Useful Indications for Endo-Anchors in TEVAR

P.M. Kasprzak
Department of Vascular Surgery
Endovascular Surgery
University of Regensburg
Germany
Disclosures (grants, speaker fees, development, patents):
Cook, Gore, Vascutek, Bard, Atrium, Aptus-Medtronic, Maquet, UCB
Complications after TEVAR

- Aneurysm expansion, - rupture
- Endoleak Type Ia/b, II, III
- Migration
- Stent graft infolding, protrusion = coarctatio - collapse
- Side branch occlusion / organ dysfunction, ischemia
- Intraluminal thrombosis
- Spinal ischemia
- Aortic dissection
- Stent graft infection
- Complications of the groin / iliacs
EndoAnchoring for TEVAR

Problems at the Sealing Zone:

- Short neck / kinking
- Stent graft nonalignment
- Type I a/b Endoleak
- Migration
- Stent graf protrusion / Infolding

Possible solution: EndoAnchoring?

Proximal Migration / Dislocation after 1 Year
Partial debranching for descendens aneurysm

Endoleak Ia after 6 months

Arch stent graft with scalop

Cook ®
First EndoAnchors in TEVAR

March, 23 - 2011
Protrusion into the aortic lumen (coarctation)
Subtotal stent graft collapse at the level of the distal aortic arch after unsuccessful proximal stent graft extension and primary treatment for traumatic aortic rupture (A). Successful secondary attachment of the proximal aortic extension stent graft to the inner curvature of the distal aortic arch using 7 endostaples (insert with black arrows, B).
Stentgraft migration with RTAA after partial Debranching
Stentgraft migration with RTAA after partial Debranching proximal Stentgraft-Extension
Fixation with 3 helical endostaples (arrow) and thoracic stent graft extension for secondary treatment of a thoracic aortic aneurysm with a distal type Ib endoleak (insert with white arrows showing 2 endostaples).
10/2011 emergency TEVAR and EVAR
Value of EndoAnchors in Complex TEVARs and F / BEVARs

Limitation:

- Lack of apposition between stentgraft and aortic wall
- Primary procedure or endoleak (distance to the aortic wall > 3mm)
- Thick thrombus formation
- Stentgraft underseized

Possible solution: Extension Cuff and Endoanchors
EndoAnchors – De Novo Indication takes Over

Department of Vascular and Endovascular Surgery
University of Regensburg 2011 – 2016

Endoanchors in 116 Patients with EVAR, TEVAR, FEVAR and BEVAR

Age 70 (±10) 42-88

99 men (mean 69 years)
17 women (mean 75 y.)
Patients

University of Regensburg
2011 – 2015

25 Patients with EndoAnchors in TEVAR and F/B EVARs

17 men, 8 women

Age 71 (43 – 88)

Elective 19, ruptured 6

Additional cuff or extension 6

Indication:

<table>
<thead>
<tr>
<th>Condition</th>
<th>Patients (n=25)</th>
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<tbody>
<tr>
<td></td>
<td>n</td>
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<tr>
<td>Nonalignment, Endoleak I a-b</td>
<td>10</td>
</tr>
<tr>
<td>Hostile neck</td>
<td>7</td>
</tr>
<tr>
<td>Stent graft protrusion</td>
<td>2</td>
</tr>
<tr>
<td>Partial stentgraft collaps</td>
<td>1</td>
</tr>
<tr>
<td>Migration +side branch malperfusion</td>
<td>2</td>
</tr>
<tr>
<td>Non alligment</td>
<td>3</td>
</tr>
</tbody>
</table>
Value of EndoAnchors in Complex TEVARs and F / BEVARs

Perioperative results:

- Technical success 25/25 (100 %)
- 3-14 EndoAnchors per patient implanted
- Sheath repositioning in 20-30 %
- 3 anchors lost and retracted
- 1 cerebral embolisation of the left vertebral artery
  using transaxillar approach during endovascular aortic arch intervention / deceased
Value of EndoAnchors in Complex TEVARs and F / BEVARs

Results during FU:

• Follow-up 24 Months (6 - 54)
• no dissection, periaortal hematoma or infection
• 2 Type II endoleaks with stable aneurysm diameter
• 1 Type III endoleak (BEVAR, reintervention with TEVAR)
• No redo for EndoAnchors
• No aneurysm related mortality
Value of EndoAnchors in Complex TEVARs and F / BEVARs

We consider EndoAnchors for treatment in:

- Nonalignment
- Short neck / kinking
- Prevention of migration / side-branch malperfusion
- Stent graft protrusion
- Partial stent graft collaps
- Typ I endoleak (ev. with Extension-Cuff / Stentgraft)

as therapy option with promising early results
Fenestrated TEVAR / BEVAR
Migration of Fenestrated (LSA) TEVAR in BEVAR for TAAA
Left Vertebral originating from the Arch
Arch Aneurysm

Fenestration in-situ (transcarotidal)
Chimney for the left CCA in ruptured Arch Aneurysm
Value and Limitations of EndoAnchors in TEVAR

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as therapy option with promissing early results
- Proximal fixation of extensive TAAA Stentgrafting?
Proximal EndoAnchoring of the TEVAR with Scalop for Brachiocephalic Trunk and Fenestration for the left CCA in Patient with Multibranched Stentgraft for Type II TAAA