Fenestrated Anaconda stent-graft in the treatment of juxtrarenal, suprarenal and type IV TAAA

D. Kotelis, K. Schleimer, H. Jalaie, J. Grommes, M.J. Jacobs, J. Kalder

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Disclosures

• Johannes Kalder is a consultant for Vascutek, Cook Medical, and Bentley Innomed
Pararenal aortic aneurysm repair using fenestrated endografts

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Objective: We performed a systematic review of the current literature to analyze the immediate and follow-up results of fenestrated endovascular aortic aneurysm repair (F-EVAR) in patients with pararenal abdominal aortic aneurysms (AAAs).

Methods: The Medline, Embase, and Cochrane databases were searched to identify all studies reporting F-EVAR of pararenal AAAs published between January 2000 and May 2011. Two independent observers selected studies for inclusion, assessed the quality of the included studies, and performed the data extraction. Studies were selected based on specific predefined criteria. Outcomes were technical success (successfully completed procedure with endograft patency, preservation of target vessels, and no evidence of type I or III endoleak at postprocedural imaging), 30-day mortality, all-cause mortality, branch vessel patency, renal impairment, and secondary interventions. Between-study heterogeneity was calculated using I² statistics. Pooled estimates were calculated using a fixed-effects (I² <25%) or a random-effects (I² >25% to <50%) model.

Results: Nine studies were included reporting 629 patients who underwent F-EVAR for a pararenal AAA, of which 1622 target vessels were incorporated in an endograft design. Between-study heterogeneity was ≤41% for all outcomes. The pooled estimate (95% confidence interval [CI]) was 90.4% (87.7%-92.5%) for technical success, 2.1% (1.2%-3.7%) for 30-day mortality, and 16% (12.5%-20.4%) for all-cause mortality. Follow-up was 15 to 25 months. The pooled estimate (95% CI) during follow-up was 93.2% (90.4%-95.3%) for branch vessel patency, 22.2% (16%-30.1%) for renal impairment, and 17.8% (13.5%-22.6%) for secondary interventions.

Conclusions: Promising immediate and midterm results (up to 2 years) support F-EVAR as a feasible, safe, and effective treatment in a relatively high-risk cohort of patients with pararenal AAAs. (J Vasc Surg 2012;56:238-46.)
Why Anaconda?
Repositionable / transaxillary cannulation
What do we know so far?

- Infrarenal graft CE mark in 2005
- First fenestrated Anaconda implantation in 2010
- Größte Serie aus den Niederlanden: 8 Zentren, 25 Patienten, 23 juxtarenal AAA, 2 short neck AAA, 11 Monate follow-up
  - 53/56 fenestrations cannulated
  - 1/25 (4%) in-hospital mortality
  - 12% type I endoleaks
  - 28% type II endoleaks

Aachen experience: 2011-2015

Table 1. Characteristics of the 39 Study Patients.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, y</td>
<td>74 (59–86)</td>
</tr>
<tr>
<td>Men</td>
<td>36</td>
</tr>
<tr>
<td>ASA classification</td>
<td>3 (2–4)</td>
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<tr>
<td>Hypertension</td>
<td>34 (87)</td>
</tr>
<tr>
<td>Smoking history</td>
<td>16 (41)</td>
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<tr>
<td>Diabetes mellitus</td>
<td>5 (13)</td>
</tr>
<tr>
<td>GFR &lt;60 mL/min/1.73 m²</td>
<td>16 (41)</td>
</tr>
<tr>
<td>Dialysis</td>
<td>2 (5)</td>
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<tr>
<td>BMI &gt;30 kg/m²</td>
<td>34 (87)</td>
</tr>
<tr>
<td>CAD</td>
<td>24 (61)</td>
</tr>
<tr>
<td>Previous myocardial infarction</td>
<td>6 (9)</td>
</tr>
<tr>
<td>COPD</td>
<td>5 (17)</td>
</tr>
<tr>
<td>PAD</td>
<td>8 (20)</td>
</tr>
<tr>
<td>Previous infrarenal aortic surgery</td>
<td>4 (10)</td>
</tr>
</tbody>
</table>
Aneurysm morphology (N=39)

23 (59%)
12 (31%)
4 (10%)
Infrarenal neck $>60^\circ$ (N=5)
Stent-graft configurations

**Fenestrations**
- Renals: 73
- SMA: 25
- Celiac trunks: 8

**Stent-grafts**
- 5x fenestrated: 2
- 4x: 6
- 3x: 17
- 2x: 12
- 1x: 2

**Zenith iliac side branch**: 3
Survival

In-hospital mortality 3/39 (8%)
- Mesenteric embolism 2
- Renal artery rupture 1

Mortality during follow-up (33 mo.) 4/36 (11%)
Technical success (37/39; 95%)

- 1x cannulation failure
- 2x stent dislocation
- 2x stent fracture
- 1x renal stent occlusion (3.5mm)

➢ Target vessel patency 95/96 (99%)
Postoperative adjunctive maneuvers (N=9; 23%)

- Target vessel bridging stent relining/extension
- Coil / glue embolization for type II endoleak
- Ascending colon resection
- Endograft limb thrombectomy
- Operation for lymph fistula

➢ Aneurysm sac stable/decreased:

34/36 (94%)
Conclusions

Fenestrated Anaconda broadens spectrum of indications

- Satisfactory short-term technical and clinical success
- Midterm efficacy (aneurysm sac regression) very good
- Durability (target vessel patency) excellent
- Significant overall mortality and reinterventions
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