Types of prosthetic valves

Types of prosthetic valves

Mechanical valves Mechanical valves can be used in any age group to replace any valve (Figure 59.10). They are extremely durable but thrombogenic and patients require systemic anticoagulation, usually with warfarin. The patient should be warned about the risk of haemorrhagic (intracerebral, epistaxis, gastrointestinal bleed) or thrombotic (cerebral infarction) complications. Bioprosthetic (biological) valves - - Bioprosthetic valves include cadaveric homograft (or allograft) valves; autografts , a patient’s own valve; and, most commonly , heterografts (or xenografts) prepared - from animal tissues. All have three semilunar leaflets with central flow , so decreasing pressure gradients and minimising turbulence (Figure 59.11). Heterograft ‘tissue’ valves are the

Figure 59.10 Bilea /f_l et mechanical valve.

most commonly used valves and can be stented with a limited durability of 10–15 years, whereas stentless (or frameless) valves are expected to have less late calcific degeneration but are more technically di ffi cult to insert. Sutureless and rapid deployment valves In recent years, there has been an increase in the number of available valves using rapid deployment and sutureless technol ogy . These valves are quicker to implant as they do not require extensive numbers of sutures (usually three in the case of rapid deployment and none in the case of sutureless). These valves are anchor ed in position with a balloon inflatable stent. This is advantageous in elderly or high-risk patients and in minimally invasive aortic surgery .

Valve repair Mechanical replacement Biological valves Stented Advantages No need for long-term anticoagulation Can be used in younger No need for long-term Good evidence base patients anticoagulation Good history of evidence Mimics ‘natural’ haemodynamics Disadvantages Technically challenging Nidus of infection (endocarditis), can be disastrous Requires anticoagulation Lifespan Excellent long-term Lifespan limited (traditionally 10–15 years, although Variable among durability (patient lifetime) constantly improving) techniques and valve More suited to older patient involved Comments Mostly made of bovine or porcine pericardium Many different types Mostly performed for Gr owing evidence for the use of antiplatelet agents and sizes for a range of mitral valve disease postoperatively scenarios Evidence for other valves is limited Figure 59.11 Porcine heterograft stented valve. Stentless Homograft Does not require anticoagulation Long-term results unknown Technically more Requires specialist challenging to insert expertise Increased complexity of surgery Little evidence, although may be limited Usually taken from deceased donors

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