

Mitral Regurgitation

Mitral Regurgitation: Etiology

Mitral annulus

- Annular calcification

Leaflets

- Myxomatous degeneration
- Rheumatic disease
- Endocarditis
- SAM (hypertrophic cardiomyopathy)

Chordae tendineae

- Rupture (idiopathic)
- Endocarditis

Papillary muscles

- Dysfunction or rupture

Left ventricle

- Cavity dilatation

Schematic
representation of
mitral valve
pathologies
removed

Mitral Regurgitation: Pathophysiology

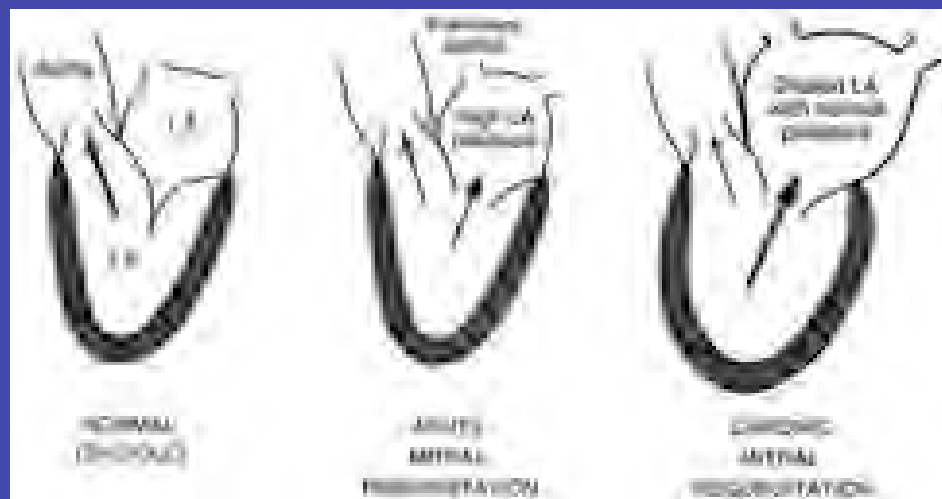
Acute Mitral Regurgitation:

Pulmonary Edema

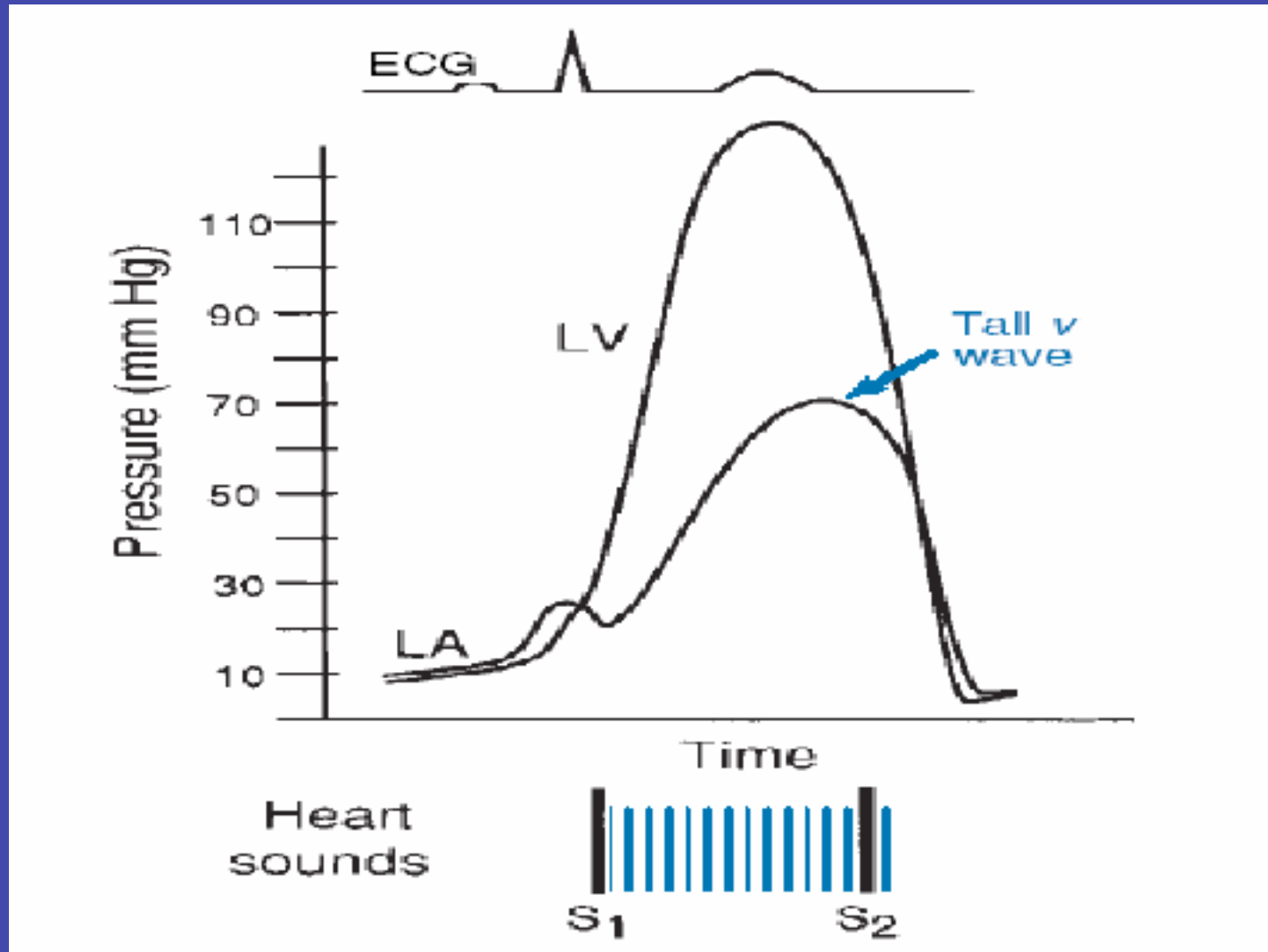
High LA Pressure

Chronic Mitral Regurgitation:

Dilated LA with less elevated pressure



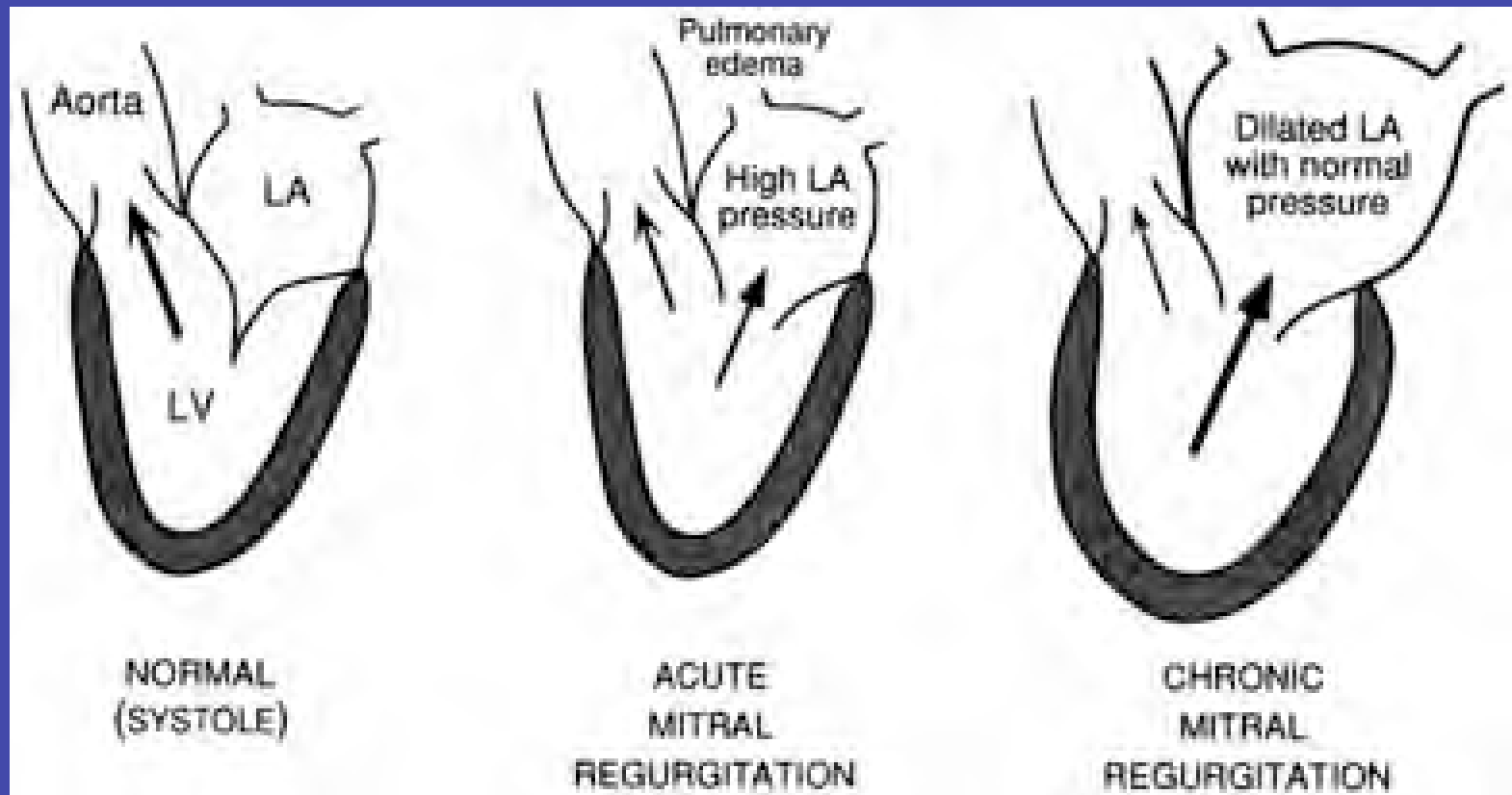
Mitral Regurgitation: Hemodynamics



Mitral Regurgitation: Pathophysiology

- May be acute or chronic
- Chronic MR:
 - Total stroke volume increases
 - Blood → LA to offload LV
 - LV enlarges (ventricular remodeling)

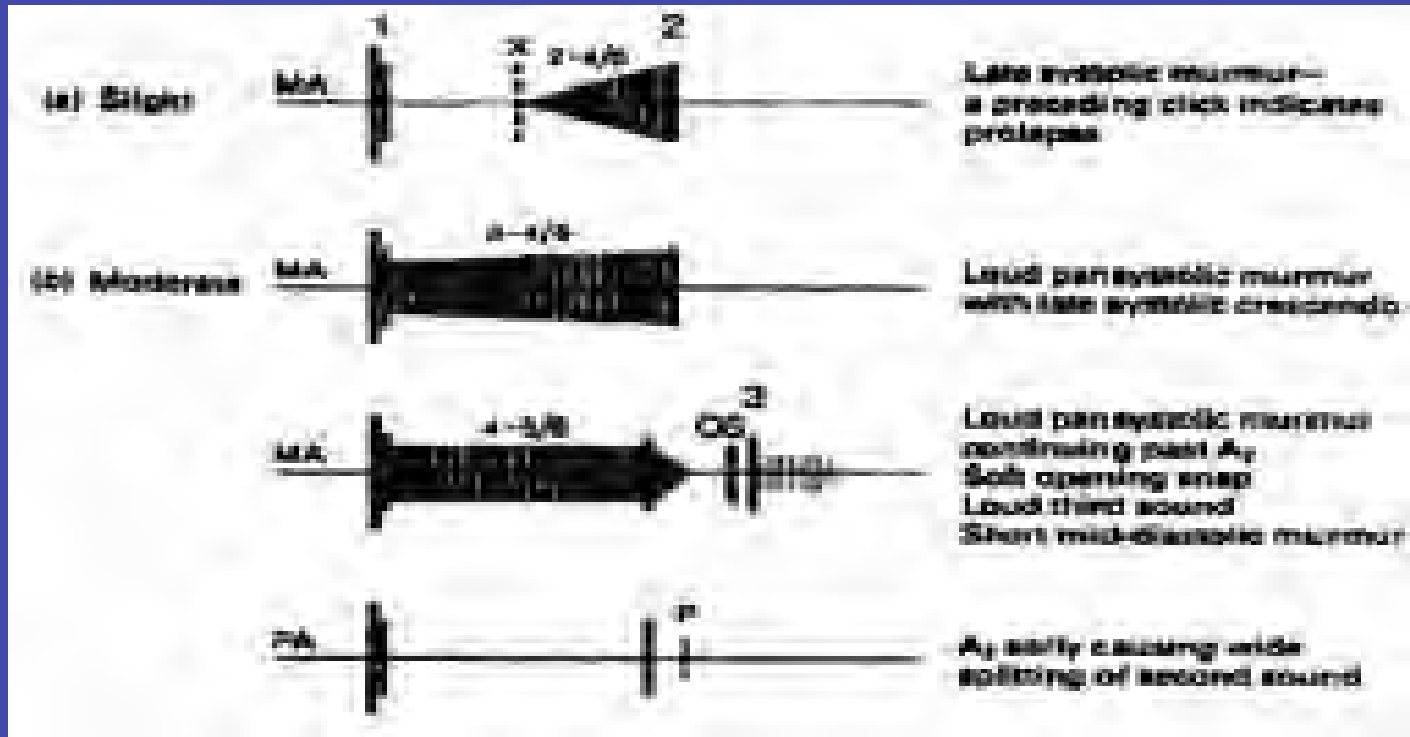
Mitral Regurgitation: Pathophysiology



Mitral Regurgitation: Clinical Features

- Mild MR → no sx
- When sx occur
 - Fatigue
 - Dyspnea
- Physical Exam:
 - Lateral; dynamic LV apex beat
 - Often diminished S¹ (leaflets don't coapt); S³ often present
 - Apical systolic murmur
 - Holosystolic murmur to axilla

Mitral Regurgitation: Auscultation



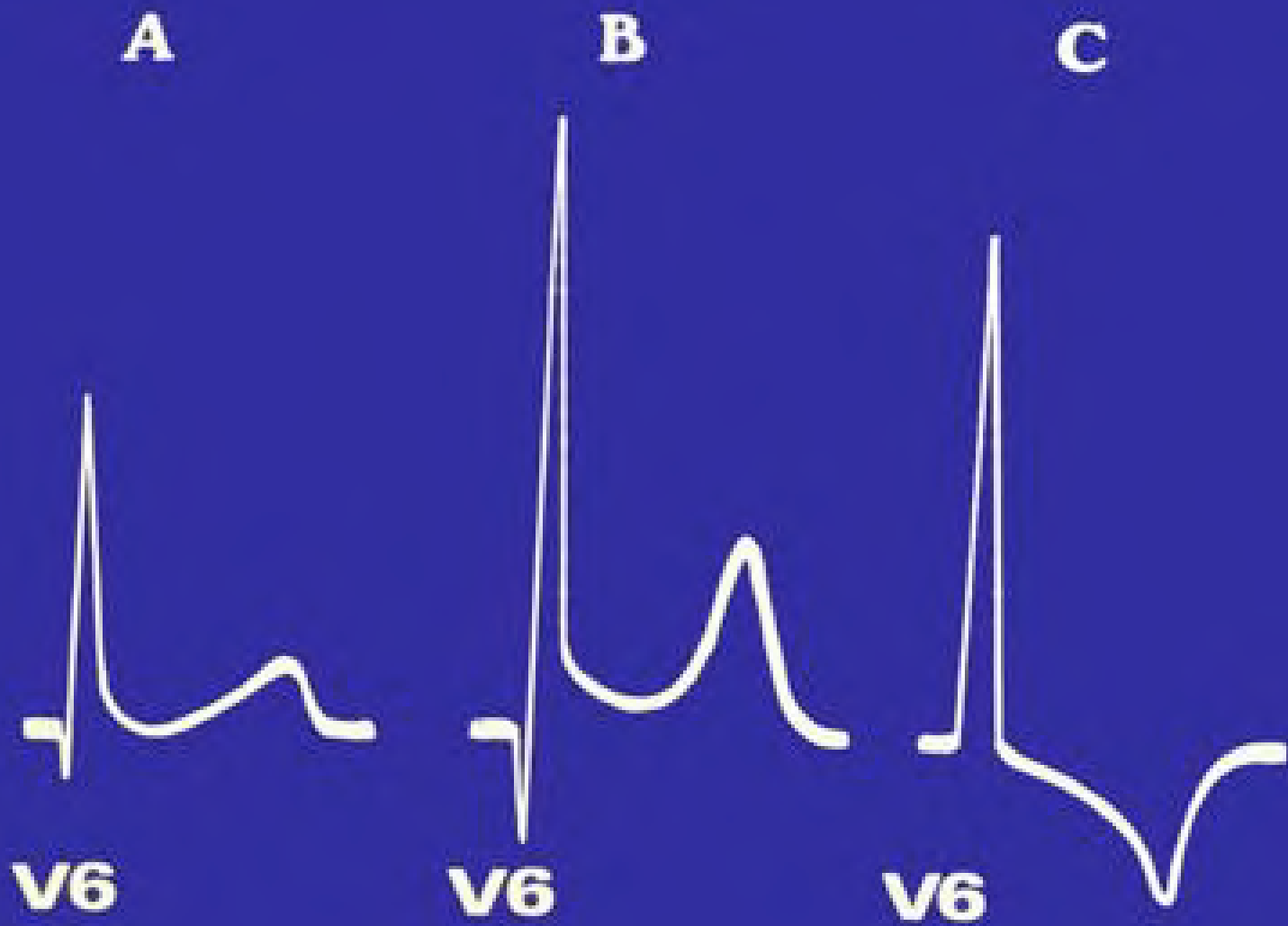
PD-INEL

Source Undetermined

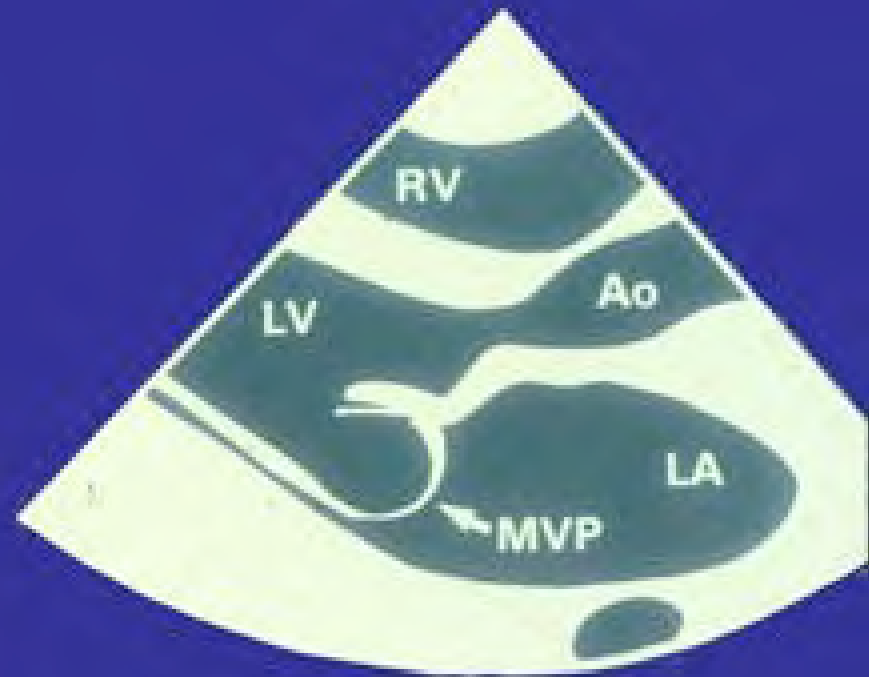
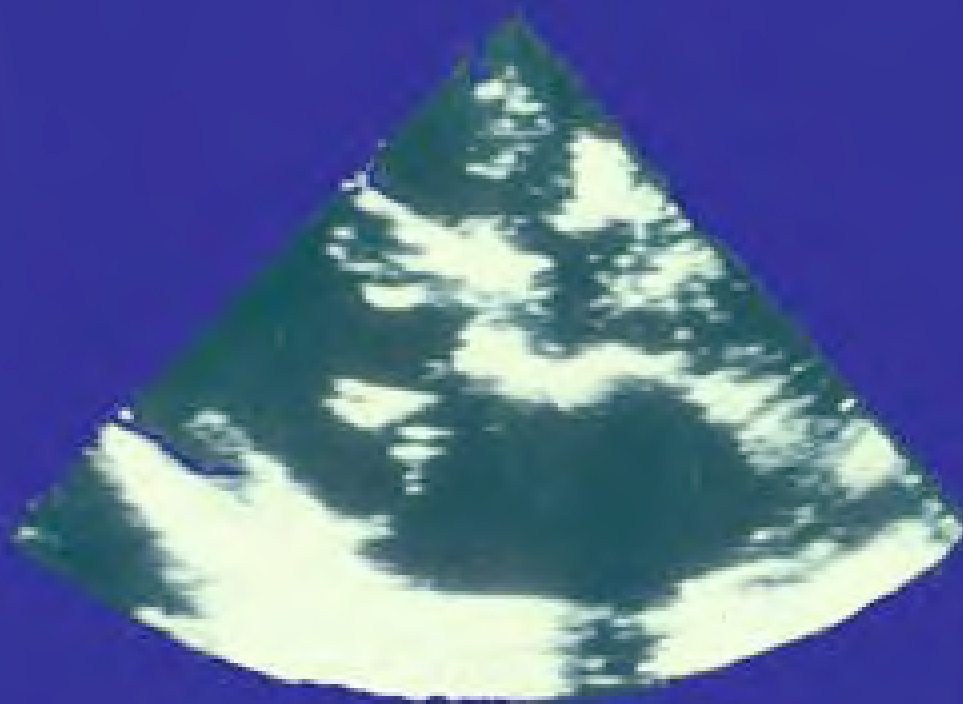
Mitral Regurgitation: Diagnostic Tests

- CXR: LA and LV enlargement
- ECG: Normal initially...then shows LV hypertrophy
- Echo:
 - LAE
 - LV enlargement
 - Doppler and color flow allow semi-quantitative estimate (1-4+)





Mitral Regurgitation: Parasternal



Severity of Mitral and Tricuspid Regurgitation

Schematic
representation of
varying degrees of
severity of
regurgitation
removed

Mitral Regurgitation: Clinical Features

Mitral Valve Prolapse:

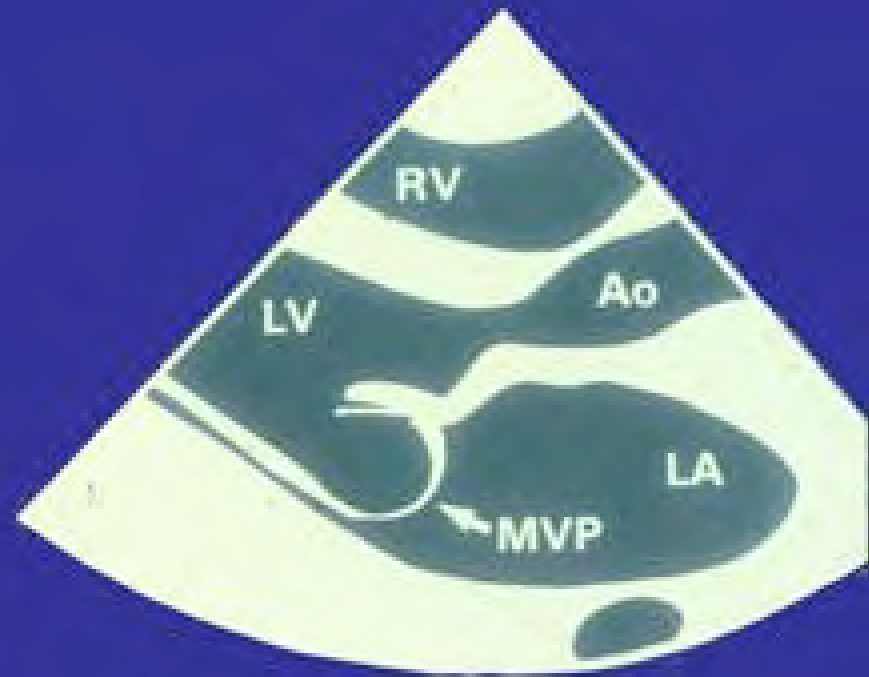
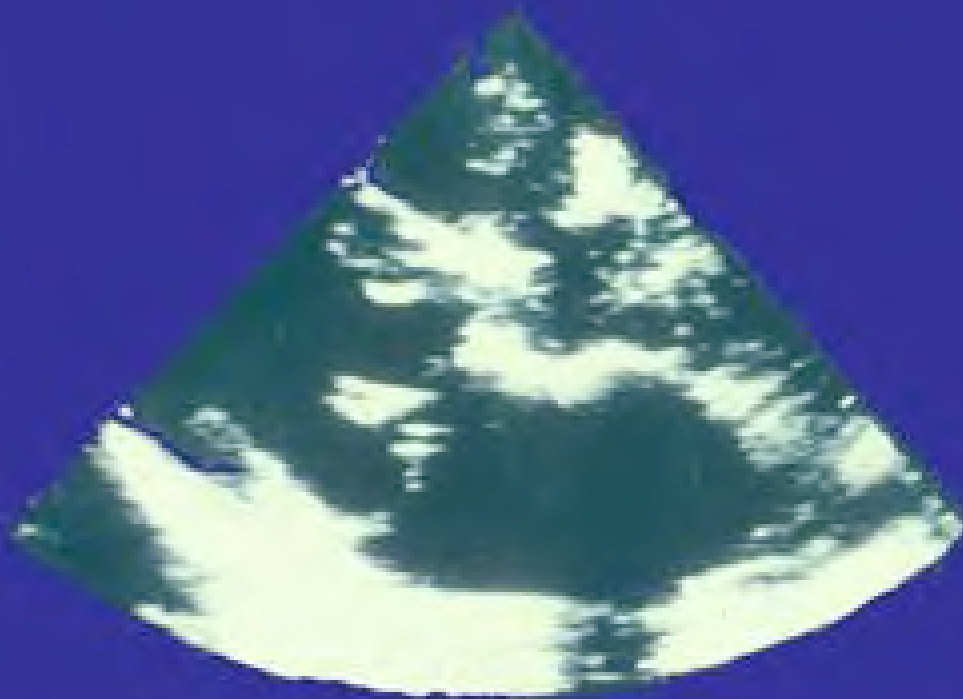
- Protrusion of MV leaflets into LA during systole; more common in women
- Valve changes → leaflets show...
 - voluminous
 - thickened
 - redundant
 - myxomatous
- Sx: palpitations, dyspnea if severe

Mitral Regurgitation: Mitral Prolapse

Exam:

- Skeletal changes – scoliosis, pectus excavatum; Marfan's in some
- Midsystolic click; may see late systolic murmur
- Echo: Mid to late systolic prolapse of posterior leaflet. Doppler or color echo reveals severity of MR

Mitral Regurgitation: Parasternal

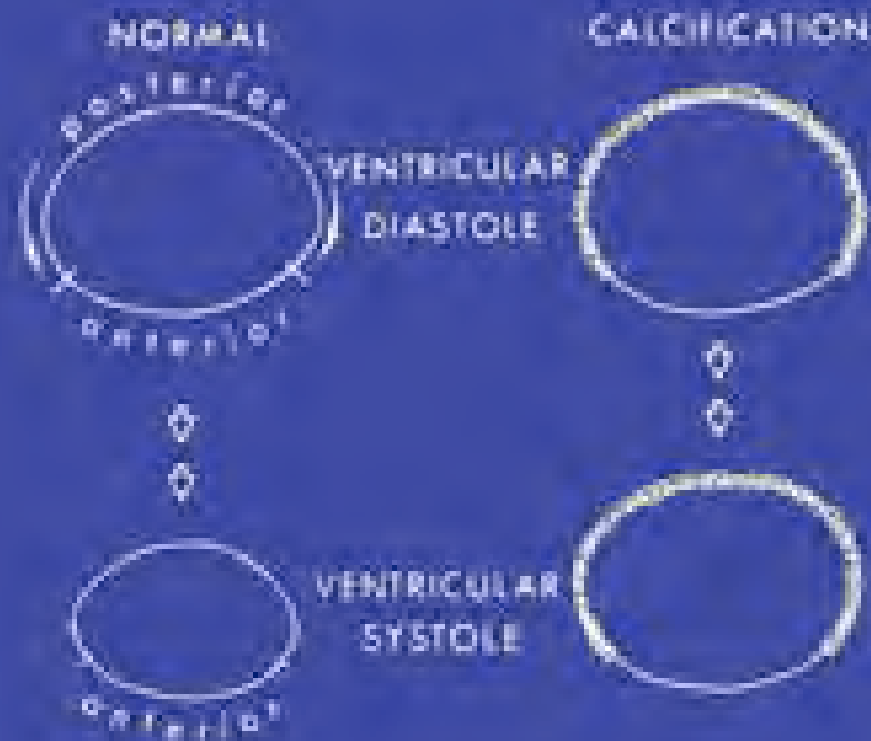


Mitral Regurgitation: Mitral Prolapse

Complications:

- Many patients go thru life without problems
- MR can progress
- Chordal rupture can lead to sudden, severe MR (esp. in men)
- Endocarditis in those with murmur
- TIA's rare → treat with ASA
- Sudden death – very rare

Mitral Annulus

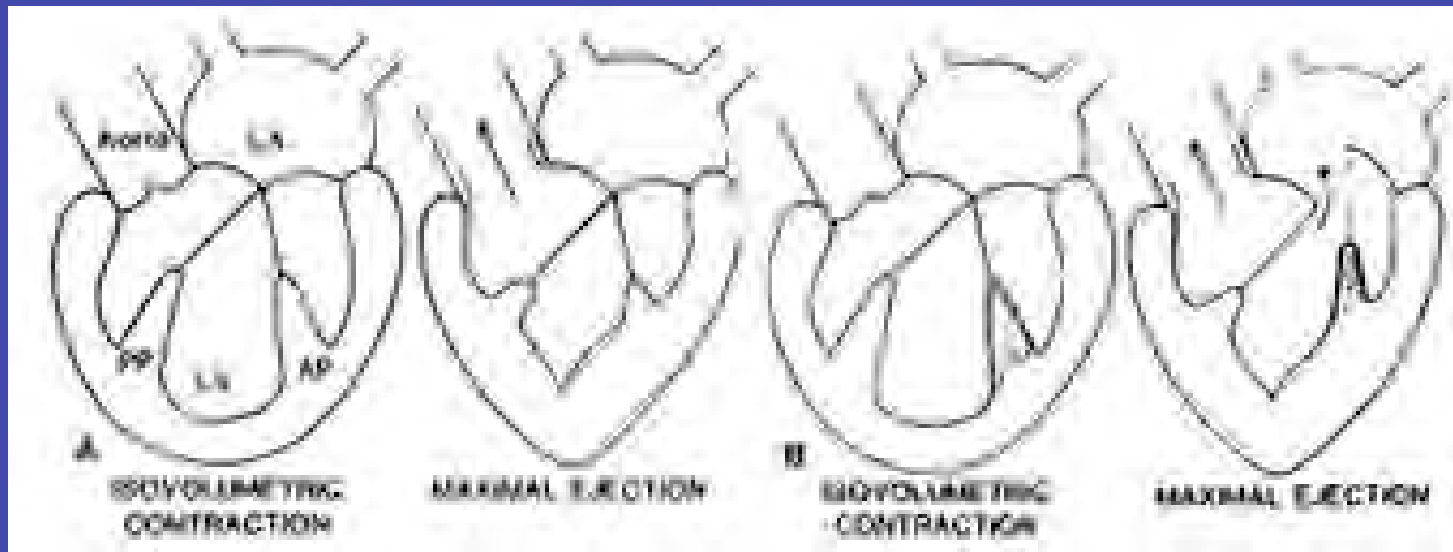


Mitral Regurgitation: Clinical Features

Papillary muscle dysfunction:

- Spectrum from intact but poorly functioning PM to acute rupture
- Frequently caused by:
 - Ischemia or infarction of papillary muscle or underlying LV myocardium
- Less frequently by LV dilation or infiltrative process

Mitral Regurgitation: Papillary Muscle Dysfunction



Mitral Regurgitation: Papillary Muscle Dysfunction



Mitral Regurgitation: Differential Diagnosis

Conditions with systolic murmur:

- VSD
- Aortic stenosis
- Tricuspid regurgitation
- Hypertrophic cardiomyopathy

Mitral Regurgitation: Management

Asymptomatic

- Follow serially with visits and echo
- Recommend repair/replacement if:
 - Clear sx develop
 - LV ejection fraction falls $< 60\%$

Mitral Regurgitation: Management and Prevention

MR caused by LV dilation from poor LV:FXN

- Diuretics
- Vasodilators
- B-Blockers
- Digitalis

Improves sx...

Symptomatic MR with preserved LV:

- Mitral repair or replacement before progressive LV dysfunction occurs