Aortic Valve Replacement with New-Generation Stentless Pericardial Valves: Short-Term Clinical and Hemodynamic Results

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Background and aim of the study
Aortic valve replacement (AVR) with stentless bioprostheses offers superior hemodynamics. In order to overcome the disadvantages of older, stentless valves, a new generation of pericardial stentless prostheses has been developed. Herein, the hemodynamic and clinical results of these substitutes have been evaluated.

Methods
Between March 2002 and Mai 2004, 85 patients (59 females, 26 males; mean age 73.6 ± 6.1 years) who underwent AVR received either a bovine (Sorin Pericarbon Freedom®; SPF; n=50) or an equine (3F Aortic Bioprosthesis®; 3F; n=35) pericardial stentless valve. Patients were followed up prospectively at six months after surgery by clinical and echocardiographic examination. The mean follow up period was 5.6 ± 0.84 months, and was 96.4% complete.

Results
Mortality was 2.4% at 30 days (two SPF patients; one died at reoperation for suspected valve thrombosis and one was a non valve-related death) and 2.5% at follow up (two SPF patients; both non-valve-related). Neither structural valve failure nor endocarditis were observed. Preoperatively, there were no differences in baseline data, functional status and hemodynamics between SPF and 3F patients. The aortic cross-clamp time was similar in both groups (51.7 ± 11.2 min in SPF; 51.6 ± 8.2 min in 3F). NYHA functional status improvement was similar in each group (1.8 ± 0.5 for SPF; 1.7 ± 0.6 for 3F). The mean transaortic pressure gradient (∆pmean) was reduced in all patients during follow up. With SPF, a lower ∆pmean was found in smaller aortic roots (indexed annular diameter (IAD) <14 mm/m2) as well as in larger (IAD =14 mm/m2) aortic roots: 8.0 ± 4.5 mmHg versus 13.2 ± 7.2 mmHg (p<0.05) and 6.8 ± 3.0 mmHg versus 12.8 ± 4.8 mmHg (p<0.05), respectively.

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