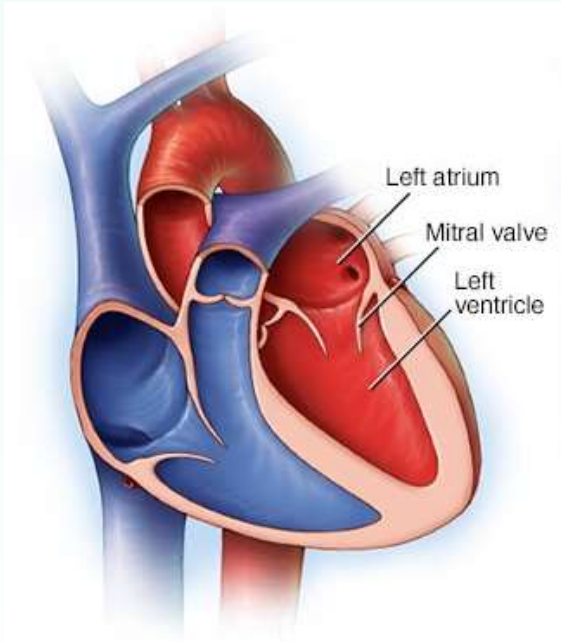


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# Mitral Stenosis

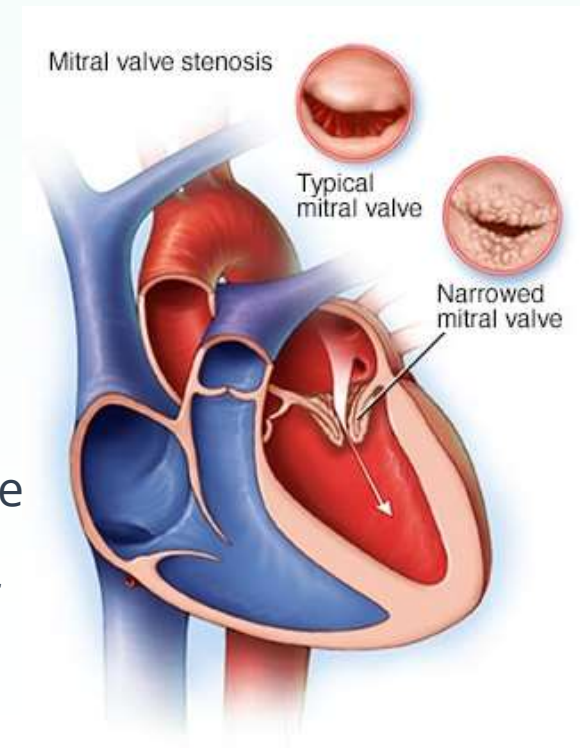
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# Mitral Stenosis

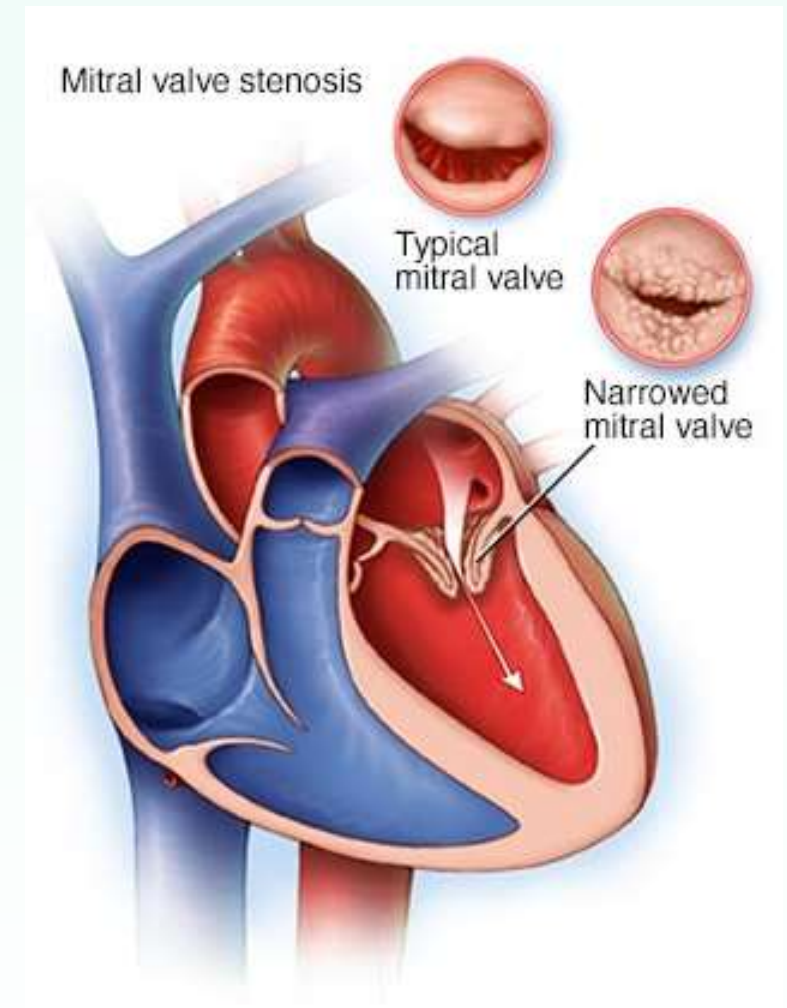
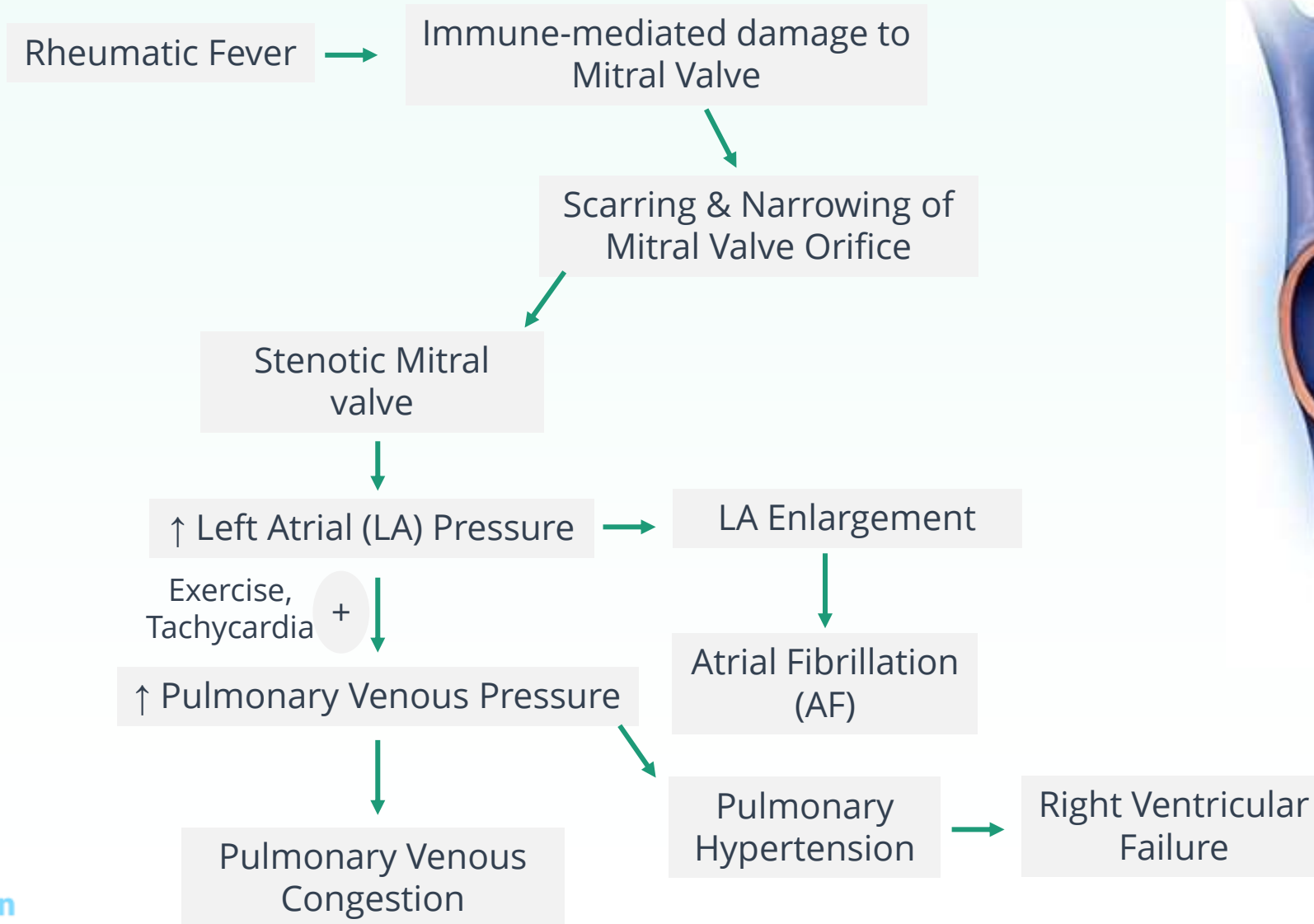


- Normal Mitral Valve Area – 4 - 6 Cm<sup>2</sup>

- Stenosis is present when this area is reduced
- Almost all cases are due to rheumatic heart disease
- 30% of patients have no history of rheumatic fever



# Pathophysiology



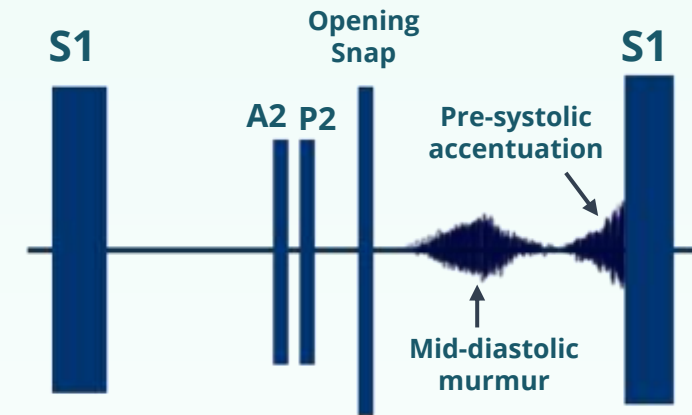
# Clinical Features

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- Asymptomatic, if mitral area  $> 2 \text{ Cm}^2$
- Pulmonary hypertension → Dyspnea, Hemoptysis & Chronic Bronchitis-like picture
- Pulmonary Congestion/Oedema → Orthopnea & Paroxysmal nocturnal dyspnea (PND)
- Fatigue, Palpitations, Chest pain & rarely, Infective Endocarditis
- Thromboembolism, in AFib
- Pressure from the large left atrium on local structures
  - Recurrent laryngeal nerve → Hoarseness (*Ortner's syndrome*)
  - Esophagus → Dysphagia (*Dysphagia megalatriensis or cardiac dysphagia*)
  - Bronchial obstruction

# Clinical Features

- **Malar flush** on the cheeks - due to low cardiac output
- **Pulse** - Low volume, Irregularly Irregular if AFib
- **Apex Beat** – Non-displaced, Tapping (*Palpable S1*)
- **Auscultation**
  - Loud S1 (*Most prominent auscultatory finding*)
  - Normal S2
  - S2 followed by Opening Snap (*Closer the opening snap with S2 → Severe stenosis*)
  - Murmur - Low-pitched, mid-diastolic rumble & then presystolic accentuation



- Duration of murmur increases with an increase in stenosis severity.
- Heard best with bell of stethoscope, in left lateral decubitus position.
- Murmur accentuates when breath is held in expiration.

- **Signs of Right Ventricular Failure** - Right ventricular heave, ↑ JVP, Hepatomegaly & Ascites
- **Signs of Pulmonary Hypertension** – Loud P2
- **Pulmonary regurgitation** → Graham steel murmur
- **Right Ventricular failure** → Ascites & Oedema

All signs and symptoms of mitral stenosis will increase with exercise & during pregnancy

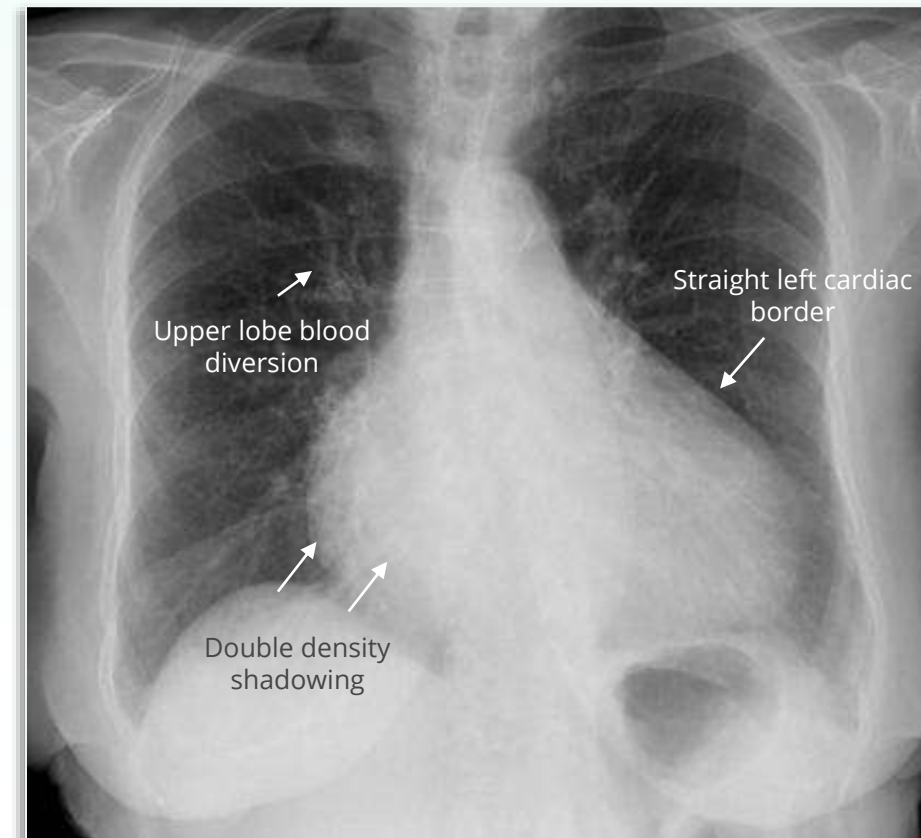
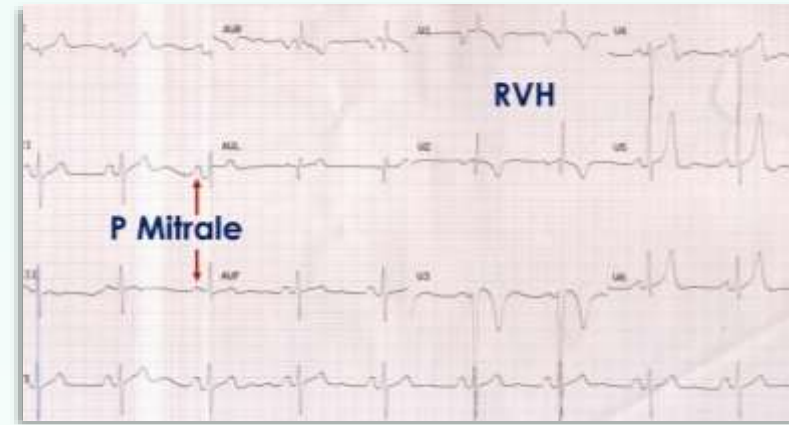
# Differential Diagnoses

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- Left ventricular failure due to any cause
- Mitral valve prolapse
- Pulmonary hypertension due to other causes
- Left atrial myxoma
- Cor-triatriatum in patients under 30 years age
- Tricuspid stenosis

# Investigations

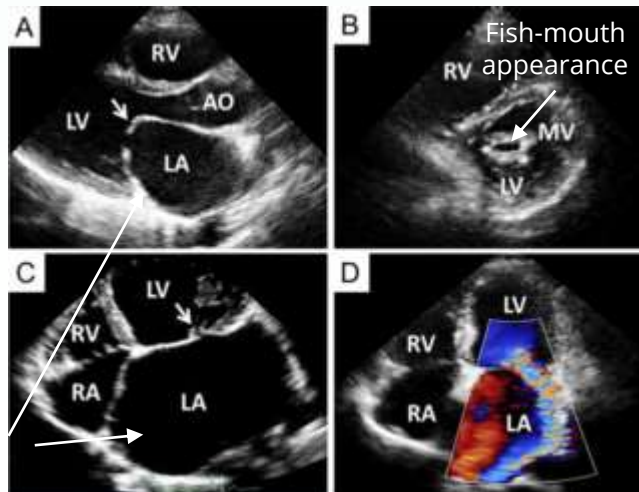
- **ECG** - AF, P-mitrale (due to LA hypertrophy), RV Hypertrophy & progressive Right Axis Deviation
- **Chest X-ray**
  - Left atrial enlargement
    - Straightening/mitralization of left heart border
    - Double density shadow in right cardiac silhouette
    - Splaying of carina
  - Pulmonary congestion
    - Upper lobe blood diversion
    - Kerley B lines
  - Mitral Valve Calcification
  - Pulmonary Hemosiderosis



# Investigations

- **Echocardiogram**

- Diagnostic investigation of choice
- Narrow 'fish-mouth' shaped orifice
- Helps in assessment of the severity of valvular stenosis, associated valvular regurgitation & presence of other valvular diseases
- May reveal Left atrial enlargement & help in excluding left atrial clot in AF
- Assesses right heart in advanced disease



- **Cardiac catheterization** – indicated if:

- Previous valvotomy
- Signs of other valve diseases
- Angina
- Severe pulmonary hypertension
- Calcified mitral valve

## CLINICAL PEARL

### Signs of Severe Mitral Stenosis

1. Shorter duration between S2 & opening snap
2. Longer duration of Diastolic murmur
3. On echocardiography, Mitral Valve area  $<1 \text{ Cm}^2$



# Treatment

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- No therapy is required in mild, asymptomatic cases
- **Medical treatment**
  - **Diuretics** - for pulmonary congestion & edema
  - **$\beta$ -Blockers** - reduces heart rate, & thus  $\uparrow$  diastolic time to improve LA emptying & LV filling  $\rightarrow$  Improved CO
  - **Calcium channel blockers & Digoxin**
  - Rate control is crucial if there is AF
  - **Thromboembolism prophylaxis** - with Warfarin in patients with AF
- **Surgical Treatment** - If medical treatment fails to control symptoms
  - **Balloon valvuloplasty** - if valves are non-calcified & pliable
  - **Open mitral valvotomy**
  - **Valve replacement**

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