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

By

Amr Farag Farag ElHadidy

M.B;B.CH

Under supervision of

Doctor Hany Fouad Hanna

Assistant Professor of cardiology

Ain Shams University

Doctor Sameh Samir Raafat Naguib

Lecturer of cardiology

Ain Shams University

Doctor Mohamed Abd Elzaher Abd Allah

Lecturer of cardiology

Ain Shams University

Faculty of medicine.Ain Shams University

٢٠١٣

List of content

Acknowledgement

Praise to "Allah", the Most Gracious and the Most Merciful Who Guides Us to the Right Way.

١) would like also to express my deep gratitude to Assist Prof. Dr. Hany Fouad Hanna, Assistant Professor of cardiology, Ain Shams University. Who had made a greet effort with me in this thesis. For his precious guidance, wise instructions, meticulous supervision, valuable experience and time, endless cooperation and true concern to accomplish this work in the best possible image. For the time he gave to me, his support and sincere help.

٢) It is a great honor to express my deep gratitude and cordial appreciation to Dr. Sameh Samir Raafat, Lecturer of cardiology, Ain Shams University. Who gave me much of his effort, experience and close supervision throughout the work. He provided me continuous encouragement and support. His generous assistance and meticulous guidance had a pivotal role in the completion of this study. For providing me the experience, cooperation and close supervision throughout the work. He provided me continuous encouragement and support.

٣) I would like to express my deep gratitude to Dr. Mohamed Abdelzaher Abd Allah, Lecturer of cardiology, Ain Shams University. For his great encouragement, constant support. Without his continuous help this work would never have been accomplished. His patience and willingness to provide continuous guidance have been instrumental in bringing the study to completion.

Last but not least I would like to express my deepest thanks to my Family for their continuous guidance and constant encouragement.

My great appreciation is extended to
all those who shared either practically
or morally in the accomplishment of this work

LIST OF TABLES

LIST OF FIGURES

List of ABBREVIATIONS

٢D	: two dimensional
٣D 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.[١] 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 ٨٠ percent of the world's population); RHD accounts for about a quarter of all patients with heart failure in endemic countries.[٢,٣]

In the great majority of cases, mitral stenosis is caused by rheumatic involvement of the mitral valve,[٤,٥] although only ٥٠ to ٧٠ percent of patients report a history of rheumatic fever.[٦,٧]

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).[٨-١٠]

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 ١٩٨٤ and Lock in ١٩٨٥ for the treatment of

selected patients with MS has revolutionized the treatment of this disorder.[٨-١٠] 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]