Percutaneous Repair of Paravalvular Regurgitation: Characteristics and Acute Outcomes of 40 Patients

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Background: Percutaneous repair of paraprosthetic paravalvular leak (PVL) is emerging as a potential therapy in patients that are at high surgical risk. We report our outcomes with this procedure in patients referred for catheter based repair of paraprosthesis paravalvular regurgitation.

Methods: We retrospectively identified 43 percutaneous PVL closures in 40 patients performed at our institution between May 2009 and November 2012.

Results: The mean age of patients undergoing percutaneous PVL closure was 70 years (40 to 92). Procedural success rate was 98% with 3 procedures failed due to prosthesis impingement and 1 patient had surgical valve replacement after 1.6 years. At a mean follow up of 208 days (range 1-888 days), all cause mortality was 30%.

Conclusions: Percutaneous PVL closure is a valuable treatment option in patients with paraprosthetic paravalvular regurgitation at high surgical risk, with good acute procedural success rates.

TCT-810
Long-term 25 Years Follow-up of Mitral Valvuloplasty with Single Balloon.

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Background: Mitral balloon valvuloplasty (MBV) with single balloon (MBVS) is the less expensive technique to perform MBV. The objectives are to describe the long-term follow-up (FU) of MBVS Balf and to determine independent predictors of survival and event-free survival (EFS).

Methods: From 1987 to 12-31-2013, 526 procedures of MBV were performed, 404 (76.8%) with MBVS Balf, being 256 procedures with long-term FU. The balloon diameter was 25 mm in 5 procedures and 30 mm in 251, mean dilatation area 7.02±0.30 cm2. The FU was 55±33 (1 to 198) months. To determine independent predictors of survival and EFS it was used the multivariate Cox analysis.

Results: Mean age was 38.0±12.6 (13 to 53) years, being 222 (66.7%) female, 215 (41%) with NYHA class III/IV, 18 patients (3.4%) with atrial fibrillation. Mean aortic valve area (AVA) was 0.81±0.20 cm2 (p<0.001) and success AVA>1.5 cm2 in 241 (94.1%) procedures and mean pulmonary artery pressure pre and post MBV were 20±7 and 10±5 mmHg. Thirty (4%) patients began the FU with severe mitral regurgitation (SMR). At the end of the FU 118 (46.1%) patients were in NYHA FC I, 71 (27.7%) in FC II, 53 (20.7%) in FC III, 3 (1.2%) in FC IV and there were 11 deaths (4.3%), 9 (3.5%) were cardiac death, being 5 during cardiac surgery. There were 17 (8.5%) patients with new SMR at the end of the FU. Twelve (4.7%) patients were submitted to new MBV, 27 (10.5%) to mitral valve surgery and 70 (26.3%) patients used no medication at the end of the FU. Independent predictors of survival and EFS it was used the multivariate Cox analysis.

Results: Mean age was 38.0±12.6 (13 to 53) years, being 222 (66.7%) female, 215 (41%) with NYHA class III/IV, 18 patients (3.4%) with atrial fibrillation. Mean aortic valve area (AVA) was 0.81±0.20 cm2 (p<0.001) and success AVA>1.5 cm2 in 241 (94.1%) procedures and mean pulmonary artery pressure pre and post MBV were 20±7 and 10±5 mmHg. Thirty (4%) patients began the FU with severe mitral regurgitation (SMR). At the end of the FU 118 (46.1%) patients were in NYHA FC I, 71 (27.7%) in FC II, 53 (20.7%) in FC III, 3 (1.2%) in FC IV and there were 11 deaths (4.3%), 9 (3.5%) were cardiac death, being 5 during cardiac surgery. There were 17 (8.5%) patients with new SMR at the end of the FU. Twelve (4.7%) patients were submitted to new MBV, 27 (10.5%) to mitral valve surgery and 70 (26.3%) patients used no medication at the end of the FU. Independent predictors of survival and EFS it was used the multivariate Cox analysis.

Conclusions: MBVS Balf is efficient with durable results similar to others techniques being less expensive.

TCT-811
First-in-Human CardiacAQ Transcatheter Mitral Valve Implantation Via Transapical Approach

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Background: Many patients with severe symptomatic native mitral valve regurgitation are not candidates for surgical replacement or repair due to high operative risk. While percutaneous repair therapies such as MitraClip are a viable option for such patients, many have unfavorable anatomy that precludes treatment. Transcatheter mitral valve implantation (TMVI) is a novel treatment option. We describe the first in human implantation of the CardiacAQ valve via transapical approach.

Methods: An 88-year-old female patient with severe mitral regurgitation secondary to A1/A2 leaflet flail and refractory NYHA class IIIb dyspnoea was referred for treatment. Co-morbidities included prior coronary artery bypass surgery and renal failure. Left ventricular systolic function was preserved. Following discussion in our heart team meeting the patient was declined surgery and deemed unsuitable for MitraClip. TMVI was performed under compassionate use provision.

Results: The CardiacAQ system was inserted via transapical approach in the hybrid operating theatre. Using transesophageal echocardiography guidance, successful device implantation was achieved with an accurate and stable prosthesis position and immediate elimination of the mitral regurgitation with only trace para-valvular regurgitation. Over a follow up of 1 week the prosthesis valve function was well functioning as assessed by sequential echocardiography, the patient experienced significant symptomatic improvement and recovery was uneventful.

Conclusions: Our initial experience with transcatheter mitral valve implantation using the CardiacAQ device via transapical approach highlights the feasibility and effectiveness of this promising therapy in treating severe mitral regurgitation.

TCT-812
Transesophageal echocardiography guided trans-apical mitral implantation

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Background: Transcatheter mitral valve implantation is an emerging therapeutic option for elderly patients with severe symptomatic mitral regurgitation. Mitral regurgitation (MR) is a catheter-based self-expanding mitral bio-prosthesis, specifically designed to fit the complex anatomical structure of the mitral apparatus. It is implanted using a transapical approach. Because transesophageal echocardiography (TEE) provides superb imaging of the mitral valve in both 2D and 3D, and has the ability to provide real time information, TEE is ideally suited both assessing suitability and guiding the implantation of trans-catheter mitral valve procedures. We describe here the TEE guidance of the first 2 human implantations of the Tiara.

Methods: The first 2 cases were with Transcatheter Mitral Valve Implantation (TAMI) of the Tiara were performed in a 72-year-old male and a 60 years old woman with severe functional MR. Anatomical suitability for Tiara implantation was confirmed by transthoracic echo, TEE and CT angiographic assessment prior to implantation. Implantation was guided by both TEE and fluoroscopy. TEE was critical in determining the orientation of the “D” shaped Tiara prior to deployment. In particular, the orientation of the device in the left atrium was confirmed using X-plane imaging, and rotational orientation by real time 3D echo. Final deployment position, paravalvular regurgitation and the presence of any complications was evaluated. Results: TEE guided Tiara implantation was completed successfully in both patients and both valves were deployed in an appropriate position and orientation. There were no complications detected by TEE at the time of implantation. Specifically no left ventricular outflow tract obstruction, pericardial effusion or deterioration in LV or RV function was noted. No new wall motion abnormalities were noted. Mitral regurgitation was reduced from 4+ to trivial and trans-mitral gradient was minimal in both patients.

Conclusions: TEE echo provides critical real time information that is integral to successful positioning, deployment and assessment of outcomes with trans-catheter mitral valve implantation.

TCT-813
Immediate and 18-Month Outcome of Balloon Mitral Valvuloplasty:
Comparison of Inoue and Multi-Track System

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Background: To compare the immediate and 18-month clinical and echocardiographic outcomes of Inoue and multi-track system for balloon mitral valvuloplasty (BMV).

Methods: We included 78 consecutive patients with moderate to severe rheumatic mitral stenosis (MS) [mitral valve area (MVA)< 1.5 cm2] and clinically indicated BMV. The first 42 consecutive patients were assigned to Inoue BMV and the following 36 consecutive patients were assigned to multi-track system (group M). Clinical and echocardiographic assessment was performed before, immediately after, 3 months after, and 18 months after the procedure.

Results: The successful immediate result [MVA > 1.5 cm2 and mitral regurgitation (MR)] was achieved in 95 (95.9%) patients. There were 15 (18.9%) patients of group I and 4 (11.1%) patients of group M (P = 0.12). Immediately after BMV, MVA increased from 0.9 ± 0.4 to 1.7 ± 0.5 cm2 in group I and from 0.8 ± 0.2 to 1.9 ± 0.3 cm2 in group M (P = 0.01). Bilateral commissural splitting was significantly higher in group M (P < 0.01). This was associated with higher incidence of mild commissural mitral regurgitation. There were no significant differences of moderate to severe MR. Both procedure and fluoroscopy time were significantly shorter in group I (P < 0.001). Eighteen month clinical and echocardiographic evaluation was available for...