Conclusions: Both the MitraClip device and MV surgery confer clinical benefits through 3 years similar to EVEREST II results at 1 year and 2 years, with sustained reduction in MR and sustained improvement in LV volumes and NYHA-FC. Although there is a 22% rate of surgery within 6 months post-index MitraClip procedure, this rate remains stable thereafter. Despite larger reductions in LV volumes and MR severity in the surgery group, both groups experienced similar levels of sustained improvement in NYHA-FC at 3 years. The MitraClip device may be considered a transcatheter therapeutic option for select patients with severe MR.

TCT-789
Optimizing plugs size for transcatheter paravalvular leak closure with Amplatzer Vascular Plug III devices
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Background: Transcatheter paravalvular leak closure (TPVLC) has become a well-established alternative to reoperation. Implantation of multiple smaller plugs is postulated to outperform a single large one. Still, the procedural success pivots on optimal choice of occluding devices, which has not been standardized as yet.

Methods: We enrolled 16 patients with mitral (n=10) or aortic paravalvular leak (PVL) scheduled for TPVLC. In each case PVL channel area (PVCLA) was estimated according to its minimum and maximum diameters in the plane parallel to prosthesi’s sewing ring with use of transthoracic echocardiography (TEE). We also calculated the middle module area (MMA) for different sizes of AVPs III according to their length and width as provided by manufacturer. Then, in a 1-stage procedure, 2 AVPs III of similar size were implanted into each PVL, either simultaneously or sequentially. Their added MMA were as provided by manufacturer. Then, in a 1-stage procedure, 2 AVPs III of similar size were implanted into each PVL, either simultaneously or sequentially. Their added MMA were aimed to exceed the targeted PVCLA by 10-30%.

Results: The mean ratio of maximum to minimum PVL diameter was 2.32. The mean estimated PVCLA [mm2] was 60.7 with median of 44.5, minimum 24 and maximum of 148. The mean value of occluders’ added MMA exceeded corresponding PVCLA by 27.7%. Optimal effect defined by total occlusion or trivial residual pile by TEE was achieved in 13 patients. When technical challenges disabled the intended oversizing (n=3) a moderate residual PVL was present - see Figure 1.

Conclusions: Implantation of 2 AVPs III with approximately 30% area oversizing ensures complete TPVLC in patients with oblong PVL.

TCT-790
Prediction of long-term clinical outcome according to the etiology of mitral regurgitation in patients undergoing MitraClip therapy
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Background: Mitral regurgitation (MR) of functional vs. degenerative origin are different morphological entities that have mostly been grouped together in studies published to date on MitraClip therapy. We sought to identify factors predicting the long-term clinical outcome following MitraClip implantation according to the underlying etiology.

Methods: By April 2012, 270 consecutive patients (74 ± 9 years, 172 men) with symptomatic MR not amenable to surgery underwent MitraClip therapy at our center. Functional (FMRA) and degenerative/mixed MR (DMRA) were present in 184 (68%) and 86 patients, respectively. We performed survival analyses (Kaplan-Meier, Cox regression) of 230 patients followed.

Results: Cumulative survival at 2 years did not differ between DMRA and FMRA patients (65.3 vs. 69.5% CL 55.7-74.9% vs. 60.5 [45.7-75.7%], p=0.855); however, at 5 years, rehospitalizations occurred significantly more often in FMRA patients (70.5 [59.3-81.7%] vs. 49.6 [37.3-62.0%], p=0.023 by 12-month landmark analysis) and mitral valve surgery was needed significantly more often in DMRA patients (20.0 [9.2-30.9%] vs. 5.0 [0.7-23.1%], p=0.002). Univariate and multivariate Cox regression revealed that both FMRA and DMRA left ventricular dilatation was independently predictive of rehospitalization. Independent predictors of reintervention were an anterior mitral leaflet length >30 mm for DMRA, and an eccentric MR jet and increasing left atrial area for FMRA.

Conclusions: As shown for this high-risk patient population, MR etiology did not impact on survival following MitraClip, however, clear differences between FMRA and DMRA were observed with respect to rehospitalization and reintervention: Whereas treatment of DMRA is linked to increased reinterventions, the increased rate of rehospitalization in patients treated for FMRA reflects the increased degree of LV dysfunction.

TCT-791
Percutaneous or surgical repair for functional mitral regurgitation – comparison of patient characteristics and clinical outcomes
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Background: Corrective surgery for functional mitral regurgitation (FMRA) has proven beneficial in that it improves NYHA functional class and induces reverse left ventricular remodeling. However, proof of survival benefit is pending. Percutaneous techniques of mitral valve repair (MVR) may become a viable alternative treatment for high-risk patients with severe FMRA.

Methods: We retrospectively analyzed our prospective hospital database of patients with severe FMRA undergoing percutaneous treatment using the MitraClip device or surgical MVR. Patient characteristics and acute and 6-month hemodynamic and clinical outcomes are reported.

Results: 95 patients were treated using the MitraClip device while 76 patients underwent isolated surgical MVR for FMRA. Patients undergoing MitraClip treatment were significantly older (mean72.4 ± 8.1 vs. 64.5 ± 11.4; p=0.001), had a lower left ventricular ejection fraction (mean62.6 ± 12.5% vs. 62.1 ± 16.2%; p=0.014), and were generally more high-risk, with a significantly higher mean logEuroSCORE compared to surgical candidates (35.7 ± 18.7 vs. 10.1 ± 8.7; p=0.001). Procedural success was 95.8% (9195%) for MitraClip treatment and 93.4% (917%) for surgical MVR (p=0.491). 30-day mortality was 4.2% (4/95) and 2.6% (2/76p=0.557) and mean grade of residual MR was 1.4 ± 0.8 and 0.2 ± 0.4 (p=0.001) after MitraClip treatment and surgical MVR respectively. Unadjusted survival rates after 6 months were 87% and 96% for MitraClip and surgical treatment respectively. However, after multivariate regression analysis and adjustment for baseline differences, survival differences were no longer statistically significant (p=0.358).

Conclusions: Patients with FMRA undergoing surgery differ significantly from those considered for percutaneous therapy. Surgery was more effective compared to MitraClip in reducing MR. However, a large proportion of patients benefits from percutaneous intervention with sustained MR>2+ at 6 months. Especially for elderly patients with reduced left ventricular function and relevant comorbidities, MitraClip therapy seems to be an adequate alternative to surgery. Assessment, treatment and postprocedural care of patients by an interdisciplinary team is of paramount importance for clinical success.

TCT-792
Mitral Inflow Patterns In Rest and During Exercise following MitraClip Implantation
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Background: Due to the implantation of one or more MitraClips in patients with mitral valve regurgitation, a decrease in mitral valve area (MVA) is created, which has been shown to result in clinical significant mitral stenosis. However mitral inflow patterns were only measured in these patients during resting conditions. Therefore we aimed to investigate the effect of MitraClip implantation on mitral valve pressure gradient (MVPG) during exercise.

Methods: We included 23 patients with symptomatic severe mitral regurgitation (age 76 ± 8 years, 44% male) who underwent MitraClip implantation with placement of one or more clips. Transthoracic echocardiography was performed pre-procedural and at follow up. After MitraClip implantation (median follow up: 13 months) to measure the mean and maximum MVPG with continuous wave Doppler in rest and during bicycle exercise test.

Results: NYHA functional class was significantly decreased after MitraClip from class III to II (p=0.001). Following MitraClip implantation the mean MVPG increased from