Impact of Tricuspid Regurgitation and Tricuspid Valve Repair on Outcomes Following VAD Implantation in INTERMACS

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Disclosures

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Background

- Left ventricular assist device (LVAD) implantation is an established treatment for patients with heart failure.

- Right ventricular (RV) failure and associated tricuspid regurgitation remain as important obstacles to long-term survival of these patients.

- Tricuspid valve repair (TVR) is a potential means to reduce the impact of RV failure after LVAD implantation.
  - Long-term effects unknown
  - Significant practice variation
Aim #1: To determine the incidence of tricuspid regurgitation and tricuspid valve repair (TVR) as a concomitant procedure at the time of left ventricular assist device (LVAD) implantation among destination therapy patients enrolled in INTERMACS.

Aim #2: To assess the impact of TVR on clinical outcomes following LVAD implantation among destination therapy patients enrolled in INTERMACS.
Inclusion Criteria and Study Group

- Primary Implants
- Continuous Flow devices
- Adults (age ≥ 19 years at implant)
- Destination Therapy at time of implant
- Implant dates: 2006-2013

- Patients: 2527
- Patient years: 2659.46
- Total deaths with a device in place: 704
Incidence of Tricuspid Regurgitation at time of LVAD Implant

<table>
<thead>
<tr>
<th>Degree of Tricuspid Regurgitation</th>
<th>Percent of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unknown</td>
<td>15</td>
</tr>
<tr>
<td>None</td>
<td>7</td>
</tr>
<tr>
<td>Mild</td>
<td>35</td>
</tr>
<tr>
<td>Moderate</td>
<td>25</td>
</tr>
<tr>
<td>Severe</td>
<td>10</td>
</tr>
</tbody>
</table>
Use of Tricuspid Valve Repair at time of LVAD Implant

Percent with Tricuspid Repair

Degree of Tricuspid Regurgitation
Survival Following LVAD Implant: None/Mild vs. Moderate/Severe TR

<table>
<thead>
<tr>
<th>Tricuspid Regurg (preimplant)</th>
<th>n</th>
<th>deaths</th>
<th>1mo %</th>
<th>12mo %</th>
</tr>
</thead>
<tbody>
<tr>
<td>None/Mild</td>
<td>1171</td>
<td>278</td>
<td>95%</td>
<td>78%</td>
</tr>
<tr>
<td>Mod/Severe</td>
<td>989</td>
<td>294</td>
<td>94%</td>
<td>74%</td>
</tr>
</tbody>
</table>

P = 0.009
Survival with Moderate/Severe TR: No TVR vs TVR

Concomitant Tricuspid Surgery  n  deaths
None  757  225
Repair  215  60

Overall $p = 0.83$
Incidence of Moderate/Severe Tricuspid Regurgitation after LVAD implant: TV Repair vs. No TV Repair

No TV Procedure
TV Repair

Pre-implant
1 week
1 month
3 month
6 month
12 month
18 month
24 month
Conclusions

• Significant tricuspid regurgitation is common in INTERMACS registrants after LVAD implantation as destination therapy

• Moderate and severe tricuspid regurgitation at the time of LVAD implantation are associated with reduced long-term survival
Conclusions

- Tricuspid valve repair at the time of LVAD implantation in patients with moderate and severe tricuspid regurgitation is not associated with improved survival.

- Tricuspid valve repair in LVAD patients is prone to late failure and results in similar rates of tricuspid regurgitation at late follow up as those that undergo LVAD implantation alone.
Thank you!