CONCLUSION Among patients with severe AS at high surgical risk, QoL improved significantly and to a similar degree with both LV and CV through 1 year, despite differing rates of specific complications. Longer term follow-up is needed to assess the durability of QoL improvement with LV vs. CV in this population.

CATEGORIES STRUCTURAL: Valvular Disease: Aortic

TCT-783

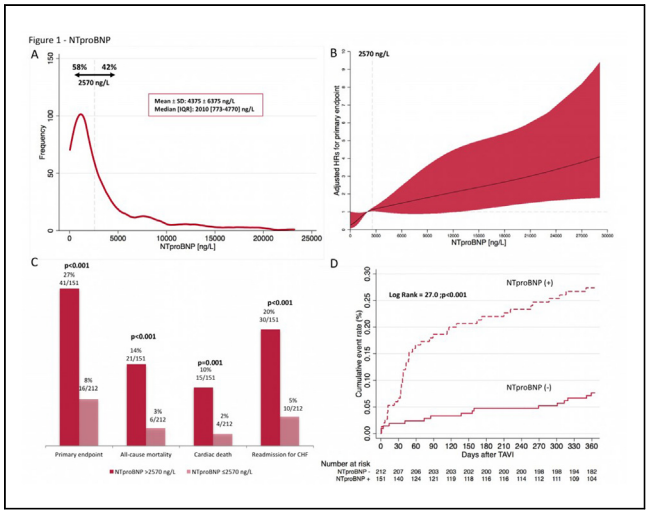
Comparison of Carbohydrate Antigen 125 and N-terminal Pro-Brain Natriuretic Peptide for Risk Prediction after Transcatheter Aortic Valve Implantation

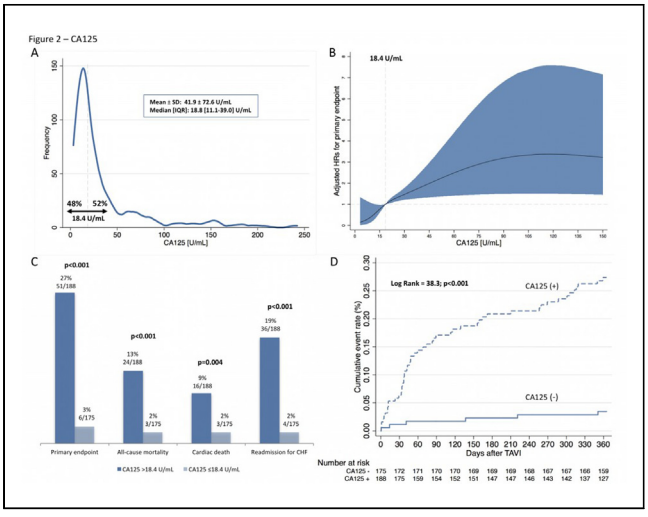
Tobias Rheude,[1] Costanza Pellegrini,[1] Jonathan Michel,[2] Teresa Trenkwalder,[1] N. Patrick Mayr,[1] Michael Joner,[1] Markus Kasel,[1] Stefan Holdenrieder,[1] Julio Núñez Villota,[3] Juan Sanchis Fores,[4] Vicent Bodc,[5] Heribert Schunkert,[1] Adnan Kastrati,[1] Christian Hengstenberg,[1] Oliver Husser[1]
[1]Deutsches Herzzentrum München, Munich, Germany; [2]Deutsches Herzzentrum Munich, Munich, Germany; [3]Hospital Clinico Valencia, Valencia, Spain; [4]Hospital Clinico De Valencia, Valencia, Spain; [5]Department of Cardiology, Hospital Clinico Universitario, INCLIVA, University of Valencia, Valencia, Spain

BACKGROUND Elevated carbohydrate antigen 125 (CA125) and N-terminal Pro-Brain Natriuretic Peptide (NTproBNP) have been associated with adverse outcome after transcatheter aortic valve implantation (TAVI). The aim of the present study was to perform a head-to-head comparison of both biomarkers for risk prediction after TAVI.

METHODS This study includes 363 patients. The primary endpoint was all-cause death or readmission for worsening congestive heart failure (CHF) within one year after TAVI and occurred in 16% of the population. The optimal cut-off in a receiver operating characteristics (ROC) curve analysis to predict the primary endpoint was 18.4 U/mL for CA125 and 2570 ng/L for NTproBNP.

RESULTS Elevated CA125 levels were present in 52% and were associated with a higher rate of the primary endpoint (27% vs. 3%; p<0.001). In parallel, elevated NTproBNP levels were present in 42% and were also associated with a higher rate of the primary endpoint (27% vs. 8%; p<0.001). After multivariable adjustment, elevated CA125 (hazard ratio (HR) 5.26; 95%CI [2.13-13.00]; p<0.001) and elevated NTproBNP (HR 2.12; 95%CI [1.12-4.38]; p=0.022) were independent predictors of the primary endpoint. To explore the utility of combining both biomarkers, CA125 was added to the model containing baseline variables and NTproBNP, with the result that only CA125 (HR 4.62; 95%CI [1.83-11.65]; p=0.001), but not NTproBNP (HR 1.58; 95%CI [0.79-3.13]; p=0.194) was an independent predictor of death or readmission for CHF during follow-up. Addition of CA125 significantly improved the predictive capability of the model (C-statistic: 0.805 vs. 0.776) and the net reclassification index (50%; 95%CI [20-84]) with an integrated discriminative improvement of 3.0%.





CONCLUSION Elevated CA125 and NTproBNP predict adverse clinical outcome after TAVI. However, when combining both biomarkers the predictive capacity of CA125 was superior.

CATEGORIES STRUCTURAL: Valvular Disease: Aortic

TCT-785

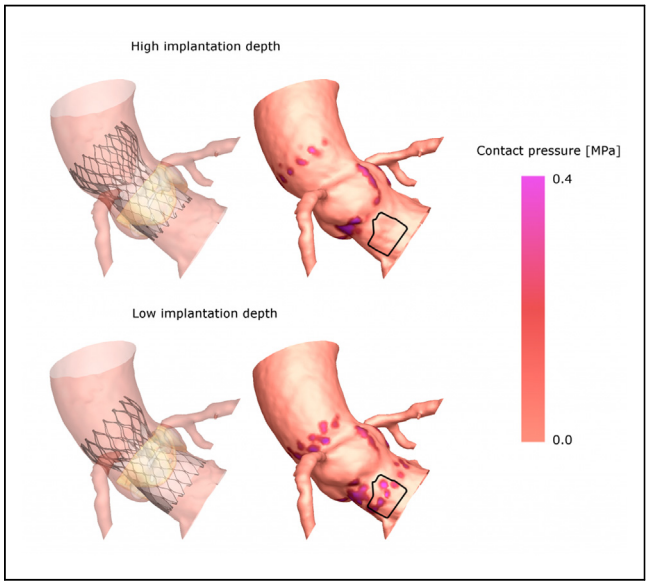
Low implantation depth during TAVR increases the pressure exerted on the atrioventricular conduction system: a biomechanical analysis

Giorgia Rocatello,[1] Nahid El Faquir,[2] Patrick Segers,[3] Peter Mortier,[4] Peter de Jaegere[2]
[1]Ghent University, Gent, Belgium; [2]Department of Cardiology, Erasmus MC, Rotterdam, Netherlands; [3]Ghent University, Ghent, Belgium; [4]FEops / Ghent University, Gent, Belgium

BACKGROUND Low implantation depth has been associated with the occurrence of new conduction abnormalities after transcatheter aortic valve implantation. However, the impact of implantation depth on the mechanical device-host interaction remains unclear. We used patient-specific computer simulations to investigate the pressure that the frame exerts on the surrounding tissues in vicinity of the atrioventricular (AV) conduction system, at different implantation depths.

METHODS Twenty patients who received an Evolut R (Medtronic, MN, USA) were included in this study. For each patient, a 3D aortic model was obtained from pre-operative CT images and a region of interest in vicinity of the AV conduction system was defined. Finite-element computer simulations were used to virtually implant the device at high, medium and low position. From each simulation the maximum contact pressure exerted by the frame on the region of interest and the relative area of contact were analyzed; differences were compared with the Friedman test.

RESULTS At high implantation depth (3.3±1.3 mm) maximum contact pressure and relative area of contact were 0.28 [0.06-0.38] MPa and 8 [2-13]% respectively, at medium implantation depth (7.2±1.3 mm) 0.48 [0.35-0.73] MPa and 29 [20-33]%, and at low implantation depth (10.9±1.3 mm) 0.62 [0.52-0.69] MPa and 50 [39-55]%. Differences between the 3 different implantation depths were significant (p<0.001) (Figure 1).



CONCLUSION Maximum pressure generated by the valve frame on the tissue in the vicinity of the AV conduction system and the relative area of contact increase with the depth of valve implantation.

CATEGORIES STRUCTURAL: Valvular Disease: Aortic

TCT-787

Comparison of U.S. Hospital Costs Between Transcatheter Aortic Valve Replacement (TAVR) and Surgical Aortic Valve Replacement (SAVR)

Christopher Meduri,[1] Janice Chung,[2] Jenny Gaffney,[2] Simon Henley,[2] Jennifer Williams,[2] Hemal Gada[3]
[1]Piedmont Heart Institute, Atlanta, Georgia, United States; [2]Medtronic, Mounds View, Minnesota, United States; [3]PinnacleHealth CardioVascular Institute, Wormleysburg, Pennsylvania, United States

BACKGROUND Given TAVR's broadening application, the budget constraints faced by hospitals, and the higher cost of the TAVR valve compared to SAVR, there is great interest in understanding how hospital costs compare between TAVR and SAVR.

METHODS To evaluate in-hospital costs across U.S. hospitals, we conducted a retrospective analysis of patients undergoing TAVR or SAVR between January 1, 2014 - September 30, 2016 using the Premier Hospital Database. Patients were included in the study if they underwent a TAVR or SAVR procedure based on ICD-9 and -10 procedure codes and were 65 years or older at the time of the procedure. Patients were matched 1:1 using propensity score method based on patient age, Charlson comorbidity index grouping (4 indices), gender, race, and payor type. In-hospital costs were defined as the total hospitalization cost including operating room, supply, room and board, ICU, lab, etc. plus pharmacy cost, adjusted to 2016 dollars. We supplemented this aggregate-level cost analysis by examining the average in-hospital costs and reimbursement for TAVR and SAVR at two U.S. hospitals.

RESULTS We matched 13,030 TAVR and SAVR patients in the Premier Database. The average, unadjusted, total in-patient hospital cost for TAVR was $60,063 (SD=$37,962) compared to $60,319 (SD=$42,144) for SAVR. The total average supply cost was higher for TAVR by $11,407 (TAVR=$26,317, SD: $21,021 versus SAVR=$14,910, SD: $10,860). TAVR had lower average differences of $4,857 for room and board costs (TAVR=$13,286 versus SAVR=$18,143); $2,705 for operating room costs (TAVR=$9,733 versus SAVR=$12,438); and $1,450 for lab costs (TAVR=$2,520 versus SAVR=$3,970).

CONCLUSION Average, in-hospital costs between TAVR and SAVR were comparable, with the lower cost of room and board, operating room, and lab offsetting the higher supply cost for TAVR.

CATEGORIES STRUCTURAL: Valvular Disease: Aortic

TCT-788

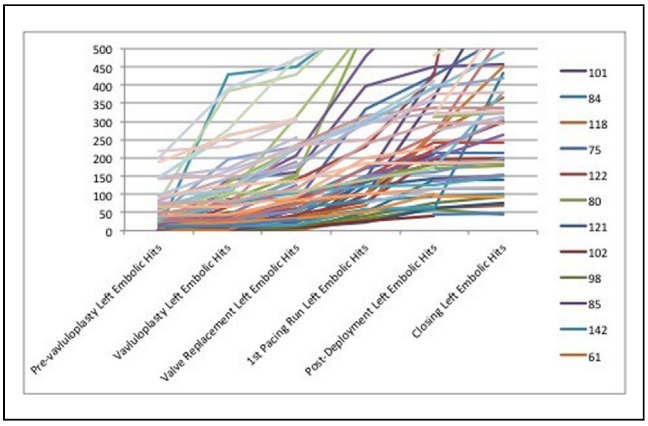
Cerebral Microembolic Exposure during Transcatheter Aortic Valve Replacement

Stephanie Tom,[1] Jaimin Trivedi,[1] Michael Flaherty,[1] Kendra Grubb[1]
[1]University of Louisville, Louisville, Kentucky, United States

BACKGROUND TAVR is associated with a spectrum of brain injuries. Studies have correlated the likelihood of neurological events with increasing magnitude of microemboli. Recently, a Cerebral Protection System became FDA approved to reduce the risk of stroke during TAVR. Our study evaluated the generation of microemboli during the stages of TAVR.

METHODS Single center, TAVR database queried 1/2013-12/2014, to identify patients who had neuromonitoring during TAVR. 62 patients had complete bilateral data. Neuromonitoring measured cerebral microembolic HITS and bilateral oxygen saturation. Data points were recorded cumulatively: pre-incision, pre-valvuloplasty, valvuloplasty, valve replacement (defined as the valve crossing the annulus), end of 1st pacing run, post-deployment, and closing. The increase between two successive time points was calculated by percent increase.

RESULTS Figure 1 shows the pattern of HITS. 24 (38%) patients had pre-valvuloplasty HITS measured at 0. Pre-valvuloplasty to valvuloplasty median increase in HITS was 81% left, 112% right side. Valvuloplasty to crossing the annulus, median increase 63% bilaterally. From crossing to the end of 1st pacing, HITS increase 106% left and 97% right. From 1st pacing run to post-deployment, bilateral increase 33%. Post-deployment to closing increase was 11% left, 6% right.



CONCLUSION The maximum increase in the microemboli during TAVR occurred between the valve crossing the annulus and the end of the 1st pacing run. Studies using the embolic protection devices are warranted to identify the efficacy in reducing microemboli at the time of valve deployment.

CATEGORIES STRUCTURAL: Valvular Disease: Aortic

TCT-789

Safety and efficacy of cerebral protection devices during transcatheter aortic valve implantation. A systematic review and meta-analysis

Luca Testa,[1] Francesco Bedogni[2]
[1]IRCCS Policlinico San Donato, San Donato Milanese, Milan, Italy; [2]Policlinico San Donato, Milano, Milan, Italy

BACKGROUND The use of embolic protection devices (EPD) may theoretically reduce the occurrence of cerebral embolic lesions during transcatheter aortic valve implantation (TAVI). Available evidences from single studies are quite inconclusive. The aim of the present meta-analysis was to assess the safety and efficacy profile of current EPD.

METHODS EMBASE, PubMed, Web of Science Core Collection, and the Cochrane Library were searched up to May 2017 for studies that evaluated patients undergoing TAVI with or without EPD. Endpoint of