Complications in Target Arteries of Branched and Fenestrated Stent Grafts – Incidence and Management

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Branched (T)EVAR + Fenestrated EVAR

Combined experience
Helios Vascular Center Berlin-Brandenburg

• 2004 - 2017
• 466 patients
• Zenith Stent-grafts in all cases
  (CMD, T-Branch, Standard Fenestrated)
• Target arteries: Renal, SMA, CA, IIA
• Bridging stent-grafts:
  Advanta V12 balloon expandable
<table>
<thead>
<tr>
<th>Graft Type</th>
<th>n</th>
<th>Hospital Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>EVAR Fenestrated Grafts</td>
<td>190</td>
<td>4.7% (n=9)</td>
</tr>
<tr>
<td>Branched TEVAR</td>
<td>138</td>
<td>8.7% (n=12)</td>
</tr>
<tr>
<td>• Off-the shelf (T-Branch)</td>
<td>93</td>
<td></td>
</tr>
<tr>
<td>• CMD Grafts</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>EVAR with Iliac side branches</td>
<td>138</td>
<td>1.4% (n=2)</td>
</tr>
<tr>
<td>Overall</td>
<td>466</td>
<td>4.9% (n=23)</td>
</tr>
</tbody>
</table>

Target arteries: 1270
Branched (T)EVAR + Fenestrated EVAR
n = 466

Complications in target arteries:
Dissection, rupture, perforation, thrombosis, occlusion

- 44 patients (9.4 %)
- 44 Target arteries (3.5 %)
  - Renal arteries 32
  - SMA 10
  - Celiac artery 2
Branched (T)EVAR + Fenestrated EVAR  
\[ n = 466 \]

Complications in target arteries  
Management

- Thrombolysis
- Stenting
- Coiling
- Occlusion of side branch
FEVAR
SMA occlusion
FEVAR
Stenting of dissected renal artery
FEVAR
Stenting of prolonged intraprocedural SMA occlusion
BrTEVAR
CA inaccessible – Branch occlusion with Amplatz plug
Branched (T)EVAR + Fenestrated EVAR  
\[ n = 466 \]

Management of  
44 target artery complications

- Successful 34
- Lethal 9*
  - SMA 8 (of 9)
  - Renal artery 1 (of 22)

*contributes 40% to overall mortality  
(9 of 23)
Conclusion

• Injury to target arteries in endovascular repair with branched and fenestrated stent-grafts is a rare but serious complication.
• Especially damage to the SMA has a high mortality.
• Further improvement of endovascular skills, instruments and trouble shouting devices are mandatory to avoid these complications.
Thank you for your attention.
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