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## CONTEMPORARY HOSPITAL OUTCOMES OF TISSUE VERSUS MECHANICAL AORTIC VALVE SURGERY : A MULTICENTER STUDY

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**Objectives:** Substantial controversy surrounds the choice between a mechanical versus bioprosthetic prosthesis for Aortic Valve Replacement (AVR), based on age. This study aims to investigate national trends and in-hospital outcomes of the 2 prosthesis choices.

**Methods:** All patients aged >18 years in the National Inpatient Sample who received an AVR between 1998 and 2011 were considered. Valve-type use was examined by patient, procedural, and hospital characteristics, after which we matched patients based on their propensity score for receiving a bioprosthetic valve and compared their in-hospital outcomes.

**Results:** Bioprosthetic valves comprised 53.3% of 767,375 implanted valves, an increase in use from 37.7% in the period 1998 to 2001 to 63.6% in the period 2007 to 2011. The median age was 74 years for patients receiving bioprosthetic valves, and 67 years for those receiving mechanical valves. Use of bioprosthetic valves increased across all age groups, most markedly in patients age 55 to 64 years. Compared with patients receiving mechanical valves, these patients had a higher incidence of renal disease (8.0% vs 4.2%), coronary artery disease (58.5% vs 50.5%), concomitant coronary artery bypass grafting (46.7% vs 41.9%), and having surgery in a high-volume (>250 cases per year) center (31.3% vs 18.5%). Patients receiving bioprosthetic valves had a higher occurrence of in-hospital complications (55.9% vs 48.6%), but lower in-hospital mortality (4.4% vs 4.9%) than patients receiving mechanical valves. This difference was confirmed in propensity-matched analyses (complications: 52.7% vs 51.5%; mortality: 4.3% vs 5.2%).

**Conclusions:** Use of bioprosthetic valves in AVR increased dramatically from 1998 to 2011, particularly in patients age 55 to 64 years. Prosthesis selection varied significantly by facility, with low-volume facilities favoring mechanical valves. Aortic valve replacement with a bioprosthetic valve, compared with a mechanical valve, was associated with lower in-hospital mortality.



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