Background and aim of the study: Certain theoretical arguments suggest that a stentless bioprosthetic valve may be less subject to calcification and degeneration compared to an equivalent stented bioprosthesis. The study aim was to define the long-term clinical outcomes, including freedom from structural valve deterioration (SVD), among relatively younger patients after aortic valve replacement (AVR) with the Freestyle aortic bioprosthesis.

Methods: A total of 725 patients at eight study sites underwent AVR with the Freestyle stentless aortic bioprosthesis. Of these patients, 57 (7.9%) were aged ≤60 years at the time of surgery. All clinical data were recorded prospectively.

Results: The total follow up for the group was 4,900 patient-years; the mean follow up per patient was 6.8 ± 3.6 years; median 7.2 years; range: 0 to 13.3 years. Survival at 12 years was 65.0 ± 11.6% for patients aged ≤60 years at implant, and 33.1 ± 5.3% for those aged ≥61 years. Freedom from cardiac death was 94.6 ± 6.6% and 70.7 ± 7.5%, respectively. Freedom from SVD at 12 years was 92.4 ± 8.0% for patients aged ≤60 years at implant, and 92.3 ± 5.0% for those aged ≥61 years (p = 0.58). There was no significant difference in freedom from reoperation at 12 years between the younger and older age groups (p = 0.16).

Conclusion: The Freestyle stentless aortic bioprosthesis was associated with excellent clinical outcomes through 12 years of follow up. Freedom from cardiac death was excellent. Measures of bioprosthesis durability remained outstanding through 12 years, with no difference in freedom from SVD or from reoperation between patients aged ≤60 years and those aged ≥61 years at the time of implant. Inasmuch as valve durability may influence decisions between a tissue and a mechanical valve in younger patients, these data help to support use of the Freestyle valve in patients aged ≤60 years.

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