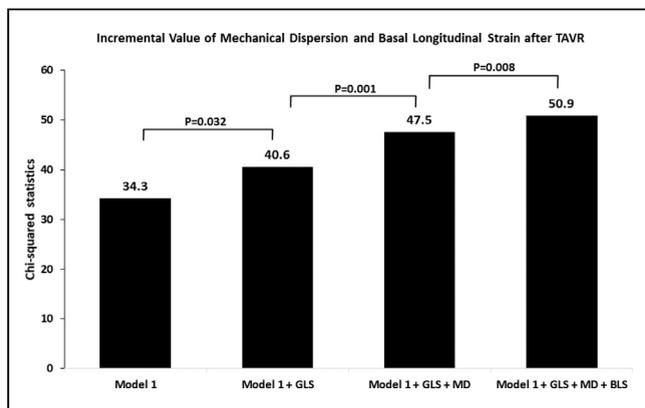


(TAVR). Fibrosis in AS preferentially affects the left ventricular (LV) basal segments and can lead to ventricular dyssynchrony. We hypothesize that basal longitudinal strain (BLS) and mechanical dispersion (MD) measured after TAVR will predict all-cause mortality in severe AS.

METHODS We retrospectively analyzed 159 patients (51% men, 81±9 years) with severe AS (AVA 0.7±0.2 cm², MPG 46±16mmHg) who underwent TAVR at our institution. 2D speckle-tracking echocardiography was used to assess myocardial deformation and MD (SD of time from Q/R on the ECG to peak strain in 16 LV segments) immediately after TAVR (median, 1 day). Images were analyzed offline using a vendor-independent software (TomTec).

RESULTS At 1-year post-TAVR, 28 (17.6%) patients died. Non-survivors demonstrated impaired global longitudinal strain (GLS, -11.2±3% vs -14.2±4%, p=0.001), impaired BLS (-10.9±2% vs -13.3±3%, p=0.001), and pronounced MD (86±33 ms vs 70±26 ms p=0.006) compared to survivors. Baseline multivariable Cox regression model (Figure) included age, STS, NYHA, renal disease, AV mean gradient, and post-TAVR paravalvular leak as significant univariates (model 1, p<0.001). Addition of BLS to model 1 resulted in a significant χ^2 increase (p=0.005), whereas the subsequent addition of GLS did not (p=0.741). Further addition of MD to the model provided incremental χ^2 increase (p<0.001).



CONCLUSION In severe AS, myocardial fibrosis assessed by strain echocardiography immediately after TAVR was significantly associated with 1-year all-cause mortality and provided incremental prognostic value.

CATEGORIES IMAGING: Imaging: Non-Invasive

TCT-455

Transfemoral TAVI in patients with “unfavorable conditions for TAVI” following the European Guidelines of Valvular Heart disease



Leire Unzué,¹ Eulogio García,² Francisco Jose Rodriguez Rodrigo,³ Belen Diaz-Anton,³ Francisco Javier Parra,² Miguel Rodriguez del Rio,³ Alberto Rubio,³ Maria Jesus Fernandez del Cabo,³ Blanca Zorita,³ Juan Medina³

¹Hospital Universitario HM Madrid Montepíncipe, Madrid, Spain;

²Hospital Universitario Madrid Montepíncipe, Madrid, Spain;

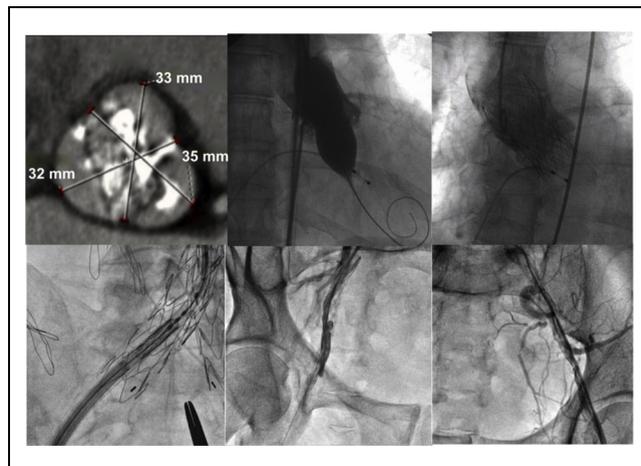
³Hospital Universitario HM Madrid Montepíncipe, Madrid, Spain

BACKGROUND The recent European guidelines for Valvular Heart disease describe different aspects (clinical, anatomical and cardiac conditions) that would favor the surgical valve replacement against TAVI. However, in day clinical practice, a considerable amount of patients treated with TAVI present one of these theoretically unfavorable conditions. The aim of the study is to analyze the results and clinical context of patients with “relative contraindications”, treated with transfemoral TAVI.

METHODS Consecutive patients treated with balloon-expandable Edwards prosthesis during 4 years in one center were analyzed, collecting the clinical characteristics, procedural items and results.

RESULTS 96 patients were included. 62 of them (65%) presented at least one of the clinical items favorable for surgical valve

replacement (table). Among these, 5 presented 2 factors, and 3 ≥ 3 factors. TAVI in these patients did not involve a more complex procedure (Radioscopy time 13.4±7.2 vs 17.5±9.3, p 0.8), nor was associated to worst results.



N (96)	
Clinical conditions	
Age < 75 years STS < 4	11 (11,5%)
Unfavorable femoral Access (femoral artery diameter < 5.5cm)	26 (27,1%)
	9 (9,4%)
Anatomical conditions	
Unfavorable aortic anatomy Previous aortic graft Aortic aneurysm	3 (3,1%) 2 (2,1%)
Valve morphology Bicuspid aortic valve	3 (3,1%) 2 (2,1%) 5 (5,2%)
Out of range diameter Asymmetric/extensive calcification	
Cardiac conditions	
Coronary artery disease Severe mitral regurgitation Severe tricuspid regurgitation Septal hypertrophy	5 (5,2%)
	6 (6,25%)
	3 (3,1%)
	5 (5,2%)

CONCLUSION A high percentage of patients treated with transfemoral TAVI in real life present at least one of the established “unfavorable conditions” for TAVI following the European guides of Valvular Heart disease. TAVI in these patients does not involve more complex procedure nor is associated with worse results.

CATEGORIES OTHER: Quality, Guidelines and Appropriateness Criteria

TCT-456

Association of Immediate Improvement in Renal function after Transcatheter Aortic Valve Replacement and Post-operative Outcomes in Patients with Renal Dysfunction



Alexis Okoh,¹ Kamrani Kambiz,² Setri Fugar,³ Dileep Unnikrishnan,⁴ Mohammad Thawabi,⁵ Amer Hawatmeh,⁵ Bruce Haik,⁵ Chunguang Chen,⁶ Marc Cohen,⁵ Mark Russo⁶

¹RWJ Barnabas Health Newark Beth Israel Medical Center, Newark, New Jersey, United States; ²RWJ Barnabas Health, Monmouth Medical Center, Newark, New Jersey, United States; ³Rush University Medical Center, Chicago, Illinois, United States; ⁴Monmouth Medical Center, Long Branch, New Jersey, United States; ⁵Newark Beth Israel Medical Center, Newark, New Jersey, United States; ⁶RWJ Barnabas Health, Newark Beth Israel Medical Center, Newark, New Jersey, United States

BACKGROUND When untreated, Aortic stenosis (AS) patients with renal dysfunction report dismal prognosis. The study aims to investigate operative outcomes in renal dysfunction patients who had transcatheter aortic valve replacement. (TAVR)

METHODS TAVR patients with ≥ moderately reduced renal function [estimated GFR ≤ 60ml/min] at baseline were identified from a prospectively maintained database. Patients were divided into 3 groups based on percent change [(discharge GFR- baseline GFR/ baseline GFR) X 100] in GFR post-TAVR. Improvement ≥ 10%, No

change, Decline $\leq 10\%$. Baseline characteristics were compared. Operative outcomes were analyzed. Multivariable logistic regression was performed to identify factors that predicted decline in GFR post-procedure.

RESULTS Out of a total of 623 patients, 333 (53%) had GFR ≤ 60 ml/.../m². Of these, 175 (53%) had an improvement in GFR $\geq 10\%$, 111 (34%) had no change and 47 (14%) observed decline $\leq 10\%$. Decline group patients had significantly higher mean STS scores (10.7 vs. 8.5 vs. 8.2; $p = 0.0015$) and incidence of liver disease (8% vs. 0% vs. 2%; $p = 0.014$) respectively compared to the no-change or increase group. Decline patients had a significantly higher rate of new onset atrial fibrillation (10% vs. 3% vs. 2%, $p=0.048$), a prolonged LOS (7 vs. 5 vs. 5, $p=0.038$) days and 10 (21%) required dialysis in long term. After a median follow up of 24 months, survival was significantly higher in the improved than the no-change or decline groups at 30-days, 1-year and 2-year follow-up time points. (95% vs. 96% vs. 86%, $p=0.0315$), (88% vs. 89% vs. 75%, $p=0.019$), (83% vs. 86% vs. 67%, $p=0.025$). On multivariable analysis, independent predictors of decline in GFR were TAVR approach, insulin-dependent diabetes mellitus, liver dysfunction and a low ejection fraction.

CONCLUSION Over half of patients with compromised renal function undergoing TAVR experience an immediate improvement in kidney function post-TAVR. Improved GFR is associated with better survival outcomes in short and mid-term. Non-transfemoral TAVR approach, diabetes, liver dysfunction and a low LVEF are independent predictors of decline in GFR.

CATEGORIES OTHER: Renal Insufficiency and Contrast Nephropathy

TCT-457

Short- and long-term changes in left ventricular mass and geometry post TAVR

Mohammad Thawabi,¹ Amer Hawatmeh,¹ Nawar Al Obaidi,² Sarah Studyvin,¹ Alexis Okoh,² Gautam Visveswaran,¹ Mark Russo,³ Chen Chunguang,¹ Marc Cohen¹

¹Newark Beth Israel Medical Center, Newark, New Jersey, United States; ²RWJ Barnabas Health Newark Beth Israel Medical Center, Newark, New Jersey, United States; ³RWJ Barnabas Health, Newark Beth Israel Medical Center, Newark, New Jersey, United States



BACKGROUND Patients with severe aortic valve stenosis commonly have increased left ventricular (LV) mass and concentric hypertrophy. LV mass tends to regress after surgical aortic valve replacement. Transcatheter aortic valve replacement (TAVR) has emerged as an alternative to surgical replacement. Data regarding changes in LV geometry post TAVR is limited. The aim of this study is to describe preoperative LV mass and geometry and their changes post TAVR.

METHODS Consecutive patients who underwent TAVR, between April 2012 and November 2017, in a single center were identified. Echocardiographic parameters were obtained from pre-TAVR, 1-month, and 1-year post-TAVR echocardiograms. American Society of Echocardiography guidelines were used. Rank sum tests and regression analysis were used.

RESULTS Of the 908 patients evaluated, 812 patients had both pre-TAVR and one-month post-TAVR echocardiograms and were included in the short-term analysis. Furthermore, 406 had one-year post-TAVR echocardiograms and were included in the long-term analysis. At one-month post TAVR, there was significant LV mass index regression (181.8 ± 56.3 to 166.4 ± 54.8 gm/m², $p < 0.01$). LV mass regression was driven by reduction in LV posterior wall (LVPW) and interventricular septum thickness (IVS), with no notable change in LV internal diameter (LVID). LV mass regression was independent of echocardiographic values and baseline characteristics. Pre-TAVR, concentric LV hypertrophy was seen in 85.5% of the patients, while only 2.8% had normal LV geometry. At one month, the proportion of patients with normal geometry increased to 4.2% ($p=0.02$). At one-year, further regression in LV mass index (154.7 ± 53.9 gm/m², $p<0.01$) was noticed, and similarly was driven by reduction in IVS and LVPW thickness. Additionally, the proportion of patients with normal LV geometry increased from 4.2% to 16.3% ($p<0.01$).

CONCLUSION Significant regression of LV mass and normalization of LV geometry are seen as early as one-month post-TAVR. These changes continue to improve at one year.

CATEGORIES IMAGING: Imaging: Non-Invasive

MANAGEMENT OF IN-STENT RESTENOSIS - II

Abstract nos: 458 - 462

TCT-458

Additional Diagnostic Value of CT Perfusion over Coronary CT Angiography in Stented Patients with Suspected In-stent Restenosis or Coronary Artery Disease Progression: ADVANTAGE study. Preliminary Results



Daniele Andreini,¹ Saima Mushtaq,¹ Gianluca Pontone,² Edoardo Conte,³ Daniela Trabattoni,² Paolo Mario Ravagnani,⁴ Piero Montorsi,⁵ Stefano Galli,⁴ Carlos Collet,⁶ Jeroen Sonck,⁷ Antonio Bartorelli⁸

¹Centro Cardiologico Monzino, Milan, Italy; ²Centro Cardiologico Monzino, IRCCS, Milan, Italy; ³Centro Cardiologico Monzino, IRCCS, Milan, Italy; ⁴Department of Clinical Sciences and Community Health, Centro Cardiologico Monzino, IRCCS, Milan, Italy; ⁵Centro Cardiologico Monzino, Milano, Milan, Italy; ⁶AMC, Amsterdam, Netherlands; ⁷UZ Brussel, Brussels, Belgium; ⁸Centro Cardiologico Monzino, Milan, Italy

BACKGROUND Aim of the study is to assess the diagnostic performance of CCTA alone, CTP alone and CCTA plus CTP performed with the latest scanner generation that combine a whole-heart coverage with high spatial and temporal resolution, by using invasive coronary angiography (ICA) as standard of reference.

METHODS A cohort of consecutive patients referred for a clinically ICA for suspicion of ISR or progression of native CAD were enrolled. The feasibility of CCTA, CTP and the combined evaluation CCTA plus CTP were calculated in a stent-based, territory-based and patient-based analysis. Sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy of CCTA, CTP, combined evaluation CCTA-CTP (the whole CT examination was considered as positive when CCTA indicated a $>50\%$ stenosis in native segment or $>50\%$ ISR and/or CTP indicated a perfusion defect) and concordant evaluation CCTA-CTP (when CCTA documented $>50\%$ stenosis or ISR and CTP a perfusion defect in the same region or both tests were negative) vs. ICA in a stent-based, territory-based and patient-based analysis. Radiation exposure of CCTA, CTP and ICA was recorded.

RESULTS Ninety-eight patients were enrolled (83 male, mean age 64 ± 9 years-old). CTP feasibility was significantly higher than CCTA feasibility in a stent-based, territory-based and patient based analysis (97% vs. 87%, $p=0.001$; 98% vs. 92%, $p=0.001$; 97% vs. 70%, $p<0.0001$, respectively). The feasibility of the combined evaluation CCTA-CTP was significantly higher than CCTA feasibility in a stent-based, territory-based and patient based analysis (96% vs. 87%, $p=0.001$; 99% vs. 92%, $p<0.001$; 100% vs. 70%, $p<0.0001$, respectively). The diagnostic accuracy of CCTA was 81%, 85% and 79%, in a stent-based, territory-based and patient based analysis, respectively; the diagnostic accuracy of CTP was 90%, 93% and 84%, respectively; the diagnostic accuracy of combined CCTA-CTP was 85%, 90% and 83%, respectively; the diagnostic accuracy of concordant CCTA-CTP was 95% and 92% in a territory and patient-based analysis, respectively. The diagnostic accuracy of CTP was higher than that of CCTA in a stent-based ($p=0.001$) and territory-based ($p<0.0001$) analysis. The diagnostic accuracy of concordant CCTA-CTP was higher than that of CCTA and CTP in a patient-based analysis ($p=0.001$ and $p=0.02$, respectively). The mean effective dose of the entire CT assessment (CCTA-CTP) was 2.76 ± 2.32 mSv.

CONCLUSION The CTP assessment appears as more feasible and more accurate than the anatomical evaluation alone by CCTA in patients with coronary stents. When results of CCTA and CTP are concordant, the diagnostic accuracy of the combined evaluation is very high and associated with very low radiation exposure.

CATEGORIES CORONARY: Stents: Drug-Eluting

TCT-459

Drug-eluting balloons versus new generation drug-eluting stents for the management of in-stent restenosis: An updated meta-analysis of randomized studies



Lei Gao¹

¹Department of Cardiology, PLA General Hospital, Beijing, China

BACKGROUND DEB and new generation DES were available strategies in treatment of BMS/DES-ISR. Six new randomized trials have recently examined the one-year clinical outcomes and angiographic outcomes