**TCT-772**

Emergency Aortic Balloon Valvuloplasty in Era of Transcatheter Aortic Valve Replacement: Results from Two Centers Experience

Claudia Fiorinda, Cristina Cincia, Francesco Saula, Camilla Ciccarese, Diego Moffa, Felicia Lipariuti, Marianna Adamo, Giuliana Chizzola, Salvatore Carello, Federica Ettori

1Spedali Civili, Brescia, Italy, 2University of Bologna, Policlinico S. Orsola-Malpighi, Bologna, ITALY

Background: Aortic balloon valvuloplasty (BAV) has often a compassionate role in the treatment of symptomatic and severe aortic stenosis (AS). Aim of this work was to evaluate the clinical outcomes of BAV performed in emergency clinical setting.

Methods: Between September 2007 and September 2012, forty-two consecutive emergency BAV were performed because of severe AS symptomatic for refractory pulmonary edema (71%) or cardiogenic shock (29%).

Results: Most of the patients were female (60%) with mean age of 86±5 years and Logistic Euroscore I of 40±21%. Baseline echocardiographic data showed an aortic valve area of 0.5±1.4 cm² and a mean transvalvular gradient of 46±14 mmHg, high pulmonary hypertension (50±15 mmHg) and left ventricular ejection fraction of 41±14%. Coronary artery disease was present in 52%, with multivessel disease in 24% of the cases. During BAV, a coronary revascularization was performed in 26% of the pts. An undersized balloon (20 mm) was used in 71% of cases. Drop of 33±20 mmHg of peak aortic gradient was observed after BAV and in 57% of the procedures one balloon inflation was enough. In-hospital death rate was 28%. All-cause death at 6 months was 45%. Transcatheter aortic valve replacement (TAVR) was performed in 56% of survival pts with a significant improvement in clinical outcomes (NYHA class II and no mortality at 6 months follow up in all pts).

Conclusions: Although high mortality rate was observed after BAV in emergency clinical setting (refractory pulmonary edema or cardiogenic shock due to severe AS), survival pts had a chance to be able to complete the treatment of AS by TAVR procedure.

**TCT-773**

The Prognostic Significance of Changes in B-Type Natriuretic Peptide (BNP) after Transcatheter Aortic Valve Replacement (TAVR): THE PARTNER I EXPERIENCE

Mayra Guerrero, Brian O’Neill, Vinod Thourani, Sashee Kodali, Mathew Williams, Vasils Babaliosros, Tom McAndrew, Howard C. Herrmann, Augusto Picardh, Michael Mack, Martin Leon, William O’Neill

1Henry Ford Hospital, Detroit, MI, 2University of Miami, Miller School of Medicine, Miami, FL, 3Emory University, Atlanta, GA, 4Columbia, New York, United States, 5Columbia University, New York, United States, 6Emory University School of Medicine, Atlanta, Georgia, 7Cardiovascular Research Foundation, New York, NY, 8Hospital of the University of Pennsylvania, Philadelphia, Pennsylvania, 9Washington hospital center, Washington, United States, 10Baylor Healthcare System, Plano, United States, 11Henry Ford Hospital, Detroit, Michigan

Background: BNP is synthesized in cardiac ventricular tissue in response to increased wall stress and is known to be elevated in patients with aortic stenosis, especially those with clinical heart failure. We sought to characterize the timing and prognostic significance of changes in BNP levels after TAVR in the PARTNER I trial.

Methods: A total of 801 patients treated with transfemoral (TF) TAVR had BNP levels determined at baseline, 1w, 6 m, 12 m, and 24 m after therapy. We further divided patients into Group I (those with rising BNP levels at 1m) and Group II (those with stable or falling BNP).

Results: Median Baseline BNP [IQR] was 619 [293, 1438], falling to 610 [289, 1342] at 1w and 479 [238, 1006] at 1m. Thereafter, BNP levels remained stable at 6m (357 [238, 950], declining to 304 [206, 1036], with the lower limit of normal for healthy adults usually being less than 100 pg/mL. At 1 year, 4% had elevated BNP (>100 pg/mL), with 28% having a normal BNP level (<100 pg/mL).

Conclusions: BNP levels are elevated and tend to fall rapidly after TF-TAVR. Rising BNP levels after TAVR are associated with a significantly increased risk of death or rehospitalization and post-procedure moderate/severe AR.

**TCT-774**

Circulatory Support is Associated with Higher Mortality During TAVR


1Hospital of The University of Pennsylvania, Philadelphia, PA, 2Hospital of the University of Pennsylvania, Philadelphia, PA, 3University of Pennsylvania Medical Center, Philadelphia, Pennsylvania, 4Penn Medicine, Philadelphia, PA, 5Emory University, Atlanta, GA, 6Associate Prof, UCLA school of Medicine, Los Angeles, California, 7Washington hospital center, Washington, United States, 8St Pauls Hospital, vancouver, british Columbia, 9Medical City Dallas Hospital, Dallas, TX, 10Cleveland Clinic, Cleveland, United States, 11Cardiovascular Research Foundation, New York, NY, 12Hospital of the University of Pennsylvania, Philadelphia, Pennsylvania

Background: Circulatory support (CS) may be needed during TAVR, but little is known about the incidence, outcomes, and predictors of its use.

Methods: The study population included all patients in the PARTNER trial and Continued Access Registry (CAR) that underwent TAVR. Patients that received CS intra-aortic balloon pump [IABP] or cardiopulmonary bypass [CPB]), either elective pre-procedure or urgent intra-procedure, were compared to patients that did not receive CS.

Results: Of the 2538 patients, 203 (8%) received support, including CPB (n=133, 66%) or IABP (n=70, 34%). Compared to those not receiving support, patients receiving CS were more likely male (64% vs 51%, p < 0.0001), undergo transapical access (81% vs 39%, p < 0.0001), have prior CABG (60% vs 41%, p < 0.0001), lower left ventricular EF (47 to 53%, p < 0.001), and moderate or severe mitral regurgitation (28% vs 21%, p = 0.03). The incidence of CS was higher in the CAR than in the PARTNER trial (9% vs 5%), partly due to an increased proportion of transapical cases (50% vs 20%, respectively). The use of circulatory support was associated with greater procedural complications, including major vascular complications (17% vs 5%, p < 0.0001) and valve embolization (5% vs 0.5%, p < 0.0001). CS was associated with a significantly higher 30 day all-cause mortality (25% vs 5%, p < 0.0001), and was higher in patients that received CPB compared to IABP (32% vs 13%, p = 0.003).

Conclusions: The use of CS during TAVR is surprisingly frequent, associated with procedural complications, and portends a higher early and late mortality. CS was used more frequently in registry patients as compared to randomized trial patients. Identifying patients most likely to benefit from CS may represent an opportunity to improve outcomes.

**TCT-775**

Cost-Effectiveness Of Transcatheter Aortic Valve Replacement By Minimalist Or Standard Approaches

Vinod Thourani, Chandan Devireddy, Amanda Maas, Stamatis Lerakis, Patrick Kilgo, Bradley G. Leshnower, Kretom Movromatis, Tom C. Nguyen, Mihir Kanitkar, Peter C. Block, Robert Gayton, Chun Lj, Laureen Ford, Dane Peterson, John Merlino, Vasils Babaliosros

1Emory University, Atlanta, GA, 2Emory University, Atlanta, GA

Background: Transcatheter aortic valve replacement (TAVR) can be performed via different access routes and settings. The economic benefits of TAVR over SAVR in a variety of procedural settings are unclear. Our goal was to compare cost of TAVR by
transfemoral (TF) route in the catheterization laboratory (C-TF) or hybrid room (OR-TF) and OR-non-TF TAVR.

**Methods:** A retrospective study was performed on 174 patients who underwent TAVR at a single US academic institution using the SAPIEN valve from 11/2011 to 4/2013. Patients were stratified into 3 groups: C-TF TAVR (n=51), OR-TF TAVR (n=39), and OR-non-TF TAVR (n=84). All C-TF patients were performed with i.v. sedation and TTE. The OR-TF and OR-non-TF patients were performed in the hybrid OR with general anesthesia and TEE. Total variable cost, hospital payment, and contribution margin were utilized to determine the financial viability of TAVR.

**Results:** Compared to OR-TF and OR-non-TF, C-TF had a significantly lower procedure time (p < 0.001) and postop ventilator hours (p < 0.001). Resource utilization in terms of ICU (p < 0.001), postop (p < 0.001), and total hospital LOS (p < 0.001) was significantly higher in OR-non-TF patients. Total variable cost in the OR-non-TF TAVR was the highest ($57,197 ± 23,142), while the Logistic Euroscore I was higher in the second group (28% vs 22%, respectively, p = 0.23), as well as the individual components, except for a significant higher incidence of acute kidney injury (stage III) in TF compared to alternative accesses (18% vs 17%, respectively, p = 0.01). All-cause of death and cardiovascular death at 2013 and 1 year of follow up were similar into two groups irrespective of different type of vascular access.

**Conclusions:** When TF approach was not feasible because of anatomical reasons, the alternative approach such as axillary artery (TA) or, more recently, direct ascending aorta (DA) could lead to a self-expandable valve implantation safely also in elderly patients.

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**Table. Admission Resource Use and Costs**

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Time, min</th>
<th>Ventilator hours</th>
<th>ICU LOS, hrs</th>
<th>Post-op LOS, days</th>
<th>Total hospital LOS</th>
<th>Total variable cost</th>
<th>Hospital payment</th>
<th>Contribution margin</th>
</tr>
</thead>
<tbody>
<tr>
<td>OR-TF TAVR</td>
<td>160 ± 85</td>
<td>1.7 ± 10.1</td>
<td>21.9 ± 17.7</td>
<td>3.7 ± 2.7</td>
<td>6.0 ± 4.9</td>
<td>$45,173 ± 28,158</td>
<td>$15,529</td>
<td>$33,544 ± 20,596</td>
</tr>
<tr>
<td>OR-non-TF TAVR</td>
<td>234 ± 49</td>
<td>23.4 ± 66.7</td>
<td>60.5 ± 64.1</td>
<td>4.7 ± 3.2</td>
<td>7.1 ± 6.7</td>
<td>$52,268 ± 59,931</td>
<td>$19,594</td>
<td>$32,674 ± 58,826</td>
</tr>
<tr>
<td>OR-TF TF</td>
<td>234 ± 49</td>
<td>23.4 ± 66.7</td>
<td>60.5 ± 64.1</td>
<td>4.7 ± 3.2</td>
<td>7.1 ± 6.7</td>
<td>$52,268 ± 59,931</td>
<td>$19,594</td>
<td>$32,674 ± 58,826</td>
</tr>
</tbody>
</table>

All values are mean ± SD; all cost data is in $US.

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**Conclusions:** This is the first study comparing the economic impact of the minimalistic and standard approaches to TAVR. The economic benefits of TAVR in all groups were shown to be financially viable (positive contribution margin). Resource utilization was the least in the C-TF group, but hospital reimbursement was also the lowest. A more defined reimbursement strategy for these high-risk patients is required.

**TCT-777**

Long-term Clinical Outcomes in Nonagenarian Patients Undergoing Transcatheter Aortic Valve Implantation: Multicenter Brazilian Registry

Gabriela Campos Cardoso de Lima, Dimitry A. Saqueira, Luiz Antonio Carvalho, Rogério Rogério Sarmento-Leite, Jose A. Mangione, Pedro Lemos, Rogério Tumelero, Alexandre S. Colafranceschi, Paulo Caruani, J. Eduardo Souza, Maria C. Ferreira, Luiz Eduardo São Thiago, César Medeiros, Adriano Durado, Adriano Caiastra, Fábio Brito Jr.,

Hospital Israelita Albert Einstein, São Paulo, Brazil, 2Dante Pizzanese Institute of Cardiology, São Paulo, Brazil, 3Pro-Cardiaco, Rio de Janeiro, Brazil, 4Instituto de Cardiologia / Fundação Universitária de Cardiologia, Porto Alegre, Brazil, 5Beneficiência Portuguesa de Sao Paulo, Sao Paulo, Brazil, 6Heart Institute - InCor, University of São Paulo Medical School, São Paulo, Brazil, 7Hospital São Vicente de Paulo, Passo Fundo, Brazil, 8Instituto Nacional de Cardiologia Laranjeras, Rio de Janeiro, Brazil, 9Hospital São Lucas da PUCRS, Porto Alegre, Brazil, 10Instituto Dante Pizzanese de Cardiologia, São Paulo, Brazil, 11Hospital Naval Marcílio Dias, Rio de Janeiro, Brazil, 12Hospital SOS Cardio, Florianópolis, Brazil, 13Hospital Copa D’Or, Rio de Janeiro, Brazil, 14Santa Casa de Salvador, Salvador, Brazil

**Background:** Transcatheter aortic valve implantation (TAVI) has been established as a standard treatment in inoperable and high-risk elderly pts with severe aortic stenosis. However, there is no data thus far assessing the safety and the efficacy of TAVI in pts older than 90 years. We therefore sought to evaluate the early- and long-term clinical outcomes in nonagenarian pts undergoing TAVI.

**Methods:** Between January 2008 and February 2013, pts with symptomatic severe aortic stenosis underwent and were enrolled in the Brazilian multicenter registry. Among a total of 418 pts, 370 were > 90 years. We therefore sought to evaluate the early- and long-term clinical outcomes in nonagenarian pts undergoing TAVI.

**Results:** Nonagenarian pts were 12 years older than pts < 90 years (92.4 years vs. 80.12 years; p < 0.001). Compared with pts < 90 years, nonagenarian pts had higher NTS risk score (19.44 ± 13.84% vs. 14.03 ± 12.38%; p = 0.005), lower body mass index (24.55 ± 3.40 vs. 26.31 ± 4.61 kg/m2; p = 0.01), but higher baseline left ventricular ejection fraction (61.74 ± 12.32% vs. 57.27% ± 15.60%; p = 0.03). 30-day and 1-year main clinical outcomes are presented in Table.

**Conclusions:** In this real world Brazilian registry, nonagenarian pts who underwent TAVI had favorable and similar early- and long-term clinical outcomes as compared with pts < 90 years. The treatment of symptomatic severe aortic stenosis in nonagenarians pts with TAVI deemed to be a non-futility approach.