Inner branches: a third option to address “non-suitable” visceral target vessels in FEVAR/BEVAR

Indication, technique, and limitations

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Fenestrations or Branches?
Fenestration

- 90 degree take-off
- Graft in contact/close to aortic wall
- Catheterisation from below
Branch

- Sharp take-off
- Larger space between graft and aortic wall
- Catheterisation from above
What to do with „non-suitable“ vessels?

- Steep take-off in conjunction with smaller diameter of the aorta
Inner Branches
Advantages of Inner Branches

• No Risk of squashing the Branch
  – Small diameter
  – Angulation

• Option to keep the main graft wide
  – Grafts with combination of F and B

• Cover less Aorta proximally

• Easier catheterization of Vessel?
  – Support of the „basket“ guides the catheter
Post-Dissection TAAA
Repair of previous FEVAR
Partial opening of graft...
Patients (N=43)
Main Reason for Inner Branches (N=63)

- Target Vessel Anatomy: N=38
- To keep main graft wide: N=34
- To start lower in Aorta: N=7
- Specials: N=2
- PS Combination of Reasons!: N=18
Stent-graft Design

- Inner Branches + Fenestrations
  - N=39

- Inner Branches only
  - N=4
## Indwelling Wire

### 52/63 Inner Branches

<table>
<thead>
<tr>
<th>N of Inner Branches</th>
<th>N of Indwelling wires</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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</tr>
<tr>
<td>2 (inner branches and fenestrations)</td>
<td>27</td>
</tr>
<tr>
<td>3 (inner branches only)</td>
<td>3</td>
</tr>
<tr>
<td>4 (inner branches only)</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>8</td>
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</tbody>
</table>
Technical Details
Catheterization of Inner Branch/Target Vessel

• Technical Success: 100%

• Inner Branches
  – With indwelling wire: N= 53: all <1’
  – Without indwelling wire: N=11: all >3’

• Target Vessels
  – With fenestrations: N=49: all <1’
  – Only inner branches: N=14: (<1’: N=3; 1’-3’: N=4; >3’:N=7)
Follow-up
Mean: 14 months (2-26 months)

• **Target Vessel Occlusion**: N=5 (7.9%, in 4 patients)
  - all in renal arteries
  - 4/5 in vessels with 5mm bridging stent-grafts
  - 2/5 in grafts with branches only
LRA Occlusion:
Suboptimal Orientation of the Graft? (4 inner branches)
Limitations

• Manufacturing with regard to Position
  – Have to fit inside existing Z-Stents
Conclusions

• Interesting third option
  – Combination of Inner Branch(es) with fenestrations
  – Avoid graft with inner branches only!
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