Endovascular fixation of aortic endografts – a solution for short aortic necks?

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I have the following potential conflicts of interest to report:

- [✓] Consulting: Abbott, Bolton, Cook, Cordis, Medtronic, WL Gore
- [ ] Employment in industry
- [ ] Stockholder of a healthcare company
- [ ] Owner of a healthcare company
- [ ] Other(s)
- [ ] I do not have any potential conflict of interest
Outcome-based anatomic criteria for defining the hostile aortic neck

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Table III. Binary logistic regression: Final model

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Standard error</th>
<th>Odds ratio</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aortic neck diameter at lowest renal artery (mm)</td>
<td>0.102</td>
<td>0.033</td>
<td>1.11</td>
<td>.002</td>
</tr>
<tr>
<td>Anatomic neck length (10% threshold, mm)</td>
<td>−0.028</td>
<td>0.012</td>
<td>0.97</td>
<td>.017</td>
</tr>
<tr>
<td>Neck circumference with mural thrombus (mm)</td>
<td>−0.007</td>
<td>0.002</td>
<td>0.99</td>
<td>.001</td>
</tr>
<tr>
<td>Intercept</td>
<td>−2.133</td>
<td>0.871</td>
<td>.014</td>
<td></td>
</tr>
</tbody>
</table>

Conclusions: A limited number of independent anatomic variables are predictive of type Ia endoleak after EVAR, including aortic neck diameter and aortic neck length, whereas mural thrombus in the neck is protective. This study suggests that anatomic measures with identifiable threshold cutpoints should be considered when defining the hostile aortic neck and assessing the risk of complications after EVAR. (J Vasc Surg 2015;61:1383-90.)
Endovascular solution for challenging proximal aortic neck

- Ch-EVAR
- f/b-EVAR
- Custom EVAR
Endovascular fixation of endografts: HeliFx system
Heli-FX System: indications for use

- Intended to provide fixation and sealing between endovascular aortic grafts and the native artery
- Indicated for use in patients whose endovascular grafts have exhibited migration or endoleak, or are at risk of such complications
- In whom augmented radial fixation and/or sealing is required to regain or maintain adequate aneurysm exclusion
- At the time of the initial endograft placement, or during a secondary (i.e. repair) procedure
Why a prophylactic use of heli-fx endoanchors?

- Standard procedure
- No additional access/techniques required
- Infrarenal fixation is maintained
- Visceral vessels are not involved
- Does not prevent any future option (ChEVAR, fEVAR)
Increased Rate of Sac Regression in Propensity-Matched Cohorts

In a propensity-matched study design, significantly greater AAA sac regression with EndoAnchor™ fixation at 2 years post-EVAR (81.1% vs. 48.7% without EndoAnchor™ fixation, p=.01)

Methodology

- Pre-EVAR CTs core lab evaluated
- Propensity matching on 19 variables
- 2 cohorts:
  - 99pts EVAR
  - 99pts EVAR+EndoAnchor™

J Vasc Surg 2017
Endovascular fixation of endografts: conical aortic neck
Endovascular fixation of endografts: angulated aortic neck
Endovascular fixation of endografts: short aortic neck
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Endovascular fixation of endografts:
short aortic neck
ANCHOR Registry Hostile Neck Cohort Endurant™ + Heli-Fx™ short neck cohort (N=70)

Technical Success*:
88.6% (62/70)

*defined as deployment of the desired number of EndoAnchor(TM) Implants, adequate penetration of the vessel wall, and absence of EndoAnchor fracture

Procedural Success**:
97.1% (68/70)

**defined as technical success without a type Ia endoleak at completion angiography.

<table>
<thead>
<tr>
<th>Initial Implant Procedure</th>
<th>Avg. duration of Procedure (min)</th>
<th>Avg. time to EndoAnchor implant (min)</th>
<th>Avg. Fluoro time (min)</th>
<th>Avg. number of EndoAnchor implants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>148</td>
<td>17</td>
<td>35</td>
<td>5.5</td>
</tr>
</tbody>
</table>
## ANCHOR Registry Hostile Neck Cohort

Endurant™ + Heli-Fx™ short neck cohort (N=70)

<table>
<thead>
<tr>
<th>Core Lab</th>
<th>1 month</th>
<th>12 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 1a Endoleak</td>
<td>6.8% (4/59)</td>
<td>1.9% (1/53)</td>
</tr>
<tr>
<td>Endograft Migration</td>
<td>N/A</td>
<td>0.0% (0/41)</td>
</tr>
<tr>
<td>2nd Endo Procedure</td>
<td>4.3% (3/70)</td>
<td>4.7% (3/64)</td>
</tr>
</tbody>
</table>

Endurant+Heli-FX have been obtained FDA and CE approval for neck length between 4-9 mm
Endovascular fixation of endografts: patient selection

**NEED FOR A CIRCUNFERENTIAL REGULAR NECK**
Endovascular fixation of endografts: when not to use

No neck, thick thrombus, Ca++, large gap
Endovascular fixation of endografts: precise endograft deployment

Endoanchors MUST penetrate aortic neck
Endovascular fixation of endografts: fix endograft at the proximal edge
Endovascular fixation for short aortic necks
Conclusion

• HeliFx Endoanchors represent a complimentary treatment option in challenging proximal aortic neck

• HeliFx Endoanchors demonstrated to be a safe therapeutic approach through 1-year in challenging patients with proximal neck between 4 and 10 mm

• Proper procedural technique is critical to clinical success