

Valve Replacements

Clinical examination

- Metallic valves
 - Metallic mitral valve: S1 is metallic sounding
 - Metallic aortic valve: S2 is metallic sounding
 - There is often an audible click heard without a stethoscope
- Tissue valves
 - Relevant heart sounds may be normal, loud or quiet
- Systolic flow murmurs are normal for aortic valve replacements
- Assess for valve function (signs/murmur of regurgitation of replaced valve), cardiac decompensation (signs of heart failure) and signs of infective endocarditis
- Also look for signs of over-anticoagulation (bruising) and anaemia (haemolysis)

Indications

- **Left-sided valve dysfunction**
 - Any valve: LVF, symptoms
 - If regurgitation, also: acute, LV dilation
 - If mitral, also: pulmonary hypertension

Note: for MR, valve repair is preferred if possible and, for MS, balloon valvuloplasty is preferred unless contraindicated (MR; thrombus; calcified valve)
- **Infective endocarditis**
 - Both naïve and prosthetic: associated heart failure, aortic root abscess, fever/bacteraemia >10 days despite antibiotics, fungal
 - If prosthetic valve, also: <2months post-op, valve dysfunction, staph aureus

Types

- Tissue valve
 - Usually porcine xenograft
 - Wear out after 10-15 years if patient not active, quicker if active; therefore, they often need replacing
 - No need for warfarin
 - Recommended for older people/people with low life expectancy/females still planning to get pregnant
- Mechanical valves
 - Types
 - Caged ball (Star-Edwards): click-click (*mostly mitral*)
 - Bileaflet (St Judes): lub-click (aortic) or click-lub (bicuspid) (*mostly aortic*)
 - Tilting disk
 - Longer lasting (20-30 years)
 - Need warfarin for life (INR target 2.5-3.5)
 - Make a quiet clicking noise
 - Recommended for younger people (<60years) so don't need repeated surgeries (unless they are planning to get pregnant – warfarin is teratogenic)

Choice depends on...

- Longevity of patient (if longer life expectancy, mechanical valve preferred so don't have to have an operation every 10-15 years)
- Ability to take warfarin (if falls risk or planning to get pregnant, tissue valve preferred)
- Lifestyle considerations including child bearing

Procedure

- Pre-op: echo, coronary angiography
- Midline sternotomy
- Put on cardiopulmonary bypass
- Replace valve

Note: if there is also coronary artery disease, it's usually repaired concurrently – check legs for grafting scar

Complications

- Peri-operative risks

- Arrhythmias
- Stroke/TIA
- Infection (wound/lung/endocarditis)
- Bleeding/haemothorax
- Thromboembolism
- Pulmonary oedema/ARDS
- Acute kidney injury
- Valve complications
 - Leakage
 - Dehiscence
 - Obstruction
 - Thromboembolism
 - Haemolytic anaemia
 - Infective endocarditis
- Warfarin side effects
 - Bleeding