Surgical Techniques for Conversion After Failed EVAR / TEVAR

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When all else fails after EVAR / TEVAR...

• Surgical conversion
  – Partial endograft removal – preservation of components
  – Complete graft removal – infection
  – Proximal aortic control
    » Aorta – with or without endograft
    » Endovascular
  – Distal control – endograft, native or both

Chronic conversion: Zenith Endograft

73 y/o 2 years post EVAR
18 mo post gastrectomy
AAA growth
Type II endoleak?
Coiling of IMA with continued AAA growth

16 F Sheath
Aortic occlusion balloon

Aortic neck / renal endarterectomy
Prolene and Rummel to collapse stent

Type II endoleak – does not resolve?

Recalcitrant Type II endoleak suspected

Type III endoleak at conversion

Type III endoleak post surgical repair
Duplex scan at 16 months
Type III endoleak?

- 4 years post EVAR
- 2 years post IMA coiling
- 90 seconds delay
- Suture hole leak?

Reline endograft

Preservation of proximal endograft:
- Avoids aortic neck endarterectomy

87 y/o, 2 yrs s/p EVAR; AAA 6cm to 8.8 cm
Coil embo of IMA, Transfemoral, Injection of glue;
Re-lining of endograft; Progressive AAA enlargement

Infected Endograft: Extra-anatomic revascularization and complete graft removal

Infected Endograft: In situ revascularization with Cryo-preserved homograft

Endograft-duodenal fistula
Endograft-duodenal fistula

Proximal Aortic control
Fistula takedown

TEVAR Conversion - Infection

Circulatory support during TEVAR conversion

Arterio-venous ECMO

Circulatory support during TEVAR conversion:
Arterio-venous ECMO

TEVAR Conversion:
Cryopreserved homograft with antibiotic beads

TEVAR Conversion:
Double thoracotomy (single incision)
Rifampin® soaked Dacron graft

Offline + antibiotic beads
Results (N = 47)

<table>
<thead>
<tr>
<th></th>
<th>Acute (n=12)</th>
<th>Chronic (n=35)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myocardial infarction</td>
<td>1</td>
<td>1</td>
<td>NS</td>
</tr>
<tr>
<td>Respiratory failure</td>
<td>1</td>
<td>2</td>
<td>NS</td>
</tr>
<tr>
<td>CVA</td>
<td>0</td>
<td>0</td>
<td>NS</td>
</tr>
<tr>
<td>Renal failure</td>
<td>0</td>
<td>1</td>
<td>NS</td>
</tr>
<tr>
<td>Perioperative deaths</td>
<td>2 (17%)</td>
<td>1 (3%)</td>
<td>0.03</td>
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<tr>
<td>Chylous ascites</td>
<td>0</td>
<td>1</td>
<td>NS</td>
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</tbody>
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Surgical Rescue after Failed EVAR:

Conclusions

- Safe – 35 chronic conversions 1/35 (3%) mortality
- Acute conversion is best avoided - ↑ mortality
- Individualized approach
- Preservation of components is best – follow-up
- Supra-renal control post EVAR rarely needed
  - Infrarenal control – selected cases
  - Trans-graft endovascular control – most cases
- Complete graft removal for infection
- Complete endograft preservation – selected cases

UCLA Aortic Center

Thank you