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Transcatheter aortic valve replacement restoring candidacy for liver transplant in cirrhotic patients

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Abstract title: Transcatheter aortic valve replacement restoring candidacy for liver transplant in cirrhotic patients

**Purpose:** Current guidelines for preoperative workup for an orthotopic liver transplant (OLT) recommend an echocardiogram that often rule out patients with superimposed severe aortic stenosis as transplant candidates. The purpose of this study was to shed light on the potential of transcatheter aortic valve replacement (TAVR) as a bridging therapy for liver transplants in cirrhotic patients with severe AS.

**Methods:** A retrospective chart review was performed on 500 patient records that underwent liver transplantation at a single large tertiary care center between 2017 and mid-2021. Two cases of alcohol cirrhosis were further investigated due to the simultaneous diagnosis of severe AS.

**Results:** This study reports the details of the TAVR procedures that alleviated the AS and lead to reinstated eligibility for OLT for both cases. The 1-month, 3-month, 1-year post-liver transplant follow-ups showed no complications in the function of both patients’ prosthetic aortic valves. Noteworthy post-transplant complications unrelated to aortic valve function for Case#1 included a left lower quadrant hematoma that resolved on its own and a brief episode of alcoholic recidivism that was successfully treated with the help of transplant psychologists. Case #2 had a post-transplant recovery course complicated two days after OLT by MRI confirmed chronic ischemia and chronic microhemorrhages that lead to left sided face drooping that improved within hours of onset.

**Conclusion:** Overall, these cases illustrate the effectiveness that TAVRs have on relieving the pre-transplantation risks of aortic stenosis in high-risk surgical aortic valve replacement patients.

Table 1. A comparison of echocardiogram parameters of aortic valve for patient #1 and #2 before and after TAVR and after OLT. For patient #1 the Echo occurred 4 days after the OLT, and that for patient #2 was 2 months after due to unrelated complications in recovery.

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Patient #1</th>
<th></th>
<th>Patient #2</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before TAVR</td>
<td>After TAVR</td>
<td>After OLT</td>
<td>Before TAVR</td>
</tr>
<tr>
<td>Aortic valve peak gradient (mmhg)</td>
<td>15.3</td>
<td>30.4</td>
<td>50</td>
<td>67.65</td>
</tr>
<tr>
<td>Aortic valves mean gradient (mmhg)</td>
<td>8.8</td>
<td>12.7</td>
<td>25</td>
<td>38.33</td>
</tr>
<tr>
<td>Left ventricular ejection fraction (%)</td>
<td>53.5</td>
<td>62</td>
<td>59</td>
<td>&gt;70</td>
</tr>
<tr>
<td>Aortic valve area (cmA²)</td>
<td>1.84</td>
<td>2.08</td>
<td>1.18</td>
<td>0.92</td>
</tr>
</tbody>
</table>
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Key words: