Methods: 2,621 patients underwent TAVR with the SAPIEN heart valve via TF (N=1521) or TA (N=1100) delivery routes between April 2007 and January 2012. The study was divided into 2 time domains for this analysis, 1st half (2007 - 2009) and 2nd half (2010 - 2012). The Shapes of the learning curves were assessed using a semi-parametric mixed effects model.

Results: Figure 1A details the outcomes of the technical performance variables. Using the date of implant, there appeared to be a significant downward trend in procedure times (Figure 1B), fluoroscopy times and contrast volume. (Figure 1C and D) The improvement in these parameters was particularly striking in TF cases p < 0.005.

Conclusions: Our results demonstrate that in the PARTNER trial there is an important TAVR learning curve with significant improvement in procedural and performance variables over time. Although the differences in primary operator skill sets between TA and TF approaches may explain some of the observed heterogeneity in learning curves, a critical volume of cases appears necessary to become proficient in the safe performance of TAVR, particularly via the TF route.

TCT-748

Incidence And Prognosis Of Acute Kidney Injury After Transcatheter Aortic Valve Implantation
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Background: Acute kidney injury (AKI) after cardiac surgery is associated with increased mortality, but very few data exist on the occurrence of AKI associated with Transcatheter Aortic Valve Implantation (TAVI). The objective of this study was to determine the incidence and prognosis of AKI after percutaneous implantation of the CoreValve aortic prosthesis.

Methods: Between April 2008 and January 2011, 223 patients with severe aortic stenosis were treated with the CoreValve prosthesis. The AKI was defined according to Valve by the Academic Research Consortium, as the absolute increase in serum creatinine ≥0.5 mg/dl at 72 hours a percutaneous procedure.

Results: AKI was identified in 37 patients (16.6%) and none required renal replacement therapy. After implantation there was a slight improvement in renal function, baseline serum creatinine decreased from 1.29±0.5 mg/dl to 1.22 mg/dl. P =0.023 and glomerular filtration rate (GFR) increased from 49.6±22 to 52±23, P=0.015. In patients with AKI, the mortality at 30 days was 13.5% compared to 1.6% of patients without AKI P=0.001 and late mortality after a mean of 16.7±11 months was 18.8% in those patients with AKI compared to 8.2% in those without AKI P=0.068. In the multivariate analysis AKI was an independent predictor of cumulative total mortality (HR=3.516, 95% CI from 1.998 to 6.775, P=0.034).

Conclusions: Deterioration of renal function in patients undergoing TAVI with the CoreValve prostheses is a serious and frequent complication. The occurrence of AKI was associated with increase early mortality and also was a predictor of worse outcome in the long-term follow-up.

TCT-749

Comparison of Area and Perimeter Derived Effective Anulus Diameter with Direct Intraoperative Sizing
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Background: Accurate sizing of the aortic annulus is an important premise for successful Transcatheter aortic valve implantation (TAVI). Multislice computed tomography (MSCT) may have advantages over other imaging modalities, but there is uncertainty whether 1) measurements should be performed in systole or diastole and 2) if calculation of the effective annulus diameter should be based on area or perimeter. Aim of our study was to compare MSCT results with direct intraoperative sizing of the annulus.

Methods: Conventional aortic valve replacement was performed in 25 patients who were primarily screened for TAVI, but were deemed inappropriate for several reasons, and the annulus was measured intraoperatively after decalcification using metric sizers. All patients had undergone transosophageal echocardiography (TEE) and MSCT for TAVI workflow and effective annulus diameter was determined derived by area (Aannulus, A1) and perimeter (Aannulus, P) in systole and diastole, respectively. Additionally, potential change of strategy for the different approaches compared to intraoperative annulus sizing in case of TAVI using the Edwards Sapien XT valve was simulated.

Results: Best agreement with direct operative sizing (intraop) was observed for Aannulus (r = 0.71, 0.77, 0.78 and 0.76 in systole, diastole, left and right ventricle, respectively), potentially change in strategy was observed for Aannulus in systole in one patient while no change in strategy was observed in diastole in any patient. Potential change in strategy was observed for Aannulus in systole in two patients while no change in strategy was observed in diastole in any patient.

Conclusions: Compared to surgical sizing area measurement in systole represents the best approach for annulus determination with least strategy change. Perimeter derived measurement in systole may lead to overestimation of the true annulus size.