Role of IMA in Type II Endoleak after Endovascular Treatment

P. M. Kasprzak
Department of Vascular Surgery
Endovascular Surgery
University Hospital Regensburg, Germany
Head: Univ-Prof. K. Pfister

Disclosures Prof. Dr. Kasprzak (grants, speaker fee, development)
Cook, Gore, Vascutek, Bard, Medtronic, Maquet, UCB, Bentley
## Type II EL

<table>
<thead>
<tr>
<th>Secondary interventions after EVAR</th>
<th>Patients</th>
<th>(%)</th>
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</thead>
<tbody>
<tr>
<td>Total</td>
<td>339</td>
<td></td>
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<tr>
<td>Endoleak Type I</td>
<td>51</td>
<td>15,0%</td>
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<tr>
<td>Endoleak Type II</td>
<td>136</td>
<td>40,1%</td>
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<tr>
<td>Endoleak Type III</td>
<td>5</td>
<td>1,5%</td>
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<tr>
<td>Endotension</td>
<td>8</td>
<td>2,4%</td>
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<tr>
<td>Stent-Graft migration</td>
<td>46</td>
<td>13,6%</td>
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<tr>
<td>Stenosis/Thrombosis</td>
<td>25</td>
<td>7,4%</td>
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<tr>
<td>Iliac Aneurysm</td>
<td>39</td>
<td>11,5%</td>
</tr>
<tr>
<td>Aneurysm rupture</td>
<td>29</td>
<td>8,6%</td>
</tr>
</tbody>
</table>

- 1768 Patients with mean 34 Months FU after EVAR
- 339 (19%) Reinterventions (200 (58,9%) due to Endoleaks)
## Endoleak Management

<table>
<thead>
<tr>
<th>Indication for treatment</th>
<th>Levels of Evidence, Recommendation</th>
<th>Therapie options</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type IA</strong></td>
<td>Always</td>
<td>2b, B</td>
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<tr>
<td><strong>Type IB</strong></td>
<td>Always</td>
<td>2b, B</td>
</tr>
<tr>
<td><strong>Type II</strong></td>
<td>Growth progression (≥ 10 mm Diameter)</td>
<td>2b, B</td>
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<tr>
<td><strong>Type III</strong></td>
<td>Always</td>
<td>2b, B</td>
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<tr>
<td><strong>Type IV</strong></td>
<td>Porosity</td>
<td>2b, B</td>
</tr>
<tr>
<td><strong>Type V</strong></td>
<td>Progression in growth (≥ 10 mm Diameter)</td>
<td>2b, B</td>
</tr>
</tbody>
</table>

We identified all EVAR patients in the Vascular Study Group of New England AAA database.

Risk factors and consequences of persistent type II endoleaks.

Lo RC1, Buck DB1, Herrmann J1, Hamdan AD1, Wyers M1, Patel VI2, Fillinger M3, Schermerhorn ML4; Vascular Study Group of New England.
CCDS and CEUS vs CTA

Mirza TA, Karthikesalingam A, Jackson D, Walsh SR, Holt PJ, Hayes PD, Boyle JR.

Duplex Ultrasound and contrast-enhanced ultrasound versus computed tomography for the detection of endoleak after EVAR: systematic review and bivariate meta-analysis.


CCDS vs CTA

- 21 studies, 2601 patients
- Sensitivity 0.77, Specificity 0.94

CEUS vs CTA

- 7 studies, 288 patients
- Sensitivity 0.98, Specificity 0.88
In- and Outflow in Type II Endoleak

Endoleak Type II and Aneurysm Growth?

„benign Endoleak“
-50%

„dangerous Endoleak“
+38%
Predictability of Type II Endoleak

What to do?

- Neglect Problem
- Selective Embolization of the IMA / ASB’s
- Embolization of the IMA and all ASB’s
- Save dominant IMA

Questions to be answered:
Costs, Effectivity, Op-Time, Radiation, Contrast Medium, Prospective Randomized Multi-Center Study
Primary IMA embolization

“The data also suggest that preoperative embolization of the IMA is associated with greater shrinkage of aneurysm sac diameter at 6 months.”

• 74 Pt

• Significantly reduced Type II EL from IMA 0/31 vs 11/43; p=0.002
Publications in favour of IMA Embolization in EVAR

Preoperative IMA Embolization: A Valid Method to Reduce the Rate of Type II Endoleak after EVAR?

Selective IMA Embolization during EVAR to prevent Type II Endoleak

Preoperative IMA Embolization is Cost-effective that may Reduce the Rate of Aneurysm Sac Diameter Enlargement and Reintervention after EVAR

Endovascular Aneurysm Repair with IMA Embolization for preventing Type II Endoleak: A prospective randomized trial
Transfemoral Amplatzer IMA
Conclusions:

• Type II Endoleak:

  – Persisting Typ II Endoleaks should be treated in growing Aneurysms >10mm (up to 8% of EVAR)
  – We may consider primary Embolisation in IMA and other ASB >3mm
  – Our experience had shown no IMA EL after primary occlusion vs. 25% in untreated
  – Prospective randomized trial should be aimed
IMA Occluded vs. Perfused

Possible Indication for IMA Branch

• High-grade stenosis / occlusion of the Celiac Trunk

• High-grade stenosis / occlusion / dissection of the SMA

• Bilateral occlusion of the Hypogastric Artery

• IMA ≥ 4mm
Downward 6mm branch
(first implantation 2009)

Bridging Stent Fluency Plus ® / BeGraft Plus®
M., 57 y.

Occlusion
left iliac axis

Stenosis
right hypogastric

IMA 4,5mm
Additional IMA-Branch

- rarely indicated (<1%)
Additional IMA-Branch

- rarely indicated (<1%)

- additional benefit preventing Type II endoleak in dominant IMA
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