The Perceval® aortic bio-prosthesis: « a booster » of the mini-invasive aortic valve replacement program. Uliège experience

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Cardiac anesthetic Team
Cardiac perfusion Team
Surgical aortic valve replacement.. In the era of TAVI

• Should have a low morbidity / mortality rate
• Should permit prompt recovery and rehab.
• Should efficiently correct the « morphological and dynamic » causes of increased aortic impedance
• Correct, if required, dilated ascending aorta pathology
... a reproducible, easy, mini-invasive procedure

• Features of the Perceval® auto-expandable, self anchoring bio-prosthesis

• Experience of U liège

• An easy solution to the issue of PPM

• An easy and « teachable » mini-invasive approach (proposal)
### DATA: Demographics, Pre–peroperative and discharge data

<table>
<thead>
<tr>
<th>N</th>
<th>Age</th>
<th>Gender</th>
<th>NYHA</th>
<th>Euro-score2</th>
<th>BMI</th>
<th>EOA</th>
<th>VA junction</th>
<th>SD</th>
<th>STJ</th>
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</thead>
<tbody>
<tr>
<td>115</td>
<td>80 Y</td>
<td>60 M / 40F</td>
<td>2.41</td>
<td>5</td>
<td>27.31</td>
<td>.73 cm2</td>
<td>22.6 mm</td>
<td>29.7</td>
<td>25.7</td>
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<table>
<thead>
<tr>
<th>Mini J</th>
<th>conversion</th>
<th>CPB</th>
<th>CCT</th>
<th>Ass. proc</th>
<th>Perceval Size</th>
<th>Perceval repos</th>
<th>Second run</th>
<th>A-V block</th>
<th>Para/cen tral valv. leak</th>
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<tbody>
<tr>
<td>0.60</td>
<td>1</td>
<td>68’</td>
<td>46’</td>
<td>25%</td>
<td>2.43</td>
<td>6</td>
<td>0</td>
<td>0.14</td>
<td>0.01</td>
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<table>
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<tr>
<th>Re-op</th>
<th>mortality</th>
<th>PMK implant.</th>
<th>Postop regurg.</th>
<th>Peak grad.</th>
<th>Mean Grad</th>
<th>EOA</th>
<th>ICU stay</th>
<th>LOS</th>
<th>AI/AS</th>
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<tbody>
<tr>
<td>0</td>
<td>0.04</td>
<td>0.10</td>
<td>0.08</td>
<td>24 mm Hg</td>
<td>14 mm Hg</td>
<td>1.73 cm2</td>
<td>3 days</td>
<td>10.5 days</td>
<td>2</td>
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</tbody>
</table>

Powell R¹, Pelletier MP, Chu MWA, Bouchard D, Melvin KN, Adams C.

Abstract

Surgical aortic valve replacement with a stented prosthesis has been the standard of care procedure for aortic stenosis. The Perceval (LivaNova, London, United Kingdom) is a sutureless aortic valve bioprosthesis currently implanted in more than 20,000 patients. The purpose of this article was to review the literature available after 9 years of clinical experience of the Perceval aortic valve. PubMed, Embase, and the Cochrane Library databases were searched. A meta-analysis of summary statistics from individual studies was conducted. A total of 333 studies were identified and 84 studies were included. Thirty-day mortality and 5-year survival ranged from 0% to 4.9% and 71.3% to 85.5%, respectively. Compared with stented prosthesis, pooled analysis demonstrated a statistically significant reduction in aortic cross-clamp and cardiopulmonary bypass times (minutes) with Perceval (38.6 vs 63.3 and 61.4 vs 84.9, P < 0.00001, respectively). Compared with transcatheter aortic valve implantation, pooled analysis demonstrated a statistically significant reduction with Perceval in paravalvular leakage (1.26% vs 14.31%) and early mortality (2.3% vs 6.9%). Favorable hemodynamics, acceptable valve durability, and ease of implantation in minimally invasive cases were reported as benefits. A trend toward increased rates of permanent pacemaker implantation and low postoperative platelet count were identified. Special use and off-label procedures described included bicuspid aortic valves, valve-in-valve for homograft and stentless prosthesis failure, concomitant valvular procedures, porcelain aorta, and endocarditis. The Perceval valve has shown safe clinical and hemodynamic outcomes. Outcomes support its continued usage and potential expansion.
Can Perceval sutureless valve reduce the rate of patient-prosthesis mismatch?†.
Belluschi I¹, Moriggia S¹, Giacomini A¹, Del Forno B¹, Di Sanzo S¹, Blasio A¹, Scafuri A², Alfieri O¹.

Author information

Abstract

OBJECTIVES:
The aim of this study is to compare the theoretical incidence of patient-prosthesis mismatch (PPM) in patients undergoing a sutureless or a sutured aortic valve replacement using an exact statistical matching.

METHODS:
Between May 2012 and March 2016, 65 patients with severe symptomatic aortic stenosis underwent a sutureless aortic valve replacement with the Perceval bioprosthesis in 2 centres. Moreover, 177 aortic valve replacements with conventional sutured bioprosthesis were performed between August 2003 and September 2015. Perceval and sutured patients were 1:1 exactly matched for sex and body surface area (BSA), resulting in 62 couples (sutureless: BSA 1.77 ± 0.16 m², female 62.9% vs sutured: BSA 1.77 ± 0.15 m², female 62.9%).

RESULTS:
After matching, the indexed effective orifice area was 1.50 ± 0.18 cm²/m² and 0.81 ± 0.19 cm²/m² in the sutureless and the sutured group, respectively (P < 0.001). No PPM occurred in patients who received a Perceval bioprosthesis (n = 62). In the sutured group (n = 62), 38 patients (61.3%) developed a PPM, which was moderate in 41.9% (n = 26) and severe in 19.4% (n = 12) (P < 0.001).

CONCLUSIONS:
The indexed effective orifice area of the sutureless group was significantly larger than in the sutured one. The incidence of PPM with the conventional sutured biprosthesis was 61.3%, while it decreases to 0% in the sutureless group. No PPM was reported in the sutureless valve group. Therefore, the Perceval sutureless valve provides larger effective orifice areas compared to the sutured conventional bioprosthesis and could be considered as a good option to reduce the risk of a PPM.
Thank you ...