

## Poster Walk: Aorta and Aortic Valve

### P09–P20

Joint Annual Meeting 2019 of the Swiss Society of Cardiology and the Swiss Society of Cardiac Surgery

### P09

**Outcome of transcatheter aortic valve implantation in nonagenarians**

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**Objective:** Transcatheter aortic valve implantation (TAVI) has largely expanded the indication for aortic valve replacement to patients older than 80 years of age. The new approaching frontier is TAVI in nonagenarians. We reviewed our records to analyze hospital outcome and 1-year follow-up of patients aged 90 years or greater that underwent TAVI for valve disease.

**Methods:** Clinical data from patients aged 90 years or greater that underwent TAVI at two associated institutions (University hospital of Zurich and Cardiocentro Ticino Lugano) were prospectively collected and retrospectively analyzed. Data from 1-year follow-up were also collected.

**Results:** From October 2011 to January 2019, 56 patients (30 females) underwent transfemoral (46), transapical (4), transaortic (3) or trans-subclavian (3) TAVI. Mean age was 92.1±1.88 years (range: 90-96), mean EuroScore II was 12.3±11.8, 9 patients (16%) already underwent cardiac previous cardiac surgery and 4 (7%) were valve-in-valve procedures. Mean ejection fraction was 53.2±11.8%, mean aortic valve gradient was 43.4±17.1mmHg. Implanted transcatheter valves were: 1 Sapien XT, 15 Sapien-3, 13 CoreValve, 15 CoreValve Evolut-R, 1 CoreValve Evolut Pro, 8 Portico, 3 Symetis. Hospital mortality was 5.36% (3 patients): 2 MOF and 1 ischemic bowel. Complications were: acute kidney injury requiring dialysis (3), new pacemaker (14), vascular access complications (6). ICU and hospital stay were 2.2±2 and 10.2±7.1 days, respectively. During the 1-year follow-up, 1 patient died.

**Conclusions:** TAVI in nonagenarians seems to be feasible and safe with acceptable hospital mortality and complication rate. After one year, most of these patients were alive. Patients selection criteria and high-volume TAVI centers are key factor for managing TAVI in fragile nonagenarians.

### P10

**Direct transaortic transcatheter aortic valve replacement through a right mini-thoracotomy**

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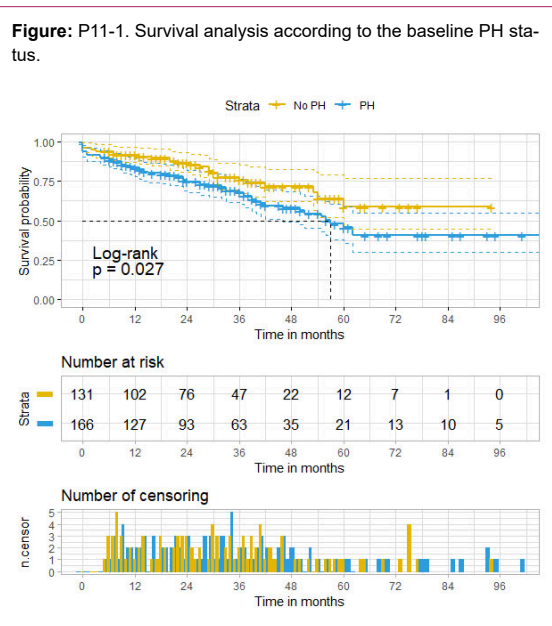
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**Objective:** Transcatheter aortic valve replacement (TAVR) has become a valid alternative to standard aortic valve replacement in inoperable and high-risk patients suffering from symptomatic aortic valve disease. The transfemoral access is the primary choice in patients without vascular disease but the direct transaortic access site (TAO-TAVR) is a valid alternative in case of ilio-femoral or aortic arch disease. We describe a consecutive case-series of TAO-TAVR.

**Methods:** Data from all consecutive patients treated for aortic valve disease with a TAO-TAVR approach (through a 5-7cm long right antero-lateral mini-thoracotomy at second intercostal space) were prospectively collected and retrospectively analysed.

**Results:** From 2013 to 2018, fifty consecutive patients (mean age 83±6.9 years; 17 ladies) underwent TAO-TAVR with Sapien XT (3; 6%), Sapien-3 (25; 50%) or CoreValve Evolut-R (22; 44%) prosthesis. Mean Euroscore II was 4±4.8. Preoperatively, 2 patients had cardiac surgery, 14 had previous PCI/STENT, 11 suffered from kidney failure and 8 had a permanent pacemaker. Mean gradient was 37.8±17.5mmHg, mean LVEF was 52.4±12.7% and 15 had pulmonary hypertension. One patient was a valve-in-valve. Operative time was 118±48 minutes and 33 patients (66%) were extubated in the hybrid room. Postoperatively, no strokes or TIA detected, two patients (4%) died for gastric bowel and aortic annular rupture, 3 patients (6%) had a new pacemaker. Mean hospital stay was 8.9±4 days. Mean gradients and LVEF at discharge were 8.4±3.1mmHg and 55.4±11.2%, respectively.

**Conclusion:** The TAO-TAVR is a valid technique for aortic valve replacement in high-risk patients with poor peripheral access. New pacemaker implantation rate and paravalvular leak rate are in line with other reports. Moreover, during the TAO-TAVR, not only the distal aorta but also the aortic arch can be “free from guidewires and delivery systems” in case of severe aortic atheromasia.



## P11

### Prognostic significance of pre-interventional pulmonary hypertension in patients undergoing transcatheter aortic valve implantation

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**Introduction:** Pulmonary hypertension (PH) is a frequent hemodynamic consequence of severe aortic stenosis, related principally to the significant post-capillary pressure overload induced by the valve obstruction. If left untreated, long-term PH is associated with permanent remodeling of the pulmonary vessels and poor clinical outcomes. The long term prognostic significance of the pre-interventional pulmonary hemodynamic profile in patients undergoing transcatheter aortic valve implantation (TAVI) remains largely unknown. The purpose of the present study was to assess the impact of baseline PH on long-term outcomes in patients undergoing TAVI.

**Methods:** From a total of 372 patients who underwent a TAVI procedure for symptomatic severe aortic stenosis at our institution (2008 to 2018), 298 consecutive patients (mean age 83±6 years, 44% males) were evaluated with a pre-procedural right-heart catheterization. The study population was divided according to whether PH (mean pulmonary arterial pressure [mPAP] > 25 mmHg) was present or not. The primary study end-point was death from any cause.

**Results:** The PH group included 167 patients (56%), with 76% exhibiting a post-capillary pulmonary pressure profile (wedge pressure > 15 mmHg). Chronic obstructive pulmonary disease (COPD) was more frequent in the PH group (22.6% vs 11.5%, p=0.013) as well as lower ejection fraction at discharge (60%, [interquartile range 47%- 62%] vs 62%, [interquartile range 60%-66%], p< 0.001). During a mean follow-up of 31±23 months, 91 patients died (31%). In survival analysis pre-interventional PH was a strong predictor of all-cause mortality (Kaplan-Meier log-

rank p=0.027, Cox regression unadjusted hazard risk [HR]: 1.6, 95% confidence interval [CI]: 1.03-2.5; p =0.036, figure 1). This remained significant even after adjustment for traditional mortality determinants including, age, gender, cardiovascular comorbidities, COPD, left ventricular ejection fraction and renal function at discharge (Cox regression adjusted HR: 1.83, 95%CI: 1.1-3.1, p =0.023).

**Conclusions:** Pre-interventional pulmonary pressure hemodynamic profile is strongly and independently associated with mortality by any cause in patients suffering from symptomatic aortic stenosis, undergoing a TAVI procedure.

## P12

### 10 versus 20 minutes treatment of human pericardium with glutaraldehyde in OZAKI procedure

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**Background:** The aortic valve replacement/neocuspidization using autologous pericardium (OZAKI technique) has gained popularity within the last years. Before using the autologous pericardium to reconstruct the valve, it is treated with glutaraldehyde (GA) for 10 minutes according the Ozaki's original publication. However, it is unclear, if longer intraoperative GA treatment (20 minutes) would enhance the pericardium mechanical stability and strength.

**Methods:** After OZAKI valve replacement, leftover pericardium in 6 patients (3 males and 3 females) was bisected directly postoperatively and one half was treated for another 10 minutes (20 minutes in total). Strip samples of 25 x 5 mm<sup>2</sup> were cut with randomized orientations to average the high tissue anisotropy and used to evaluate the differences in strength and stability performing standard uniaxial tensile tests (MTS Synergy). For each specimen, thickness profiles were reconstructed and measured by in-house developed image processing algorithms (Matlab 2017b, Mathworks) necessary to calculate the resistant cross-section defined as the section at the minimum thickness (width x minimum thickness). Thus, stress-strain curves were elaborated and ultimate tensile strength (UTS), ultimate tensile strain (uts) and collagen elastic modulus were calculated as engineering stress at the minimum resistant cross-section. Two-tailed t-test was performed to compare the two different experimental groups.

**Results:** Uniaxial stretching generated elongations at rupture of 25 ± 7% vs. 22 ± 5% (10 vs. 20 min, p=0.05) corresponding to UTS values reaching 5.16 ± 2 and 6.54 ± 3 MPa (p=0.59), respectively. The high standard deviation values resulted from the highly anisotropy of the tissue, which was averaged by randomizing sample orientation and from gender differences (6.17 vs. 8.62 MPa, for males and 4.22 vs. 4.62 MPa for females). Interestingly, the elastic modulus E representing the stiffness properties of the collagen fibres showed similar values after treating the pericardium for 10 or 20 mins with E values between 31.80 ± 15.05 and 37.35 ± 15.78 MPa (p=0.25, 10 and 20 min, respectively).

**Conclusions:** With this study we showed that doubling of fixation time did not result in significantly different outcomes compared to the operative procedure in regard to pericardium mechanical stability quantified in terms of elastic modulus and ultimate tensile strength and strain.

### P13

#### Absence of coronary artery disease in aortic stenosis: implications for risk factor profile and long-term outcome

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**Intro:** Progression of aortic stenosis is not affected by statins suggesting that the pathogenesis of aortic stenosis (AS) differs from that of atherosclerosis. The aim of this study was to characterize a large population with severe AS regarding coronary artery disease (CAD), cardiovascular risk factors, and long-term mortality.

**Methods:** A total of 1087 consecutive patients with AS undergoing TAVI were included. Patients were followed up for 18-month all-cause mortality. Those without coronary stenosis >30% in coronary angiography were defined as no coronary artery disease (NoCAD) group (MINOCA definition), those without coronary calcification in coronary MDCT in addition to the above-mentioned criterion were defined as no coronary artery calcification (NoCAC) group.

**Results:** Compared to patients with CAD, the NoCAD group (n=268, 26.5%) was younger (79.8 vs 81.7 years, p<0.0005), more often females (p<0.0005), with less peripheral artery (14.9% vs 25.2%, p=0.001) and cerebrovascular (12.7% vs 19.5%, p=0.012) disease, less hypertension (70.5% vs 82.8%, p<0.0005), diabetes mellitus (17.9% vs 26.6%, p=0.004), family history (26.1% vs 39.0%, p<0.0005), smoking (31.0% vs 40.5% p=0.006), but higher HDL-cholesterol (1.5 vs 1.3 mmol/l, p=0.0002) and LVEF (57.2% vs 53.6%, p<0.0005). There was no difference in other risk factors, aortic stenosis severity, or aortic valve Agatston score (p=0.328).

Again compared to patients with CAD, the NoCAC group (n=64, 6%) was even younger (76.0 vs 81.5, p=0.0005) and more often females (p=0.005). There was no difference in aortic stenosis severity, or aortic valve Agatston score (p=0.370).

At 18-month follow-up, NoCAD group exhibited a lower all-cause mortality (12.3% vs 19.8%, p=0.008). This difference was mainly driven by COPD (p=0.019, HR=1.64, 95% CI 1.08-2.48) and kidney function (p<0.0005, HR=0.86, 95% CI 0.77-0.93). In CAD patients, but not in the NoCAD group, COPD and kidney function were predictive for 18-month all-cause mortality. Similarly, 18-month all-cause mortality was lower in the NoCAC group (7.8% vs 19.0%, p=0.034).

**Conclusions:** A significant number of patients with severe aortic stenosis has no CAD, although aortic valve calcification is similar to those with CAD. Patients without CAD are younger, more often female, exhibit a different risk factor profile, and a better long-term outcome. This indicates that the pathogenesis of aortic stenosis is different from that of CAD, at least in a subset of patients.

### P14

#### Meaning of B-type natriuretic peptide in patients with severe aortic valve stenosis - pathophysiological determinants and long-term prognostic impact after valve replacement

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**Background:** In patients with aortic stenosis (AS), B-type natriuretic peptide (BNP) is a marker of prognosis. It is assumed that BNP in AS reflects hemodynamics but this has not specifically been investigated. It is also unknown whether the prognostic value of BNP in AS is mediated by the fact that BNP reflects hemodynamics or whether BNP predicts outcomes independently of hemodynamics.

**Methods:** BNP was measured in 252 patients (age 74±10 years, 58% males) with severe AS [indexed aortic valve area (iAVA) 0.4±0.1 cm<sup>2</sup>/m<sup>2</sup>, left ventricular ejection fraction (LVEF) 57±12%] the day before right heart catheterization. All patients underwent surgical (n=157) or transcatheter (n=95) aortic valve replacement. The median follow-up was 3.1 (interquartile range, 2.3-4.3) years.

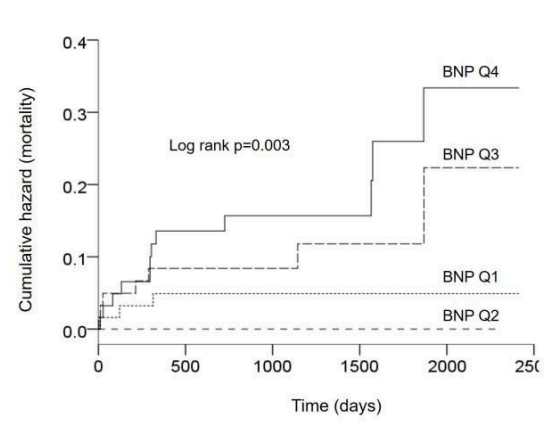
**Results:** The median BNP plasma concentration was 188 (78-452) ng/l. While iAVA was similar across BNP quartiles, there was gradual reduction in LVEF, hemoglobin, and estimated glomerular filtration rate from the lowest to the highest quartile, and there was a gradual rise in mitral regurgitation severity, mean pulmonary artery pressure, mean pulmonary artery wedge pressure (mPAWP), pulmonary vascular resistance (PVR), and the proportion of patients with pulmonary hypertension and combined pre- and post-capillary pulmonary hypertension (CpcPH) respectively (Table P14-1). Independent predictors (linear regression) of higher BNP (ln-transformed) included lower hemoglobin (β=-0.18), lower LVEF (β=-0.20), more severe mitral regurgitation (β=0.21), higher mPAWP (β=0.37), and higher PVR (β=0.21; r<sup>2</sup> for the entire model: 0.59). In the univariate Cox regression, higher ln BNP and higher BNP quartile (Figure) were predictors of mortality. In the multivariate analysis without invasive hemodynamic parameters, more severe mitral regurgitation [hazard ratio (95% confidence interval) 1.88 (1.04-3.40); p=0.04], presence of chronic obstructive lung disease [3.13 (1.26-7.81); p=0.01], and higher ln BNP [1.74 (1.16-2.61); p=0.01] were independently associated with higher mortality. In the multivariate analysis including invasive hemodynamic parameters, lower LVEF and CpcPH but not BNP were independently associated with mortality.

**Conclusions:** In patients with severe AS, higher BNP reflects more advanced disease in terms of hemodynamics and co-morbidities, and BNP is a marker of long-term mor-

Table: P14-1.

	BNP Q1 10-77 ng/l (n=63)	BNP Q2 80-187 ng/l (n=63)	BNP Q3 188-449 ng/l (n=63)	BNP Q4 453-3458 ng/l (n=63)	P value
Age (years)	68±11	76±8	78±8	79±10	<0.001
Hemoglobin (g/l)	142±14	135±15	135±17	126±20	<0.001
iAVA (cm2/m2)	0.43±0.10	0.44±0.15	0.41±0.13	0.40±0.12	0.21
LVEF (%)	64±7	59±11	58±12	47±13	<0.001
mPAP (mmHg)	18±5	22±6	25±7	36±12	<0.001
mPAWP (mmHg)	10±4	13±6	16±6	24±8	<0.001
PVR (Wood units)	1.7±0.7	1.8±0.7	2.2±1.4	3.2±1.9	<0.001
Pulmonary hypertension (mPAP ≥25 mmHg)	9 (14%)	21 (33%)	30 (48%)	51 (81%)	<0.001
CpcPH (mPAP ≥25 mmHg, mPAWP >15 mmHg, PVR >3 Wood units)	1 (2%)	1 (2%)	5 (8%)	25 (40%)	<0.001

Figure: P14-1.



tality. The prognostic value of BNP in this setting seems to be mediated by the fact that BNP is a marker of hemodynamics.

**P15**

**Prognostic significance of NT-ProBNP decrease after transcatheter aortic valve implantation**

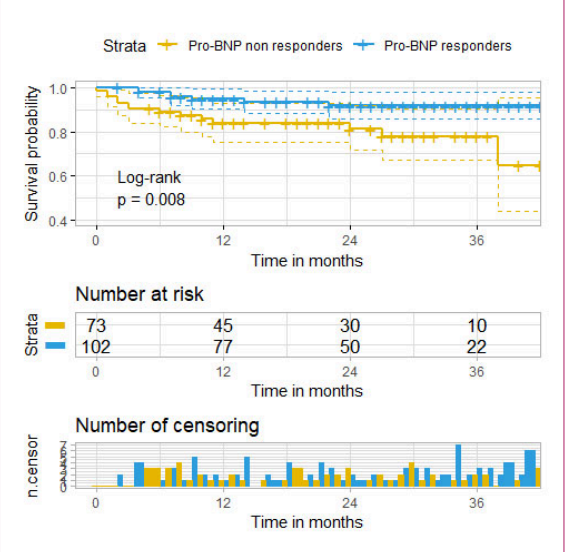
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**Introduction:** Plasma concentration of natriuretic peptides is high in patients with severe aortic stenosis, reflecting a significant left ventricular pressure overload. However, correction of the aorto-ventricular obstruction after transcatheter aortic valve implantation (TAVI) is not always associated with normalization of plasma B-type natriuretic peptide (BNP) concentrations or its terminal portion (NT-proBNP). The purpose of the present study was to assess the impact of NT-proBNP decrease on long-term outcomes in patients after TAVI.

**Methods:** From a total of 373 patients who underwent a TAVI procedure for symptomatic severe aortic stenosis at our institution, 175 consecutive patients (mean age 81±7 years, 45% males) with a complete set of NT-proBNP measures at baseline and at hospital discharge were included in the final cohort. The study population was divided into two groups according to the NT-ProBNP response to the aortic valve intervention (responders: Delta NT-ProBNP < 0 and

Figure: P15-1. Survival analysis according to NT-ProBNP response after TAVI procedure.



non responders: Delta NT-ProBNP ≥0). The primary study end-point was death from any cause.

**Results:** The NT-ProBNP responders group included 102 patients (58.3%) and exhibited a more pronounced decrease in aorto-ventricular pressure gradients (-35±15 mmHg vs -28±12 mmHg, p=0.006) after the TAVI. During a mean follow-up of 22±13 months, 21 patients died (12%). In survival analysis NT-ProBNP response was a strong predictor of all-cause mortality (Kaplan-Meier log-rank p=0008, Cox regression unadjusted hazard risk [HR]: 3.2, 95% confidence interval [CI]: 1.3-7.9; p=0.012, figure 1). This remained significant even after adjustment for traditional mortality factors including, age, gender, left ventricular ejection fraction and renal function (Cox regression adjusted HR: 2.8, 95%CI: 1.1-7.2, p=0.038).

**Conclusions:** NT-ProBNP decrease immediately after TAVI implantation is strongly and independently associated with better long-term outcomes in patients suffering from symptomatic aortic stenosis at high surgical risk.

**P16**

**Long-term follow-up comparison between trifecta and magna-ease aortic bioprosthesis: a propensity score matched study**

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**Introduction:** Since the introduction of aortic valve bioprosthesis, the ratio between biological and mechanical valves increased constantly. Biological valves are even implanted in younger patients nowadays. Previous short-term results for the Trifecta bioprosthesis (TF) were equivalent or even better, particular in small aortic diameters, compared to the Carpentier-Edwards Magna-Ease bioprosthesis (CE). The aim of this study was to evaluate the overall long-term outcome, with special interest on hemodynamics, comparing the TF to the CE.

**Method:** We retrospectively reviewed patients operated between 2010 and 2015, for isolated or concomitant (with coronary artery bypass graft surgery) aortic valve replacements, using the either the TF or the CE. Short and long-term results were analyzed with special focus on hemodynamic performance at echocardiography follow up (FU).

**Results:** 498 patients (202 TF, 296 CE) were included. At FU up to 8 years, primary endpoint, including survival and freedom from reoperation was  $87.7 \pm 2.12\%$  for TF, and  $91.4 \pm 1.8\%$  for CE ( $p = 0.55$ ). Adjusted 30 days mean transvalvular gradients (MTG) were, with  $7.7 \pm 3.2$  versus  $11.3 \pm 3.4$  mmHg ( $p < 0.001$ ) lower in the TF than in the CE group. This difference disappeared at a mean follow up of  $4 \pm 2.06$  years for larger valves (size equal or greater than 23), but persisted, with  $10.1 \pm 4.1$  mmHg (TF) versus  $13.5 \pm 5.4$  mmHg (CE,  $p = 0.012$ ) before matching and  $10.1 \pm 4.1$  (TF) versus  $14.1 \pm 5.5$  mmHg (CE,  $p = 0.009$ ) after matching, for smaller sizes (19 and 21). Structural valve disease, defined as a MTG  $\geq 20$  mmHg or a more than mild intra prosthetic regurgitation, was generally rare, and, with 6 (3%) TF versus 11 (3.7%) CE patients its incidence was statistically not different for both groups.

**Conclusion:** Results indicate that TF is safe and preserves excellent early and long-term hemodynamics. Lower MTG in smaller sized valves may be particular advantageously in narrow aortic roots. A longer FU is certainly mandatory for definitive conclusions, especially in terms of MTG.

## P17

### Aortic root-replacement using the freestyle stentless bioprosthesis with and without hemiarach replacement: a retrospective analysis in various pathologies

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**Introduction:** The freestyle bioprosthesis is used for combined pathologies of the aortic valve and root. The additional resection of the proximal aortic arch in dissections or aneurysms can be performed to create a tension-free, open anastomosis while the aortic clamp is removed for few minutes. As possible drawbacks, a prolonged duration and the requirement of selective brain perfusion via axillary artery are discussed, but not reflected in literature. The aim of this retrospective analysis was to assess long-term outcome with regard to prosthetic performance, reoperations, stroke and death.

**Methods:** Retrospective data analysis of 278 patients after aortic root replacement with freestyle root prosthesis from September 2007 till March 2017 (119 hemiarach (HA) vs 159 non-hemiarach (nHA)). Cardiovascular risk factors, previous cardiac events and operations, intraoperative and postoperative data were evaluated focusing on valve performance, major events and re-operations. Inferential statistics were performed with Mann-Whitney U-test. Nominal and categorical variables were tested with Fisher-Freeman-Halton exact test.

**Results:** Both groups were equal for their risk factors. HA patients had significantly less previous myocardial infarction ( $p=0.02$ ), previous cardiac operations ( $p=0.0002$ ) and were younger (60 (53-69) vs 64 (56-73);  $p=0.03$ ). The follow up rate was 84.5% for a median follow up of 37 months. The distribution for operation urgency was comparable in both groups ( $p=0.19$ ). There were differences in the indication for operation (endocarditis: HA 4% vs nHA 23%,  $p < 0.0001$ ; dissection: HA 11% vs nHA 4%;  $p=0.03$ ; reoperation HA 6% vs nHA 20%;  $p=0.001$ ). HA patients had significantly less reoperations on the same admission (16 vs 28%,  $p=0.01$ ), experienced less perioperative stroke (1 vs 10%,  $p=0.003$ ) and had shorter hospital stay (9 vs 12 days,  $P=0.0005$ ). There were no significant differences in the short- and long-time mortality (in-hospital:  $p=>0.9$ ; death at follow up:  $p=0.1$ ). The valve performance in both groups showed a moderate to severe impairment in 6 of 230 patients (2.6%) over the FU period.

**Conclusion:** Elective and emergency procedures can be safely performed through axillary cannulation in favor of the open anastomosis technique for a hemiarach replacement without increased risk for stroke, prolonged stay and short- and longterm mortality. The valve performance in a long-term follow up showed excellent results regardless of the initial indication for operation.

## P18

### Clinical outcome and hemodynamic performances of the Livanova Perceval-S sutureless aortic bioprosthesis: a single center experience

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**Introduction:** The aim of this study was to evaluate the clinical outcome and the hemodynamic performances of the LivaNova Perceval-S sutureless aortic valve in patients undergoing aortic valve replacement (AVR) in our center.

**Methods:** From March 2016 to February 2019, 100 consecutive patients underwent AVR using the Perceval-S valve. We included all patients, irrespective of the indication for AVR (including bicuspid aortic valve and infective endocarditis) and all emergent procedures. The choice for Perceval-S valve was left to the operating surgeon. Exclusion criteria were patients  $< 65$  years or unfavorable aortic root anatomy. Implantation failure was defined as unsuccessful first implantation due to technical problems or paravalvular leak. Postoperative antithrombotic regimen was limited to AAS antiaggregation. Hemodynamic performances were evaluated on early (in-hospital) and mid-

**Figure: P18-1. Clinical Outcome (n=100).**

<i>Operative data</i>		
	Isolated AVR	Combined AVR
CPB Time	55 min	94 min
X-Clamp Time	36 min	72 min
Size S		n=6
Size M		n=17
Size L		n=30
Size XL		n=47
<i>Late Follow-Up</i>		
30-Day mortality		3 (3%)
Stroke		1 (1%)
AV-Block 2 or 3		12 (12%)
PM Implantation		13 (13%)
Residual AR		3 (mild or less)
Endocarditis		0

CPB: Cardio-Pulmonary Bypass, X-Clamp: aortic cross clamp, PM: pacemaker, AR: Aortic Regurgitation

term (7.5 months) postoperative transthoracic echocardiograms.

**Results:** First implantation was successful in 90 patients and 97 patients finally received a Perceval-S. In three patients, the Perceval-S valve had to be switched to another heart valve substitute. Fifty-three patients had isolated AVR (mean CPB and aortic X-clamp times, 55 min and 36 min, respectively) and 47 had a concomitant procedure (CABG in 42 patients, mean CPB and aortic X-clamp times, 94 min and 72 min, respectively). Further intraoperative details are shown in Table I.

In-hospital procedure-related mortality was 2% (overall 3%) and there were no late deaths. A single patient presented postoperative ischemic stroke. Postoperative permanent pacemaker implantation was required in 13 patients.

Mean aortic pressure gradients decreased from 38.8 mmHg to 12.2 and 10.1 mmHg, while peak aortic pressure gradients decreased from 63.7 mmHg to 22.8 mmHg and 18 mmHg, at preoperative, discharge and midterm echocardiograms, respectively. Only 3 patients had residual mild or less aortic regurgitation at midterm follow up (Table II).

**Conclusion:** Our findings showed that Perceval-S is safe and effective in AVR, with excellent early and midterm outcomes. It allows short CPB and aortic X-clamp times and offers satisfying mid-term hemodynamics.

## P20

### Long-term outcomes with balloon-expandable and self-expandable prostheses in patients undergoing transfemoral transcatheter aortic valve implantation for severe aortic stenosis

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**Figure: P18-2. Hemodynamics.**

	Pre-Operative	Post-Operative	Midterm Follow Up
<i>Total</i>			
Mean Gdt (mmHg)	38.8	12.2	10.1
Peak Gdt (mmHg)	63.7	22.8	18
EOA (cm <sup>2</sup> )	0.84	1.51	-
<i>Size S</i>			
Mean Gdt (mmHg)	32.2	13.7	8.8
Peak Gdt (mmHg)	56.5	25.7	16
EOA (cm <sup>2</sup> )	0.84	1.33	-
<i>Size M</i>			
Mean Gdt (mmHg)	39.8	14.9	11
Peak Gdt (mmHg)	68.9	28.2	20
EOA (cm <sup>2</sup> )	0.78	1.18	-
<i>Size L</i>			
Mean Gdt (mmHg)	48.1	12.8	10.2
Peak Gdt (mmHg)	63	23.8	19.3
EOA (cm <sup>2</sup> )	0.83	1.62	-
<i>Size XL</i>			
Mean Gdt (mmHg)	38.3	10.7	9.8
Peak Gdt (mmHg)	65	19.6	16.5
EOA (cm <sup>2</sup> )	0.84	1.66	-

Gdt: gradient, EOA: aortic Effective Orifice Area

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**Introduction:** Data on long-term outcomes in patients undergoing transcatheter aortic valve implantation (TAVI) is scarce.

**Methods:** We investigated long term outcomes of consecutive patients undergoing TAVI with balloon- and self-expandable bioprostheses (Edwards SAPIEN (ESV), Edwards Lifesciences Inc., Irvine, CA, USA; Medtronic Corevalve system (MCS), Medtronic Inc., Minneapolis, MN, USA).

**Results:** Among 628 patients (mean age 82.4 ± 5.8 years, 55% female), 489 (77.8%) underwent transfemoral TAVI. 309 (63.2%) patients received a MCS prosthesis, whereas 180 (36.8%) patients were treated with an ESV prosthesis. The median duration of follow-up amounted to 5.2 years (range 3.4 - 8.3 years). All-cause mortality did not differ between the two groups (MCS 46.9%, ESV 53.4%, CI 95%: RR 1.21 [0.93 - 1.57], P = 0.15), whereas cardiac mortality was higher in the ESV cohort after 5 years of follow-up (MCS 35.1%, ESV 45.4%, CI 95%: RR 1.37 [1.01 - 1.86], P = 0.04). Structural valve deterioration, which was on average diagnosed 41.9 months (range 18 - 60 months) after TAVI, occurred in 8 cases (1.6%), resulting in one repeat intervention.

**Conclusion:** While half of all patients died within 5 years after TAVI with no significant differences in all-cause mortality, structural valve deterioration was documented in less than 2% of cases.