

Case Report

Percutaneous Transvenous Mitral Commissurotomy (PTMC) and Percutaneous Coronary Intervention (PCI) successfully applied in one patient in same sitting

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Abstract

Sixty years old male with severe rheumatic mitral stenosis (MS), presented with dyspnoea New York Heart Association (NHYA) class III to IV. Coronary angiogram revealed severe occlusive coronary artery disease in left anterior coronary artery (LAD). Percutaneous Transvenous Mitral Commissurotomy (PTMC) and Percutaneous Coronary Intervention (PCI) of Left Anterior Descending (LAD) were done in same sitting. Both procedures were successful and ended without complication. After, half an hour while shifting to coronary care unit (CCU) patient developed cardiac tamponade, which was managed successfully. Patient was followed up for three month, he is doing well and recent echocardiogram showed mild mitral stenosis with normal left ventricular function. This case demonstrates the feasibility of the combined appliance on interventional techniques in selected patients as an alternative to cardiac surgery.

Keywords: Balloon mitral commissurotomy. Coronary stenting. Rheumatic heart disease. Mitral stenosis.

Introduction

Critical narrowing of one or more coronary vessels occurs in approximately with 25% of all adults having mitral

stenosis (MS).¹ Since 1984 percutaneous transvenous mitral commissurotomy (PTMC) has been shown to be a valid alternative to surgical therapy in selected patients with MS.² Its clinical applications has been widely accepted and a large series has been reported.³ An increasing interest in this method has resulted in its widening application to situations that would not generally have been considered for surgical commissurotomy, such as in elderly patients with calcific MS,⁴ MS associated with subvalvular fibrosis,⁵ mitral restenosis after surgical commissurotomy,⁶ or in combination with other valvular disease.⁷

Combined non surgical valvotomy in patients with multivalvular disease has been reported,⁷ as well as combined percutaneous aortic valvuloplasty and percutaneous coronary intervention (PCI).⁸ However, to our knowledge, the combined use of PTMC and PCI in patients with concomitant MS and coronary artery disease (CAD) very few cases have been reported. Very limited data has been found in patients with both coronary artery disease and mitral stenosis who underwent both procedures in the same session.

In this case we report a middle aged patient with moderately severe MS and severe coronary artery stenosis who was successfully treated by combined balloon mitral commissurotomy and coronary stenting in the same sitting

but after an hour the patient developed cardiac tamponade which was successfully managed with pericardiocentesis.

Case Report

A sixty year old male was referred to us for percutaneous transvenous mitral commissurotomy, with six months history of exertional dyspnoea New York Heart Association (NYHA) class III. Patient was a diabetic, hypertensive, dyslipidaemic and a smoker. Clinically, he was found to have loud S1 with opening snap followed by mid-diastolic murmur at apex while rest of clinical examination was unremarkable. Electrocardiogram (ECG) showed sinus rhythm with rate of 80 b/min, left atrial enlargement, otherwise within normal limits, X-Ray chest showed signs of left atrial enlargement. Transthoracic echocardiography showed dilated left atrium with no thrombus, moderate to severe mitral valve stenosis, mitral valve area on planimetry and pressure half time was 1 cm² and 1.2 cm² respectively with pulmonary artery hypertension. Wilkins echocardiographic score was 6 (thickening 2, mobility 2, subvalvular apparatus 1 and calcification 1), normal left ventricular systolic function, no mitral regurgitation and normal other valves.

As the patient had multiple coronary artery disease risk factors and his age was 60 years, it was planned to go for diagnostic coronary angiogram first. His coronary angiogram showed two severe lesions in proximal segment of left anterior descending artery (LAD) one of them involving the ostium as shown in Figure-1.

Treatment options were discussed with the patient and it

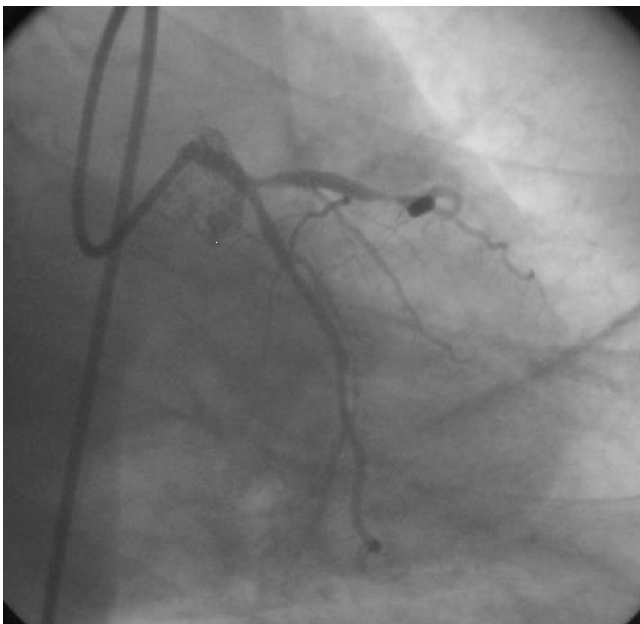


Figure-1: Coronary Angiogram showing two tight lesions in left anterior Coronary Artery.



Figure-2: Successful angioplasty of left anterior coronary artery after stenting.

was decided to go for balloon mitral commissurotomy (PTMC) and coronary stenting in the same sitting. So after two days the procedure was performed. First LAD lesion was stented with Cypher 3.5 x 33mm (Johnson & Johnson), the procedure was successful without complications as shown in Figure-2.

PTMC was started, after getting haemodynamic data, atrial septostomy was done through right femoral (venous) approach, keeping the PTMC wire at LV apex mitral valve was dilated with 14x14 mm balloons (Bonhoeffer Multi-Track system) and haemodynamic data was recorded as shown in Figure-3.

This procedure ended successfully without complications, but during shifting to coronary care unit (CCU) the patient became haemodynamically, unstable, emergency echocardiography showed collection of fluid around the heart with signs of cardiac tamponade so pericardiocentesis was done immediately and patient recovered, systolic blood pressure raised to 110 mmHg. Shots of left coronary system were taken to see the patency of stent, which was patent.

Patient was shifted to CCU with pig tail catheter placed in pericardial cavity, where repeated echocardiography showed no sign of reaccumulation. On 4th day echocardiography showed mild mitral stenosis and mitral valve area increased to 1.9 cm², no mitral regurgitation and minimal pericardial effusion at Left Ventricular (LV) apex. Patient remained stable and was discharged on medical treatment including dual antiplatelet and statins with prophylaxis of rheumatic fever. The patient was followed up for three months. He is doing well

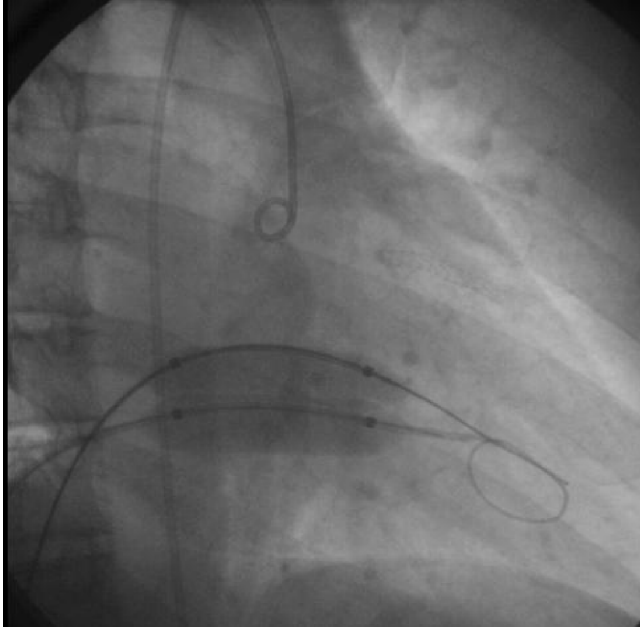


Figure-3: Percutaneous transvenous mitral commissurotomy is being performed.

and recent echocardiogram showed mild mitral stenosis with normal left ventricular function.

Discussion

In the literature, the reported frequency of CAD in patients with mitral stenosis ranges from 4% to 50%. There is a consistent relationship between the number of coronary risk factors present and the incidence of significant CAD in patients with MS. Angina pectoris is a poor predictor of CAD, and CAD can exist without any symptoms. Mattina⁹ analyzed 96 consecutive patients older than 40 years with severe MS and found 28% of the patients with significant CAD, 37% with angina pectoris and 63% without angina pectoris. Accordingly, it appears that coexistent CAD is not uncommon in patients with severe MS older than 40 years and that in these patients, CAD is often silent. PTMC has recently been shown to be a valid alternative to surgical treatment in selected subgroups of patients with MS.³ As a consequence, it appears likely that over the next few years, increasing numbers of patients undergoing combined PTMC and PTCA will be seen as in this case. Previously reported cases are with Inoue balloon.² This is a unique case as we did it with Bonhoeffer Multi-Track system.

The decision not to treat this patient surgically was based on a number of particular considerations. First, the contraindication to long-term anticoagulant therapy. Second, the known relatively high risk on combined surgical repair in older patients with multi- system disease. And finally, the

favourable valvular³ and coronary arterial features such as moderate disease of the subvalvular apparatus and an easily accessible coronary lesion. PTMC appeared successful with no immediate complications; Patient developed cardiac tamponade as septal puncture was done and patient was already heparinized for angioplasty. One case has been reported in literature where PTMC was done first and argument in favour is that if one goes for PCI first then heparinization is necessary and septal puncture of PTMC afterwards can complicate cardiac tamponade.¹⁰ This complication occurred in our case. Although, one could argue in favour of a staged procedure, we decided to proceed with PCI of the LAD lesion first then for PTMC. Another strategy which could have been followed in this case to prevent the complication of cardiac tamponade is first to do septal puncture and place the balloon catheter in left atrium and go for PCI of LAD first then continue with PTMC. Cardiac tamponade could have been prevented as septal puncture was being done prior to heparinizing the patient. This case illustrates the efficacy of the combined applications of recent innovations in the treatment of cardiovascular disorders.

In conclusion, the present case report shows the feasibility of combined application of PCI and PTMC in selected patients. Furthermore, the case history illustrates a potential complication of PTMC, i.e. cardiac tamponade, which was successfully treated by pericardiocentesis.

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