The Freedom SOLO valve: superior hemodynamic results with a new stentless pericardial valve for aortic valve replacement

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Background and Aim of the Study
The new Freedom SOLO aortic valve, as a modification of the Pericarbon Freedom stentless valve, requires only one suture line. The study aim was to compare both prostheses with regard to surgical convenience and early postoperative hemodynamics.

Methods
In this case-matched study, 90 patients underwent primary elective isolated or combined aortic valve replacement (AVR) between 2001 and 2004. The Freedom SOLO valve was implanted in 30 patients using a supra-annular, subcoronary technique with one continuous subcoronary suture line (group FS). For comparison, the Pericarbon Freedom valve was implanted in 30 patients using an interrupted suture (group PFI), and in 30 patients using a continuous suture line at the inflow site (group PFC). Patient hemodynamics at discharge were investigated by monitoring echocardiographic peak and mean gradients, and regurgitation.

Results
The mean extracorporeal circulation time (75.5+/−22.7 min in FS; 83.7+/−21.0 min in PFC versus 110.9+/−31.4 min in PFI) and cross-clamp time (56.0+/−18.6 min in FS; 62.2+/−16.2 min in PFC versus 87.7+/−25.4 min in PFI) were significantly shorter with the continuous implantation techniques. Hemodynamics were most favorable for the Freedom SOLO valve as compared to either implantation technique of the Pericarbon Freedom valve (mean gradient 7.4+/−4.6 mmHg in FS versus 10.6+/−6.0 mmHg in PFC and 11.0+/−5.7 mmHg in PFI). There were no paravalvular leakages or transvalvular regurgitations.

Conclusion
The Freedom SOLO stentless valve is easy to implant and demonstrates superior early postoperative hemodynamics. Due to the reduced cross-clamp time, it also offers an attractive option in isolated and combined AVR.

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