TCT-633
Predictors for Paravalvular Regurgitation After Transcatheter Aortic Valve Replacement With the Self-Expanding CoreValve Prosthesis: Quantitative Measurement of Multidetector Computed Tomographic Analysis

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BACKGROUND Paravalvular regurgitation (PVR) has been associated with adverse outcomes. Balloon post-dilation is an effective strategy to treat PVR in case of frame under-expansion. We evaluated the impact of device sizing and aortic valve calcification distribution on paravalvular regurgitation and the need for post-dilation after transcatheter aortic valve replacement (TAVR) with the self-expanding CoreValve prosthesis (Medtronic Inc., Minneapolis, MN).

METHODS We conducted a multicenter study, which included 183 consecutive patients undergoing CoreValve implantation with pre-procedural multidetector computed tomography (MDCT). Quantitative assessment of aortic root dimensions and calcium volume for leaflet and left ventricular outflow tract (LVOT) were retrospectively performed with MDCT in a centralized core laboratory.

RESULTS Moderate or severe PVR was reported in 27 patients (14.8%), and post-dilation was performed in 58 patients (31.7%). Multivariable analysis found perimeter oversizing (odds ratio [OR] 0.90, 95% confidence interval [CI]: 0.83 - 0.95; p = 0.004) and leaflet calcium volume (per increase of 100 mm3; OR 1.18 - 1.31; p = 0.002) as independent predictors of significant PVR with cutoff values of 13.6% and 583 mm3, respectively. In terms of the need for post-dilation, LVOT calcification was identified as independent predictor (OR 2.35; 95% CI: 1.09 - 4.58; p = 0.028) as well as perimeter oversizing (OR 0.93; 95% CI: 0.88 - 0.99; p = 0.004) and leaflet calcium volume (per increase of 100mm3, OR 1.17; 95% CI: 1.05 - 1.31; p = 0.004). Comparing to the manufacturer’s recommendation for prosthesis sizing, satisfying cutoff value of perimeter oversizing (13.6%) would substantially reduce incidence of significant PVR (7.1% vs. 33.3%; p < 0.001) and the need for post-dilation (21.6% vs. 46.7%; p = 0.011).

CONCLUSIONS Perimeter oversizing and leaflet coaptation. The reduction of significant PVR and adequate post-dilation should be integrated into treatment strategy.

TCT-634
N-terminal Brain Natriuretic Peptide Predicts Mortality After Transcatheter Aortic Valve Implantation

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BACKGROUND Patients with severe aortic valve stenosis undergoing transcatheter aortic valve implantation (TAVI) have elevated NT-proBNP values. There seems to be a correlation between the increased value of this protein with the severity of the valvular stenosis, although its meaning after TAVI is not well established. We aim to analyze its prognostic value in our TAVI population.

METHODS Single center study of 193 prospectively included TAVI patients admitted to our Cath lab (VCROSS registry), during a period of 6 years (5 patients were excluded due to peri-procedural death). The primary objective was to assess the impact of pre and post-procedural NT-proBNP in the prediction of 1-year mortality.

RESULTS 188 patients with a mean age of 81 (+/- 7.7) years, 55.3% female, median STS mortality score of 5.1%(IQR 3.5-7.1), 10.1% with LVEF <35%, median pre-procedure NT-proBNP of 2405 (IQR 1230-7790) and post NT-proBNP 2190 ng/l (IQR 806-5485). There wasn’t a significant early post-procedural reduction of NT-proBNP levels (p=0.220). At one year there were 23 deaths (12.2%). Patients with LVEF <35% had higher rates of mortality (36.8% vs.9.5%, p=0.001), as did patients with liver failure (50.0% vs. 11.4%, p=0.020). Mortality at one year was also significantly related to higher STS scores (6.7% (IQR 4.5-10.73) in patients who died vs 5.1%(IQR 3.6-7.17), p=0.039). NT-proBNP value that better discriminated one year mortality was 2520ng/l. Levels above this cutoff were related to a higher mortality (21.5% vs. 3.9%, p=0.001). Multivariate Cox regression model revealed that post procedural NT-proBNP >2520ng/l is the only independent predictor of mortality (HR 6.27, CI 95%, 1,801-21,866, p=0.004)

CONCLUSIONS Post-procedural NT-proBNP is an independent predictor of 1-year mortality and stratifies a population at higher risk of death. Pre and post TAVI levels of NT-proBNP help in the selection and management of these patients.

TCT-635
Valve-In-Valve With The New Recapturable CoreValve Evolut R™ For Degenerated Small Aortic Bioprostheses

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BACKGROUND Transcatheter aortic valve implantation (TAVI) is well-established treatment for failing bioprosthetic valves in patients at high-risk for conventional heart surgery. Elderly patients with degenerated bioprostheses and significant comorbidities are a subgroup in which TAVI represents a viable option. However, small bioprostheses with outer diameter of 19-21 mm are frequently used in these patients, representing a challenge for currently available transcatheter valves, with a potential risk of residual transvalvular gradient or regurgitation due to inadequate leaflet coaptation. The new Medtronic CoreValve Evolut R™ provides several refinements to improve anatomical fit, annular sealing, and durability. Moreover, the