Implantation: An Intracoronary Doppler Study

TCT-774

stent PW Doppler sample volume placement may result in inaccurate and inconsistent
CoreValve stent proximal to the cusps. Failure to recognize the importance of pre-
Duisburg-Essen, Institute of Pathophysiology, Essen, Germany, 3University Hospital
Eva Kottenberg 3, Jürgen Peters 3, Raimund Erbel 1, Gerd Heusch 2, Philipp Kahlert 1
Essen, Essen, Germany
of such injury. We therefore evaluated each step of the transfemoral TAVI procedure
implantation (TAVI). Periprocedural coronary microembolization is a potential cause
re

Results: Flow acceleration occurred in-stent but proximal to the cusps and again at the
level of the cusps in all pts. EOA and DVI calculated using P-S values was signi-
cantly lower than when using I-SPC values. See table.

<table>
<thead>
<tr>
<th></th>
<th>Pre-stent (P-S)</th>
<th>In-stent pre-cusp (I-SPC)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective orifice area (EOA), cm²</td>
<td>1.81 ± 0.36</td>
<td>2.30 ± 0.42</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Doppler velocity index (DVI)</td>
<td>0.44 ± 0.10</td>
<td>0.85 ± 0.11</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Peak velocity, m/sec</td>
<td>0.80 ± 0.16</td>
<td>1.05 ± 0.22</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Peak gradient, mmHg</td>
<td>2.7 ± 1.2</td>
<td>4.6 ± 2.0</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Mean gradient, mmHg</td>
<td>1.5 ± 0.8</td>
<td>2.4 ± 1.1</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td>Stroke volume, ml</td>
<td>63.9 ± 18.5</td>
<td>81.1 ± 22.9</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>

Conclusions: There is hemodynamically significant flow acceleration within the
CoreValve stent proximal to the cusps. Failure to recognize the importance of pre-
stant FW Doppler sample volume placement may result in inaccurate and inconsistent
assessment of Corevalve EOA and DVI.

TCT-774

Coronary Microembolization during Transfemoral Transcatheter Aortic Valve Implantation: An Intracoronary Doppler Study

Fadi Al-Rashid 1, Heike Hildebrandt 2, Theodor Baars 3, Till Neumann 3, Felix Nessa 3, Kai nassenstein 1, Daniel Wendi 4, Matthias Thielmann 4, Heinz Jakob 5, Eva Kottenberg 6, Jürgen Peters 7, Raimund Erbel 8, Gerd Heusch 9, Philipp Kahler 10
1West German Heart Center, Essen University Hospital, Essen, Germany, 2University Duisburg-Essen, Institute of Pathophysiology, Essen, Germany, 3University Hospital Essen, Essen, Germany

Background: A postprocedural increase of the serum troponin I concentration (Tnl)
reflects myocardial injury and occurs frequently during transcatheter aortic valve
implantation (TAVI). Periprocedural coronary microembolization is a potential cause
of such injury. We therefore evaluated each step of the transfemoral TAVI procedure
for coronary embolization using intracoronary Doppler (ICD) in the left anterior
descending (LAD) artery.

Methods: 15 high-risk patients with severe, symptomatic aortic valve stenosis who
underwent transfemoral TAVI using the balloon-expandable Edwards bioprosthesis
were included. ICD examinations were recorded and evaluated off-line for high-in-
tensity transient signals (HITS). Periprocedural concentrations of Tnl were serially
measured within the first 72 h after TAVI, and a cardiac MRI with late gadolinium-
enhancement (LGE) was performed within 7 days.

Results: HITS were detected in all patients, mostly during the initial crossing of the
native valve and positioning of the prosthesis with subsequent implantation. Tnl
peaked at 24 h after TAVI (3.17 ng/ml), and LGE was observed in only one single
case. There was no correlation between amount of HITS and Tnl area under the curve
in the first 72 h after TAVI.

Conclusions: Procedural HITS were detected by ICD in all patients undergoing
transfemoral TAVI. The highest amount of HITS was observed during initial valve
passage and positioning of the prosthesis with subsequent implantation. No association
was found between the number of HITS and myocardial injury, as re-
lected by increased serum Tnl concentrations or LGE on cardiac MRI.

TCT-775

Transapical Transcatheter Aortic Valve Implantation in Patients with Reduced Left Ventricular Ejection Fraction: Comparison of Balloon-expandable and Self-expanding Prostheses

Johannes Schirmer 1, Moritz Seiffert 2, Hermann Reichenspurner 1, Patrick Diemert 2, Hendrik Treede 4
1University Heart Center Hamburg, Hamburg, Hamburg, 2University Heart Center Hamburg, Germany, 3University Heart Center Hamburg, Ham, Hamburg, 4Hamburg University, Hamburg, Germany

Background: The adverse impact of left ventricular dysfunction on survival after
transcatheter aortic valve implantation (TAVI) has been documented. We report our
experience with transapical TAVI in patients with reduced left ventricular function
(LVEF) comparing first (balloon-expandable) and second (self-expanding) generation
TAVI devices.

Methods: From 3/2008 through 12/2012, a total of 75 patients presenting with pre-
procedural LVEF<45% underwent transapical TAVI, implanting either balloon-
expandable prostheses (Edwards Sapien/Sapien XT) in 48 patients (BE; mean age
78.2±7.9 years, 71% male) or self-expanding prostheses (JenaValve, n=12; Symetis
Accurate, n=9; Medtronic Engager, n=6) in 27 patients (SE; mean age 79.5±6.7
years, 63% male), respectively. Calculated logistic EuroSCORE II and STS mortality
scores were 12.6±7.4% (BE) vs. 10.4±5.4% (SE) (p=ns) and 9.2±6.6% (BE) vs.
9.2±7.3% (SE) (p=ns). Clinical and functional data were analysed according to the
Valve Academic Research Consortium (VARC) endpoints.

Results: Cumulative survival rates at 30 days and at one year were 87.5% (BE) vs.
96.3% (SE) (p=ns) and 52.0% (BE) versus 60.5% (SE) (p=ns), respectively. VARC
device success and VARC combined 30-day safety endpoints were achieved in 87.5% (BE)
vs. 85.2% (SE) (p=ns) and 31.3% (BE) vs. 18.5% (SE) (p=ns), respectively.
Post-procedural aortic regurgitation >grade 1 did not differ between groups (8.4%
(BE) vs. 11.1% (SE), p=ns). However, aortic regurgitation >grade 1 was observed in
50.0% (BE) vs. 37.0% (SE) (p=0.016). New onset of pacemaker indication was
present in 10.4% (BE) vs. 7.4% (SE) (p=ns). Mean ICU stay was 2.5±2.6 days (BE)
vs. 2.0±1.8 days (SE) (p=ns), whilst post-procedural hospital stay was 10.0±3.8 days
(BE) vs. 10.6±6.6 days (SE) (p=ns).

Conclusions: Comparable survival rates and VARC endpoints were achieved in pa-
patients with reduced LVEF undergoing transapical TAVI either with balloon-expand-
able or with self-expanding prostheses. Further studies are required to evaluate the
impact of a lower incidence of mild aortic regurgitation following implantation of self-
expanding valve types when compared to balloon-expandable prosthetic valves.