

**Using Mitral Leaflet Separation Index for the
Evaluation of the Severity of
Mitral Stenosis pre and post Percutaneous
Balloon Mitral Valvuloplasty**

Thesis submitted for partial fulfillment

Of Master Degree In Cardiology

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List of ABBREVIATIONS

2D	: two dimensional
3D echo	: three dimensional echocardiography
ACC	: American college of cardiology
AF	: atrial fibrillation
AHA	: American heart association
ASD	: atrial septal defect
AV	: atrioventricular
BP	: blood pressure
CCS	: Canadian cardiovascular society
DFP	: diastolic filling period
ECG	: electrocardiogram
INR	: international normalization ratio
LA	: left atrium; left atrial
LV	: left ventricle; left ventricular

MAC : mitral annular calcification

MLAP : mean left atrial pressure

MLS : mitral leaflet separation index

MLVP : mean left ventricular pressure

MR : mitral regurgitation

MS : mitral stenosis

MVA : mitral valve area

MVAP : mean mitral valve apparatus

MVG : mitral valve gradient

MVL : mitral valve leaflet

NYHA : New York heart association

OS : opening snap

PASP : pulmonary artery systolic pressure

PBMV : percutaneous balloon mitral valvuloplasty

PCWP : pulmonary artery wedge pressure; pulmonary
artery catheter

PHT : pressure half time

RHD : rheumatic heart disease

RVSP : right ventricular systolic pressure

SEC : spontaneous echo contrast

SV : stroke volume

TEE : transesophageal echocardiography

TTE : transthoracic echocardiography

VHD : valvular heart disease in the wedged position

INTRODUCTION

Rheumatic heart disease remains a major cause of cardiovascular disease in developing nations, although the prevalence of rheumatic heart disease (RHD) has declined sharply in industrialized countries during the last century.^[1] RHD is by far the most important form of acquired heart disease in children and young adults living in developing countries (which are inhabited by 80 percent of the world's population); RHD accounts for about a quarter of all patients with heart failure in endemic countries.^[2,3]

In the great majority of cases, mitral stenosis is caused by rheumatic involvement of the mitral valve,^[4,5] although only 20 to 30 percent of patients report a history of rheumatic fever.^[3,6]

Mitral stenosis (MS) is a disabling and eventually lethal disease. Untreated progressive disease can lead to significant symptoms (eg, dyspnea and fatigue) and serious complications (eg, pulmonary edema, systemic embolism, and pulmonary hypertension).^[7-10]

Although medical therapy can relieve symptoms, it does not affect the obstruction to flow. As a result, surgical commissurotomy and open valvuloplasty were, for many years, the only methods by which MS could be corrected. However, the development of percutaneous balloon mitral valvuloplasty (PBMV) by Inoue in 1984 and Lock in 1986 for the treatment of

selected patients with MS has revolutionized the treatment of this disorder.^[١٠٠] The long-term results, lower costs, and the avoidance of thoracotomy make PBMV the treatment of choice in patients with MS who have the following features:

- Moderate to severe MS
- Pliable, noncalcified mitral valves
- Symptomatic or, if asymptomatic suffering from pulmonary artery hypertension
- The absence of left atrial thrombus or moderate to severe mitral regurgitation

In addition, patients who are too old or frail for surgery or those with severe valve deformities might consider PBMV as a palliative procedure in the absence of left atrial thrombus or moderate to severe mitral regurgitation.^[١٣٨]

The mitral valve was the first structure to be identified by echocardiography. Technical advances have enabled echocardiography to identify almost any anatomic or functional abnormality of the mitral valve.^[١١,١٢]

Echocardiography is the most accurate approach to diagnosis and evaluation of MS.^[١٣] Echocardiography is recommended in all patients with MS at initial presentation, for reevaluation of changing symptoms or signs, and at regular intervals (depending on disease severity) for monitoring disease progression.^[١٤]