Indications, techniques and results for open conversions after TEVAR

Michael Jacobs

Indications for secondary intervention after TEVAR

if no endovascular measures are feasible

- Endoleak type 1a/b (post dissection, stiff septum)
- Progression of disease (growing aneurysm)
- Endograft infection
- Aorto bronchial fistula
- Aorta esophageal fistula

Surgical protocol

- Extra corporeal circulation
- Selective organ perfusion (celiac, SMA)
- Custodiol kidneys
- Cardiac arrest and brain perfusion if arch involved
- CSF drainage
- Neuromonitoring spinal cord (MEP)

Table 3. Indication for secondary surgery (n = 44 patients).

<table>
<thead>
<tr>
<th>Indication</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type I endoleak</td>
<td>10</td>
<td>23</td>
</tr>
<tr>
<td>Type Ia</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Type Ib</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Type Ia + Ib</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Type Ia + persisting false lumen perfusion</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Persisting false lumen perfusion</td>
<td>8</td>
<td>18</td>
</tr>
<tr>
<td>Proximal/distal disease progression</td>
<td>16</td>
<td>36</td>
</tr>
<tr>
<td>Proximal</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Distal</td>
<td>13</td>
<td>30</td>
</tr>
<tr>
<td>Device specific failure (fracture/dislocation)</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>Infection</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>Graft misplacement during primary procedure</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>44</td>
<td>99%</td>
</tr>
</tbody>
</table>
Procedures (n=44)

- DTAA 12 (28%)
- TAAA I 4 (9%)
- TAAA II 5 (12%)
- TAAA III 13 (30%)
- TAAA IV 7 (16%)
- TAAA V 3 (7%)
- Simult arch 7 (16%)
- Complete explantation endograft 41%

Mortality

In-hospital-mortality: 9/44 (20%)

- Hemorrhage (4)
- Mesenteric ischemia (1)
- Respiratory insufficiency (2)
- Cerebellar ischemia (1)
- Multi organ failure (1)

Median follow up 34 months

- Survival rate 71%
- Freedom from open repair failure 100%

Patient Mrs. NK, 42 years

- 2015 type A dissection: arch repair, distal anastomosis distal to left subclavian art.
- 2016: hematemesis due to aorto-esophageal fistula; emergency TEVAR
- 2017: persisting fistula
- PET-CT: infection entire ascending aorta and arch prosthesis as well as endograft

Surgical strategy

1. Esophagus resection
2. Radical explantation all artificial graft material and reconstruction with bovine pericardial patches
3. Gastric pull-up (ante-sternal)
Open conversion after TEVAR; lessons learned

- With correct indication, the only solution
- Complex pathology, sick patients
- Significant morbidity and mortality
- Survivors (80%) have good prognosis
- Low re-intervention rate
- Open surgery is and will be crucial
- Centralization required