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How best to treat infectious complications of open and endo thoracic aortic repairs

Disclosures
PI/Co-PI for several thoracic and abdominal aortic stent graft trials (Cook, Inc, Cordis® Corporation, Bolton Medical)

Proctor and participated as a lecturer at symposia hosted by Cook, Inc., Bolton, W.L. Gore and Associates, Jotec and Medtronic, Inc.

Main issues - 1

Prosthetic graft
Native aorta

Main issues - 2

OPEN
TEVAR

Main issues - 3

Fistula
No fistula

Etiology of graft infection
1. Contamination during surgery
2. Sepsis / hematogenous seeding
3. Bacterial translocation (contiguity)
4. Thrombus infection
5. Fistula (esophageal / bronchial)
Clinical presentation

Usually symptomatic (fever, septic state)

Often ruptured, aorto-esophageal / bronchial fistula

Aortic in situ surgical replacement

Stent-graft removal

Aorto-esophageal fistula

Esophageal associated repair

Direct repair (small esophageal lesion)

Aortic reconstruction (Silver-coated graft)

Intercostal muscle flap interposition
In case of large esophageal lesions...

Esophageal resection and gastric tubulization

Alternative option...

Plan A

Plan B

Case report

- ♂, 57 years
- Previous distal DTA repair
- Hematemesis, shock
- Ruptured thoracic PAU

Aortoesophageal fistula

Peri-esophageal air bubbles

TEVAR in emergency

life-saving

Air collection

Case report

Esophagogram shows esophageal leak

(3 days after emergent TEVAR)

Case report

Right thoracotomy

Intercostal muscle flap preparation

5 days after TEVAR...
Esophageal repair

- Esophageal fistula
- Double-layer suture

Intercostal muscle interposition

Follow-up

18F-FDG PET/CT at 2 yrs
(no abnormal tracer captation)

Infection of thoracic aortic grafts

OSR experience 1993 - 2016

<table>
<thead>
<tr>
<th>Total</th>
<th>N = 25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infection of surgical graft</td>
<td>14 (56%)</td>
</tr>
<tr>
<td>Infection of endoprosthesis</td>
<td>11 (44%)</td>
</tr>
<tr>
<td>Associated esoph./bronch. fistula</td>
<td>17 (68%)</td>
</tr>
<tr>
<td>Mean interval from index procedure</td>
<td>16 ± 19 months</td>
</tr>
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</table>

Infection of thoracic aortic grafts

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Pts. (N = 25)</th>
<th>Mortality at 1 year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conservative (only debridement / drainage)</td>
<td>2</td>
<td>100%</td>
</tr>
<tr>
<td>Primary surgical aortic reconstruction (+ esoph./bronch. repair)</td>
<td>15</td>
<td>33%</td>
</tr>
<tr>
<td>TEVAR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Definitive (TEVAR alone)</td>
<td>2</td>
<td>100%</td>
</tr>
<tr>
<td>Secondary esoph./bronch. repair / muscle flap</td>
<td>6</td>
<td>16%</td>
</tr>
</tbody>
</table>

Conclusions

Thoracic graft infection / fistula

- TEVAR life-saving in emergency
- After stabilization: decision making
- Possible role of associated esophageal / bronchial repair and intercostal muscle flap