

RHEUMATIC HEART DISEASE

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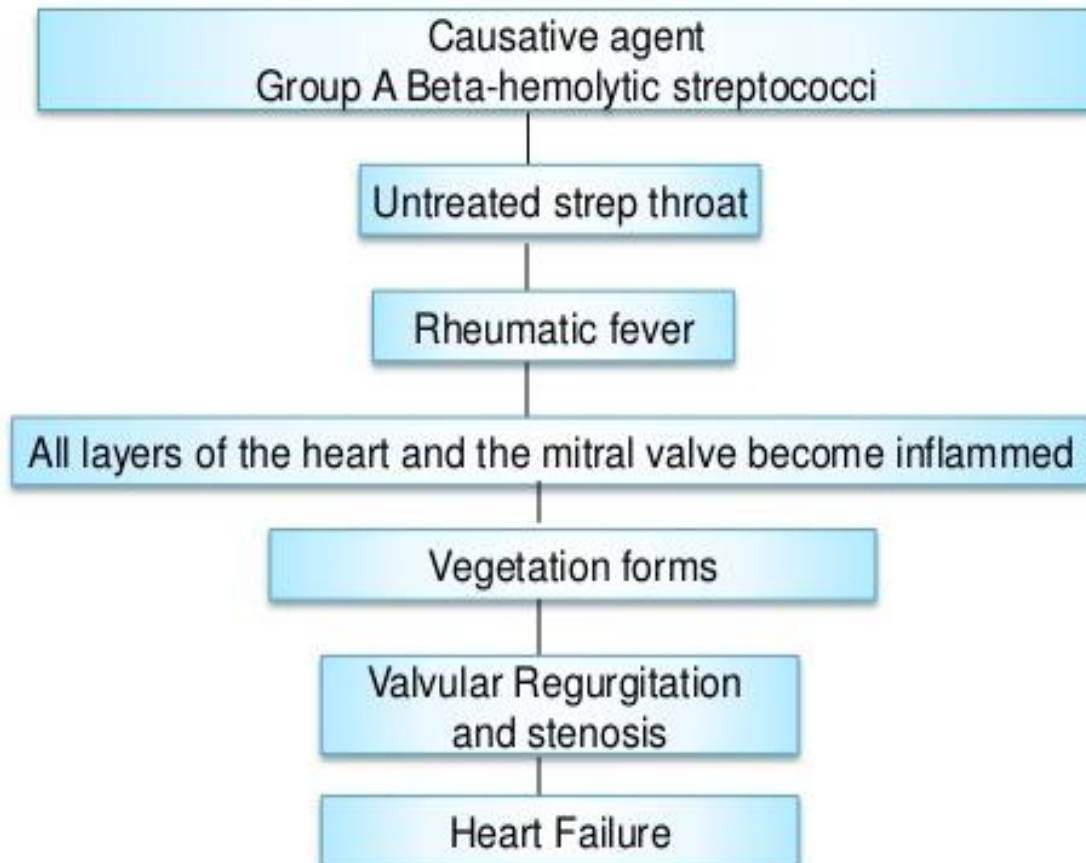
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DEFINITION

- Rheumatic heart disease is a chronic condition resulting from rheumatic fever that is characterized by scarring and deformity of the heart valves.
- Recurrent attacks of Rheumatic Fever may cause fibrosis of heart valves, leading to chronic valvular heart disease . The term Rheumatic heart disease refers to the cardiac involvement and may affect the endocardium, myocardium or pericardium.
- It may later affect the heart valves, causing chronic valvular disease.
- It is thought that 40-60% of patients with ARF will go on to developing RHD.

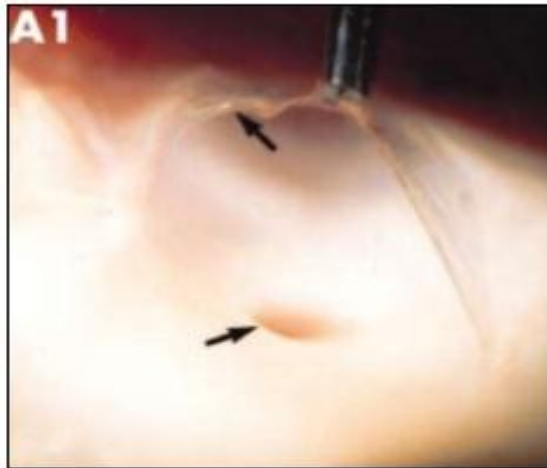
- The order of frequency of involvement depends on the hemodynamic stress placed on the various chambers.
- Thus the order is;
- mitral >65-70%.
- aortic > 20-25% .
- tricuspid > 10%
- pulmonic valve > Rarely.
- Valve incompetence is more common than stenosis.
- The extent of the damage depends on the heart area that the disease strikes.

PATHOPHYSIOLOGY

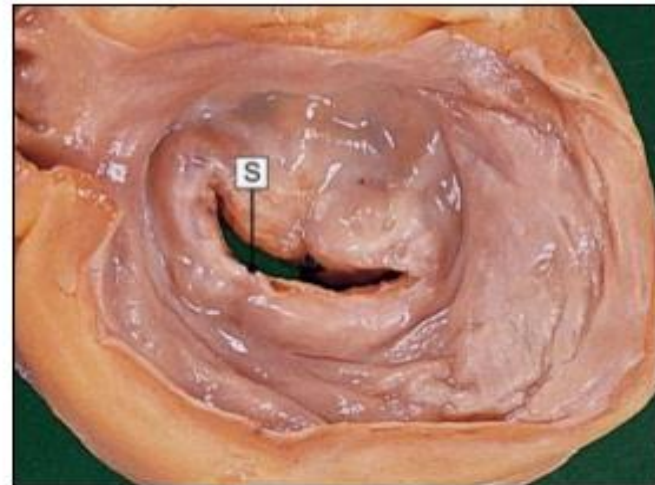


- Normal valve is Transparent, avascular, thin flexible membrane.
- **RHD**: Thick, fibrous scarred stenotic & fixed (MS/MR) with Blood Vessels.

THE DIFFERENCE



Normal valve is Transparent, avascular, thin flexible membrane.



RHD: Thick, fibrous scarred stenotic & fixed (MS/MR) with Blood Vessels.

CLINICAL SIGNS

High pulse rate

Murmur

mitral or aortic regurgitation-endocardium involved

Cardiomegaly

myocardium involvement

Pericardial friction rub

Pericarditis

Prolonged PR interval

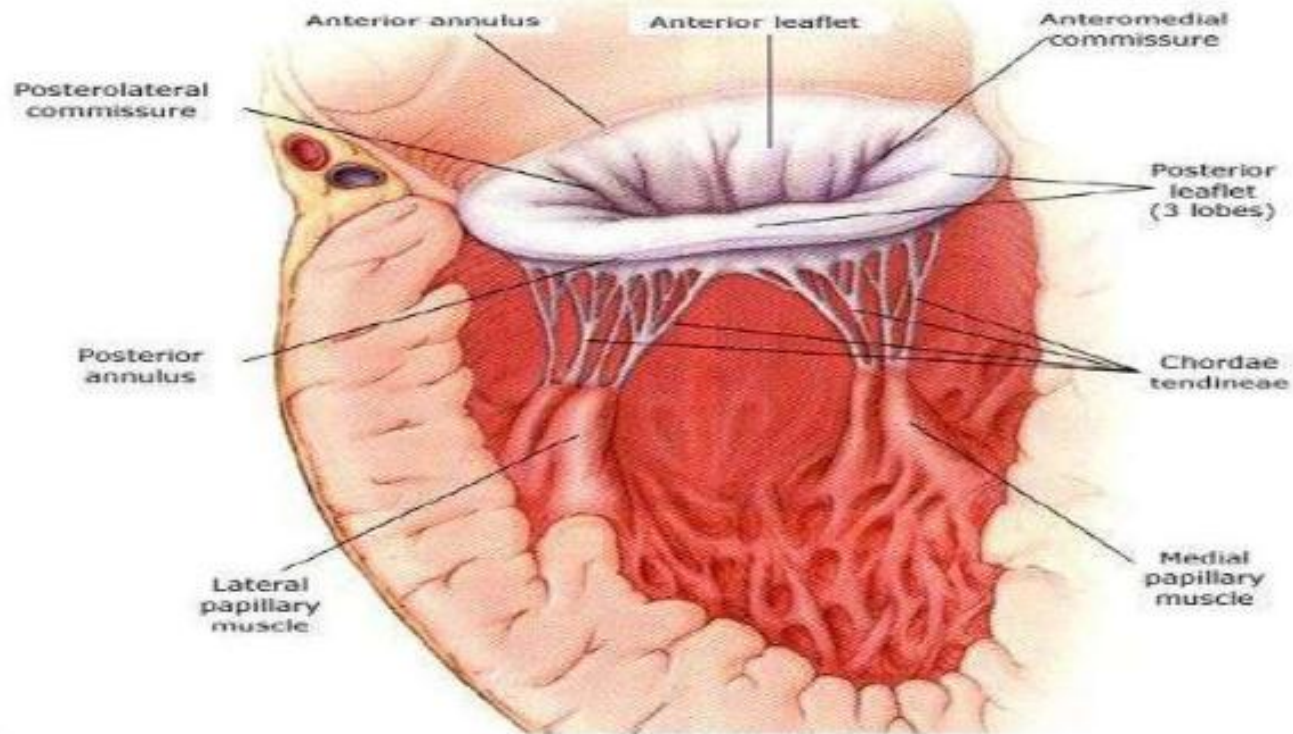
Myocardial inflammation affecting electrical conduction

Cardiac failure

PARTS OF HEART VALVE

- **Annulus**: a (fibrous) ring like structure, or any body part that is shaped like a ring.
- **Commissure**: a site of union of corresponding parts; specifically, the sites of junction between adjacent cusps of the heart valves
- **Chordae tendineae**: thread-like bands of fibrous tissue that attach on one end to the edges of the tricuspid and mitral valves of the heart and on the other end to the papillary muscles.
- **Papillary muscles**: small muscle within the heart that anchors the heart valves.

PARTS OF HEART VALVE



VALVE INVOLVEMENT IN RHD



Valve doesn't open all the way, not enough blood passes through



Valve doesn't close all the way so blood leaks backwards

VALVE CHANGES

- Leaflet thickening • Commissural fusion • Shortening and thickening of chordae • Orifice is narrowed
- **VALVE INVOLVEMENT IN RHD ;**
- MITRAL Valve is affected in 60 – 70% of cases.
- Mitral regurgitation most commonly found in children and adolescent.
- Mitral stenosis represent longer term chronic disease, commonly in adults.
- Most common complication in mitral stenosis is atrial fibrillation.

MITRAL STENOSIS

- Mitral stenosis represents longer term chronic disease, commonly in adults. Most common complication of mitral stenosis is atrial fibrillation.
- **Symptom** • Patients usually remain asymptomatic until the stenosis is $< 2 \text{ cm}^2$.
- Breathlessness
- Fatigue
- Exercise tolerance typically diminishes very slowly,
- Oedema, ascites (right heart failure) ,
- Palpitation (atrial fibrillation)
- Thromboembolic complications (e.g. stroke, ischaemic limb).7

- **Signs • :**
- Atrial fibrillation,
- Mitral facies (calcification),
- **Auscultation** – Loud first heart sound (S₁),
- Mid-diastolic murmur.
- **Medical Management:**
- Systemic embolism: anticoagulants ,
- Atrial fibrillation: ventricular rate control by digoxin, β -blockers or rate-limiting calcium antagonists ,
- Pulmonary congestion: diuretic therapy ,
- Surgical Management • Mitral valvuloplasty:

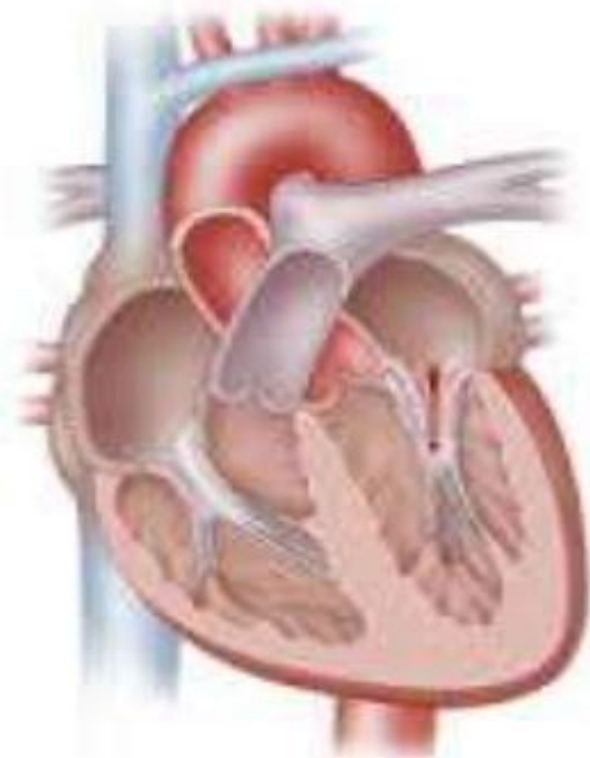
MITRAL REGURGITATION

- **SYMPTOMS;**
- Dyspnea, Orthopnea • Paroxysmal nocturnal dyspnoea • Fatigue ,
- Pulmonary HTN, right sided failure • Hemoptysis • Systemic embolization in Atrial fibrillation.
- **SIGNS ;**
- Apex: – hyperdynamic – laterally displaced.
- Murmur- Fixed MR – pan systolic murmur– Loudest, radiates from apex to axilla,

- TREATMENT :

- Rheumatic prophylaxis,
- Decongestive- vasodilators, ACE inhibitors,
- Infective endocarditis prophylaxis,
- Valve replacement if left ventricular function is progressively reducing

MITRAL STENOSIS



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AORTIC STENOSIS

- **Symptoms** ; Cardinal symptoms are angina, breathlessness and syncope .
- **Mild or moderate stenosis:** usually asymptomatic •.
- **Severe Stenosis** : Exertional dyspnoea , Angina , Exertional syncope , Sudden death, Episodes of acute pulmonary edema
- **Signs:** Ejection systolic murmur , Slow rising carotid pulse, Thrusting apex beat, Narrow pulse pressure, Signs of pulmonary venous congestion
- LV impulse is usually displaced laterally.

- **Auscultation** : Ejection systolic murmur.
- **MEDICAL TREATMENT** :
- Nitroglycerin, Beta blockers , ACE inhibitors, Aspirin.

- **SURGICAL TREATMENT** ;
- aortic valve replacement,
- Percutaneous balloon aortic valvuloplasty ,
- Percutaneous aortic valve replacement. (TAVI).

AORTIC REGURGITATION

- **Symptoms** :Palpitations, esp. on lying down , Exertional dyspnoea, Orthopnoea, PND, excessive diaphoresis , Angina, congestive hepatomegaly & pedal oedema
- **Physical findings** ; Corrigan's pulse – ‘water-hammer’ pulse , Quincke's pulse – alternate flushing & paling of skin at the root of nail, when pressure applied to the tip of nail , Traube sign – pistol shot sound over femoral artery , Duroziez's sign – to and fro murmur over femoral artery , Widened pulse pressure .
- **Palpation** : Apex beat – shifted down & laterally, heaving Systolic thrill- suprasternal notch, transmitted along carotids

- **Auscultation:** Diastolic murmur- high pitched, 3rd ICS, left sternal border. Louder and longer in severe AR.
- **TEATMENT ;**
- Diuretics ,
- Vasodilators; Vasodilators are 1st choice as anti-hypertensives.
- Cardiac arrhythmias and systemic infections promptly treated.
- Beta blockers and ARBs retard the rate of aortic root enlargement.
- Surgery

TREATMENT,,,,, MEDICAL

ERADICATE INFECTION ;

- Preventive and prophylactic therapy is indicated after rheumatic fever and acute rheumatic heart disease to prevent further damage to valves.
- **PRIMARY PREVENTION** ; Prevent the first attack of RF, by identifying all patients with streptococcal throat infection and treating them with penicillin
- **SECONDARY PREVENTION** : An injection of 0.6-1.2 million units of benzathine penicillin G intramuscularly every 4 weeks is the recommended regimen for secondary prophylaxis.
- Continue antibiotic prophylaxis indefinitely for patients at high risk (eg, health care workers, teachers, daycare workers) for recurrent GABHS infection.
- Patients with rheumatic fever with carditis and valve disease should receive antibiotics for at least 10 years or until age 40 years.

- Beta blockers
- Digoxin,
- Diuretics,
- Antibiotic prophylaxis,

Patients with rheumatic heart disease and valve damage require a single dose of antibiotics 1 hour before surgical and dental procedures to help prevent bacterial endocarditis.

Patients who had rheumatic fever without valve damage do not need endocarditis prophylaxis.

- Control Arrhythmias.(Beta blockers, Calcium channel blockers, Digoxin.).
- Anticoagulation for Atrial Fibrillation

Duration of Secondary Rheumatic Fever Prophylaxis

Category	Duration
Rheumatic fever without carditis	At least 5 y or until age 18 y,(whichever is longer)
Rheumatic fever with carditis and heart disease (persistent valvular disease*)	At least 10 y since last residual episode and at least until age 40 y sometimes lifelong prophylaxis
RF with carditis disease but no residual heart disease (no valvular disease*)	Rheumatic fever 10 y or well into adulthood (whichever is longer)
More severe valvular disease Post-valve surgery cases <i>*Clinical or echocardiographic evidence.</i>	Lifelong

Recommendations of American Heart Association

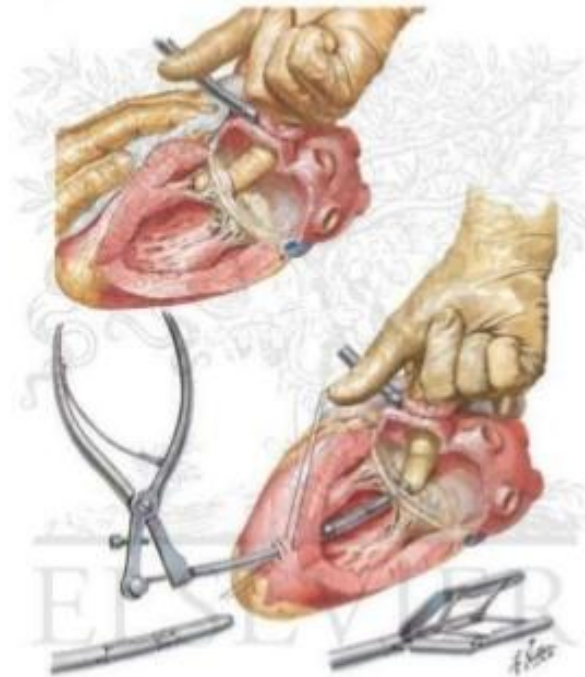
SURGICAL TREATMENT

- Closed mitral commissurotomy
- Percutaneous transluminal balloon valvuloplasty,
- Repair of the chordae tendinae • Mostly used for mitral valve.
- Surgical Valve Replacement (Bioprosthetic or Metallic Valve).
- OTHERS –Ross procedure, Bentall's procedure

Balloon Valvuloplasty



MITRAL COMMISSUROTOMY



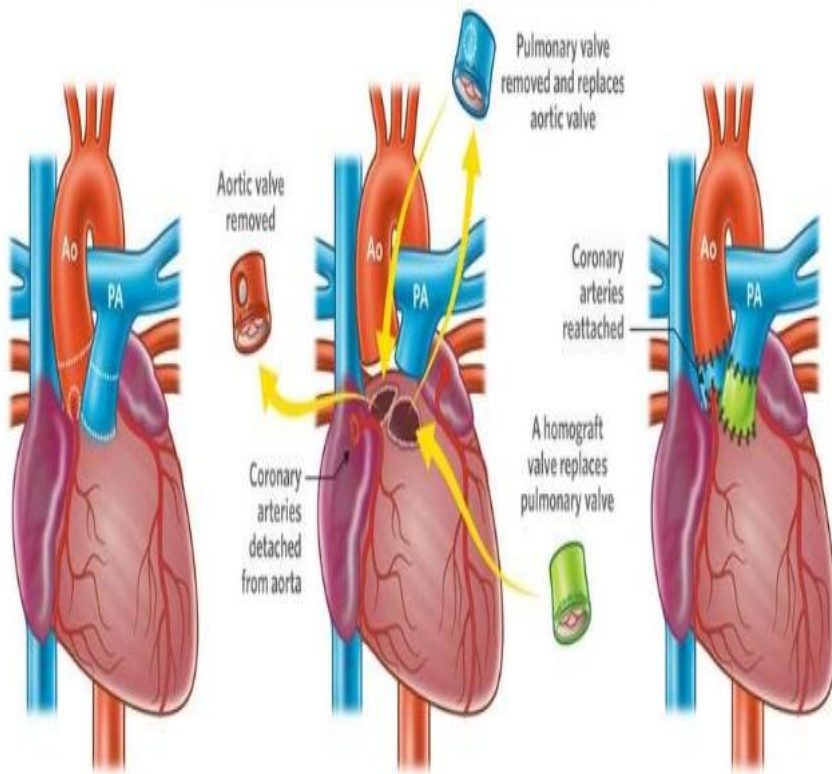
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VALVE REPLACEMENT

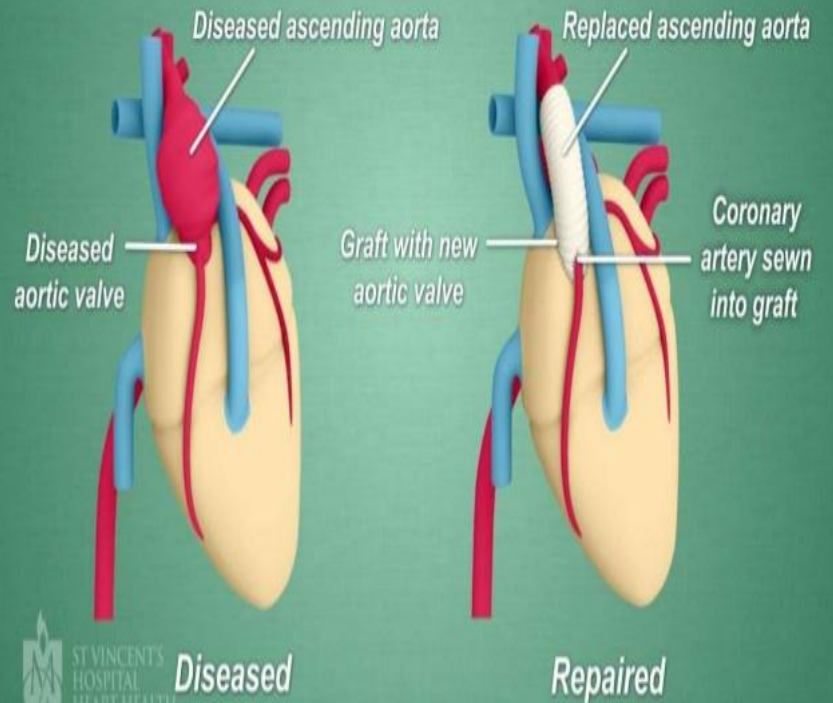
- Performed when valvuloplasty is not suitable
- Approached through a median sternotomy or mitral valve (at times) – right thoracotomy incision



ROSS PROCEDURE



Bentall procedure



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COMPLICATIONS

- Congestive heart failure.
- Infective endocarditis.
- Arrhythmias mainly atrial fibrillation.
- Thromboembolic episodes. (Acute Myocardial Infarction, Cerebrovascular Accident,)

THANK YOU