

6 (24%) moderate MR (2+). Only 3 patients (12%) presented MR>3+ and were successfully re-operated. Two patients underwent conventional mitral valve replacement, while the latter underwent NeoChord re-implantation.

Conclusions: Our initial results with the TOP-MINI procedure showed that this minimal invasive technique is safe, feasible and provide significant clinical benefit.

TCT-802

Long-Term Follow-Up for Complete Transcatheter Melody Valve-in-Valve Implantation for High-Pressure Systemic Bioprosthesis Failure

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Background: Reoperation for aortic and mitral valve bioprosthetic deterioration is associated with significant morbidity and mortality. Transcatheter valve-in-valve (ViV) implantation is now utilized as an alternative in the high-risk patient. However, little is known about the long-term follow-up of Melody (Medtronic, Minneapolis, MN) ViV for systemic bioprosthesis failure.

Methods: Between February 2012 and February 2013, 12 patients (74±14years, 66% male, STS mitral:aortic 14.3±14%:13.5±10%) presented to our institution with severe bioprosthetic mitral (25 to 33mm, n=9) and aortic (23 to 25mm, n=3) dysfunction at a median of 3426 days [IQR:2669 to 3318] following surgery. Etiology of mitral and aortic dysfunction was severe regurgitation in 67% // 0%, stenosis in 11% // 67%, and combined in 22% // 33%. All individuals had transthoracic echocardiography performed preoperatively and at 1mo, 6mo, and annually thereafter. Percutaneous transseptal/transapical approach with an arteriovenous rail was utilized for mitral ViV and retrograde transaortic for aortic ViV.

Results: Complete percutaneous mitral and aortic ViV was successfully performed in all patients, with 3 patients having two Melody valves implanted in the mitral position. The mean NYHA functional class improved from 3.4±0.5 to 2.0±1.1 (p< 0.05) over a median follow of 485 days and a maximum follow-up of 818 days (IQR:259 to 578). The mean transvalvular gradient improved from 10.3±3.4 to 3.6±2.2 (p< 0.05) for mitral and from 40.2±20 to 9.5±7.8 (p< 0.05) for aortic ViV implantation, with all patients having mild or no residual regurgitation.

Conclusions: In high-risk patients, Melody ViV implantation for left-sided valvular heart disease is a promising therapeutic option in individuals with degenerated bioprostheses. Early results suggest that it is associated with favorable outcomes however long term durability needs to be further assessed.

TCT-803

3D Transesophageal Echocardiography provides optimal real-time guidance for off-pump, transapical implantation of artificial chordae tendineae. An imaging study

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Background: The NeoChord DS1000 system is used deliver artificial chordae tendineae (neochordae), under beating-heart conditions with transesophageal echocardiography (TEE) used to guide the device to the target leaflet for deployment of the neochordae. The aim of the study is to identify refinements in intraoperative imaging technology that directly influence accuracy and reproducibility of the key steps of neochordae implantation using NeoChord DS1000 system: intra-cardiac navigation, crossing of mitral valve plane, mitral leaflet capture, assessment of neochordae efficacy.

Methods: At Vilnius University Hospital Santariskiu Klinikos 42 Patients have undergone the NeoChord operation since June 2012. In the first 13 cases, intraoperative guidance was achieved by 2D echocardiography only, while in the remaining cases a combination of 2D and 3D echocardiographic guidance was utilized. Currently, 2D imaging is utilized first to introduce and navigate the NeoChord instrument inside the LV until the mitral valve plane is crossed. Imaging is then switched to 3D and leaflet capture and chorda deployment are performed. Tension is then applied to the artificial chorda and its effectiveness in reducing prolapse is evaluated.

Results: In the 42 patients, an average of 4 chordae per patient were implanted (Range 2-7). In the 2D+3D group, as compared to the 2D-only group, average number of chordae implanted per patient was increased by 44% (3.9 vs 2.7, p< 0.05), average time to implant a single chorda was decreased by 18% (4.4 vs 5.5 minutes, P=NS); number of total deployment attempts per case was decreased by 27% (5.8 attempts vs 8.2, P< 0.05). Furthermore, intraoperative 3D visualization of the mitral valve anatomy allowed a better planning of the operation and precise targeting of specific portions of the prolapsing leaflets

Conclusions: 3D real-time echocardiography provides significant benefits over 2D-only, and has become an indispensable intraprocedural guidance tool.

TCT-804

Transcatheter Mitral Valve-in-Valve / Valve-in-Ring Implantations for Degenerative Post Surgical Valves: Results from the Global Valve-in-Valve Registry

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Background: Transcatheter mitral valve-in-valve / valve-in-ring implantation is an emerging therapeutic alternative for patients with failed mitral valves after surgical intervention and may obviate the need for a redo operation. We aimed to evaluate the clinical results of this technique using a large worldwide registry.

Methods: The registry included 190 patients with degenerated mitral valves after surgical intervention (17.4% ring only, median of 9 years post procedure). Mean age 73.6 ± 12.6 years; 65.2% female (STS score 14.4 ± 11.9%). The mode of failure was regurgitation (n=70, 37%), stenosis (n=47, 25%), and combined (n=73, 38%).

Results: Transcatheter Edwards SAPIEN (Edwards Lifesciences, Irvine, CA) implantation was performed in 93.7% of cases (23 mm in 11.1%, 26 mm in 57.4%, and 29 mm in 25.3%) and Inovare in 6.3%. Procedural access was transapical in 161 cases (84.7%); transseptal in 23 (12.1%), and through the left atrium via right mini-thoracotomy in 6 (3.2%). Twenty-three combined procedures (12.1%) included aortic valve-in-valves, aortic valve replacement, tricuspid valve-in-ring implantation, and paravalvular leak closure. Device malposition appeared in 5.3% of cases and post implantation valvuloplasty was utilized in 8%. Post-procedure, mitral valve area was 2.1 ± 0.7 cm² and valve mean gradients was 6.2 ± 2.7mmHg. Significant mitral regurgitation (≥+2) was observed in 4.2% of patients. Median length of hospital stay was 8 days. At 30-day follow-up, all-cause mortality was 8.9%, 2.2% of patients had stroke and 85.8% were at New York Heart Association functional class I/II. 1-year mortality was 22.3%. Independent predictors for 1-year mortality included baseline STS score (HR 1.04, CI 1.02-1.06) and renal failure (GFR< 60cc/min, HR 2.37, CI 1.06-5.28).

Conclusions: Mitral valve-in-valve/ valve-in-ring implantations, performed in extremely high-risk patients, were clinically effective in most patients with degenerative mitral valves after surgery. However, safety and efficacy concerns include device malposition and elevated post procedural gradients.

TCT-805

Effects of the Percutaneous Mitral Balloon Valvuloplasty on the Left Atrial Compliance

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Background: Percutaneous mitral balloon valvuloplasty (PMV) is the treatment of choice for patients with symptomatic mitral stenosis (MS). Rapid improvement in symptoms and hemodynamic parameters can be observed after increasing mitral valve area and decreasing left atrial pressure. However, left atrial pressure has been shown to be influenced by both MS severity and left atrial compliance (Ca). Effects of PMV on Ca are still unknown. The aim of this study is to define the immediate effects of PMV on Ca and to identify factors influencing the changes in Ca post PMV in patients with MS.

Methods: We enrolled patients in our institution with MS who underwent successful PMV from December 2012 to May 2014. Transthoracic echocardiography (TTE) was performed in all the patients pre and 24-h post procedure. PMV was performed by the Inoue technique, guided by TTE. Gas analyzes of blood samples from aorta and pulmonary artery were obtained and pressure tracings were recorded from aorta, left ventricle and left atrium before and after the balloon dilation in order to calculate cardiac index and the left atrial compliances.

Results: Sixty-one patients were enrolled. The mean age was 45±12 years, 84% were female. Mean mitral valve area (MVA) pre procedure was 0.96 ± 0.25 cm². After PMV we observed a significant decrease in mPAP (35.1±12.4 mmHg vs. 29.6±9.7 mmHg, p< 0.001) and an increase in cardiac output (4.1±1.3 L/min vs. 4.4±1.3 L/min, p< 0.001). The median Ca pre procedure was 6.6 [4.5-9.2] mL/mmHg with increase after PMV to 12.4 [6.6-22.5] mL/mmHg (p< 0.001). The change in Ca correlated with changes in mitral transvalvular gradient, pulmonary artery pressure, left atrial pressure and pulmonary vascular resistance pre and post-PMV. Multivariate analysis revealed that the degree of change post PMV in mPAP (p=0.004), left atrial pressure (p=0.012) and pulmonary vascular resistance index (p=0.001) were independently associated with changes in Ca.

Conclusions: This study demonstrates that successful PMV can significantly increase Ca, which is associated with improvement in cardiac hemodynamics. These results may also provide potential mechanistic insights into the pathophysiology of the hemodynamic changes seen in MS.