Chronic Aortic Dissection: When To Use FEVAR And When False Lumen Occlusion Techniques

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Disclosures

- Research-grants, travelling, proctoring speaking-fees, IP, royalties with Cook Medical.
- Consultant with Philips
- Speaking fees from Getinge
- IP, Consultant with Terumo Aortic
- Shareholder Mokita-Medical GmbH
TEVAR in Chronic Type B

Predictors of Outcome after Endovascular Repair for Chronic Type B Dissection

K. Mani, R.E. Clough, O.T.A. Lyons, R.E. Bell, T.W. Carrell, H.A. Zayed, M. Waltham, P.R. Taylor

Figure 5. Kaplan–Meier analysis of survival based on remodelling of the aorta after endovascular intervention for chronic type B dissection.

Mani et al. 2012; Eur J Vasc Endovasc Surg 43: 386-91
Long-Term Predictors of Descending Aorta Aneurysm Change in Patients With Aortic Arch Aneurysm

Jong-Min Song, MD, PhD,* Sung-Doo Kim, MD

Incidence of Distal Aorta Aneurysm

Incidences of aneurysm at the aortic arch; upper, mid, and lower descending thoracic aorta; and abdominal aorta in patients with type 1 and type 3 aortic dissection.

FL-Aneurysm in Chronic AD

Song et al. 2007; JACC 50:799-804
Preoperative thoracic false lumen branches are predictors of aortic enlargement after stent grafting for DeBakey IIIb aortic dissection

Feng Liu, MD, Yang Yang Ge, MD, Wei Guo, MD, Xiao Ping Liu, MD, Xin Jia, MD, Jiang Xiong, MD, and Xiao Hui Ma, MD

<table>
<thead>
<tr>
<th></th>
<th>Group A (preoperative TFLBs ≥8)</th>
<th>Group B (Preoperative TFLBs &lt;8)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imaging follow-up period, median (IQR) mo (N)</td>
<td>11.8 (4.5-27.9) (28)</td>
<td>12.2 (4.3-25.1) (39)</td>
<td>.97</td>
</tr>
<tr>
<td>6 ± 3 mo, % (n/N)</td>
<td></td>
<td></td>
<td>&lt;.01</td>
</tr>
<tr>
<td>Partially thrombosed</td>
<td>67.9 (19/28)</td>
<td>25.6 (10/39)</td>
<td></td>
</tr>
<tr>
<td>Completely thrombosed</td>
<td>32.1 (9/28)</td>
<td>74.4 (29/39)</td>
<td></td>
</tr>
<tr>
<td>12 ± 3 mo, % (n/N)</td>
<td></td>
<td></td>
<td>.01</td>
</tr>
<tr>
<td>Partially thrombosed</td>
<td>52.6 (10/19)</td>
<td>11.5 (3/26)</td>
<td></td>
</tr>
<tr>
<td>Completely thrombosed</td>
<td>47.4 (9/19)</td>
<td>88.5 (23/26)</td>
<td></td>
</tr>
<tr>
<td>24 ± 6 mo, % (n/N)</td>
<td></td>
<td></td>
<td>.03</td>
</tr>
<tr>
<td>Partially thrombosed</td>
<td>60.0 (6/10)</td>
<td>13.3 (2/15)</td>
<td></td>
</tr>
<tr>
<td>Completely thrombosed</td>
<td>40.0 (4/10)</td>
<td>86.7 (13/15)</td>
<td></td>
</tr>
</tbody>
</table>
Direct False Lumen Occlusion

- TEVAR-extension to CA
- Embolisation or Knickerbocker
- Separates aortic FL-compartments!
- Does not restrict further distal techniques like fenestrated EVAR
Coils, Plugs, Glue

Preop. CT

Intervention

Postop. CT
Cook Candyplug

+ 22mm AVP
sm Candyplug
2012

+ 22mm ZIP
CMD Candyplug I
2013

+ CMD Candyplug II
2017
Candy-Plug

February 2016

July 2016
The Candy-Plug Technique: Technical Aspects and Early Results of a New Endovascular Method for False Lumen Occlusion in Chronic Aortic Dissection

Fiona Rohlffs, MD¹, Nikolaos Tsilimparis, MD¹, Beatrice Fiorucci, MD¹,², Franziska Heidemann, MD¹, Eike Sebastian Debus, MD, PhD¹, and Tilo Kölbl, MD, PhD¹

Table 2. Development of Thoracic Aneurysm Diameters² in 10 Patients With >6-Month Follow-up.²

<table>
<thead>
<tr>
<th>Patient</th>
<th>Follow-up, mo</th>
<th>Postoperative Measurement, mm</th>
<th>Most Recent Measurement, mm</th>
<th>Aneurysm Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7</td>
<td>45</td>
<td>35</td>
<td>Remodeling</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
<td>64</td>
<td>59</td>
<td>Remodeling</td>
</tr>
<tr>
<td>3</td>
<td>11</td>
<td>111</td>
<td>91</td>
<td>Remodeling</td>
</tr>
<tr>
<td>4</td>
<td>12</td>
<td>69</td>
<td>72</td>
<td>Stable</td>
</tr>
<tr>
<td>5</td>
<td>12</td>
<td>72</td>
<td>72</td>
<td>Stable</td>
</tr>
<tr>
<td>6</td>
<td>13</td>
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</tr>
<tr>
<td>8</td>
<td>19</td>
<td>95</td>
<td>81</td>
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</tr>
<tr>
<td>9</td>
<td>21</td>
<td>64</td>
<td>55</td>
<td>Remodeling</td>
</tr>
<tr>
<td>10</td>
<td>26</td>
<td>67</td>
<td>38</td>
<td>Remodeling</td>
</tr>
</tbody>
</table>
Other Candyplugs

Bolton CMD-Candyplug
Courtesy of Dr. M Youssef, University of Mainz

Gore sm-Candyplug
Ogawa et al. 2016; J Endovasc Ther 23:482-6

Medtronic sm-Candyplug
Courtesy of Prof. I-Hui Wu, National Taiwan University

Gore/Cook sm-Candyplug
False Lumen Occlusion Techniques

A-Branch + Knickerbocker

A-Branch + Candy Plug
Knickerbocker-Technique

Kölbel et al. 2014; J Endovasc Ther 21: 117-22
FL-Aneurysm in Chronic AD

**Long-Term Predictors of Descending Aorta Aneurysmal Change in Patients With Aortic Dissection**

Jong-Min Song, MD, PhD,* Sung-Doo Kim, MD,* Jeong-Hoon Kim, MD,* Mi-Jeong Kim, MD,*

- N=100: 51 post TAAD; 49 TBAD
- FU: 53±26 months: FL-Aneurysm
  - Aortic arch 3%
  - Upper desc. aorta 14%
  - Mid desc. aorta 8%
  - Lower desc. aorta 4%
  - Abdominal aorta 3%

Song et al. 2007; JACC 50:799-804
Outcomes of Fenestrated/Branched Endografting in Post-dissection Thoracoabdominal Aortic Aneurysms

K. Oikonomou a,b, R. Kopp a, A. Katsargyris a, K. Pfister a, E.L. Verhoeven b, P. Kasprzak a,*

a Department of Surgery, Division of Vascular Surgery, University Hospital Regensburg, Regensburg, Germany
b Department of Vascular and Endovascular Surgery, Paracelsus Medical University, Nürnberg, Germany

- 2010-2014
- N=31, 17 months FU
- 6 Type II EL; 6 type 1b EL
- 30d-mortality: 9.6%
- Technical success: 93.5%
- FL-thrombosis: 88%

Oikonomou et al. 2014; J Vasc Endovasc Surg 48: 641-8
Iliac False Lumen Embolisation
Role of FL-Occlusion:

Hamburg 2013-2017:

- Chronic aortic dissection FL-TAAA: 61
- TEVAR alone: 10
- False Lumen Occlusion techniques: 48
  - Candy-plug: 33
  - Knickerbocker: 11
  - Other (plugs, coils, glue): 4
- Primary F/B EVAR: 3
- Secondary F/B EVAR: 17
Chronic Dissection Strategy

FL-Aneurysm in CAD
Chronic Dissection Strategy

FL-Aneurysm in CAD

→

TEVAR to the Celiac
Chronic Dissection Strategy

FL-Aneurysm in CAD

↑

TEVAR to the Celiac

↑

+ FL-Occlusion
Chronic Dissection Strategy

- FL-Aneurysm in CAD
- TEVAR to the Celiac
- + FL-Occlusion
Chronic Dissection Strategy

- FL-Aneurysm in CAD
- TEVAR to the Celiac
- + FL-Occlusion
- Fen/Branch EVAR
Chronic Dissection Strategy

- FL-Aneurysm in CAD
- TEVAR to the Celiac
- + FL-Occlusion
- Fen/Branch EVAR
Chronic Dissection Strategy

- FL-Aneurysm in CAD
- TEVAR to the Celiac
  + FL-Occlusion
- Fen/Branch EVAR
  + FL-Occlusion
Conclusion

- Use false lumen occlusion techniques whenever possible to treat a thoracic false-lumen aneurysm!

- F/B stentgrafts reserved for abdominal FL-aneurysm.
Chronic Aortic Dissection: When To Use FEVAR And When False Lumen Occlusion Techniques

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