Immediate Results of Percutaneous Balloon Mitral Valvuloplasty For Mitral Stenosis Associated With Mild To Moderate Mitral Regurgitation

Thesis

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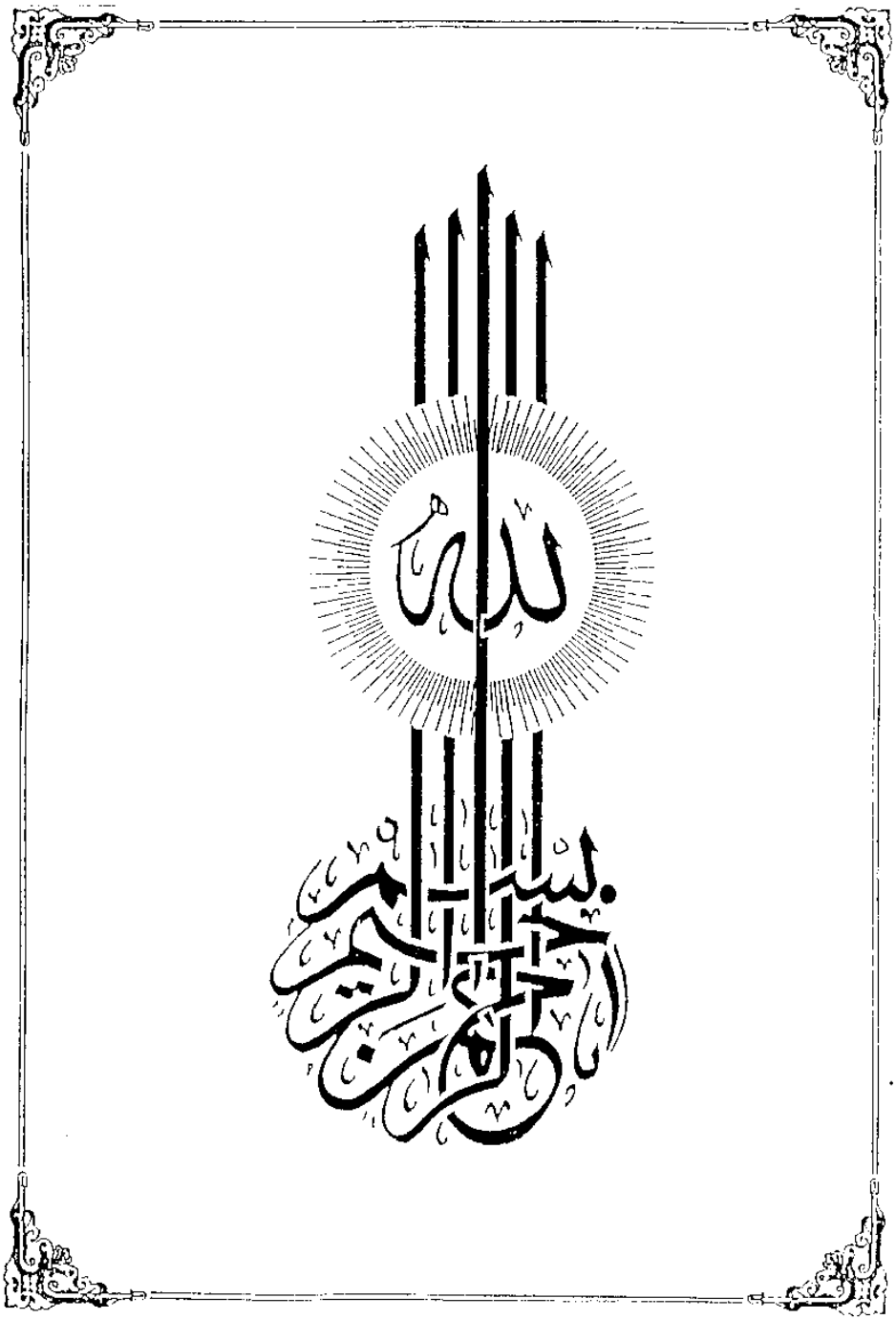
To
My Wife
To
My Family



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List of Abbreviations

2D	Two dimension
AF	Atrial fibrillation
Ao. P	Aortic pressure
AR	Aortic regurgitation
B/A	Balloon annulus ratio
ECG	Electrocardiogram
EF	Ejection fraction
LA	left atrium
LAP	Left atrial pressure
mPG	Mean pressure gradient
MR	Mitral regurgitation
MS	Mitral stenosis
MVA	Mitral valve area
NYHA	New York Heart Association
PAP	Pulmonary artery pressure
PAT	Pulmonary acceleration time
PBMV	Percutaneous balloon mitral valvuloplasty
RAO	Right anterior oblique
RAP	Right atrial pressure
RVEDP	Right ventricular end diastolic pressure
RVSP	Right ventricular systolic pressure
TEE	Transesophageal echocardiography
TTE	Transthoracic echocardiography

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Introduction
And
Aim of The Study

Introduction & Aim of The Study

Rheumatic heart disease is still a major cause of disability and death among children and adolescents in our country.

Mitral stenosis occurs in more than 40% of patients with rheumatic heart disease.

Many treatment modalities are now used to correct the hemodynamic and clinical burden of patients with mitral stenosis. Such as medical treatment, closed or open mitral commissurotomy and percutaneous balloon mitral valvuloplasty that was first introduced in 1982.

Many points should be fulfilled before considering a patient candidate for percutaneous balloon mitral valvuloplasty; one of which is the presence and severity of concomitant mitral regurgitation.

The association of mild mitral regurgitation to mitral stenosis is usually not considered as a contraindication for the procedure.

However, some prefer not to proceed with percutaneous balloon mitral valvuloplasty in those patients with mild to moderate mitral regurgitation due to the fear of progression of the regurgitation.

The results of percutaneous balloon mitral valvuloplasty in patients with mitral stenosis associated with mild to moderate mitral regurgitation should be studied.

The issue of this study is to evaluate the impact of percutaneous balloon mitral valvuloplasty on the severity of mitral regurgitation associated with mitral stenosis.

Aim of The Study

This study evaluates the immediate outcome of percutaneous balloon mitral valvuloplasty on patients having mitral stenosis with mild to moderate mitral regurgitation and to identify the predictors of progression of mitral regurgitation.

Review of Literature

I. Mechanism of Mitral Regurgitation Following PBMV

Essop et al. (1991). This study was designed to evaluate the incidence and mechanisms of MR following PBMV in 40 consecutive patients, all of which had no more than 2+ MR by angiography and color Doppler prior to PBMV.

By Doppler criteria 33 patients had no MR (n = 6) or mild (n = 27) increase in MR (group 1), and 7 developed significant new MR (group 2).

Echo Doppler examination clarified the mechanism of MR in all patients with increased MR following PBMV. Disruption of valvular or of the subvalvular apparatus was identified in all patients in group 2.

A tear of the posterior mitral leaflet was seen in five patients. One patient was found to have a torn anterior mitral leaflet and another had an avulsed anterolateral papillary muscle. Confirmation of the mechanism was obtained at surgery in two patients and by TEE in all seven patients.

In contrast, mild MR occurring in group 1 patients was seen to occur at the sites of one or both commissures that had been split

in 20 patients and represents the most frequent mechanism by which mild increase in MR occurs.

The mechanism of mild increase in MR in a smaller group of patients (6 of 26) was prolapse of the anterior mitral leaflet. In these patients anterior mitral leaflet prolapse is most likely due to the combination of annular dilatation, mild leaflet retraction, and absence of significant subvalvular disease with no chordal shortening.

Reifart et al. (1990) found a 13 % incidence of leaflet laceration resulting in severe MR following PBMV, which occured with more advanced morphological changes at the commissures in valves that tended to rupture. They postulated therefore that the leaflets themselves were less resistant to rupture than the commissures. The excised valves that they examined, however, were fibrotic and calcific.

O'Shea et al. (1992) described 6 patients who had unusual sequelae as visualized by Doppler echocardiography study after catheter balloon commissurotomy for MS. These sequelae included:

⇒ *Case 1:* a 28 year old woman who underwent PBMV. Although she had no MR before the procedure, severe MR developed immediately after and progressed to pulmonary edema. Doppler and two dimensional echocardiographic examination at this time demonstrated the presence of partial rupture of

the distal portion of the posterior mitral valve leaflet, with a flail portion of the posterior leaflet evident on the atrial side of the coapted mitral valve leaflets at the onset of systole.

⇒ *Case 2:* was a 58 year old woman who underwent PBMV using a single balloon. Doppler echocardiographic studies performed before valvuloplasty showed an eccentric mitral valve orifice. A repeat study performed 24 hours later revealed an unusual appearance suggestive of a double orifice mitral valve. Subsequently, as a result of symptoms, the patient underwent repeat valvuloplasty with the double balloon technique and the "double orifice mitral valve" disappeared. It was postulated that the double orifice originated from a partial split of one commissure, near the annulus but not at the central portion of the leaflets after dilatation with single balloon. So subsequent dilatation using the double balloon technique produced a complete split of the commissure. Thus, this patients response represents an inadequate catheter balloon commissurotomy rather than a complication.

⇒ *Case 3:* PBMV using the double balloon technique was done in a 41 year old woman. She developed mild MR post-dilatation evident by angiography. Doppler echocardiography revealed a mobile, thickened ruptured chordae tendinae attached to the anterior mitral leaflet, with systolic anterior motion of the ruptured chordae into the left ventricular outflow tract.