TCT-893
Does Left Ventricular Hypertrophy Affect Outcomes in Patients Undergoing Transcatheter Aortic Valve Replacement?
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Background: Severe left ventricular hypertrophy (LVH) has a well documented severe negative impact on early mortality in patients undergoing surgical aortic valve replacement. This effect is particularly pronounced in patients with elevated relative wall thickness, an indicator of extreme hypertrophy with small ventricular cavity (suicide ventricle). It is not clear whether similar mortality risk is present in transcatheter aortic valve replacement (TAVR), which avoids issues regarding myocardial protection and hyperdynamic post-bypass physiology. The purpose of this study is to analyze the impact of LVH on patients undergoing TAVR.

Methods: From 2008-2011, a retrospective review of patients undergoing TAVR was performed, comparing patients without severe LVH (n=59) to those with severe LVH (group 2, n=89). LVH was defined as a relative wall thickness (2DPosterior wall Thickness/LVEDD) of greater than 0.5. Data was abstracted from a prospectively kept database with robust echocardiographic and clinical follow-up.

Results: Preoperative age, STS score, and aortic valve area did not differ (age: 81 vs. 84 years, STS score 12 vs. 12; AVA 0.61 vs. 0.61cm2, no LVH versus severe LVH groups respectively). Peak gradient (PG) was higher in severe LVH group (PG 79 vs. 84mmHg, p<0.0001) but mean gradient (MG) did not differ (MG: 47 vs. 49mmHg, p=NS). The severe LVH group had a higher LV ejection fraction(<p=0.001), higher preoperative pulmonary artery pressures(<p=0.001), worse mitral and tricuspid regurgitation(<p=0.01). There was no difference in peri-procedural mortality (6.8% vs. 7.8%, p=0.5). There were not differences in ventilation time, inotrope use or overall length of stay between groups. At 1 year follow up, mortality rates did not differ (29 vs. 25%, p=0.3). PG and MG did not differ (PG: 23 vs. 24mmHg, MG: 12 vs. 12mmHg). LV mass regression did not differ between groups. The severe LVH group continued to have a higher ejection fraction (59 vs. 67%, p=0.0001).

Conclusions: Unlike surgical AVR patients, the presence of severe left ventricular hypertrophy in patients undergoing TAVR was not correlated with adverse outcomes at 1 year.

TCT-894
Impact Of Transcatheter Aortic Valve Implication On Mitral Regurgitation. Insights From A Multicenter Study.
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Background: Prognostic Value and Predictors Value of Reverse Ventricular Remodeling in Patients with Severe Aortic Stenosis Undergoing Transcatheter Aortic Valve Replacement

Conclusions: Our findings suggest that TAVI in patients with preserved EF could be associated with improvement in preexisting MR, whereas there seems to be no such benefit for patients with impaired EF.

TCT-895
Prediction of implanted TAVI prosthetic size by 3D-TEE assessment
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Background: The preoperative assessment of aortic annular dimensions and geometry is essential for optimal TAVI type selection and sizing. Particularly in oval-shaped annuli, multislice computed tomography (MSCT) has been shown to provide more accurate aortic annular geometric sizing as compared with 2D TEE. Real-time 3D transesophageal echocardiography (3D-TEE) imaging is gaining importance in both diagnostic evaluation and periprocedural guidance during cardiac interventions. We evaluated whether 3D-TEE can provide additional morpho-geometrical information for TAVI planning.

Methods: In 52 consecutive patients who underwent TAVI in our institution (57% Medtronic CoreValve, 43% Edwards Sapien; EuroSCORE 26.3%, mean age 83.1 years), analysis of all imaging data (2D- and 3D-TEE and MSCT) was performed retrospectively by experienced physicians blinded to the valve type and size actually implanted. TAVI prosthesis size had been chosen based on manufacturer’s recommendation and after review of all available imaging modalities by our HeartTeam. Mean aortic annular diameter (MAAD) was calculated from planimetric annular area in both MSCT and 3D-TEE datasets, and aortic annular diameter was additionally measured in the 2D-TEE long axis view.

Results: In 852 patients (15.4%), MSCTs were acquired without contrast agent due to severely impaired renal function. On average, 2D-TEE (22.5±2.6 mm) underestimated MAAD by 0.5 mm as compared to 3D-TEE (22.8±2.0 mm) and by 1.3 mm as compared to MSCT (23.6±2.2 mm). The valve size actually used was congruent with regard to 3D-TEE-measurements in 38/52 (73.1%), and with CT-measurements in 44/52 (84.6%) of patients. Of those remaining 8 CT-examinations (6 acquired without contrast media), MAAD for TAVI planning could be more reliably measured by 3D-TEE (78 patients) than by 2D measurements alone, especially in cases of strongly asymmetric annulus shape.

Conclusions: Echocardiography measures (2D and 3D) of the aortic annulus tend to be smaller than MSCT analyses. 3D-TEE and MSCT show clear advantages for the assessment of oval-shaped annuli. In cases with suboptimal MSCT-quality (~15%) or equivocal results of other imaging modalities, 3D-TEE imaging optimizes TAVI planning.