

Mitral Stenosis

- Mitral valve has two leaflets - Anterior & Posterior.
- During Systole $\rightarrow$ closes $\rightarrow$ if does not close $\rightarrow$ Mitral Stenosis Regurgitation
- During Diastole $\rightarrow$ opens $\rightarrow$ if does not open $\rightarrow$ Mitral Stenosis

Causes:

- Rheumatic origin in 90%.
- Congenital - 5% . old age - 90%

Pathogenesis:

- In Rheumatic $\rightarrow$ Fibrosis $\rightarrow$ calcification and commissural fusion $\rightarrow$ Mitral Stenosis.

- Mitral Valve 5cm^2 normal.

In severe $< 1\text{cm}^2$, and the patient is usually asymptomatic until the valve becomes $< 2\text{cm}^2$.

- Increased volume in RA



Increased pressure



Dilatation



Pulmonary Congestion & oedema
(dyspnoea)



Pulmonary hypertension



Right Ventricular hypertrophy



Tricuspid regurgitation



Right heart failure.

$\rightarrow$ Atrial fibrillation $\rightarrow$ thrombus

$\downarrow$

Systemic Circulation

Symptoms:

Breathlessness - Pulmonary Congestion,
low cardiac output

Fatigue - low cardiac output

oedema, Anasarca - Right heart failure

Palpitation - Atrial fibrillation

Haemoptysis - Pulmonary Congestion, Embolism

Cough - Pulmonary Congestion

Chest pain - Pulmonary hypertension

Thromboembolism - Atrial thrombus and atrial
fibrillation

Signs:

Atrial fibrillation - Atrial dilatation

Auscultation

- Loud first heart sound, opening snap

- Mid diastolic murmur

- Crepitation - Left heart failure

Investigations:

ECG - Tall R wave

Chest X-ray - Left atrium enlarged, Pulmonary
Congestion

Echo - Curved, Enlarged left atrium

Doppler - Mitral valve

Cardiac catheterisation - Pressure

Management:

- Balloon valvuloplasty and valve replacement

- Diuretics

Mitral Regurgitation

Cause:

- i) Mitral Valve Prolapse
- ii) Dilatation of the left ventricle
- iii) Damage to valve cusps and chordae (Rheumatic heart disease)
- iv) Ischemia or infarction to papillary muscle

v) Myocardial Infarction

Pathogenesis:

- Normally left ventricle contracts → pressure generated → Blood pumped out aorta
- Papillary muscle and chordae tendineae keeps valve from prolapsing.
- In mitral valve prolapse there is Myxomatous degeneration (weakened connective tissue, due to the Marfan Syndrome, leads to chordae tendineae rupture.
- Blood pumped into atrium and again drains into ventricle → Volume overload.
→ eccentric Hypertrophy → left sided heart failure.

Clinical features:

- Chronic mitral regurgitation is similar to the MS; but sudden onset usually presents with pulmonary edema.
- The regurgitant causes an apical pansystolic murmur which radiates to axilla.

- Increased forward flow across
loud 2nd heart sound and apical
Mid diastolic murmur
- The apex beat is felt rocking due to
left ventricular overload
- Mid systolic click due to $\uparrow$ size left
ventricle

Symptoms

- Breathlessness - Pulmonary congestion
- Fatigue - low cardiac output
- oedema - Right heart failure
- Palpitations - Atrial fibrillation

Signs Investigation:

- ECC $\rightarrow$
- Chest X-ray
- Echo $\rightarrow$
- Doppler
- Cardiac Catheterisation

Medical management:

- Diuretics
- Vaso dilators if hypertension
- Anticoagulants