Clinical experience with the ATS 3F stentless aortic bioprosthesis: five years' follow up

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Background and aim of the study
The ATS 3F aortic bioprosthesis is an equine pericardial stentless valve used for aortic valve replacement (AVR). The study aim was to determine the incidence of valve-related events during a five-year follow up period.

Methods
Between 2002 and 2003, a total of 35 patients (mean age 73 +/- 6 years; range 61-86 years) underwent AVR with the ATS 3F valve implanted in the subcoronary position, utilizing a single running suture technique. The mean valve size was 26.0 +/- 1.9 mm. Prior to surgery, all patients were in NYHA class III or IV. The hemodynamic performance of the valve was assessed after one, three, and five years by means of transthoracic echocardiography. Clinical outcome was evaluated by either physical examination or by telephone interviews with the primary care physicians.

Results
The total patient follow up was 123 patient-years. Four patients (11%) were lost to follow up. The overall survival was 86%, and none of the deaths was valve-related. Up to five years, no severe structural or non-structural valve dysfunction was identified in the followed patients. Freedom from severe adverse events (SAE) was 89%; the SAE included one permanent and three transient neuroembolic events, but echocardiographic examinations of these patients were unsuggestive for thrombotic depositions on the prosthetic valves. Freedom from endocarditis was 100%. Minimal paravalvular regurgitation was detected in four patients; this was of no clinical importance, and resulted in a 100% freedom from reoperation. The mean transvalvular pressure gradients were 12.9 +/- 6.3, 11.2 +/- 4.2, and 15.2 +/- 5.3 mmHg at one, three, and five years, respectively. The left ventricular mass and NYHA class were each improved significantly during the observation period. The left ventricular geometries showed also a trend towards improvement.

Conclusion
The ATS 3F aortic valve prosthesis continues to perform with satisfactory hemodynamic results, comparable to those of other pericardial valves. With minimal SAE, the prosthesis demonstrated excellent intermediate-term clinical results and--to date--is proving to be durable.

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