False Lumen Backflow In Chronic Aortic Dissections: What Is Its Role and How Can It Be Treated?

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Disclosure

Speaker name:
Tilo Kölbel, MD

I have the following potential conflicts of interest to report:

☐ Consulting
☐ Employment in industry
☐ Stockholder of a healthcare company
☐ Owner of a healthcare company
☒ Other: Proctoring, travel, research-grants, patents with Cook Medical

☐ I do not have any potential conflict of interest
Critical Issue:

„Why Does the Aorta Fail to Remodel in Chronic Dissection?“
Failure to Remodel in Chronic Dissection

- Perfusion and pressure unchanged in false lumen
- Presence of Intercostals originating from false lumen
- False lumen back flow to Intercostals
Efficacy of thoracic endovascular stent repair for chronic type B aortic dissection with aneurysmal degeneration

Salvatore T. Scali, MD, a Robert J. Feezor, MD, a Catherine K. Chang, MD, a David H. Stone, MD, c
Philip J. Hess, MD, b Tomas D. Martin, MD, b Thomas S. Huber, MD, PhD, a and Adam W. Beck, MD, a
Gainesville, Fla; and Lebanon, NH

- 2004-2011
- n=80, 26 months FU
- TEVAR for type B and residual AD
- LSA-coverage 75%, 24% debranching
- Median 16 (1-74) months.
- 35% FL-expansion during FU (!)

Scali et al. 2013; J Vasc Surg. 58:10-7
TEVAR in Chronic Type B

2000-2010
N=58, 38 months FU
TEVAR for chronic type B (>14days)
Perioperative mortality 5.2%
3 year mortality 36%

Mani et al. 2012; Eur J Vasc Endovasc Surg 43: 386-91
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


<table>
<thead>
<tr>
<th>Parameters</th>
<th>Odds ratio</th>
<th>P-value</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, per year</td>
<td>1.08</td>
<td>0.04</td>
<td>1.00</td>
</tr>
<tr>
<td>Female vs male</td>
<td>0.01</td>
<td>0.03</td>
<td>0.00</td>
</tr>
<tr>
<td>Urgent vs elective</td>
<td>0.59</td>
<td>0.60</td>
<td>0.08</td>
</tr>
<tr>
<td>Maximal aortic diameter, pre-intervention, per cm</td>
<td>0.92</td>
<td>0.82</td>
<td>0.43</td>
</tr>
<tr>
<td>Increase in aortic size, per cm</td>
<td>2.70</td>
<td>0.01</td>
<td>1.23</td>
</tr>
</tbody>
</table>

Mean change rate, cm/year

-0.4

Mani et al. 2012; Eur J Vasc Endovasc Surg 43: 386-91
TEVAR in Chronic Type B

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

- False Lumen Perfusion
- No Aortic Remodelling
- Death

Mani et al. 2012; Eur J Vasc Endovasc Surg 43: 386-91
False Lumen Perfusion
Outcomes of Fenestrated/Branched Endografting in Post-dissection Thoracoabdominal Aortic Aneurysms

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

Department of Surgery, Division of Vascular Surgery, University Hospital Regensburg, Regensburg, Germany
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
fEVAR in Chronic Type B

Courtesy of Stephan Haulon, Lille
Direct False Lumen Occlusion

- Separate aortic FL-compartments.
- Further distal techniques like fenestrated EVAR not restricted.
Knickerbocker-Technique
Knickerbocker-Technique

Kölbel et al. 2014; J Endovasc Ther 21: 117-22
Knickerbocker-Technique

Kölbel et al. 2014; J Endovasc Ther 21: 117-22
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Knickerbocker-Technique

Kölbel et al. 2014; J Endovasc Ther 21: 117-22
Knickerbocker-Technique

- Investigational technique
- Diameter reducing ties
- One sided bulge
- Gold-markers
- N=8
- Technical success 8/8
- 2 requiring additional coils and cyanoacrylate
- FL-thrombosis all patients

Kölbel et al. 2014; J Endovasc Ther 21: 117-22
Cork in the Bottleneck

How to Exclude the Dilated False Lumen in Patients After a Type B Aortic Dissection? The Cork in the Bottleneck

Maartje C. Loubert, MD; Victor P.M. van der Hulst, MD, PhD; Cees De Vries, MD; Kees Bloemendaal, MD; and Anco C. Vahl, MD, PhD

— 2 Cases

1. FL-TAA-occlusion with:
   - 2 Greenfield filters
   - 6 detachable balloons
   - 5ml thrombin

2. FL-TAA-occlusion with:
   - 24mm Talent occluder

Loubert et al. 2003; J Endovasc Ther 10: 244-8
False Lumen Embolisation

Outcomes after false lumen embolization with covered stent devices in chronic dissection

Jahanzaib Idrees, MD, Eric E. Roselli, MD, Susan Shafii, MD, Joshua Reside, BS, and Bruce W. Lytle, MD, Cleveland, Ohio

Table II. Outcomes

<table>
<thead>
<tr>
<th>Variable</th>
<th>Outcome^a (N = 21)</th>
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<tbody>
<tr>
<td>Early</td>
<td></td>
</tr>
<tr>
<td>30-day mortality</td>
<td>1 (4.7)</td>
</tr>
<tr>
<td>Follow-up, median months</td>
<td>26 (2-42)</td>
</tr>
<tr>
<td>Aortic rupture</td>
<td>0</td>
</tr>
<tr>
<td>Complete thrombosis after index embolization</td>
<td>15 (71)</td>
</tr>
<tr>
<td>Partial thrombosis</td>
<td>6 (29)</td>
</tr>
<tr>
<td>Endovascular reintervention (re-embolization)</td>
<td>4 (19)</td>
</tr>
<tr>
<td>Complete thrombosis after further embolization</td>
<td>19 (90)</td>
</tr>
<tr>
<td>Failure of thrombosis</td>
<td>0</td>
</tr>
<tr>
<td>Reduction in postoperative max descending</td>
<td>13 (62)</td>
</tr>
<tr>
<td>Shrinkage, median mm</td>
<td>4.6 (0.2-27)</td>
</tr>
</tbody>
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Candy-Plug

22mm Amplatzer plug II

Kölbl et al. 2013; J Endovasc Ther 20: 484-9
Candy-Plug
Candy-Plug

- Investigational technique
- Max. 46mm diameter
- 22mm Amplatzer II
- N=6
- Technical success 6/6
- FL-thrombosis all patients

Kölbel et al. 2013; J Endovasc Ther 20: 484-9
Iliac False Lumen Embolisation

Ballon-occlusion to prevent plug-embolisation
Iliac False Lumen Embolisation
Conclusion

- Tubular stent-graft sufficient in majority cases of TBAD.
- False lumen backflow limiting treatment success in chronic TBAD.
- 2 new techniques to occlude false lumen backflow
  - Knickerbocker-technique
  - Candy-plug
- Early results promising, but future role to be defined.
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