prognostic value for 1-year mortality independently of successful TAVR (p=0.024 and p=0.012 respectively).
Conclusions: Thus pre- and postinterventional hscTnT levels demonstrate preserved longterm prognostic value in patients with severe aortic stenosis and may reflect a mortality risk independently of successful TAVR.

TCT-855

Chronic Obstructive Pulmonary Disease in Patients Undergoing Transcatheter Aortic Valve Implantation: Insights on Clinical Outcomes, Prognostic Markers and Functional Status Changes

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Background: Chronic obstructive pulmonary disease (COPD) has been associated with higher mortality following transcatheter aortic valve implantation (TAVI), but no data exist on the factors determining poorer outcomes and functional status improvement in these patients.
Methods: A total of 210 consecutive patients (29.5% COPD) who underwent TAVI were studied. Baseline, procedural characteristics and follow-up (median of 12 [6-24] months) data were prospectively collected. Functional status, as evaluated by NYHA class, Duke Activity Status Index (DASI) and 6-minute walking test (6MWT), were performed at baseline and at 6-12 months.
Results: COPD patients were younger, more frequently male and had a history of smoking, peripheral vascular disease and diabetes mellitus. Survival rates at 1 year after TAVI were 66% in COPD versus 85% in no-COPD patients (p=0.002). In multivariate analysis, COPD was an independent predictor of cumulative mortality following TAVI [HR: 2.49, 95% CI: 1.38-4.48, p=0.003]. Among COPD patients, a shorter distance in the pre-procedure 6MWT predicted cumulative mortality [HR: 1.25 for each decrease of 20 m, 95% CI: 1.05-1.49, p=0.014], whereas poorer baseline spirometry results (FEV1) determined a higher rate of periprocedural pulmonary complications [OR: 1.44 for each decrease of 5%, 95% CI: 1.03-2.0, p=0.031]. Baseline FEV1 <60% of predicted and a distance <150 m in the 6MWT best determined the occurrence of periprocedural pulmonary complications and midterm mortality, respectively. A significant improvement in functional status was observed following TAVI (p<0.001 for changes in NYHA class, DASI and 6MWT), without differences in the degree of functional improvement between COPD and no-COPD patients (p=NS between groups for changes in NYHA, DASI and 6MWT).
Conclusions: COPD was associated with a higher rate of mortality at midterm follow-up. Among COPD patients, a higher degree of airway obstruction and a lower exercise capacity determined a higher risk for pulmonary complications and mortality, respectively. In addition, COPD patients who survived after TAVI exhibited similar improvements in functional status as the rest of the study population.

TCT-856

Impact of Transcatheter Aortic Valve Implantation on Aortic-Mitral Valve Coupling

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Background: Normal aortic and mitral valves function in a reciprocal interdependent fashion. We hypothesized that the mitral valve function would be affected by severe aortic stenosis (AS) and that its function would remain altered after transcatheter aortic valve implantation (TAVI). Using three-dimensional (3D) echocardiography, we studied aortic-mitral coupling in AS patients undergoing TAVI and compared them to patients without AS.
Methods: 3D transesophageal echocardiography (Philips) was performed on 38 patients: 16 controls and 22 with severe AS, studied pre- and post-TAVI. Custom software tracked the aortic and mitral annuli (AA, MA), allowing automated measurements of AA and MA morphology, angle and motion throughout the cardiac cycle.
Results: Compared to controls, pre-TAVI patients had significantly reduced MA displacement, MA and AA areas (Table). Post-TAVI, MA displacement, MA and AA areas remained reduced. AA-MA angle was significantly wider at end-systole in pre-TAVI patients and became wider throughout the cardiac cycle post-TAVI. There was no difference in MA or AA dynamics between pre-TAVI patients with mild versus those with moderate-severe MA calcium, or between Edwards-Sapien and Medtronic CoreValve patients. A trend to reduced MA area was seen in those with moderate-severe MA calcium post-TAVI.

	Controls (N=16)	Pre-TAVI (N=22)	Post-TAVI (N=22)
Aortic annulus area			
Maximum AoA area (during systole), cm sq.	5.3+1.1	4.5+1.1*	3.3+0.6*#
Minimum AoA area, (during diastole) cm sq.	4.2+1.1	3.7+1.3	3.0+0.6*#
Mitral annulus area			
Maximum MA area (during diastole), cm sq	10.7+2.1	8.5+2.0*	8.1+1.9*
Minimum MA area (during systole), cm sq.	9.0+2.1	7.2+1.8*	6.8+1.8*
Mitral annular height			
Maximum MA height, mm	10.1+2.2	8.0+2.7*	7.6+2.4*
Mitral annular motion			
MA longitudinal displacement velocity, mm/s	1.8+0.5	1.0+0.5*	1.1+0.5*
MA longitudinal displacement, mm	7.8+3.2	5.4+2.3*	5.8+2.1*
Aortic-mitral annular angle			
Maximum Ao-MA angle, degree	122+19	129+20	136+19*
Minimum Ao-MA angle, degree	98+16	113+17*	119+20*

data presented as mean+sd; *p<0.05 compared to Controls; †p<0.1 compared to Controls; #p<0.05 compared to Pre-TAVI

Conclusions: This study is the first to demonstrate that the effect of severe degenerative AS extends to a secondary, 'unaffected' valve, the mitral valve, due to calcification in the aortic-mitral fibrous continuity. TAVI does not result in recovery of mitral valve function as the prosthetic ring compresses the calcified aortic valve into the aortic-mitral fibrous continuity. These changes not only provide insight into a possible mechanism for prosthetic aortic valve failure, but also have implications in the future development of TAVI valves and possible need for mitral valve assessment before and after the procedure.

TCT-857

Three Dimensional Multi-detector Computed Tomography Predictors Of Prosthesis-Patient Mismatch In Transcatheter Aortic Valve Replacement

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Background: Prosthesis patient mismatch (PPM) is an independent predictor of mortality post aortic valve replacement. We sought to determine if 3-dimensional aortic annular measurements by multi-detector computed tomography (MDCT) are predictive of PPM post transcatheter aortic valve replacement (TAVR).
Methods: 128 patients underwent MDCT then TAVR. Moderate PPM was defined as an indexed effective orifice area 0.85 cm2/m2 and severe 0.65 cm2/m2. MDCT annular measurements (area, short and long axis) were compared with the size of the selected transcatheter heart valve (THV) to obtain a) the difference between prosthesis size and CT measured mean annular diameter, and b) the percentage of undersizing (calculated as 100 * (MDCT annular area − THV nominal area)/ THV nominal area). Additionally, the MDCT annular area was indexed to body surface area. These measures were evaluated as potential predictors of PPM.
Results: On discharge echocardiography, 42.2% (54/128) had moderate PPM and 9.4% (12/128) severe PPM. Procedural characteristics and in-hospital outcomes did not differ between those with or without PPM. THV undersizing of the mean diameter was not predictive of moderate (OR 0.84, 95% CI 0.65 – 1.07, p=0.16, AUC 0.58) or severe PPM (OR 0.84, 95% CI 0.55-2.1, p = 0.79, AUC 0.59). THV undersizing of annular area was not predictive of moderate (OR 0.96, 95% CI 0.80-1.16, p=0.69, AUC 0.52) or severe PPM (OR 0.95, 95% CI 0.70-1.30, p=0.74, AUC 0.53). Indexed MDCT annular area was predictive of PPM (OR 0.24, 95% CI 0.10 – 0.59, p < 0.001, AUC 0.66).
Conclusions: Severe PPM is not infrequent post TAVR. The etiology of PPM is not related to undersing of the THV relative to 3-D aortic annular size by MDCT. Indexed MDCT annular area is moderately predictive of PPM.

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