

Long-Term Results of Mechanical Valve Replacement: Isolated Mitral Valve Replacement and Mitral-Aortic Valve Replacement

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The long-term results of mechanical valve replacement are satisfactory in terms of both survival and quality of life. In a series of 440 isolated mitral valve replacements (MVR) with a St. Jude Medical prosthesis (1), the overall actuarial survival rate was $63 \pm 3.3\%$ at 19 years, while the valve-related actuarial survival was $83 \pm 2.7\%$. The operative mortality rate (0-30 days) was 4.09%. The linearized rate (% per patient-year) of thromboembolism, thrombosis and hemorrhage were 0.69%, 0.2% and 1.0%, respectively. After 19 years, freedom from endocarditis and reoperation were $98.6 \pm 1\%$ and $90 \pm 3\%$, respectively. These very long-term results confirm the excellent durability of the St. Jude Medical valve when implanted in the mitral position

Today, mitral-aortic valve diseases occur less frequently in industrialized countries due to the almost complete eradication of rheumatic fever. Degenerative etiologies have therefore become predominant. In a series of bivalvular mitral-aortic replacement in patients (2), the operative mortality was 7.08%, while global actuarial survival rates and valve-related mortality at 22 years was $45.7 \pm 3.6\%$ and 73.1 ± 3 years, respectively.

Currently, valve replacement involves a population of high-risk patients (degenerative etiologies, female gender, advanced age). Therefore, when a procedure on the mitral valve is necessary in combination with aortic valve replacement, mitral valvuloplasty remains preferable, and complete or partial preservation of the subvalvular apparatus in the case of MVR is essential, as the short-, medium- and long-term prognoses are each improved by the constant concern to preserve left ventricular function.

Improved management of anticoagulant therapy also remains an important objective to further reduce the morbidity and mortality of these patients.

By contrast, improvements among bioprostheses in term of their durability could reduce the number of indications for mechanical prostheses. The perioperative management of atrial fibrillation (modified Maze procedure; cryocoagulation) could also improve the long-term results of mechanical valve replacement. Likewise, the linearized rates of thromboembolism could be significantly reduced with the treatment of atrial fibrillation.

So what does the future hold? What is 'an ideal mechanical prosthesis' without a need for anticoagulation, or 'a bioprosthesis with long-term durability'?

Indeed, the first generation of St. Jude Medical bileaflet valves, which were first implanted way back in 1978, could be implanted in 2003 and still remain the 'gold standard'. Consequently, what is the need for innovation for mechanical valves?

References

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