Endoanchors can prevent Cranial Migration of Thoracic Endografts: When And How Should They Be Used

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- Bolton Medical
- Cordis
- Medtronic
- iVascular
- Bayer
- MSD
- Ferrer
- GE
- ASTA ZENEKA
- W.L. Gore
- Jotec

Proctor

- Bolton Medical
- Cook
- Medtronic
- W.L. Gore
- Cordis
- Jotec
Index

- Scope of the problem
- Biomechanics in Distal DTA
- Preventive actions
- Summary
Index

• Scope of the problem
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Scope of the problem

- **Durability** of thoracic endografting remains a concern

- **Cranial migration**, from the distal attachment, is part of it (specially with distal neck length <3cm)

- It is an **under-reported** complication
Scope of the problem

4 years later
## Scope of the problem

<table>
<thead>
<tr>
<th>Pivotal Trials</th>
<th>Migration rates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gore TAG J Vasc Surg 2005</td>
<td>4.0% @ 2y</td>
</tr>
<tr>
<td>VALOR J Vasc Surg. 2008</td>
<td>2.4% @ 1y</td>
</tr>
<tr>
<td>TX2 J Vasc Surg. 2008</td>
<td>2.8% @ 1y</td>
</tr>
</tbody>
</table>

- In our experience, before 2006, for distal neck lengths 1.5-3cm, 60% cranial migration rate was registered at 5 years.
- Cranial migration of TEVAR is underreported, specially in long follow-up.
Index

- Definition
- Biomechanics in Distal DTA
- Preventive actions
- Summary
Abdominal pull out forces

CA Figueroa et al, SITE 2011
Thoracic pull out forces

CA Figueroa et al. J Endovasc Ther 2011
The consequence: up cranial migration & Type Ib endoleak
Index

- Definition
- Biomechanics in Distal DTA
- Preventive actions
- Summary
Preventive actions
How to improve distal fixation and sealing?

Wrapping
Occluded CT
Periscope
Debranching
Scallop
Hooks
Endoanchors
Branched
Our Approach

Preventive actions

Distal neck length

≥3cm Regular Straight

Regular endograft (=3cm +/- endoanchors*)

* If angulated or long life expectancy
Preventive actions

Our Approach

Distal neck length

- ≥3cm
  - Regular endograft
    (=3cm +/- endoanchors*)
  - If angulated or long life expectancy

- 1.5-3cm
  - Scalloped endograft
    +/- endoanchors
Heli-FX™ System:
Applier + Guide + 10 EndoAnchor™ Implants

Cross Bar

3 mm

1.0 mm

3.5 mm

18Fr OD,
90cm Working Length
Example # 1

Distal neck =3cm, 63 yo lady
Example # 2

Distal neck 2cm, 67 yo man
Our Approach

- Regular endograft
  (=3cm +/- endoanchors*)

- Scalloped endograft
  +/- endoanchors

- Fenestrated and/or branched endografts

* If angulated or long life expectancy
Example # 3

Distal neck <1.5cm, 68 yo man
Index

- Definition
- Biomechanics in Distal DTA
- Preventive actions
- Summary
Durability of thoracic endografting remains a concern.

Cranial migration is a consequence of biomechanical forces of the thoracic aorta and it is underreported.

The proximal and distal necks deserve equal attention.

Many different approaches have been suggested to avoid cranial migration.

Endoanchors, scallops, fenestrations and branched endografts should be applied more often.
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