

Long-Term Clinical and Echocardiographic Follow-Up of the Freestyle Stentless Aortic Bioprosthesis – The Tel Medical Center Experience

Arie Lorin Schwartz¹, Yan Topilsky¹, Gideon Uretzky², Nahum Neshet², Yanai Ben-Gal²,
Simon Biner¹, Gad Keren¹, Amir Kremer²

¹*Division of Cardiovascular Diseases, Tel-Aviv Medical Center, Israel*

²*Division of Cardiovascular Surgery, Tel-Aviv Medical Center, Israel*

Background:

Stentless aortic bioprostheses were designed to provide improved hemodynamic performance and potentially better survival. We report the outcomes of patients after aortic valve replacement with the Freestyle stentless bioprosthesis in the Tel-Aviv Medical Center followed for ≤ 15 years.

Methods and Results:

Between 1997 and 2011, 268 patients underwent primary aortic valve replacement with a Freestyle bioprosthesis (211[79%] in the subcoronary position). Mean age, Charlson co-morbidity index, and Euroscore were 71.0 ± 9.2 years, 4.2 ± 1.5 and 10.2 ± 11 respectively, and 156 (58%) were male. Peak and mean trans-aortic gradient have decreased (75.0 ± 29.1 vs. 22.8 ± 9.6 mmHg; $P < 0.0001$ and 43.4 ± 17.2 vs. 12.1 ± 5.4 mmHg; $P < 0.0001$ respectively) significantly in 3 months follow up. Mean overall follow-up was 4.9 ± 3.1 years and was complete in all of the patients. In-hospital mortality was 4.1% (n=11), but differed significantly between the first 100 patients operated before 2006 (8 patients [8.0%]) to the last 168 patients operated after January 2006 (3 patients [1.8%]; $p=0.01$). Overall, 5- and 10-year survival rates were $85 \pm 2.5\%$ and $57.2 \pm 5.7\%$, respectively. Five-year survival was markedly improved in patients operated after January 2006 compared to those operated on at the early years of the experience ($92.3 \pm 2.3\%$ vs. $76.0 \pm 4.4\%$; $p=0.0009$). All the 21 octogenarians operated after January 2006 survived surgery, with excellent 5-year survival ($85.1 \pm 7.9\%$). Six patients required reoperation during follow-up for structural valve deterioration in five and endocarditis in one.

Conclusions:

Aortic valve replacement with the Freestyle bioprosthesis provides good long-term hemodynamic and clinical outcomes, even in octogenarians. Valve calcification is the major (and rare) mode of valve deterioration leading to reoperation in these patients.