

CLOSED MITRAL COMMISSUROTOMY PROCEDURE FOR RHEUMATIC MITRAL STENOSIS IN QUETTA, PAKISTAN

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ABSTRACT

OBJECTIVE: This study was carried out to know the safety of Closed Mitral Commissurotomy procedure, improvement of functional capacity & complication rate in the setting of General surgery.

DESIGN: descriptive Study.

Place and duration of study Closed Heart surgery has started at the sandaman (prove) teaching Hospital Quetta from 15th December 1996 to December 2003

PATIENTS AND METHODS: The first ever successful closed heart valvuloplasty was carried out on a 20 year old boy with mitral stenosis and severe dyspnea, from Afghanistan, on 15th December 1996, following this there were 85 more close mitral valve commissurotomy were done making a total of 86 cases, there were 21 (24.4%) Male and 65 (75.5%) were Females. Majority of patients were in younger age group. Mitral valve area range from 0.8 to 1.5 cm² with severe pulmonary artery hypertension was recorded in 17 cases. For selection of close mitral valvuloplasty, cases of calcified mitral valve, significant mitral regurgitation, and clot in left atrium were not selected.

RESULTS: There were no operation table death and postoperative death occurred in two patients. All surviving cases had very significant improvement at short term follow up.

CONCLUSION: Closed Mitral Commissurotomy is very useful palliative procedure in term of safety, efficacy and cost effectiveness for Rheumatic Mitral stenosis. It can be performed in the setting of General surgery in developing countries, where the incidence of rheumatic heart disease is high and facilities for balloon valvuloplasty are limited.

Key Words: - Closed Mitral Commissurotomy procedure, General surgery, and closed Heart surgery.

INTRODUCTION

Rheumatic heart disease is still common in third world countries, poor, socioeconomic status, overcrowding and poor access to medical care are important factors in continuing high incidence of Rheumatic fever and of rheumatic heart disease. Mitral stenosis remains the commonest form of valvular heart disease resulting as sequel of rheumatic fever in developing countries.^{1,2} Mitral stenosis is the leading cause of morbidity and mortality among of rheumatic valvular heart disease.^{1,2} Close mitral Commissurotomy is one of the simplest and oldest of all cardiac operation.³ The efficacy and simplicity of this procedure has been well documented in developing countries.^{4,5} Like our where the facilities for balloon Commissurotomy are not

easily accessible. Close mitral Commissurotomy offers an ideal alternative to relieve rheumatic mitral stenosis.

PATIENTS AND METHODS

Preoperative Evaluation : All cases were diagnosed clinically to be suffering from rheumatic heart disease resulting in mitral stenosis and confirmed by echocardiography with colour Doppler. All cases of pure mitral stenosis or mitral stenosis with aortic regurgitation or mitral regurgitation of 1+ or no significant AR or MR were accepted for close mitral Commissurotomy. Mitral calcification was considered as contraindication to surgery. At echocardiography mitral valve area was measured and any evidence of mitral regurgitation, calcification, and vegetation around mitral valve or clot in left atrium or in left atrial appendage were noted. Cardiac catheterization was not done in any case due to non-availability of cath/Angiogra-

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phy lab facility in our province. Patient with congestive Heart failure, pulmonary artery hypertension, and atrial fibrillation was treated medically before surgery.

SURGICAL TECHNIQUES

Under general anesthesia, with single lumen endotracheal incubation, patients were placed in the supine position. At surgery patients were on continuous, routine monitoring included transcutaneous oxygen saturation, continuous end tidal carbon dioxide, blood pressure, and electrocardiogram with defibrillator with internal paddle close at hand. Procedures were done through left 5th anteriolateral thoracotomy space. Pericardium open and secured by stay sutures, then two per string suture on apex of the left ventricle. Through left atrial appendage atriotomy, right index finger inserted and mitral valve examined and digital dilatation was initiated then left ventriculotomy through apex was done, Tubb's dilator was inserted through left atrium and mitral valve feel by index finger, valvotomy completed, both atriotomy and ventriculotomy were closed carefully, bleeding point secured, chest tube retained, wound closed layer by layer.

OPERATIVE COURSE

Surgical time is defined as the interval from skin incision to placement of the surgical dressing. Our Surgical time ranged from 40 minutes to 120 minutes (median: 35 minutes) (This surgical time compares with a balloon Commissurotomy time ranging from 31 to 171 minutes in a similar group of patients undergoing Closed Mitral Commissurotomy) Operative mortality was zero. Intraoperative complications were developed in patients like severe bradycardia in one case; hemorrhage in one case - Postoperative echocardiography examination documented the elimination of the mitral regurgitation in all patients.

RESULTS

From 15th December 1996 to December 2003, 86 cases of closed mitral valvotomy were carried out. There were 21(24.4%) males and 65 (75.5%) were females' majority of the patients were in a younger age group of less than 30 years table-2. Most of our patients presented with dyspnea, palpitation, chest pain, hemoptysis, clinically majority of patients were in functional class 111, ECG showed atrial fibrillation in 45 cases, degree

of mitral stenosis as measure by Doppler echocardiography ranged from .8cm – 1.5cm. Eighty percent of cases were with MVA (Mitral Valve Area) of 1cm or less, all were selected for closed mitral commissurotomy. Tricuspid regurgitation was found in 60 cases. Four of our patients were pregnant in 2nd and 3rd trimester and all underwent successful surgical mitral valvuloplasty. At operation 90% cases were dilated up to 3.5cm, only 10% cases were dilated up to 2.6cm due to smaller age. Appendicular thrombus was seen in 22 cases and calcification was palpated in 15 cases, We lost 2 (2.32%) patients all were in functional class four had severe pulmonary arterial hypertension and severe Tricuspid regurgitation, all were died of low cardiac output in high dependency unit due to non availability of open heart surgery facility such patient should be done by open heart surgery procedure with good myocardial protection with over all mortality of 2.32 % table 3. Intraoperative complications were hemorrhage in 5 cases, arrhythmias 09 (10.4%) in cases.

POSTOPERATIVE COURSE

Postoperatively 7 patients got wound infection, average postoperative drainage was 180

TABLE 1
Age Distribution

Year	Cases
12--20	45 (52.3%)
21--30	35 (40.6%)
31--40	6 (6.9%)

TABLE 2
Degree of operative Dilatation

Range 2.5 cm to 3.5 cm	
Dilated to	
2.5cm	15 cases
3.5cm	71 cases

TABLE 3
Complication Total (21 cases)

Mitral Regurgitation moderate	01 (1.16%)
Hemorrhage	05 (5.8%)
Infection	07 (8.1%)
Arrhythmias	09 (10.4%)
Postoperative Death	02 (2.32%)

ml with range 90 to 730 ml. Average hospital stay was 4 days, postoperatively mitral valve area was 1.8 cm with range of 1.4 to 2.5 cm at 10 months, 60 patients were in FC 1 and 20 patients in FC-11.

FOLLOW-UP

All patients were followed up on OPD basis and underwent complete echocardiography and Doppler evaluation at 3 Month, 6 Month, and 1 Year of the procedure; we carefully looked for any signs and symptoms and restenosis on each visit. Length of follow-up ranged from 2 days to 7 years. No patient has shown any signs and symptoms and restenosis in short follow-up. All incisions healed well without significant scarring or complications

DISCUSSION

At present close instrumental mitral valvotomy is practical in underdeveloped countries and especially in the Asian countries. This is mainly due to the fact that still Rheumatic Heart Disease is prevalent in Asian countries, Rheumatic Heart Disease seen therefore, is in its early stage and in younger age group 9. Close mitral valvotomy in one of the simplest and well-established procedures. Though there is increasing number of surgeons who would favor open mitral commissurotomy as the preferred surgical technique for mitral stenosis^{6,7,8}. Close mitral valvotomy should be carried out before the patient developed atrial fibrillation; patients with moderate restrictions from symptoms (NYHA functional class II) but with severe mitral stenosis are good candidates for valvotomy. In young patients who may have only moderate mitral stenosis but with attacks of paroxysmal nocturnal dyspnea or pulmonary edema, mitral valvotomy is indicated⁹⁻¹⁰.

Advanced age, preoperative atrial fibrillation, congestive heart failure, mitral regurgitation, severe pulmonary hypertension, immobility of mitral valve produced by subvalvular fibrosis and advanced symptomatology are the risk factors which adversely affect the survival following surgery^{10,11}. Our total mortality is

2.5%, it has been reported to be 2.6% by Sohail et al¹². 2.9 by Rehman K et al¹³. Post operatively the clinical as well as echocardiography improvement is satisfactory. Our 60 patients are in FC class 1 and 20 patients are in FC-11. 5 patients are in FC-111 at a follow up of 1 month to 7 years (average 2.5 years). 90% of cases of Sohail¹² and 84% of Rehman¹³ are in FC 1 postoperatively. Females are more common in our study, the same is from studies of Sohail¹² and Rehman.¹³ Similarly our mean age is 24.04 which are same for Sohail¹² and Rehman¹³, our preoperative MVA is from 0.8 to 1.5 cm²-cm which is same of Sohail et al¹² and Rehman et al¹³.

Our experience of surgical mitral valvotomy in pregnancy is limited to 4 patients, which was successful. It has been reported by Abid AA et al¹⁴ to be safe; postoperatively the MVA on echocardiography was attained to be 1.4cm with range of 1.5 to 2.7cm. Sohail et al¹² have reported it to be 1.8 with range 1.6 to 2.6cm, mitral valve gradient dropped from 30/18 to 13/7, which is tallying with other reported. Sohail et al¹² have given the drop to be from 29/20 to 12/7 while Rehman¹³ has given drop from 28/19 to 13/8. Lan KW¹⁶ et al achieved the drop of mitral valve pressure gradient from 30/19 to 11/6. Blood loss of 180ml is average among our cases. It is 50 ml by Sohail et al¹². We lost 2 patients all were in functional class four had severe pulmonary arterial hypertension and severe Tricuspid regurgitation, all were died of low cardiac output in high dependency unit due to non availability of open heart surgery facility such patient should be done by open heart surgery procedure with good myocardial protection.

CONCLUSION

Close mitral Commissurotomy is very useful palliative procedure in term of safety, efficacy and cost effectiveness for mitral stenosis. It can be performed in the setting of General Surgery. Most of the young age group in this series should dream improvement symptomatically, at short-term follow up, following surgery.

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