Functional anatomy and echocardiographic assessment in secondary mitral regurgitation

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Abstract

Background: Mitral valve apparatus is complex and involves the mitral annulus, the leaflets, the chordae tendinae, the papillary muscles as well as the left atrial and ventricular myocardium. Secondary mitral regurgitation is consequence of regional or global left ventricle remodeling due to an acute myocardial infarction (75% of cases) or idiopathic dilated cardiomyopathy (25% of cases). It is associated with an increase in mortality and poor outcome. There is a potential survival benefit deriving from the reduction in the degree of severity of mitral regurgitation. So the correction of the valve defect can change the clinical course and prognosis of the patient. The rationale for mitral valve treatment depends on the mitral regurgitation mechanism. Therefore, it is essential to identify and understand the pathophysiology of the mitral valve regurgitation. **Aim of the study:** The aim of this review is to describe the crucial role of transthoracic and trans-esophageal echocardiography, in particular with 3D echocardiography, for the assessment of the severity of secondary mitral regurgitation, anatomy and hemodynamic changes in the left ventricle. Moreover, the concept that the mitral valve has no organic lesions has been abandoned. The echocardiography must allow a complete anatomical and functional evaluation of each component of the mitral valve complex, also useful to the surgeon in choosing the best surgical approach to repair the valve. **Conclusions**: Echocardiography is the first-line imaging modality for a better selection of patients, according to geometrical modifications of mitral apparatus and left ventricle viability, especially in preoperative phase.

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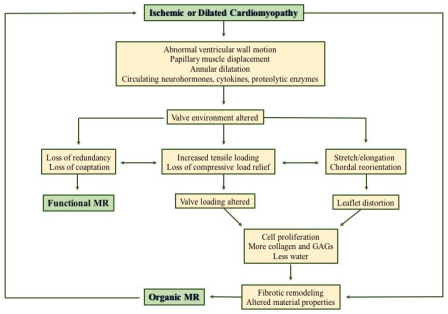

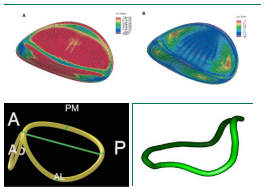

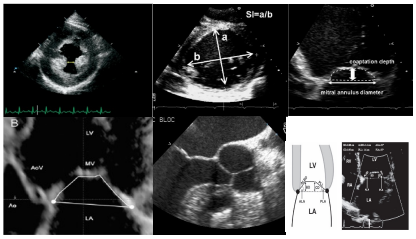

	SMR with Inferior MI	*SMR with Anterior MI*
ROA	↑	↑
LV chamber		
EDVI	↑	↑↑↑
ESVI	↑↑	↑↑↑
Mitral anulus		
Circumference	↑	↑↑
Area	↑	↑↑
Height	↓	↓↓