

Original Research Paper

Cardiology

COMPARATIVE STUDY OF CMC Vs PTMC IN MITRAL STENOSIS

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KEYWORDS:

INTRODUCTION:

Rheumatic heart disease continues to be major cardiac problem in india caused by Group A beta haemolytic streptococcus.although the prevalence of heart disease is steadily declining it is higher in developing nations like India where it is approximately 100-150 cases per 1,00,000 population.

Mitral stenosis is the predominant lesion in Rheumatic Heart Disease .the natural history of Mitral stenosis is poor without surgical relief of stenosis.The 10 year survival rate for asymptomatic, mild symptoms & those who developed failure symptoms is approximately 80,60&15% respectively.

Surgical correction of mitral stenosis has evolved since 1902 (Brunton).the options available are closed mitral commissurotomy (CMC),Open Mitral Valvotomy, Percutaneous Trans Mitral Commissurotomy(PTMC) and Mitral Valve Replacement.Each procedure has its own merits & demerits.

A recent long term study has shown no advantage for the open vs closed procedure. PTMC offers certain distinct advantages over surgical commissurotomy. However cost & expertise needed for the procedure makes it as a complement and does not replace the available surgical options.

AIM OF THE STUDY:

- 1. To evaluate the outcome after closed mitral commisurotomy in our institution.
- 2. To compare our results with percutaneous Trans Mitral commissurotomy in our institution.

MATERIALS & METHODS :

412 consecutive patients with valvular heart disease admitted over one year in the department of CT surgery ,govt. general hospital ,Chennai.Out of 412 patients ,392 patients were isolated with mitral valve disease.

Among 392 patients ,260 patients fulfilled the criteria for closed mitral commissurotomy which included 9 patients with mitral restenosis and 1 patient with pregnancy.Patients were selected for CMC based on Echocardiographic findings.Patients with severe mitral stenosis and echo score < 8(wilkin's score),raised Pulmonary Artery Systolic Pressure and Atrial Fibrillation are all included.

Patients having Echo score of > 8, LA & LAA clot, Moderate MR were excluded. After the operation patients were followed up for 6 months for hemodynamic stability. In all cases, the procedure was performed through standard left anterolateral thoracotomy and close dmitral commissurotomy was done through trans ventricular route using Tubb's dilator.

During the same period, using the same criteria as for that of CMC, 72 patients underwent PTMC in our cardiology department using Inoue single balloon technique. Echo was taken at discharge and 6th month post operatively.

70% Of the patients are females & most common age of presentation is in 3 rd decade.

 $66\,\%$ of the patients presented with NYHA CLASS III SYMPTOMS & 10 % with CLASS IV Symptoms

Overall incidence of Atrial Fibrillation is 20% -common in 4th decade

Preoperative MVOA (0.6-1)Cm2 ; At discharge MVOA (1.5-2.2)Cm2 . no restenosis noted at 6 months follow up

 $2\ hospital\ deaths\ were\ reported\ (0.77\%).$ No severe MR were reported

	PTMC	CMC
MVOA Cm 2	1.7	1.84
MV gradient(mm Hg)	11.26	10.9
PASP (mm Hg)	26.48	30.42
Failed attempts	8(11.11%)	Nil
Severe MR	Nil	Nil
LA Tear	1(1.38%)	2(0.77%)
LV Tear	nil	1(0.38%)
Embolic Episodes	Nil	3(1.15%)
Death	Nil	1(0.38%)

The efficacy of CMC has been well proved and its excellent palliative effects has been adequately documentedhickey et al demonstrate that 5, 10 & 20 years survival rates after surgical commisurotomy were 95%, 85% & 33% respectively. Importantly the technique used for commissurotomy was not a risk factor for diminished survival , requirement for second commissurotomy or subsequent or subsequent valve replacement, occurrence of thromboembolism or long term poor functional status. Stanley John , a strong proponent of CMC from Christian Medical College , Vellore reported short and long term results in 3748 patients. The 24 years survival rate was 84% and thromboembolism and restenosis rates ranges from 0.03% - 0.16% / year and 0.24% - 1.14% /year, respectively.

Increase in calculated mitral valve area (or orifice size) produced by commissurotomy varies greatly and depends not only on the surgical opening but also on leaflet pliability and extent of subvalvar obstruction from fused chordae. Feigenbaum and colleagues found that closed mitral commissurotomy, usually with a transventricular dilator, increased mitral valve area by an average of 1.3 to 2.6 cm2 with post operative mitral valve areas ranging from 0.7 to 5.8 cm2.

Younger patients tend to have a better functional result and experience greater increases in calculated valve area than older patients, perhaps because younger patients tend tohave more pliable valves. The same general results are achieved by both open and closed commissurotomy and percutaneous balloon mitral valvotomy. Enlargement after percutaneous balloon valvotomy results primarily from splitting of fused commissures

Inoue from Japan created history in 1982 when he explored the use of a balloon catheter for the treatment of mitral stenosis.By 1992 several large series have shown balloon valvotomy is safe and non

OBSERVATION & RESULTS:

operative treatment for wide range of patients with Mitral stenosis. The major contraindications for BMV are presence of fresh clots in LA or LA appendage and also more than grade II Mitral regurgitation.

Kirklin points out that open surgical technique is preferable in this group not only because of a favourable outcome but also with an open technique valve replacement can be performed at the same time should the valve morphology be unfavourable than expected.

This percutaneous technique consists of advancing a small balloon flotation catheter across the interatrial septum (after trans septal puncture), enlarging the opening, advancing a large (23 to 25 mm) hourglass-shaped balloon (the Inoue balloon), and inflating it within the orifice. Alternatively, two smaller (12 to 18 mm) balloons may be employed.

Commissural separation and fracture of nodular calcium appear to be the mechanisms responsible for improvement in valvular function. In several series, the hemodynamic results of BMV have been quite favourable, with reduction of the trans mitral pressure gradient from an average of approximately 18 mm Hg to 6 mm Hg, a small (average 20 percent) increase in cardiac output, and an average doubling of the calculated mitral valve area from 1.0 to 2.0 cm2 . Although the double-balloon technique may result in a slightly greater valve opening, the clinical outcomes of the two approaches are similar. Tolerance has paralleled the favorable hemodynamic changes.

In conclusion, the complications following CMC is very minimal and is comparable to any other results reported in literature.PTMC provided somewhat lower MVOA and hemodynamics than CMC and the number of failed attempts were relatively high in the presented study

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