

Initial Experience with the Freedom Solo Supraannular Stentless Heart Valve in Iran

M. Hasan Kalantar Motamedi MD, Ali Hemmat MD[†]
and Pooya Kalani MD[‡]

Abstract

Background- Rheumatic heart disease and consequent disease of heart valves continues to place a heavy burden on health services providers, especially in developing countries. The ideal heart valve substitute has yet to be found, and new valve designs with innovative processing technologies are being introduced. In this regard, the new Sorin Freedom Solo bovine pericardial valve is designed for supra-annular implantation, is stent-less and without a fabric sewing cuff, and is implanted with a single suture line technique. In this report, we present our initial experience with these substitutes.

Methods- Between October 2006 and March 2007, nine patients underwent surgery for aortic valve replacement with this biological prosthesis. Seven patients had aortic insufficiency (AI); one, stenosis (AS); three combined, AS/AI; the mean patient age was 53.11 ± 17.54 . Standard median sternotomy incision and cardiopulmonary bypass with mild hypothermia was used for all patients. Postoperative results, morbidity and mortality were assessed and hemodynamic data were obtained by echocardiography (mean and peak gradients, valve function) at follow-up.

Results- All patients survived the procedure and were discharged from hospital. Mean duration of cardiopulmonary bypass was 92.44 ± 24.65 minutes and mean cross-clamp time was 72.44 ± 16.75 minutes. Mean time of intensive care unit stay was 3.44 ± 1.66 days. Mean and peak transvalvular gradients were 6.5 ± 2.88 mmHg and 17.50 ± 5.68 mmHg, respectively at followup (about 8 months). Four patients had trivial AI and there were no paravalvular leakages. All patients are alive and well at the time of this writing and no patient is taking anticoagulants.

Conclusion- Our initial experience with the new generation pericardial stentless aortic valve, Freedom Solo, appears to be a promising aortic valve substitute for patients requiring aortic valve replacement. Long-term durability and performance remain to be determined (*Iranian Heart Journal 2007; 8 (4): 6-10*).

Key words: aortic valve replacement ■ bioprosthetic heart valve ■ bovine pericardium

The ideal heart valve substitute should have excellent hemodynamic properties, be free from need for anticoagulation, have life-long durability, and be resistant to infection and degeneration; needless to say no such valve has been developed to date. Following more than a decade of experience with stentless valves, a new generation of pericardial stentless bioprostheses has been developed.

The ideal stentless prosthesis should have no synthetic materials, preserve the aortic root dynamics, restore flexibility and distensibility of the native valve annulus after decalcification, and have minimal xenograft aortic wall, short implantation time, and excellent hemodynamic performance to facilitate the recovery of left ventricular function.¹

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From the Department of Cardiovascular Surgery, [†] Department of Anesthesiology, and [‡] Cardiovascular Research Center, Jamaran Heart Hospital, Baqiatallah University of Medical Sciences, Tehran, Iran

Corresponding author: M. Hasan Kalantar Motamedi, MD, Assistant Professor of Cardiovascular Surgery, Jamaran Heart Hospital, Baqiatallah University of Medical Sciences, Tehran, Iran Tel: +9821-22090204 Fax: +9821-22292243 Email: k_motamedi@hotmail.com