Update On Advances In The Treatment Of Infections Of The Native Aorta And TEVAR Endografts

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Disclosures

* none

ESVS Guidelines on Vascular Graft Infections
1st Meeting June 30, 2017
Chair: Nabil Chakfe
Thoracic/Thoracoabdominal Aortic Graft Infections

Germano Melissano, Frank Vermassen

Strings / Search Engines

• "thoracic aorta" AND "infection"
• "thoracic aorta" AND "mycotic aneurysm"
• "thoracic stent-graft" AND "infection"
• "thoracic" AND "aorta" AND "graft infection"
• aorto-esophageal fistula
• aorto-bronchial fistula

Bibliography Flow Chart

1657 publications
487 potentially relevant
151 inadequate data
239 duplicates
4 Literature Reviews
4 Multi-centre Series
10 Single-centre Series < 5 pts
25 Case reports
10 Imaging
87 included
233 Total Patients

Literature Reviews
**Jonker et Al. J Endovasc Ther 2009**

- TEVAR for AEF and ABF, 114 pts
- TEVAR can stabilise the patient with a minimally invasive technique
- AEF related deaths after discharge are caused by recurrent bleeding and sepsis
- Additional open surgery for the treatment of the oesophageal breach/defect seems to be associated with lower long-term mortality

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**Canaud et Al. Ann Thorac Surg 2013**

- TEVAR for ABF, mostly primary, 134 pts
- Technical success of TEVAR was 93.2% and 30-days mortality was 5.9%
- Aortic-related mortality at 17.4 months was 14.3%
- Additional concomitant or staged operation is required to address the bronchus or lung

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**Canaud et Al. J Vasc Surg 2014**

- TEVAR for AEF, 72 pts
- Technical success of TEVAR was 87.3% and 30-days mortality was 19.4%
- All-cause mortality at 7.4 months was 40.2%
- Mortality rate was higher when TEVAR was used as the sole therapeutic strategy due to late infection or recurrence of the AEF

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**Moulakakis et Al. J Vasc Surg 2014**

- Graft infections after TEVAR, 96 pts
- Endograft preservation (55 pts) had an in-hospital mortality of 42% and at 8.6 months of 81.8%
- Endograft excision (41 pts) had an in-hospital mortality of 36.6% and at 15.3 months of 46.3%

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**Demographics & Indications**

<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th># of Patients</th>
<th>Age (Mean)</th>
<th>Male (%)</th>
<th>Timing to Diagnosis (Days)</th>
<th>AEFI</th>
<th>TSD / PAU / IMI</th>
<th>AEF / ABF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chiesa et Al.</td>
<td>2010</td>
<td>19</td>
<td>73.8 (SD 7.1)</td>
<td>16 (84%)</td>
<td>327 (-)</td>
<td>13 (68%)</td>
<td>2 (11%)</td>
<td>-</td>
</tr>
<tr>
<td>Shidas et Al.</td>
<td>2014</td>
<td>23</td>
<td>68 (77%)</td>
<td></td>
<td>540 (5-2100)</td>
<td>-</td>
<td>-</td>
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<tr>
<td>Cassey et Al.</td>
<td>2014</td>
<td>36</td>
<td>69 (75%)</td>
<td></td>
<td>30 (15-150)</td>
<td>26 (7%)</td>
<td>-</td>
<td>5 (14%)</td>
</tr>
<tr>
<td>Cassey et Al.</td>
<td>2015</td>
<td>26</td>
<td>69 (65%)</td>
<td></td>
<td>310 (29-100)</td>
<td>15 (58%)</td>
<td>6 (23%)</td>
<td>-</td>
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</tbody>
</table>
Clinical Presentation

107 patients mostly with fistula

<table>
<thead>
<tr>
<th>Authors</th>
<th>Pain (%)</th>
<th>Fever/Chills (%)</th>
<th>Haematemesis (%)</th>
<th>Haemoptysis (%)</th>
<th>Shock (%)</th>
<th>AEF (%)</th>
<th>AEF + ABF (%)</th>
<th>AEF + ABF (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chiesa et Al.</td>
<td>1 (5%)</td>
<td>1 (5%)</td>
<td>13 (68%)</td>
<td>5 (26%)</td>
<td>13 (68%)</td>
<td>5 (26%)</td>
<td>5 (26%)</td>
<td></td>
</tr>
<tr>
<td>Smeds et Al.</td>
<td>17 (66%)</td>
<td>17 (66%)</td>
<td>-</td>
<td>-</td>
<td>12 (46%)</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Czerny et Al.</td>
<td>-</td>
<td>29 (81%)</td>
<td>19 (53%)</td>
<td>8 (22%)</td>
<td>26 (100%)</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Czerny et Al.</td>
<td>4 (15%)</td>
<td>7 (27%)</td>
<td>24 (82%)</td>
<td>6 (22%)</td>
<td>0</td>
<td>26 (100%)</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Management

107 patients

<table>
<thead>
<tr>
<th>Authors</th>
<th>Conservative</th>
<th>Fistula Repair Only</th>
<th>Open + Fistula Repair</th>
<th>Open - Fistula Repair</th>
<th>Endo + Fistula Repair</th>
<th>Endo - Fistula Repair</th>
<th>Overall Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chiesa et Al.</td>
<td>8 (42%)</td>
<td>6 (32%)</td>
<td>1 (5%)</td>
<td>1 (5%)</td>
<td>2 (11%)</td>
<td>-</td>
<td>16% 2-year</td>
</tr>
<tr>
<td>Smeds et Al.</td>
<td>5 (19%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>21 (91%)</td>
<td>0% 5-year</td>
</tr>
<tr>
<td>Czerny et Al.</td>
<td>17 (66%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>12 (46%)</td>
<td>0</td>
<td>71% 1-year</td>
</tr>
<tr>
<td>Czerny et Al.</td>
<td>4 (15%)</td>
<td>7 (27%)</td>
<td>24 (82%)</td>
<td>6 (22%)</td>
<td>0</td>
<td>26 (100%)</td>
<td>61% 2-Year</td>
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</table>

Clinical Presentation

Single-Centre Series + Case Reports

<table>
<thead>
<tr>
<th>Males</th>
<th>Age</th>
<th>Timing to Diagnosis (Days)</th>
<th>Pain</th>
<th>Fever/Chills (%)</th>
<th>Haematemis (%)</th>
<th>Haemoptis (%)</th>
<th>Shock</th>
<th>AEF</th>
<th>AEF + ABF</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>83</td>
<td>64.9</td>
<td>986</td>
<td>73</td>
<td>84</td>
<td>81</td>
<td>16</td>
<td>11</td>
<td>31</td>
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<tr>
<td></td>
<td>73</td>
<td>63.5</td>
<td>513</td>
<td>38</td>
<td>61</td>
<td>42</td>
<td>15</td>
<td>18</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>77</td>
<td>63.0</td>
<td>678</td>
<td>52</td>
<td>69</td>
<td>62</td>
<td>26</td>
<td>14</td>
<td>53</td>
</tr>
</tbody>
</table>

Management

“Previous Open”: Mortality

49 patients (%)

<table>
<thead>
<tr>
<th></th>
<th>Conservative</th>
<th>Endo + Fistula Repair</th>
<th>Endo - Fistula Repair</th>
<th>Overall Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-Day</td>
<td>108</td>
<td>46</td>
<td>32</td>
<td>-</td>
</tr>
<tr>
<td>1-Year</td>
<td>108</td>
<td>54</td>
<td>42</td>
<td>33</td>
</tr>
<tr>
<td>5-Year</td>
<td>108</td>
<td>64</td>
<td>54</td>
<td>60</td>
</tr>
</tbody>
</table>
Conclusions

• Thoracic graft / endograft infections are associated to very high mortality rates

• The outcomes of conservative treatment is ominous: intervention may be justified in most patients

• When emergency TEVAR, is followed by concomitant or late fistula repair outcomes are improved