**TCT-799**

**Predictors Of Long Term Outcome In Heart Failure Patients With Very Low Left Ventricular Ejection Fraction And Severe Mitral Regurgitation After Percutaneous Edge To Edge Mitral Valve Repair**

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**Background:** Data is limited on the long-term outcome of patients with a left ventricular ejection fraction (LV-EF) ≤25% and severe mitral regurgitation (MR) after percutaneous edge-to-edge mitral valve repair.

**Methods:** From 2009 to 2012, 34 patients with a LV-EF ≤25% and severe MR were intended to treat with percutaneous edge-to-edge mitral valve repair in the two university hospitals of Munich.

**Results:** Long-term follow-up (up to 4.5 years) revealed a high 1-year mortality of 50% and the putative existence of two subgroups, one with a poor short-term and one with a favourable long-term outcome. In an univariate Cox proportional hazard model, NYHA functional class IV (hazard ratio [HR] 4.1, p < 0.001), cardiogenic shock (HR 8.6, p < 0.001), lack of hypertension (HR 3.9, p = 0.013), low tricuspid annular plane systolic excursion (TAPSE < 14mm)HR (4.0, p = 0.035), severely impaired RV-function (HR 3.3, p = 0.014), elevated right ventricular tricuspid pressure gradient (RVTG ≥ 30mmHg/p = 0.0016), dialysis (HR 6.6, p = 0.001), EuroSCORE II (HR 1.3, p = 0.008) and STS risk score (HR 1.4, p = 0.004) were significantly associated with 1-year mortality. Dialysis was an independent predictor of 1-year mortality.

**Conclusions:** Percutaneous edge-to-edge mitral valve repair possibly leads to a favourable long-term outcome in a subgroup of patients with a LV-EF ≤25% and severe MR. Predictors like NYHA functional class, cardiogenic shock, TAPSE, RV-function, RVTG, the need for dialysis, EuroSCORE II and STS risk score might be used to consider percutaneous edge-to-edge mitral valve repair primarily for patients with favourable prognosis.

**TCT-800**

**Improvement in Quality of Life in Patients With Degenerative Mitral Regurgitation at Prohibitive Surgical Risk Following Transcatheter Mitral Valve Repair with the MitraClip System**

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**Background:** We sought to evaluate the improvement in quality of life (QOL) in patients with severe degenerative mitral regurgitation (DMR) at prohibitive surgical risk undergoing transcatheter mitral valve repair with the MitraClip.

**Methods:** MitraClip repair was performed in 21 prohibitive risk DMR patients with 4+ MR after a multi-disciplinary heart team deemed them to be ineligible for surgery. The Kansas City Cardiomyopathy Questionnaire (KCCQ) was administered at baseline and one-month follow-up to assess QOL.

**Results:** Mean age was 78±9 years, and mean STS score was 12.2%. Twenty patients (95.3%) had successful deployment of the MitraClip device. There were no procedural deaths. At 30-day follow-up there were two deaths (9.5%), 1 due to respiratory failure at 48 hours and 1 due to a stroke at 3 weeks. At 1-month follow-up, 17 patients (81.0%) had grade 1-2+ MR. QOL as assessed by the KCCQ in 18 patients was significantly improved (P< 0.001) in 1-month survivors (Figure). Eight different quality domains were used for assessment of QOL. These included activity (p = 0.002), edema (p = 0.001), fatigue (0.001), shortness of breath (p = 0.001), orthopnea (p = 0.001), satisfaction at status quo health (p = 0.001) and activity limitation (p = 0.01). There was a significant improvement in all domains assessed.

**Conclusions:** Transcatheter mitral valve repair with the MitraClip in prohibitive surgical risk patients with DMR results in substantial improvement in QOL. Further studies are needed to examine whether these results are durable and associated with other improved clinical outcomes.

**TCT-801**

**Safety, Feasibility And Efficacy Of Transapical Off-Pump Mitral Valve Repair With Neochord Implantation**

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**Background:** Transapical off-pump mitral valve repair with Neochord implantation (TOP-MINI) is a recently introduced minimally invasive technique to treat degenerative mitral valve prolapse or flail. We sought to assess the safety, feasibility and efficacy of the TOP-MINI procedure.

**Methods:** From November 2013 to April 2014, 25 patients with severe symptomatic degenerative mitral regurgitation (MR) with leaflet prolapse or flail were treated. Acute procedure success was defined as postoperative residual MR less than moderate (MR < 2+). At 1 and 3 months follow-up, we evaluated clinical conditions and residual MR grade with transthoracic echocardiography.

**Results:** Median age was 76 years (range 31-90 years), median Euroscore-I was 5.98% (range 0.88-38.9%) and median STS score was 1.73% (range 0.22-14.6%). Twenty one patients (84%) presented a posterior mitral leaflet prolapse or flail. Twenty patients (84%) presented a posterior mitral leaflet prolapse, 3 (12%) an anterior leaflet prolapse and 1 (4%) a combined anterior-posterior prolapse. The procedure was successfully completed in all patients with correct chordae implantation achieving a significant MR reduction. A median of 4 Gore-Tex Neochords (range 3-6) were implanted for each patient: 8 patients (32%) received 3 chordae, 12 (48%) received 4 chordae, 4 (16%) had 5 chordae and 1 (4%) had 6 chordae. Median procedural time was 135 min (range 90-200 min). No death, stroke, acute myocardial infarction or bleeding events occurred within 30-days. At 1 month and 3 months follow-up 22 patients (88%) were in good clinical conditions (NYHA I or II) with residual MR < 2+. Ten patients (40%) presented no MR, 6 (24%) mild MR (1+)

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6 (24%) moderate MR (2+). Only 3 patients (12%) presented MR>3+ and were successfully re-implanted 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-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 Inouvo 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 3 (1.6%). 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 1.65 ± 0.7 cm² and valve mean gradients was 6.2 ± 2.7 mmHg. 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% of patients had stroke and 85.8% were at New York Heart Association functional class II. 1-year survival was 92.3%. 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 due to 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. Transcatheter echocardiography (TEE) 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 dilatation 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/MinHg with increase after PMV to 12.4 [6.6-22.5] ml/MinHg (p < 0.001). The change in Ca correlated with changes in mitral transvalvular gradient, pulmonaray 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.