# Diseases of cardiac valves

- Congenital
- Pulmonary valve stenosis
- Aortic valve stenosis / perforation
- Pulmonary artery atresia
- Tricuspid valve stenosis
- Ebstein's anomaly
- Paracheute mitral valve
- Sinus of valsalva defects

- Acquired
- Infective
- Degenerative
- Rheumatic
- Post-ischaemic
- Traumatic
- Left atrial myxoma presenting as mitral stenosis

# Infective lesions of the cardiac valves

- SBE
  - Commonly affects aortic and Mitral valves
  - Tricuspid valve endocarditis common in drug abusers
  - Usually the affected valves have abnormal pathology

## Common Pathogens

- Staphylococcus aureus : intravenous route. Acute ulcerative lesions, abscess.
- Streptococcus: Dental extraction, endoscopy etc. Usually affects abnormal valves
- Sterptococcus epidermides: intravenous route. Low grade fever
- Fungal infection: usually in immunosuppressed patients. Excessive antibiotics
- Infection from pets: Capnocytophaga canimorsus

# Rheumatic valve disease

- Mitral stenosis / incompetence
- Aortic stenosis / incompetence
- Caused by group A Streptococcus infection
  - Autoimmune process
  - Aschoff bodies : granulomatous lesions which progress to fibrosis
  - May take as long as 5 -10 years to present.
  - Progressive
  - more prone to SBE

# Connective tissue disorders causing valve lesions

- Marfan’s syndrome:
  - Aortic valve; Mitral valve.
  - Cystic medial necrosis
  - Aortic root lesions
  - Acute dissections of the aorta
- Ankylosing spondylitis
  - Inflammatory changes & infiltration
  - Dilated aortic root and Aortic valve incompetence
- Barlows syndrome
  - Excess valve tissue in the mitral valve cusps: mitral regurgitation.

# Ishaemic valve disease

- Mostly mitral valve lesions:
  - Post MI papillary muscle dysfunction
  - Acute rupture of papillary muscle - acute mitral regurgitation
  - Chronic stretching of mitral valve chordae
  - Dilated left ventricle resulting in annular dilatation

# Indications for Valve surgery

- Aortic valve
  - Pressure gradient >50 mm Hg
  - Progressive dilatation of LV as a result of valve disease
  - SBE
    - Abscess formation
    - Vegetations
    - Inadequate response to medical treatment
    - Risk of systemic embolisation
    - Clinical deterioration
  - Lower gradient (20-50) at the time of concommitent CABG, other cardiac surgery

# Indications for Valve surgery

- Mitral valve
  - Gradient of 10 mm across the valve
  - Mitral valve orifice < 1.3 $cm_2$
  - Acute ischaemic Mitral regurgitation
  - SBE
    - Abscess formation
    - Vegetations
    - Inadequate response to medical treatment
    - Risk of systemic embolisation
    - Clinical deterioration
- LA myxoma operation in cases that present with mitral valve signs

# Indications for Valve surgery

- Tricuspid valve
  - SBE
    - Risk of pumonary embolisation
    - Inadequate response to antibiotic treatment
    - Progressive RV failure
- Pulmonary valve
  - Valvotomy
  - Homograft replacement as part of other operations : Ross procedure, Fallots operations enlarging the RV outflow

# Types of valve replacements

- Mechanical
  - Advantages
    - Long lasting
    - Good haemodynamics
    - Low infection rate
    - Low risk of re-operation
  - Disadvantages
    - Valve click
    - Long term anticoagulation
    - Risk of thromboembolism
    - Rare complication of mechanical failure of valve disc
    - It can interfere with MRI scan

# Types of valve replacements

- Xenograft
  - Advantages
    - No need for anticoagulation after 3 months if the heart remains in SR
    - Less noisy than mechanical valve
    - Less chance of mechanical obstruction related to valve components
  - Disadvantages
    - Shorter valve life (10-15 yrs) compared to mechanical valves
    - Increased risk of calcification in children
    - Increased risk of infection
    - Increased risk of having to undergo re-operation

# Types of valve replacements

- Homograft
  - Advantages
    - No anticoagulation required
    - Better haemodynamics compared to stented valves
    - Quiet
    - Lasts more than xenografts (15-20 yrs)
  - Disadvantages
    - Difficult to acquire
    - More chance of fungal infection

# Types of valve replacements

- Reconstructive surgery
  - Advantages
    - Low incidence of embolisation
    - Low infection rate
    - Better haemodynamic features
    - Improved ventricular function
    - Growth
  - Disadvantages
    - Technically more precise
    - Inadequate repair may give rise to complications: haemolysis, rupture etc.
    - Risk of failure of repair due to tissue weakness

# AVR

# Percutaneous AVR