Prosthetic valve dysfunction and complications

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Structural valve failure Structural failure rates for the currently used bioprosthetic valves, although rare in those over 70 years of age, can reach 60% after 15 years. Structural failure of a mechanical - valve is generally uncommon. Recently , a new generation of bioprosthetic valves has been introduced with a novel leaflet preparation method. These valves are associated in theory with more durability and can be used for the younger cohort of patients requiring prosthetic valve replacement. The increased utilisation of transcatheter aortic valve inser - tion (TA VI) means that many patients with degenerative pros - thetic valve disease can have a new valve inserted inside the old valve without the need for reoperation. This has encouraged many young patients to select a bioprosthetic valve as the pre - fer red choice for replacement. Paravalvular leak Early-onset paravalvular leaks usually result from technical di ffi culties at insertion. Late-onset leaks can occur and may be precipitated by an episode of endocarditis or by leaflet degen - eration. The leak can cause haemolytic anaemia or haemo - dynamic compromise and the valve may need replacement. Recent improvements in catheter techniques have resulted in the ability to close small areas of paravalvular leak with special occlusion devices, thus reducing the need for r eoperation. Thrombosis and thromboembolism Thrombus formation is the most common complication of a mechanical valve (Figure 59.12). The risk of thromboembo - lism is greater with a mitral valve (mechanical or biological) than with one in the aortic position. The incidence of thromboembolism in current mechanical valves is 0.5–3% per patient-year. Management depends on the extent of the thrombosis and valve dysfunction and can include either thrombolysis or surgery . Prosthetic valve endocarditis The incidence of prosthetic valve endocarditis (PVE) is 2–4%. The risk is lifelong and is at its greatest in the first 3 months after surgery . The incidence of PVE is higher with mechanical and bioprosthetic valves and lowest with homograft and auto graft valves. The diagnosis is suspected following symptoms of septicaemia, development of a new murmur or a septic embolus. It is confirmed with echocardiography , which may show vegetations and even abscess formation. A high index of suspicion is required and early multiple blood cultures are needed to confirm the diagnosis, identify the infective organism and choose appropriate antibiotic therapy . The most common organisms in prosthetic and native valve endocarditis are shown in Table 59.3 . antibiotic therapy . Serial echocardiography to assess extent of infection and involvement of surrounding myocardial tis - sue, as well as functional assessment of the infected valve, may help in optimising decisions on timing of surgical intervention. Multidisciplinary team discussion is essential. The principle of surgical treatment is radical debridement of all infective tissue followed by reconstruction of any defects in the ann ulus and replacement. The prognosis of PVE remains poor, with an overall mortality rate of over 20%.

Figure 59.12 Thrombus (marked T and indicated with arrows) on the moving components of a ball-and-cage valve. TABLE 59.3 Common organisms in infective endocarditis. Classi /f_i cation of

organism Native valve Gram-negative bacteria Streptococcus viridans/milleri HACEK (Haemophilus spp., bacterium , Eikenella , Kingella Gram-positive bacteria Staphylococcus aureus/epidermidis Streptococcus faecalis Other Candida Histoplasma Aspergillus

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Revision #1
Created 2025-12-31 15:22:16 UTC by Omar Ayman
Updated 2025-12-31 15:22:16 UTC by Omar Ayman