years or less), medium (8–12 years) and long (13 years or more). Main outcome was incident degenerative aortic stenosis defined as first-time diagnosis of aortic stenosis within the preceding 5 years. The patients were stratified into three age groups; 55–59 years, 60–64 years and 65–69 years.
Results: A total of 12,388 patients were included between 2001 and 2015. The figure shows the incidence rate (IR) of aortic stenosis (per 100,000 person-years (PY)) stratified in the three age groups. The incidence of aortic stenosis is increasing with increasing age. There was a clear educational gradient in incidence for all three age groups. We found that the highest incidence is amongst the patients with the shortest education. The lowest incidence is for the patients with the longest education. The pattern seems to be the same for all three age groups.
Conclusion(s): In a nationwide cohort of patients with incident degenerative aortic stenosis, there was a socioeconomic gradient measured by duration of education with a higher incidence of aortic stenosis in patients with shorter education. This is the first study to demonstrate a socioeconomic gradient in degenerative aortic stenosis, future studies should look into the mechanism behind this important finding with lifestyle factors being a possible mechanism.
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DEEP DIVE IN TRANSCATHETER AORTIC VALVE IMPLANTATION

P6306
Impact of aorto-ventricular angulation on clinical outcomes following TAVR with a self-expanding valve

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Background: The degree of angulation between the aorta and the left ventricle (aorto-ventricular angulation, AA) can pose difficulties during transcatheter aortic valve replacement (TAVR) especially in cases of high angulation or horizontal aortic roots. Data concerning the impact of AA on device success and clinical outcome after TAVR with a self-expanding valve is limited.
Purpose: The aim of this study was to evaluate the impact of AA on device success and clinical outcomes following TAVR.
Methods: Consecutive patients with severe symptomatic aortic stenosis scheduled for TAVR in a tertiary center were included in the study. Prospectively collected data before and after TAVR were retrospectively analyzed in all patients. All patients scheduled for TAVR had contrast computed tomography available prior to the procedure. AA was defined as the angle between the horizontal plane and the basal plane of the aortic annulus in a coronal projection. For analysis purposes and keeping with previously published studies, patients were divided retrospectively into two groups based on the mean AA; high angulation (group A) and low angulation (group B). All outcomes were evaluated according to the VARC-2 criteria.
Results: A total of 160 patients were included in the analysis (mean age: 79±4 years; logistic EuroSCORE: 25±9%; female gender: 59%; NYHA class III: 83%). Mean AA was 46.9±9°; therefore, group A was defined as AA≥47° and group B as AA<47°. Baseline characteristics in both groups were similar. Patients in group A had increased fluoroscopy time compared to group B (29.7±11.2 min vs 25.5±9.2 min, p=0.01). Device success rate was no different between the two groups. Moderate/severe paravalvular leakage was similar between the 2 groups (67% for group A versus 59% for group B, p=0.32). Mid-term all-cause mortality was comparable to both groups (13% vs 10%, p=0.13).
Conclusions: In patients undergoing TAVR with a self-expanding valve aorto-ventricular angulation AA did not affect device success rate and mid-term mortality.

P6307
Mid term outcome after transfemoral treatment of failing aortic valve bioprostheses

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Background: Surgical aortic valve replacement for aortic valve disease is safe and performed with excellent results. Bioprosthetic valves have been used more frequently in recent years. These implants may fail within the next ten to 15years. Peri-operative risk for redo-open heart surgery of these patients increases over time thus transcatheter aortic valve replacement implantation (TAVR) utilizing Valve-in-Valve implantation (VinV) represents an alternative for these high risk patients.
Purpose: Therefore, the aim of the study was to elucidate whether TAVR in patients (pts) with a failing aortic bioprosthesis is safe, feasible and if valve type as well as model of failure affect outcome after VinV TAVR.
Methods: Symptomatic patients with failing bio-prosthetic valves in aortic position we enrolled in our single center prospective registry since 2007. TAVR was performed using self-expandable or balloon-expandable devices utilizing the transfemoral approach under local anesthesia. Clinical events according to the VARC 2 definitions were recorded and echocardiography was performed to evaluate hemodynamics at follow-up.
Results: A total of 168pts (age 76±9years) with a logEuroSCORE 23±14% and STS score of 8.7±6.1% were treated so far. The overall frequency of VinV procedures out of the whole TAVR population was 5±2% per year. The duration between the Initial conventional AVR and TAVI was 8.6±3.7years. The mean effective inner diameter of the bioprostheses was 20.0±2.7mm. Severe re-stenosis of the preexisting prosthesis was the main cause for treatment (81.5%), whereas 18.5% of the patients were treated for severe aortic regurgitation. VinV TAVR has been performed successfully in all patients. The majority of pts was treated with a self-expanding device (n=122/73%), whereas 46 pts (27%) were treated with a balloon-expandable device. In those pts with aortic stenosis, the mean gradient declined from 48±16mmHg to 19±7mmHg after VinV TAVR with the tendency of higher gradients in pts with smaller pre-existing valves (p<0.05), in those pts with severe AR the level declined by at least two degrees. The incidence of any VARC 2 stroke was 4.8%, peri-procedural MI 3% and any VARC 2 bleeding event 16.7%. Over all thirty-day and one-year mortality was 4.7% and 8.2% respectively. Observed mortality was higher in the severe AS group (5.4%) vs. 0% in the AR group; and higher mortality in the stentless vs. stented bioprosthetic valve group (16.3% vs. 4%), not reaching statistical significance due to the small sub-group cohort (both, p>0.05).
Conclusion: VinV TAVR is feasible and safe with good clinical results and low midterm mortality. Longer follow up is necessary to elucidate the true impact of this treatment form on hemodynamic and clinical parameters.

P6308
Impact of coronary revascularization in patients undergoing transcatheter aortic valve implantation

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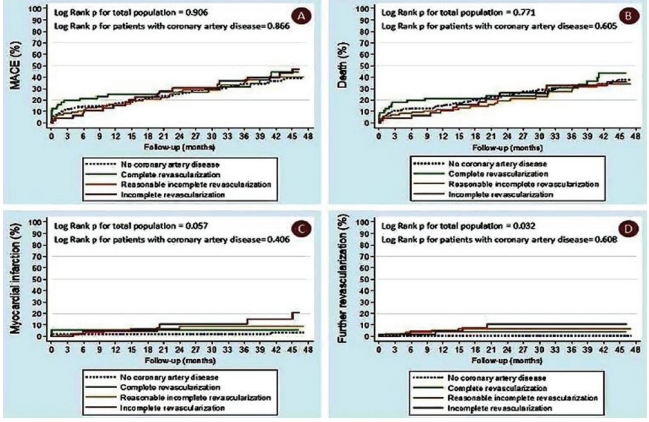
Background: Patients who undergo transcatheter aortic valve implantation (TAVI) frequently have concomitant coronary artery disease (CAD) with the need for revascularization, unknowing how complete that must be.
Purpose: Evaluate the impact of CAD and the degree of revascularization in the occurrence of major cardiovascular adverse events (MACE) (any cause of mortality, myocardial infarction, and new revascularization not planned) and heart failure (HF) in the follow-up.
Methods: From November 2008 to August 2016, the baseline SYNTAX Score (bSS) and the SYNTAX Residual Score (rSS) were calculated before to TAVI; we classify the patients with CAD according to the rSS: complete revascularization (CR). (rSS=0), reasonable incomplete revascularization (RIR) (0>rSS<8) and incomplete revascularization (IR) (rSS≥8), we estimated predicted event rates obtained from the Cox regression models and Kaplan-Meier survival curves, were made without adjustment and adjusted by STS and Euroscore II.
Results: 349 patients were included, with a mean age of 82.4±5.7 years, 53% were women, 187 patients (53.6%) had CAD, of these, 56 patients (29.9%) had CR, 85 (45.4%) had RIR and 46 (24.5%) had IR. The mean of bSS was 9.2±8.1, with a mean follow-up of 35.2±25.3 months; no differences were observed in the occurrence of MACE between the groups of CAD vs No CAD (p=0.906), or between the different degrees of revascularization (p=0.866), no difference was observed in the admissions by HF (p=0.748), without worsening the risk of MACE (p=0.971) when they were added to it, even when were adjusted by STS or EuroScore II.



Cumulative event rates in follow up

Conclusions: The CAD and the degree of revascularization in TAVI patients were

not associated with an increase in the frequency of MACE or admissions for HF in the long-term follow-up.

P6309
Impact of low-flow, low-gradient aortic stenosis in short- and long-term follow-up after TAVI: Insights from the Brazilian TAVI Registry

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Background: Data on outcomes in low-flow, low gradient aortic stenosis (LFLG-AS) after transcatheter aortic valve implantation (TAVI) is scant and controversial.
Purpose: We aim to compare baseline characteristics and outcomes between patients with LFLG-AS and high-gradient aortic stenosis (HG-AS) undergoing TAVI.
Methods: Patients included in the Brazilian TAVI Registry were divided in 2 groups according to mean transaortic gradient (MG): 1) HG-AS: indexed aortic valve area (iAVA) $\leq$0.60cm^2/m^2 and MG$\geq$40mmHg; and 2) LFLG-AS: iAVA $\leq$0.60cm^2/m^2 and MG$<$40mmHg. The endpoints evaluated were VARC-2 combined clinical efficacy at 1 year, VARC-2 combined early safety events at 30 days and device success.
Results: 657 patients were included, 522 (79%) classified as HG-AS and 135 (21%) as LFLG-AS. Mean follow-up was 520±490 days (range 0–2268 days). LFLG-AS had higher prevalence of male gender (60% vs. 44%; P$<$0.01), coronary artery disease (69% vs. 56%; P$<$0.01) and pulmonary hypertension (31% vs. 20%; P$<$0.01). Additionally, LFLG-AS had higher EuroSCORE II (25.2±16.6% vs. 19.3±13.7 vs p$<$0.01) and lower left ventricular ejection fraction (48±18% vs. 61±13; P$<$0.01). HG-AS had lower VARC-2 device success (67% vs 77%, p=0.022). There were no differences related to VARC-2 combined clinical efficacy at 1 year (12% HG-AS vs 17% LFLG-AS, p=0.081) (Figure 1) and VARC-2 combined early safety at 30 days (21% HG-AS vs 15% LFLG-AS, p=0.117). By multivariate analysis using Cox Regression, LFLG-AS was not a predictor of VARC-2 combined clinical efficacy outcomes at 1 year, independent if paradoxical LFLG-AS (HR=1.42; 95% CI=0.64–3.11) or LFLG-AS with low ejection fraction (HR=1.51; 95% CI=0.56–4.08). The only predictors found were diabetes (HR=1.82; 95% CI=1.02–3.26), syncope (HR=0.40; 95% CI=0.17–0.97) and post-procedure moderate/severe aortic regurgitation (HR=3.12; 95% CI=1.40–6.95).

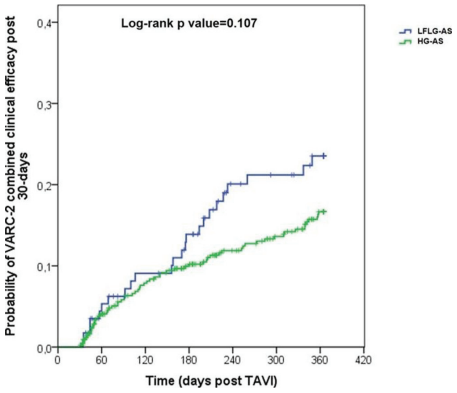

Figure 1. Kaplan-Meier curve for VARC-2 combined clinical efficacy at 1 years.

Conclusions: TAVI was a feasible procedure in LFLG-AS patients, with higher rates of device success than HG-AS. Despite the baseline differences, VARC-2 combined clinical efficacy and combined early safety events at 1 year were similar between LFLG-AS and HG-AS.
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P6310
Impact of device landing zone calcification on paravalvular regurgitation after transcatheter aortic valve replacement with different next generation devices

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Background: Residual paravalvular regurgitation has been associated to impaired outcomes after TAVR.
Purpose: To evaluate the impact of device landing zone (DLZ) calcification on residual PVR after TAVR with different next-generation transcatheter heart valves (THV).
Methods: 560 patients underwent TAVR with a SAPIEN 3 (S3; n=292), ACURATE neo (NEO; n=166), Lotus (n=52) or Evolut R THV (ER; n=50). Calcification of the DLZ was assessed from preprocedural contrast-enhanced multidetector computed tomography data and correlated with echo data at discharge.
Results: The occurrence and degree of PVR differed significantly between the different THV. PVR was $\geq$moderate in 0.7% of S3 patients, 13.9% of NEO patients, 0% of Lotus patients and 22.0% of ER patients, respectively (p$<$0.001). Due to significant differences in calcium load between the different devices, patients were matched according to total device landing zone calcium volume in a 4:3:1:1 manner resulting in 351 matched patients (S3: n=156; NEO: n=117; Lotus: n=39; ER: n=39). After matching PVR $\geq$moderate occurred in 1.3% of S3 patients, 13.8% of NEO patients, 0% of Lotus patients and 17.9% of ER patients (p$<$0.001). Permanent pacemaker implantation rates were 12.2%, 11.2%, 46.2% and 23.1% in S3, NEO, Lotus and ER patients, respectively (P$<$0.001). The amount of DLZ calcium was significantly related to the degree of PVR in patients treated with the S3 (no PVR: 852±567 mm^3, trace PVR: 893±558 mm^3, mild PVR: 916±465 mm^3; moderate PVR: 2776±163 mm^3, P=0.045), NEO (no PVR: 533±354 mm^3, trace PVR: 660±476 mm^3, mild PVR: 713±457 mm^3; $\geq$moderate PVR: 1004±694 mm^3, P=0.004) and the ER (no PVR: 575±503 mm^3, trace PVR: 938±697 mm^3, mild PVR: 958±729 mm^3; $\geq$moderate PVR: 1800±881 mm^3, P=0.001), but not in Lotus patients (no PVR: 943±750 mm^3, trace PVR: 882±694 mm^3, mild PVR: 899±334 mm^3, P=0.698). Below a total DLZ calcium volume threshold of 1257.9 mm^3, PVR was $\geq$moderate in 0, 10.7, 0 and 6.3%, and above this threshold 2.9, 41.2, 0 and 50.0% in S3, NEO, Lotus and ER patients, respectively (S3/Lotus: n.s.; NEO: P=0.003; EVR: P$\leq$0.001). In multivariate regression analysis, the use of NEO or ER and DLZ calcium load $>$1257.9 mm^3 emerged as independent predictors of PVR $\geq$moderate.
Conclusions: DLZ calcification predicted the degree of PVR after TAVR with 3 out of 4 devices. The susceptibility to PVR depending on the amount of calcium differed significantly with higher susceptibility in the self-expanding NEO and ER compared to the S3 or the Lotus THV. However, also permanent pacemaker implantation rates differed significantly between the implanted devices with higher rates in Lotus and ER treated patients. Thus, DLZ calcification is an import factor to be considered in prosthesis selection for each individual patient, keeping in mind the trade-off between PVR reduction and the occurrence of new-onset conduction disturbances requiring permanent pacemaker implantation.

P6311
Prognostic impact of permanent pacemaker implantation in patients with low left ventricular ejection fraction following transcatheter aortic valve replacement

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Aims: Data is limited regarding the clinical impact of permanent pacemaker implantation (PPI) in patients with low left ventricular ejection fraction (LVEF) after transcatheter aortic valve replacement (TAVR). The aim of this study was to determine the impact of new PPI in patients with baseline low LVEF at 2-year follow-up after TAVR.
Methods and results: A total of 659 patients undergoing TAVR between January 2013 and December 2015 were included in the study. Patients were divided into two groups according to the need of PPI following TAVR. These patients were further divided by their baseline LVEF: low LVEF ($\leq$50%) and preserved LVEF ($>$50%). One-hundred and four patients (15.8%) needed PPI following TAVR. After a median follow up of 19.1 months (interquartile range: 11.4 to 24.4), overall and cardiovascular survival showed no significant differences between new PPI and no PPI (overall, log-rank p=0.94; cardiovascular, log-rank p=0.51). Nonetheless, patients requiring PPI that had low EF had higher cardiovascular mortality compared to patients with low LVEF that didn't need PPI (log-rank p$<$0.001). Patients with new PPI and low LVEF had independently increased risk for 2-year cardiovascular mortality but not 2-year all-cause mortality (cardiovascular mortality; hazard ratio 5.76, 95% confidence interval 2.18 to 15.24, p$<$0.001). Other significant predictors of 2-year cardiovascular mortality included peripheral artery disease (hazard ratio 2.52, 95% confidence interval 1.29 to 4.91, p=0.007), logistic EuroSCORE (hazard ratio 1.02, 95% confidence interval 1.01 to 1.04, p=0.016), and moderate or more paravularleak (hazard ratio 4.89, 95% confidence interval 2.36 to 10.14, p$<$0.001)
Conclusions: New PPI following TAVR was not associated with overall survival or cardiovascular survival difference at 2 years. However, receiving a new PPI in the setting of low LVEF adversely impacts mid-term cardiovascular survival.