Long-term outcomes of the Cook IBD for iliac artery aneurysms

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Disclosure

Speaker name:
...........Giovanni Federico Torsello.................................

I have the following potential conflicts of interest to report:

☐ Consulting

☐ Employment in industry

☐ Stockholder of a healthcare company

☐ Owner of a healthcare company: Vascupedia

☐ Other(s)

Group received research grants from Cook Medical

☐ I do not have any potential conflict of interest
Rx options for Iliac Artery Aneurysms (IAA)

- Open Surgical Repair
- Hybrid Techniques

Coil and Cover
Bell Bottom
Sandwich
Iliac Branch
Challenges to evidence

- Limited number of patients
- Wide variety of treatments
- Expanding combinations of devices and bridging devices
pELVIS Registry

- Large collective: 9 European Centers, > 900 IBDs
- Long experience: enrolment since 01/05
- Anatomic variety: Inclusion of CIA, EIA, IIA aneurysms
- Evaluation of mostly Cook ZBIS (99.1%) with available bridging devices
- Donas KP et al J Vasc Surg 2018
## Mortality

- **30-day mortality:** 4/910 (0.5%)  
  - Heart: 2
  - Lung: 2

- **IBD-related mortality:** 9/910 (1.2%)  
  - Heart: 3
  - Lung: 2
  - Brain: 2
  - Foot: 1
  - Kidney: 1

- **Overall mortality:** 110/910 (13.7%)  

Mean imaging follow-up: 32.6±9.9 mo, clinical follow-up: 60 mo
Common complications in IAA Rx

Occlusions/Stenoses

Endoleaks
Primary Patency

Log-rank (Mantel-Cox) test, p=0.405

<table>
<thead>
<tr>
<th>Patients at risk</th>
<th>Time in months</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
</tr>
<tr>
<td>IIA &lt; 12mm</td>
<td>540</td>
</tr>
<tr>
<td>Std error</td>
<td>.01</td>
</tr>
<tr>
<td>IIA &gt; 12mm</td>
<td>264</td>
</tr>
<tr>
<td>Std error</td>
<td>.01</td>
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</table>

<table>
<thead>
<tr>
<th>IBDs at risk</th>
<th>Time in months</th>
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<tbody>
<tr>
<td></td>
<td>0</td>
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<tr>
<td>IIA &lt; 12mm</td>
<td>595</td>
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<tr>
<td>Std error</td>
<td>.01</td>
</tr>
<tr>
<td>IIA &gt; 12mm</td>
<td>315</td>
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<tr>
<td>Std error</td>
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### Occlusive complications

<table>
<thead>
<tr>
<th>Complication</th>
<th>n</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>Occlusion or high-grade IBD stenosis</td>
<td>36</td>
<td>4.6</td>
</tr>
<tr>
<td>Common iliac</td>
<td>17</td>
<td>2.11</td>
</tr>
<tr>
<td>External iliac</td>
<td>17</td>
<td>2.11</td>
</tr>
<tr>
<td>Internal iliac</td>
<td>19</td>
<td>2.36</td>
</tr>
<tr>
<td>Claudications (all types)</td>
<td>62</td>
<td>7.71</td>
</tr>
<tr>
<td>Pelvic ischemia (incl buttock claudic.)</td>
<td>32</td>
<td>3.98</td>
</tr>
<tr>
<td>Bridging stent stenosis</td>
<td>12</td>
<td>1.49</td>
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</tbody>
</table>
## Endoleaks and Migrations

<table>
<thead>
<tr>
<th>Complication</th>
<th>n</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>IBD-related Type I EL</td>
<td>17</td>
<td>2.1</td>
</tr>
<tr>
<td>Ia from common iliac</td>
<td>3</td>
<td>0.4</td>
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<tr>
<td>Ib from internal iliac</td>
<td>13</td>
<td>1.6</td>
</tr>
<tr>
<td>Ib from external iliac</td>
<td>1</td>
<td>0.1</td>
</tr>
<tr>
<td>Migration</td>
<td>6</td>
<td>0.7</td>
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<tr>
<td>Re-Interventions</td>
<td>110</td>
<td>13.7</td>
</tr>
<tr>
<td>Open conversion sec. to vessel occlusion</td>
<td>9</td>
<td>1.1</td>
</tr>
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WHAT ABOUT

RISK FACTORS FOR COMPLICATIONS
Hypogastric Aneurysms
Hypogastric Aneurysms

<table>
<thead>
<tr>
<th></th>
<th>HA</th>
<th>Non-HA</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pelvic ischemia</td>
<td>6.4%</td>
<td>2.7%</td>
<td>.011</td>
</tr>
<tr>
<td>- Buttock claudication</td>
<td>5.3%</td>
<td>2.2%</td>
<td>.019</td>
</tr>
</tbody>
</table>
Hypogastric Aneurysms

- Primary patency rate 95.3% at 24 mo
- 0 type I or III endoleaks
- 9.5% type II endoleaks
- No patient suffered from buttock claudication
- 4.8% erectile dysfunction

Austermann et al J Vasc Surg 2013
Bridging Devices
Bridging Devices

Log Rank Test, $p = .4$

Log Rank Test, $p = .57$
IBD alone in isolated CIA aneurysm
IBD alone

IBD Occlusion

IIA Occlusion

Type I/III, IBD occl.

Re-Intervention
Use of IBD for aorto-iliac aneurysms is 
**efficacious** and **safe**.

Complication rates are **favorable** compared to other techniques

Off-label use is **feasible**, but might be connected to **higher** complication rates.
Thank you!

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Future research focus

- **Tortuosity of IIA/EIA** (acute angulation vs. angul. of the IIA offspring (>50 °) and/or kinked IIA)
- **Calcification of IIA**
- **Short CIA**
- **IIA aneurysm** (aneurysmal IIA vs. non-aneurysmal IIA)
- **Narrow (<16 mm) CIA**
- **Stenosis of IIA**
- **Bilateral vs. Unilateral**
- **Isolated iliac vs. Aortoiliac aneurysm**
- **Type of bridging stent** (self-expanding vs. balloon-expandable bridging stent)
Hypogastric Artery Involvement

- Technical success rate 100%%
- Primary patency rate 95.3% at 24 mo
- 0 type I or III endoleaks
- 9.5% type II endoleaks
- No buttock claudication
- 4.8% erectile dysfunction

Austermann et al J Vasc Surg 2013
Iliac artery aneurysms (IAA)

30% of abdominal aortic aneurysms (AAA) extend to the iliacs

Most IAAs are treated in a concomittant fashion when treating AAA

A variety of Rx options exist
Long-term outcomes of the Cook IBD for iliac artery aneurysms

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