POSTERS

## TCT-862

### Flow Characteristics of the CoreValve and Potential Underestimation of Aortic Valve Cross-Sectional Area Following Transcatheter Valve Implantation

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**Background:** Echocardiographic follow-up after transcatheter aortic valve implantation (TAVI)includes calculation of effective orifice area (EOA). This requires accurate measurement of sub-valvular velocities, which are affected by left ventricular outflow tract (LVOT) size and sample volume position. Guidelines have been issued for calculating EOA in Edwards Sapien valves, but not for the Medtronic CoreValve. Since the CoreValve is wider at its inflow compared with the neo-annulus (aortic valve level), flow acceleration occurs at the inflow of the transcatheter valve and then again at neo-annular level. Sample volume positioning thus influences EOA. The aim of our study was to compare the effect of using inflow velocity-time integral (VTI) (measured 1cm below TAVI inflow struts) with neo-annular VTI (measured 1cm below aortic valve cusps) on calculated aortic EOA in patients receiving CoreValve TAVI.
**Methods:** We studied 43 patients (mean age 79±8years, 21 male) after CoreValve implantation (16 patients recieved a 26mm valve, 22 patients a 29mm valve, and 5 patients a 31mm valve). All underwent transthoracic echocardiography 1 week after TAVI. Sub-valvular velocities at inflow and neo-annulus were measured using pulsed-wave Doppler; peak aortic velocities were measured using continuous-wave Doppler.
**Results:** Full CoreValve deployment was achieved in all patients. No patient had intra-valvular aortic regurgitation (AR) or more than mild paravalvular AR. Mean LVOT diameter was 28±2mm and peak post-valvular VTI was 39±11cm. Neo-annular VTI was significantly higher than inflow VTI (26±7cm vs. 17±5cm, p<0.001), so that calculated EOA was smaller using inflow VTI compared to VTI at the neo-annulus (2.8±1.0cm2 vs. 3.3±0.8cm2, p<0.001). Measurement of EOA in a similar cohort of fully-expanded but non-implanted valves would have been 4.7±0.5cm2: measurement of VTI at inflow thus underestimated neo-annular EOA by 40% while neo-annular VTI measures underestimated neo-annular EOA by 29% (p<0.001).
**Conclusions:** Closest estimation of neo-annular valve area using CoreValve TAVI is achieved when sub-valvular velocities are measured within the valve, 1cm below the neo-annulus, as opposed to 1cm below the TAVI inflow struts.

## TCT-863

### Severe Decline In Platelet Count In Patients Treated By Transcatheter Aortic Valve Replacement Is An Independent Correlate For Worse Clinical Outcome

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**Background:** Decline in platelet count (DPC) is a strong independent predictor for adverse outcome in patients undergoing coronary intervention. We aimed to assess the incidence and prognostic significance of DPC after transcatheter aortic valve replacement (TAVR).
**Methods:** The analysis included consecutive patients treated at our medical center with an Edwards SAPIEN or CoreValve. The population was divided according to the magnitude of DPC [(baseline platelet count – nadir platelet count) / baseline platelet count] into three groups: no/mild DPC (<25%), moderate DPC (≥25-≤50%), and severe DPC (≥50%).
**Results:** A total of 249 patients undergoing TAVR were included. The time to nadir in platelet count was a median of 2 days. No/mild DPC was observed in 6.7% of patients, moderate DPC in 56.5%, and severe DPC in 31.2%. The 3 groups had similar baseline characteristics. These groups did not differ in baseline platelet level but were different in their nadir platelet and hemoglobin levels. (Table) There was no significant difference in the distribution of DPC between transapical and transfemoral procedures (severe DPC: 39.7% vs. 27.3%, respectively, p=0.10). 30-day death rate, major vascular complication, bleeding events and 1-year death were all higher in the group with severe DPC. (Table) A value of 50% DPC after TAVR had 72% specificity and 68% sensitivity for predicting 30-day death. Baseline thrombocytopenia was associated with higher bleeding events (66.2% vs. 49.0%, p=0.046) but not with other clinical outcomes. In multivariable analysis, DPC (%) was the strongest correlate for death within 1-year (hazard ratio of 11.9, p=0.02).
**Conclusions:** Severe DPC is common after TAVR procedures, occurring in about 1/3 of patients. Patients with severe DPC have high early mortality and lower long-term survival as a result of increased 1-month death. Such patients are at high risk and require further medical attention.

| | No/mild DPC | Moderate DPC | Severe DPC | P-value |
|---|---|---|---|---|
| | n=27 | n= 143 | n= 79 | |
| Baseline platelet count (1/uL) | 185.3 ± 77.7 | 205.6 ± 66.0 | 216.2 ± 71.9 | 0.13 |
| Nadir platelet count (1/uL) | 154.5 ± 78.9 | 127.9 ± 43.0 | 82.1 ± 33.1 | <0.001 |
| Nadir hemoglobin (g/dL) | 9.2 ± 1.1 | 9.0 ± 1.3 | 7.8 ± 1.5 | <0.001 |
| 30-day death (%) | 0 | 3.6 | 16.7 | 0.02 |
| Major vascular complication (%) | 4.8 | 10.8 | 24.1 | 0.02 |
| Bleeding major/ minor (%) | 42.9 | 50.0 | 70.9 | 0.03 |
| 1-year survival (%) | 90.2 | 83.4 | 66.1 | 0.001 |

## TCT-864

### A comparison Of The Femoral And Radial Crossover Techniques For Vascular Access Management In Transcatheter Aortic Valve Implantation: The Milan Experience

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**Background:** Femoral crossover for controlled angiography and balloon inflation of the therapeutic access site to facilitate safe vascular closure is beneficial but technically challenging in patients with complex femoral anatomy. An alternative approach should be available. We sought to compare the radial crossover technique (CT) with the femoral CT for vascular access management in transcatheter aortic valve implantation (TAVI).
**Methods:** Between June 2011 and March 2012, 41 transfemoral TAVI patients receiving the femoral CT were compared to 46 transfemoral TAVI patients receiving the radial CT. Outcomes were 30-day Valve Academic Research Consortium (VARC) endpoints.
**Results:** Patients undergoing the radial CT received higher median contrast volumes (150 interquartile range [IQR]: 105 to 180 vs. 111 IQR: 90 to 139 ml; p= 0.025) but procedural radiation dose and fluoroscopy times were comparable between groups. At 30 days, all cause and cardiovascular death were similar between the radial and femoral CT groups (respectively 2.4% vs. 7.9%, p= 0.258 and 0% vs. 7.9%, p=0.063). Stroke and myocardial infarction rates were similar between the 2 groups (2.4% vs 5.6%, p=0.481 and 2.6% vs 2.8%, p= 0.954 respectively).There were also no differences in major vascular complications (4.3% vs. 7.3%, p=0.553) or in the occurrence of life threatening or major bleeding events (respectively 9.1% vs. 19.5%, p=0.168 and 13.6% vs. 22%, p=0.315).
**Conclusions:** This is the first comparison of two crossover closure techniques for vascular access management in transfemoral TAVI. In our center the radial CT for vascular access management is a safe and effective alternative to the femoral CT.

## TCT-865

### Rotational Aortography With CT Reconstruction Can Guide Transcatheter Aortic Valve Replacement And Predict Prosthetic Regurgitation

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**Background:** The Dyna-CT and Aortic Valve Guide software (Siemens) perform background 3D reconstruction of rotational root aortography, automatically segment the valve, and display the resulting CT as an overlay on live fluoroscopy during Transcatheter Aortic Valve Replacement (TAVR). We hypothesized that the dimensions of a circle around the nadir of the native valve cusps would predict whether the TAVR device was of adequate size to prevent aortic insufficiency (AI).
**Methods:** 20 patients had rotational aortography during rapid pacing prior to TAVR with the Edwards-Sapien device. Images were analyzed in 3D and planar views. The annulus plane was retrospectively determined (Figure) at the nadir of the three contrast filled native valve cusps (L, R, N). The smallest circle encompassing the outer edge of the native cusps' nadir (CN) was compared to the modeled circular 23 or 26 mm prosthetic valve (V) implanted. The ratio of areas (V:CN) was plotted against 30d post TAVR echocardiographic AI (0=no AI, 1=trace, 2=mild, 3=moderate, 4=severe AI).
**Results:** All patients tolerated rapid pacing and root aortography prior to TAVR. The 3-D CT image was used to determine an ideal radiographic projection angle for implantation; the overlay on live fluoroscopy aided positioning of the TAVR. The ratio of V:CN was inversely correlated with echocardiographic AI (r= −0.685; p<0.01).