Endovascular Strategies for treatment of Type 1 endoleak in EVAR

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I have the following potential conflicts of interest to report:

Consulting – Medtronic, Bolton Medical, Orzone

Other(s) – Speaker, travel and conference fees from Medtronic and Bolton and Gore;

Imperial College London:

Institutional level funding from Orzone
...not all endoleaks are the same

- Endograft mal-deployment
- Excessive thrombus/calcium in seal zone
- Inadvertent creation of a leak channel
  - Excessive oversizing creating gutters
  - Non-circular or angulated neck – conformability challenges
- Migration and loss of seal
- Late insufficient apposition due to aortic expansion
Initial Manouvres

Early endoleak
First Correct Endograft Mal-deployment, Re-balloon, Extend to renals ensuring max seal, and consider Palmaz
EndoAnchors for type 1 endoleak

HELI-FX™ ENDOANCHOR™ IMPLANT SYSTEM
ENDOVASCULAR INTERRUPTED SUTURE SYSTEM
ANCHOR Registry – Therapeutic Use for Proximal ELs

**PROCEDURAL SUCCESS**
Technical success without type Ia endoleak at completion arteriography

<table>
<thead>
<tr>
<th>Intra-operative T1 EL</th>
<th>84.4% Intra-op T1 EL</th>
<th>108/128</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revision</td>
<td>86.6% Revision</td>
<td>188/217</td>
</tr>
</tbody>
</table>

**Kaplan-Meier Estimates**

<table>
<thead>
<tr>
<th>Intra-operative T1 EL</th>
<th>Revision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freedom from ACM</td>
<td>80.3%</td>
</tr>
<tr>
<td>Freedom from ARM</td>
<td>98.4%</td>
</tr>
<tr>
<td>Freedom from 2nd Procedures</td>
<td>97.4%</td>
</tr>
<tr>
<td>Freedom from 2nd Procedures for type Ia endoleak</td>
<td>86.3%</td>
</tr>
</tbody>
</table>
CONFORMABILITY CHALLENGES
CONFORMABILITY CHALLENGES

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CT evaluation is essential if possible, consider more detailed imaging to triangulate leak channel with angiography if not.

Fix side away from endoleak first.

Row of staples across endoleak and often another row below.
Posterior Type 1a endoleak
Late Type 1 Endoleak

Late endoleak

- Migration and loss of seal
  - Extend, re-ballooning

- Neck degeneration
  - Fenestrated cuff
  - Chimney / CHEVAS
  - Band
  - Hybrid
  - Open explant
  - Embolisation

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Fenestrated Cuff
• 2010-16
• 10 patients. Mean 78 years; seven patients ASA grade ≥ III
• IA endoleak following EVAR, 5 cuffs, 5 fenestrated re-lining

• Technical success was 9/10
• Median hospital stay of 6.5 (6-16) days
• No 30-day mortality

• Mean follow up was 22.4 ± 13 months.
• One death at 51 months from rupture (Type 2 endoleak)
• No other aneurysm related death
Primary patency 94%

Secondary patency 95.3%.

Thirty day mortality 0.8%

New onset of type IA endoleak needed secondary procedure: 1.6%
Hybrid Approaches
Explantation
Strategies for proximal type 1 endoleak

- Early/intra-operative
  - Re-balloon
  - Extend
  - Endoanchor if conformability issues or leak channel identified

- Late, due to migration
  - Extension piece (and endoanchors)

- Late, due to degeneration
  - Fenestrated cuff
  - Chimney
  - Hybrid or open approach
  - Fill with onyx if no other solution

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