this study were procedural major adverse cardiovascular and cerebrovascular events, residual aortic valve gradient postprocedure, and 30-day and 1-year survival.

RESULTS Median age was 77 years at the time of ViViV. Median time between SAVR and first TAVR was 11.6 years. Median time between TAVR and re-do TAVR was 38.5 months. There were 4 males and 3 females. Four of the 7 patients were in New York Heart Association functional class III or IV. Procedural success was 100%. Median aortic valve mean gradient postprocedure was 16.5 mm Hg. There were no procedural major adverse cardiovascular and cerebrovascular events. At 30 days and 1 year, survival was 100% for both.

CONCLUSION In this small cohort of 7 patients who underwent a ViViV, we found very favorable results with acceptable post-procedural mean gradient in addition to 100% survival at both 30 days and 1 year.

CATEGORIES STRUCTURAL: Valvular Disease: Aortic.

TCT-926

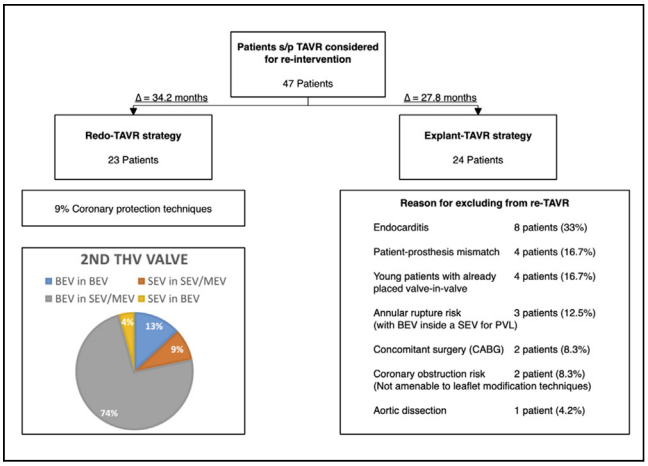
Analyzing Decision-Making in Valve Reinterventions: Redo-TAVR vs Explant TAVR Surgery

Lior Lupu,[1] Itsik Ben-Dor,[2] Dan Haberman,[1] Kalyan Chitturi,[1] Abhishek Chaturvedi,[3] Waiel Abusnina,[4] Matteo Cellamare,[1] Cheng Zhang,[5] Vaishnavi Sawant,[1] Jeffrey Cohen,[6] Christian Shults,[7] Lowell Satler,[6] Ron Waksman,[6] Toby Rogers[8]
[1]MedStar Washington Hospital Center, Washington, DC, USA; [2]Georgetown University Washington, DC, USA; [3]Georgetown University MedStar Washington Hospital Center, Washington, DC, USA; [4]MedStar Georgetown University Medical Center, Chevy Chase, Maryland, USA; [5]MedStar Cardiovascular Research Network, Washington, DC, USA; [6]Washington Hospital Center, Washington, DC, USA; [7]MedStar Heart and Vascular Institute, Alexandria, Virginia, USA; [8]MedStar Health, Washington, DC, USA

BACKGROUND Data on aortic valve reintervention after transcatheter aortic valve replacement (TAVR) failure is limited, primarily derived from retrospective studies on preselected patients undergoing redo-TAVR or explant surgery. There is a lack of data on the decision-making process and reasons for excluding patients from redo TAVR.

METHODS This single-center retrospective study included post-TAVR patients who underwent aortic valve reintervention between February 2014 and June 2024. Patient charts, heart team meetings, and imaging findings were analyzed to determine the rationale for the selected treatment strategy. Procedural details are also reported.

RESULTS Forty-seven post-TAVR patients underwent reintervention: 24 (51%) had explant surgery, and 23 (49%) had redo TAVR (Figure). Redo TAVR patients were older (79 vs 75 years; $P = 0.018$), and 31.9% were female ($P = 1.0$). Median time to reintervention was 34.2 months for redo TAVR and 27.8 months for explant surgery ($P = 0.75$). Reasons for excluding patients from redo TAVR were endocarditis (33.3%), patient-prosthesis mismatch (16.7%), young patients with already placed valve-in-valve (16.7%), high risk for annular rupture (12.5%), need for concomitant surgery (8.3%), high risk of coronary obstruction (8.3%), and aortic dissection (4.2%).



CONCLUSION Among post-TAVR patients considered for reintervention, only half are eligible for a transcatheter approach. Advancements in TAVR valve designs and techniques could potentially mitigate many of the exclusion reasons. We recommend that clinical trials include data on the decision-making process to better understand and address the unmet needs in this field.

CATEGORIES STRUCTURAL: Valvular Disease: Aortic.

TCT-927

Clinical Outcomes of Valve-in-Valve Transcatheter Aortic Valve Replacement With Newer Generation Self-Expanding Valve by the Size of Failed Bioprosthesis: A Single-Center Experience

Yoshiyuki Yamashita,[1] Massimo Baudo,[1] Serge Sicouri,[1] William Gray,[2] Basel Ramlawi[3]
[1]Lankenau Institute for Medical Research, Wynnewood, Pennsylvania, United States; [2]Main Line Health/Lankenau Heart Institute, Wynnewood, Pennsylvania, USA; [3]Lankenau Heart Institute, Wynnewood, Pennsylvania, USA

BACKGROUND Valve-in-valve transcatheter aortic valve replacement (ViV TAVR) has become a widely accepted procedure for treatment of failed bioprostheses. However, there are concerns about the risk of significant postprocedural transvalvular pressure gradients after ViV TAVR, especially for small surgical bioprostheses. This study aimed to evaluate early and mid-term outcomes of ViV TAVR with newer generation self-expanding valves according to the size of the failed surgical bioprosthesis.

METHODS We retrospectively evaluated consecutive patients who underwent ViV TAVR using the Evolut Pro/Pro+/Fx (Medtronic) between 2018 and 2022. These patients were grouped and analyzed based on the true internal diameter of the failed bioprosthesis, specifically ≤19 mm (small group) vs >19 mm (large group). The primary endpoint was a composite of all-cause mortality, stroke, myocardial infarction, and bioprosthetic valve failure. We used a Cox regression hazard model adjusted for covariates using propensity scores to assess the effect of true internal diameter on clinical outcomes.

RESULTS A total of 91 patients (small group, n = 35; large group, n = 56) were identified and the median age of the entire cohort was 78 years. Patients in the small group were more likely to be female and have higher STS scores. There was no 30-day mortality, but the incidence of postprocedural mean gradient ≥20 mm Hg (40% vs 8.9%, $P = 0.001$) and moderate/severe prosthesis-patient mismatch (63% vs 38%, $P < 0.001$) was significantly higher in the small group. During a median follow-up period of 25 (range: 1.0-66) months, all-cause mortality showed no significant difference between the groups (adjusted $P = 0.10$); however, the incidence of the primary composite outcome was significantly higher in the small group (adjusted HR: 3.72; 95% CI: 1.48-9.37).

CONCLUSION ViV TAVR for small bioprostheses was associated with worse clinical outcomes compared with those for large bioprostheses. Redo surgical AVR for small bioprostheses, or aortic root enlargement for initial AVR in patients with small annulus, might be beneficial especially in younger and lower-risk cohorts.

CATEGORIES STRUCTURAL: Valvular Disease: Aortic.

Session: TAVR vs TAVR – 1

TCT-928

Comparison of the Self-Expandable Acurate Neo 2 and the New Balloon-Expandable Myval Series Transcatheter Heart Valve at 4-Year Follow-Up

Akash Jain,[1] John Jose,[2] Matteo Montorfano,[3] Henrik Nissen,[4] Pedro Martin,[5] Ashok Seth,[6] Mario Garcia-Gomez,[7] Clara Fernandez Cordon,[8] Alberto Campo Prieto,[7] Ignacio Amat-Santos[9]
[1]Hospital Clinico Universitario de Valladolid, Spain, Valladolid, Spain; [2]Christian Medical College Hospital, Vellore, Tamil Nadu, India; [3]San Raffaele Scientific Institute, Milan, Italy; [4]Odense University Hospital, Odense, Denmark; [5]Hospital Universitario Gran Canaria Doctor Negrin, Las Palmas de Gran Canaria, Spain; [6]Fortis Escorts Heart Institute, New Delhi, India; [7]Hospital Clinico Universitario Valladolid, Valladolid, Spain; [8]University Clinic Hospital of Valladolid,, Valladolid, Spain; [9]University of Valladolid, Spain, Valladolid, Spain

BACKGROUND Acurate Neo 2 (ACN2, Boston Scientific) and Myval series (Meril Life Sciences) are 2 transcatheter aortic valve

replacement devices available in Europe. ACN2 just completed IDE trial, and Myval was studied in the LANDMARK trial. ACN2 and Myval series have not been compared yet.

METHODS The multicentric analysis included patients implanted with ACN2 and Myval series. The primary endpoint was the rate of mortality and stroke at 1 year. Secondary outcomes included procedural success, mortality, stroke, residual aortic regurgitation (AR), mean aortic gradients, and rate of new permanent pacemaker implantation (PPI) both in hospital and yearly up to 4 years. A matched hemodynamic performance was done adjusting for annular dimensions, aortic valve calcification, baseline gradients and left ventricular ejection fraction.

RESULTS A total of 545 patients (ACN2: 144 and Myval series: 401) from 9 institutions were included. Procedural success rates were 90.3% and 97% for ACN2 and Myval series ($P < 0.001$). The rate of residual AR, mean aortic valve area, and mean aortic gradients over 4 years are shown in the Figure. Similar findings were detected after matched analysis. Stroke-free survival rate was 95.0% and 93.7% ($P = 0.570$), and the new PPI rate was 10.5% and 13.2% ($P = 0.433$) for ACN2 and Myval series at 1 year.

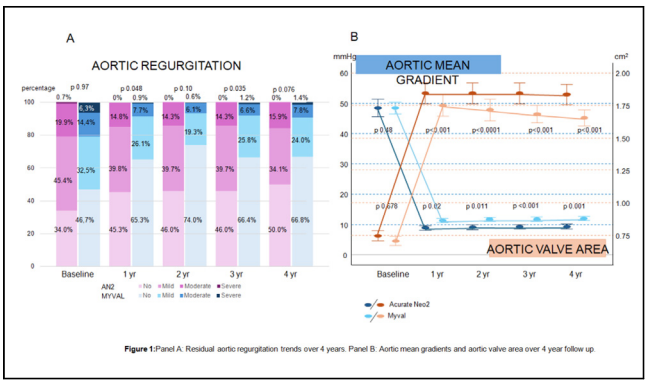


Figure 1:Panel A: Residual aortic regurgitation trends over 4 years. Panel B: Aortic mean gradients and aortic valve area over 4 year follow up.

CONCLUSION Procedural success rates were significantly higher for Myval series compared with ACN2. Over the 4-year follow-up, Myval series was associated with significantly lower rates of moderate or higher AR but higher aortic mean gradient and lower mean aortic valve area than with ACN2. One-year stroke-free survival and new PPI rates were similar between the cohorts.

CATEGORIES STRUCTURAL: Valvular Disease: Aortic.

TCT-929

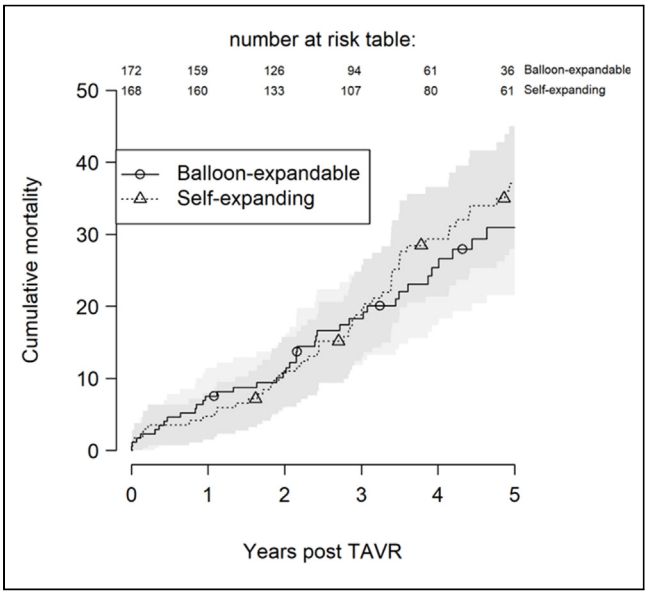
Long-Term Outcomes Balloon-Expandable vs Self-Expandable Valves for Valve-in-Valve TAVR: Insight From Michigan Structural Heart Consortium

Omar Abdelhai,[1] Laith Alhuneafat,[2] Luai Madanat,[3] Ivan Hanson,[4] Brian Renard,[5] Amr Abbas,[6] Pedro Villablanca[1]
[1]Henry Ford Hospital, Detroit, Michigan, USA; [2]University of Minnesota, Minneapolis, Minnesota, USA; [3]William Beaumont University Hospital, Royal Oak, Michigan, USA; [4]Corewell Health William Beaumont University Hospital, Troy, Michigan, USA; [5]Beaumont Health System, Royal Oak, Michigan, USA; [6]Corewell Health William Beaumont University Hospital, Birmingham, Michigan, USA

BACKGROUND Valve-in-valve transcatheter aortic valve replacement (ViV TAVR) addresses issues with previously implanted aortic valves. Its use is growing because of the rise of bioprosthetic valves, high surgical reoperation risks, and expanding transcatheter aortic valve replacement (TAVR) indications. Both balloon-expandable (BE) and self-expandable (SE) valves are used, each with unique features and outcomes.

METHODS We analyzed ViV TAVR patients from 2015 to 2022 using data from the Michigan Structural Heart Consortium and linked Medicare claims to extend the analysis of long-term mortality beyond the 1-year follow-up.

RESULTS In our ViV TAVR cohort, 1,394 patients were analyzed comparing 683 BE and 711 SE valves. The cohort was predominantly male (70.3% vs 51.8%; $P = 0.001$) with lower Society of Thoracic Surgeons scores (4.17% vs 5.1%; $P < 0.005$). One-year post TAVR mortality was higher in SE valves (7.5% vs 6.4%; $P < 0.018$). Post-TAVR stroke, readmission, vascular complications, permanent pacemaker, and bleeding were similar between the groups. Severe patient-prosthesis mismatch was significantly higher in the BE cohort (47.9% vs 24.3%; $P = 0.001$). Three hundred forty cases (24%) were matched to Fee-for-Service Medicare, comprising 172 BE and 168 SE valves. Five-year post-TAVR survival was similar between the groups despite significant baseline differences. After the adjusted Cox regression model, there was no significant difference in survival between the groups (adjusted HR for SE vs BE: 1.03; 95% CI: 0.70-1.53; $P = 0.88$) (Figure).



CONCLUSION In this real-world registry study, our findings showed no significant differences in in-hospital or long-term outcomes between patients with SE and BE valves following ViV TAVR.

CATEGORIES STRUCTURAL: Valvular Disease: Aortic.

TCT-930

Impact of TAV Prosthesis Implantation and Expansion on Thrombosis: An In Vitro Blood Loop and PIV Assessment

Thangam Natarajan,[1] Jae Kim,[1] Akshita Jha,[1] Christian Salgado,[1] Ajit Yoganathan,[1] Lakshmi Dasi[2]
[1]Georgia Institute of Technology, Atlanta, Georgia, USA; [2]Georgia Tech and Emory University, Atlanta, Georgia, USA

BACKGROUND Although transcatheter aortic valve replacement (TAVR) therapy is increasingly adopted, there have been increased concerns about postprocedural thrombosis and its potential adverse effects on prosthesis function and durability, as highlighted by the recent PARTNER trial. This in vitro study examines how prosthesis expansion and tilt influence thrombus deposition.

METHODS A patient-averaged model was constructed from 45 patient image stacks, and a biocompatible polydimethylsiloxane chamber was manufactured for this anatomy. In 2 validated flow loops mimicking the left heart, we examined transcatheter aortic valve (TAV) tilt (relative to the annulus) and expansion (under and over). Initially, TAVs were placed in a particle image velocimetry setup to observe flow patterns under different deployment conditions. Afterward, the chamber was moved to a blood loop where $CaCl_2$ infusion accelerated the coagulation of porcine blood to induce thrombus. This approach allowed us to correlate thrombus deposition with TAV deformation types and flow patterns.

RESULTS Figure 1A-F shows the results of the control TAV under nominal tilt and expansion. Figure 1D shows the thrombosed TAV explanted from the blood loop. Figure 1E shows the micro-computed tomography of the same TAV, stained for better segmentation and thrombus volume quantification. Figures 1F and 1G illustrate flow patterns likely leading to thrombus deposition.