Reoperative Valve Replacement With the St. Jude Medical Valve Prosthesis: Long-Term Follow-Up

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OBJECTIVE: From 6/78 – 9/02, 451 redo open heart patients (following various primary cardiac operations) age range 18-91 years (average age 62 ± 14) underwent single-valve replacement with the St. Jude Medical (SJM) heart valve. Of 248 patients having aortic (AVR) and 203 patients having mitral valve replacements (MVR), 35% and 21% had concomitant coronary bypass respectively.

METHODS: Cardiac Surgical Associates has maintained an independent database of our patients with the SJM prostheses since the 1st implant in 10/77. Patients were contacted by questionnaire and/or phone from 11/02 through 6/03. Hospital course and valve-related events were verified by patient chart review and/or physician contact.

RESULTS: Follow-up was 95% complete for a total of 3,115 patient years (1,671 AVR; 1,443 MVR). Follow-up ranged from 0.1 to 24.3 years (average 7 ± 6 years). Operative mortality was 9% (10% AVR, 8% MVR). Five deaths (13%) were valve related. Freedom from all late mortality at 24 years was 64% (70% AVR, 56% MVR), and from valve-related mortality 83% (84% AVR, 82% MVR). Freedom from thromboembolic events was 85% (91% AVR, 82% MVR), from bleeding events 83% (83% AVR, 82% MVR), from endocarditis 97% (97% AVR, 97% MVR), from valve thrombosis 98% (99% AVR, 98% MVR), and from subsequent reoperation 94% (95% AVR, 94% MVR). There were no structural failures.

CONCLUSION: Reoperative valve replacement carries a significant operative mortality, but long term results with the SJM valve show a low event rate, a durable prosthetic valve and excellent long-term patient survival.

ORAL CONTRIBUTIONS

851 New Developments in Valvular Heart Surgery: Techniques, Results, and Postoperative Care

Tuesday, March 09, 2004, 2:00 p.m.-3:30 p.m. Morial Convention Center, Room 257

851-T Ischemic Mitral Regurgitation Does Not Influence Postinfarction Ventricular Remodeling

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Background: Despite sparse clinical data, surgical treatment for ischemic mitral regurgitation (IMR) has become more aggressive. We used four well-developed ovine models of postinfarction left ventricular (LV) remodeling to test the hypothesis that IMR does not significantly contribute to postinfarction LV remodeling.

Methods: Infarction of 21% to 24% of the LV was induced by coronary ligation in 71 sheep. Infarctions varied only by anatomic location: anteropapical (AA), n=26; anterobasal (AB), n=16; lateralbasal (LB), n=9 and posterobasal (PB), n=20. End systolic volume (ESV), end diastolic volume, end systolic muscle to cavity area ratio (ESMCAR), ejection fraction (EF) and degree of IMR as determined by quantitative echocardiography were assessed before infarction and at 2, 5 and 8 weeks after infarction to evaluate the extent of LV remodeling.

Results: All infarcts resulted in significant postinfarction remodeling and decreased EF (table). AA infarcts led to LV aneurysms and resulted in more severe remodeling than the other three infarct locations. Only PB infarcts caused severe and progressive IMR. Remodeling due to PB infarcts was not more severe than that caused by infarcts at other locations.

Conclusion: The extent of postinfarction remodeling is determined by infarct size and location. The development of IMR does not contribute to adverse remodeling. IMR is a manifestation rather than a cause of postinfarction remodeling. The current aggressive surgical approach to IMR should be reassessed.

Table 1

<table>
<thead>
<tr>
<th>Infarct Location</th>
<th>IMR at 8 weeks (0=no MR, 1=severe MR)</th>
<th>ESV at 8 weeks as % of preinfarction</th>
<th>ESMCAR at 8 weeks as % of preinfarction</th>
<th>EF at 8 weeks as % of preinfarction</th>
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<tbody>
<tr>
<td>Anteropapical (AA)</td>
<td>13/16 (81%)</td>
<td>23±11*</td>
<td>86±4</td>
<td>76±4</td>
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<tr>
<td>Anterobasal (AB)</td>
<td>15/16 (94%)</td>
<td>20±7</td>
<td>75±6</td>
<td>75±8</td>
</tr>
<tr>
<td>Lateralbasal (LB)</td>
<td>8/9 (89%)</td>
<td>19±11</td>
<td>83±8</td>
<td>74±23</td>
</tr>
<tr>
<td>Posterobasal (PB)</td>
<td>27/20 (85%)</td>
<td>21±11</td>
<td>74±7</td>
<td>73±21</td>
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* ESV significantly greater for AA infarcts than all other infarct locations at 8 wks
** IMR significantly greater for PB infarcts than all other infarct locations at 8 wks

851-2 Reduction in Functional Mitral Regurgitation Using the Coapsys Annuloplasty Device in Patients Undergoing Off-Pump Coronary Artery Bypass Grafting: A Quantitative Echo Analysis

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Background: We are evaluating a novel implantable device (Myoscot® Coapsys™ Annuloplasty System) intended to treat functional mitral regurgitation (MR) on a beating heart as conventional surgical correction increases mortality and morbidity over CABG alone. Changes in mitral valve (MV) geometry induced by the device were evaluated using echo techniques.

Methods: The Coapsys device was surgically implanted in 20 patients (mean age 58.7 ± 8.1 years, 3 females, mean ejection fraction 37.3 ± 6.2 %) with sustained MR grade 2 or more after undergoing concomitant CABG. Patients with structural abnormalities of the MV or its apparatus were excluded. Coapsys consists of anterior and posterior epicardial pads connected by a flexible sub-valvular chord. The device is tightened under echo guidance to minimize MR. Echo parameters (MR Grade; Maximum MR jet area; end-diastolic anteroposterior (A-P) annular dimension and MV tenting area) were studied pre-operatively and post-operatively (prior to discharge and 3 months).

Results: Implants were performed off-pump without device related adverse events. Echo parameters were as Table 1. [*p<0.005 compared to pre-implantation]

<table>
<thead>
<tr>
<th>Pre-implant</th>
<th>Discharge</th>
<th>Three Month</th>
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<tr>
<td>MR Grade</td>
<td>3.0±0.6</td>
<td>1.1±1.0*</td>
</tr>
<tr>
<td>MR jet area (cm²)</td>
<td>7.9±3.7</td>
<td>3.5±2.0*</td>
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<tr>
<td>Annular A-P Dimension</td>
<td>2.8±0.4</td>
<td>2.4±0.4*</td>
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<tr>
<td>Mitral Tenting Area</td>
<td>3.9±1.0</td>
<td>2.8±1.0*</td>
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Conclusions: The Coapsys device can be safely implanted on the beating heart. Implantation of the device results in significant reductions in MR, MR jet area, A-P dimension, and MV tenting area are also significantly reduced. These functional and geometric changes are maintained at 3-months.

851-3 Staged Initial Percutaneous Coronary Intervention Followed by Valve Surgery (“Hybrid” Approach) for Patients With Complex Coronary and Valve Disease

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Background: With advancements in percutaneous coronary interventions (PCI), some patients requiring coronary recanalization and valve surgery may be better served with a “hybrid” approach involving initial planned PCI followed by valve surgery in a staged fashion rather than conventional high-risk valve/CABG. This may be particularly relevant in hemodynamically unstable patients after acute coronary syndromes, and some patients requiring valve reoperations.

Methods: We retrospectively analyzed 26 consecutive patients with coronary artery disease and valve disease who were treated with planned initial PCI followed by valve surgery during the same hospitalization between September 1997 and August 2003.

Results: Median age was 72.5 years (range 53-91 years), with 12M/14F. Mean NYHA was 3.5±0.6. Acute myocardial infarction was present in 10/26 (38%) with cardiogenic shock in 4/26 (15%) and low cardiac output syndrome in 6/26 (23%). 7/26 (27%) required periprocedural intubation. Balloon angioplasty was performed in every patient (n=26), fol-