Fen. vs. Branched Endografts to Treat Aortic Arch Lesions: Pros and Cons of 2 Different Endo-Techniques

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Disclosures

- Research-grants, travelling, proctoring speaking-fees, IP with Cook.
Aortic Arch Reconstruction by Transluminally Placed Endovascular Branched Stent Graft

Kanji Inoue, MD; Hiroaki Hosokawa, MD; Tomoyuki Iwase, MD; Mitsuru Sato, ME; Yuki Yoshida, MT; Katsuya Ueno, RT; Akiyoshi Tsubokawa, MD; Terumitsu Tanaka, MD; Shunichi Tamaki, MD; Takahiko Suzuki, MD

* N=15
  * 14 single branch,
  * 1 triple branch
* Outer branches
* Traction wire

Inoue et al. 1999; Circulation 100:316-21
Endovascular Repair of the Aortic Arch

Timothy A. M. Chuter, DM, and Darren B. Schneider, MD

- 2003 – 2010(?)
- N=10-20(?)
- Outer branch
- Transcervical access

Chuter et al. 2007; Perspect Vasc Surg Endovasc Ther19(2):188-92
Branched Arch Repair

Inoue

Chuter

Outer Branches

Inner Branches
Global experience with an inner branched arch endograft

Stéphan Haulon, MD, PhD, a Roy K. Greenberg, MD, b Rafaëlle Spear, MD, a Matt Eagleton, MD, b Cherrie Abraham, MD, c Christos Lioupis, MD, c Eric Verhoeven, MD, PhD, d Krassi Ivancev, MD, c Tilo Kölbl, MD, PhD, f Brendan Stanley, MD, g Timothy Resch, MD, h Pascal Desgranges, MD, PhD, i Blandine Maurel, MD, a Blayne Roeder, PhD, j Timothy Chuter, MD, k and Tara Mastracci, MD b

* 2009-2013
* Multicenter Study
* n = 38
* Technical success 32/38
* Mortality 5/38 (13%)
* Stroke/TIA 6/38 (16%)

Cook Branched Arch Endograft

Subsequent experience:

* n = 27; Hamburg, Tokio, Lille
* 4/2013- 11/2014
* Technical success 27/27
* 30d Mortality 0/27
* 1y mortality 1/27
* Stroke/TIA 3/27

Haulon et al. 2016; Eur J Vasc Endovasc Surg; accepted
Branched Arch Endograft

Hamburg Experience 2012-2016:

- Cases: 26
  - Aneuysm: 12
  - Residual dissection: 11
  - Acute Type A: 1
  - PAU: 2
- 30d-Mortality: 1
- Stroke: 2
Lesion-Type

- Aneurysm and PAU of the arch
- Chronic aortic dissection
- Acute Type A dissection
Residual Dissection
Residual Dissection

Bilateral carotid-subclavian bypass

Axillo-axillary bypass
Residual Dissection
Connective Tissue Disease
Acute Type A Dissection
Branched Arch Endograft
Cook – Fenestrated Arch Endograft
Cook – Fenestrated Arch Endograft

- Procedure is usually quick: 60-120min
- Treats other pathology than branched devices.
- Avoids landing in mid and proximal native ascending.
Rotational Error
Wire-Entanglement

Options:

* Free wire by manipulation from LSA
* Catheter
* Balloon
* Give up T&T-wire
Comparing...

Branched Arch Graft

Fenestrated Arch Graft
# Fenestrated vs. Branched

<table>
<thead>
<tr>
<th>2011-2014</th>
<th>Fenestrated-TEVAR (n=15)</th>
<th>Branched-TEVAR (n=14)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical Success</td>
<td>14 (93%)</td>
<td>14 (100%)</td>
<td>n.s.</td>
</tr>
<tr>
<td>30-day survival</td>
<td>12 (80%)</td>
<td>14 (100%)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Major Stroke</td>
<td>2 (13%)</td>
<td>1 (7%)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Minor stroke</td>
<td>0</td>
<td>1 (7%)</td>
<td>n.s.</td>
</tr>
<tr>
<td>SCI temporary</td>
<td>1 (7%)</td>
<td>1 (7%)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Reintervention</td>
<td>0</td>
<td>0</td>
<td>n.s.</td>
</tr>
<tr>
<td>Target vessel patency</td>
<td>100%</td>
<td>100%</td>
<td>n.s.</td>
</tr>
<tr>
<td>ICU stay in days (SD)</td>
<td>3 (±4)</td>
<td>4 (±3)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Hospital stay in days (SD)</td>
<td>7 (±5)</td>
<td>14 (±8)</td>
<td>&lt;0.05</td>
</tr>
</tbody>
</table>

Potential CONs for Fenestrated Arch Grafts

- No strutfree fenestrations larger than 12mm restricts use for innominate artery
- Alignement of fenestrations difficult
- Preloaded wire may entangle in struts of scallop
Potential CONs for Branched Arch Grafts

- Higher risk for trapped air and embolism
- Maximum ascending diameter 38mm and minimum length of 40mm limits use.
- Required left-ventricle wire position limits use in mechanical aortic valves
Fenestrated and Branched Devices

All Under Investigation!
Fenestrated and branched grafts feasible for high-risk patients.

Peri-operative morbidity and mortality acceptable.

Innovative new technique under investigation.

Limited evidence and a significant learning curve.
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