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Sutureless Aortic Valve Replacement: Our Initial Experience

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Background:
Sutureless aortic valve (SAV) bears the potential of easy implantation, reduced ischemic time and surgical trauma in aortic valve replacement. The Perceval S (Sorin, Italy) and Enable (Medtronic, USA) are pericardial aortic bio-prosthesis assembled within an elastic alloy frame. After excision and decalcification of the native valve, the sutureless bio-prosthesis is implanted intra-annularly, without the need of multiple sutures. SAV is a potential alternative to traditional bioprosthesis, especially for small or atheromathous aortic root and minimally invasive approach. We present our initial clinical and echocardiographic results with these new SAV.

Methods:
From May 2012 through December 2012, 11 patients underwent AVR in our center using SAV. Mean age was 78.1±5.2 (range 66-85). Seven patients were female. The underlying pathology was aortic stenosis in all patients. One patient had a bicuspid valve. CABG+AVR were performed in 4 patients.

Results:
In 6 patients, a significant atheromathous aorta has been noticed. Mean prosthesis size was 23±2 mm. Mean aortic cross-clamp time for all patients was 86±36 minutes (42±9 minutes for isolated Perceval implantation). In one case, intra-operative repositioning of the valve was required due to valve displacement. Valve expansion failure that required another SAV was observed in one patient. One patient died from multiorgan failure. Post-operative morbidity included prolonged mechanical ventilation (1 patient), low cardiac output (1 patient), acute renal failure (1 patient), and atrial fibrillation (5 patients). None of the patients needed permanent pacemaker implantation. Mean aortic gradients dropped from 50.6±11.6 mmHg (pre-operative) to 8.2±2.7mmHg (postoperative). No paravalvular leakage was noticed. Median hospital stay was 7±1.5 days.

Conclusions:
These initial results demonstrate that sutureless aortic valve replacement is a safe but not a trivial procedure, with good clinical and hemodynamic results. With growing experience, operative trauma can be minimized by shortening the aortic cross-clamp time and minimal manipulation of the aorta. Further studies should evaluate the short and long term outcome of this new technology.