Global longitudinal strain is associated with better outcomes in transcatheter aortic valve replacement

Supplementary material

Fadi Al-Rashid¹, MD, Matthias Totzeck¹, MD, Nadine Saur¹, MS, Rolf Alexander Jánosi¹, MD, Alexander Lind¹, MD, Amir A. Mahabadi¹, MD, Tienush Rassaf¹, MD, FACC, FESC, and Raluca-Ileana Mincu¹, PhD

¹ Department of Cardiology and Vascular Medicine, West German Heart and Vascular Center Essen, University Hospital Essen, Medical Faculty, Germany

# Corresponding author
Dr. Fadi Al-Rashid
Department of Cardiology and Vascular Medicine
West German Heart and Vascular Center Essen
University Hospital Essen, Medical Faculty,
University Duisburg-Essen
45122 Essen, Germany
Phone: 0049 201 723 4801
Fax: 0049 201 723 5401
Email: fadi.al-rashid@uk-essen.de
Methods

Subgroup analysis

For the subgroup analysis, we divided the population into three different groups according to the type of AS and defined in accordance with the current guidelines [1, 2]:

- Group 1 included patients with severe AS defined as a valve area <1 cm² and a mean gradient >40 mmHg.
- Group 2 included patients with low-flow, low-gradient AS with preserved ejection fraction, also known as the paradoxical low-flow low-gradient AS, which was defined as valve area <1 cm², mean gradient <40 mmHg, ejection fraction ≥ 50%, and stroke volume index (SVi) ≤ 35 mL/m².
- Group 3 included patients with low-flow, low-gradient AS with reduced ejection fraction, defined as valve area <1 cm², mean gradient <40 mmHg, ejection fraction < 50%, and SVi ≤ 35 mL/m².

Results

2D speckle tracking echocardiography

We performed a subgroup analysis of the LVEF and GLS dynamics in three different AS entities (Supplement Table 1). Group 1 included 86 patients with classic AS, group 2 included 31 patients with paradoxical low-flow low-gradient AS and group 3 included 33 patients with low-flow low-gradient AS. While the GLS improved significantly at the 3-month follow-up in all groups, it showed no significant improvement after one week. The LVEF significantly improved one week after the TAVR procedure in patients with classic AS and those with low-flow low-gradient AS (Supplement Table 1).
References


Supplement Table 1. Difference in systolic function between the three study subgroups.

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>First week after TAVR</th>
<th>3 months after TAVR</th>
<th>baseline vs first week*</th>
<th>baseline vs 3 months*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GLS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 1 (n=86)</td>
<td>-15.97 ± 2.7</td>
<td>-16.8 ± 3.75</td>
<td>-19.3 ± 4.2</td>
<td>0.82 [-2.04; 3.70], p=NS</td>
<td>3.86 [2.56; 5.17], p&lt;0.001</td>
</tr>
<tr>
<td>Group 2 (n=31)</td>
<td>-17.05 ± 2.82</td>
<td>-18.83 ± 2.95</td>
<td>-20.42 ± 2.38</td>
<td>1.77 [-0.24; 3.79], p=NS</td>
<td>3.9 [2.99; 4.81], p&lt;0.001</td>
</tr>
<tr>
<td>Group 3 (n=33)</td>
<td>-13.35 ± 11.8</td>
<td>-13 ± 7</td>
<td>-18.46 ± 3.03</td>
<td>0.93 [-2.05 ; 3.79], p=NS</td>
<td>8.02 [1.66; 14.37], p&lt;0.05</td>
</tr>
<tr>
<td><strong>LVEF</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 1 (n=86)</td>
<td>52.79 ± 9.73</td>
<td>55.57 ± 9.35</td>
<td>55.23 ± 6.39</td>
<td>-2.77 [-4.91; -0.63], p&lt;0.05</td>
<td>-0.69 [-2.04; 1.01], p=NS</td>
</tr>
<tr>
<td>Group 2 (n=31)</td>
<td>57.62 ± 4.83</td>
<td>56.33 ± 7.82</td>
<td>56.4± 6.6</td>
<td>1.28 [1.27; 3.84], p=NS</td>
<td>0.65 [-2.84; 4.14], p =NS</td>
</tr>
<tr>
<td>Group 3 (n=33)</td>
<td>37.46 ± 7.73</td>
<td>43.26 ± 10.07</td>
<td>43.42 ± 11.78</td>
<td>-5.79 [-8.57; -3.02],p&lt;0.001</td>
<td>-6.66 [-12.05; -1.27], p&lt;0.001</td>
</tr>
</tbody>
</table>

* = mean difference, 95% CI, p-value

LVEF = left ventricular ejection fraction; GLS = global longitudinal strain; TAVR = transcatheter aortic valve replacement