

## Quick Fact Sheet: Mitral Stenosis

Mitral stenosis (MS) is defined as the reduction of the orifice of the mitral valve caused by a failure of the leaflets to open fully. This leads to left ventricular diastolic dysfunction, increased left atrial pressures, and eventual symptoms of heart failure.

### Etiology

\*\*\*By far the #1 cause is rheumatic valvular disease\*\*\*

Other causes including those that mimic MS include:

- 1) Congenital
  - Congenital MS
  - Congenital pulmonary vein stenosis
  - Cor triatriatum
  - Congenital subvalvular ring
- 2) Acquired
  - Left atrial myxoma
  - Pulmonary vein stenosis (post atrial fibrillation ablation)
  - Left atrial thrombus
  - Prosthetic valve dysfunction
  - Large mitral valve vegetation
  - Severe mitral annular calcification (MAC)
  - Inflammatory states (i.e. SLE, RA)

### Signs/Symptoms

Often asymptomatic until MS is severe

First symptoms are usually exertional and include:

- Dyspnea on exertion
- Fatigue/inability to exercise
- PND/orthopnea
- Signs/Symptoms of atrial fibrillation (i.e. palpitations, SOB, CP, dizziness, syncope)

Rarely may present as embolization of LA thrombus leading to CVA and other embolic events

Rarely presents as hemoptysis due to rupture of bronchial veins ("pulmonary apoplexy")

Rarely presents as Ortner syndrome: Severe LA enlargement impinging on the recurrent laryngeal nerve causing a horse voice

Angina may occur from right heart strain secondary to severe pulmonary hypertension

### Physical Examination

- 1) Inspection
  - Prominent *a* wave in JV pulsations (if in NSR)
  - Prominent *v* wave in JV pulsations if TR present due to pulmonary HTN and RV dilation
  - "Mitral facies" is when a low cardiac output state causes pinkish-purple patches on the cheeks
- 2) Palpation
  - A palpable S1 over the apex is pathognomonic for MS
  - Rarely a diastolic thrill may be palpated over the apex with the patient in LLD position
- 3) Auscultation
  - Accentuated S1 in mild-moderate MS, soft to absent S1 in severe MS when MV leaflets are no longer mobile
  - S3 heart sound NEVER present since early diastolic filling is impaired
  - An opening snap (OS) occurs when MV leaflets suddenly tense and dome into the LV
  - The earlier the OS appears in diastole, the more severe the MS
  - The murmur of MS follows the OS and is a decrescendo, low-pitched, diastolic rumble
  - The longer the diastolic murmur, the more severe the MS
  - The murmur then crescendos just before S1 as the LA contracts (if NSR is present)

Mild Mitral Stenosis



Severe Mitral Stenosis



Mitral stenosis with atrial fibrillation



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### Diagnosis

- 1) EKG – Left atrial enlargement (p-mitrale) almost always present, atrial fibrillation, RAD, RVH
- 2) Chest x-ray – Left atrial enlargement (“double density”), elevation of the left mainstem bronchus, prominent pulmonary artery
- 3) Echocardiogram – Measures pressure gradient, valve area, and pulmonary artery pressures
- 4) Cardiac catheterization – Measure pressure gradient, valve area (using Gorlin formula), PCWP

	Mitral Valve Area (cm <sup>2</sup> )
Normal	4-6
Mild	2.5-4
Moderate	1.5-2.5
Moderate-Severe	1-1.5
Critical	< 1

### Treatment

Treat rheumatic heart disease early to prevent MS

Prophylaxis against RHD recurrence

Anticoagulation if risk factors for LA thrombus or if atrial fibrillation present

Percutaneous Mitral Balloon Valvotomy (PMBV)

- Indicated for patients who are symptomatic with moderate-severe MS, no LA thrombus, and little or no mitral regurgitation
- Indicated for asymptomatic patients with severe MS and a score of 8 or less on the Abascal echocardiographic score (see below)

Surgery

- Closed commissurotomy vs open commissurotomy
- Mitral valve replacement – only if PMBV not recommended due to high Abascal score or if moderate to severe MR is present (PMBV can cause worsening of MR)

### Abascal echocardiographic score for mitral stenosis

Score	Leaflet mobility	Valve thickness	Subvalvular thickening	Valvular calcification
1	Highly mobile with little restriction	Normal thickness (4-5mm)	Minimal chordal thickening	A single area of calcification
2	Decreased mobility in midportion and base of leaflets	Midleaflet/marginal thickening	Chordal thickening 1/3 up chordal length	Confined to leaflet margins
3	Forward movement of valve leaflets in diastole	Total leaflet thickening (5-8mm)	Chordal thickening 2/3 up chordal length	Up to mid-leaflet
4	No or minimal forward movement of leaflets in diastole	Severe thickening (≥8mm)	Complete chordal thickening to papillary muscle	Throughout most of the valve leaflets