Complex endografts vs.
false lumen occlusion
in chronic AD

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Disclosures Prof. Dr. Kasprzak (grants, speaker fee, development)
Cook, Gore, Vascutek, Bard, Medtronic, Maquet, UCB, Bentley
Case presentation

M, 51
01.12.13 type A AD
02.12.13 ao-asc repair
postOP 6.3 cm TAAA
M, 51
Type A aortic dissection
02.12.13 ao-asc repair
postOP 6.3 cm TAA

16.12.13 TEVAR
(Cook Zenith 26-32-162; distal: Zenith 34x152 and Zenith Dissection Stent 36/123)
TAA progression after TEVAR i cTBAD

- Retrograde perfusion of the false lumen over distal tears
- Often conditioned by outflow through open intercostal arteries
- Stiff membrane prevents remodeling after TEVAR
- Diameter progression
- Exclusion of proximal endoleaks after TEVAR (Ia, II-LSA, III)
Distribution of intimomedial tears in patients with type B aortic dissection

Khoynezhad A. et al. (2010) JVS 52;3:562-8

37% 52% 66% 81% (Celiac at 282mm)
Dissection Type B with Aneurysm Reno-mesenterial after TEVAR und EVAR
Dissection Type B with infrarenal aortic occlusion and perfusion of lower extremities through false lumen.
• TBAD - false lumen expansion requiring reintervention 30%
  Nienaber CA et al. Randomized comparison of strategies for type B aortic dissection: INSTEAD. Circulation 2009

• Complete false lumen thrombosis in 40%

• False lumen (dissection) stable 30%

• Post-TEVAR aneurysm in 35%
  Scali ST et al. Efficacy of TEVAR for cTBAD with aneurysmal degeneration JVS 2013
TEVAR?

A Systematic Review of Mid-term Outcomes of Thoracic Endovascular Repair (TEVAR) of Chronic Type B Aortic Dissection


- 527 Pt (17 Studies)
- Technical Success 59.1-100%
- 8% Ongoing Aneurysmal Dilatation
# False Lumen Embolization after TEVAR

<table>
<thead>
<tr>
<th>Year</th>
<th>Author(s)</th>
<th>Methodology</th>
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</thead>
<tbody>
<tr>
<td>2003</td>
<td>Loubert</td>
<td>balloons, thrombin, occluders</td>
</tr>
<tr>
<td>2012</td>
<td>Hofferberth</td>
<td>coils, cyanoacrylate glue</td>
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<tr>
<td>2013</td>
<td>Kölbel</td>
<td>candy-plug</td>
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<tr>
<td>2014</td>
<td>Idrees, Roselli</td>
<td>iliac occluders</td>
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<tr>
<td>2015</td>
<td>Mendes</td>
<td>18-22mm plugs</td>
</tr>
<tr>
<td>2017</td>
<td>Wojtaszek</td>
<td>Amplatzer</td>
</tr>
<tr>
<td>2018</td>
<td>Rohlffs, Kölbel</td>
<td>2. generation candy-plug</td>
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</tbody>
</table>
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

Abstract

Purpose: To describe the technical aspects and early results of the Candy-Plug technique for endovascular false lumen occlusion in chronic aortic dissection. Methods: A retrospective single-center study analyzing 18 consecutive patients (mean age 63 years, range 44–76; 16 men) with thoracic false lumen aneurysm in chronic aortic dissection. All patients underwent thoracic endovascular aortic repair with false lumen occlusion using the Candy-Plug technique. Primary endpoints consisted of technical success (successful deployment) and clinical success (no false lumen backflow). Secondary endpoints included 30-day mortality and morbidity as well as aortic remodeling during follow-up. Results: Technical success was 100%. Additional intraprocedural false lumen embolization at the Candy-Plug level was needed in 1 patient due to persisting false lumen backflow on the final angiogram (clinical success 94%). There were no intraprocedural complications. In the perioperative period, there were 3 minor complications: transient mild spinal cord ischemia, cervical hematoma after carotid-subclavian bypass, and a common femoral artery pseudoaneurysm. No deaths or reinterventions occurred. Complete distal false lumen occlusion was present on postoperative computed tomography in 15 patients, while 3 had minor contrast enhancement in the distal false lumen. Over a mean 9-month follow-up (range 0–26), 1 patient died due to rupture. Follow-up >6 months was available in 10 patients (mean 14.7 months, range 7–26): 7 patients showed aortic remodeling, while aneurysm size was stable in 3 patients. Conclusion: The Candy-Plug technique is a feasible endovascular method to achieve false lumen occlusion and aortic remodeling in chronic aortic dissection. It is associated with low morbidity and mortality due to its minimal invasiveness.
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2 patients received F/BEVAR
Experience Regensburg/Nuremberg (N=71) (01/2008-04/2017)

• 53/71 after previous surgery:
  – Open surgery for type A (N=15)
  – Open Surgery/TEVAR for type B (N=38)
Perioperative Results

• Technical Success: N=68/71 (95.8%)
  1 Conversion; 2 catheterization failures (LRA/SMA)

• 30-day Mortality: N=4 (5.6%)

• SCI
  Paraplegia N=2 (2.8%)
  Temporary Paraparesis Uni-/Bilateral N=9 (12.7%)
Freedom from Reintervention

80.7 ± 5.3%  1 Year

52.6 ± 8.0%  3 Years
Cumulative Survival

84.7 ± 4.5%  1 Year

70.0 ± 6.7%  3 Years
False Lumen Thrombosis

41/48 (85.4%) Patients that completed 1 year FU

Post-op

CT 2 years

Mean Aneurysm Sac Regression 9.2 ± 8.8mm
Conclusions:

• Complex endografts are a realistic option with high technical success in treatment of thoracoabdominal aneurysms complicating chronic dissection type B but high percentage of reinterventions.

• False lumen occlusion is a valuable option in growing TAA due to retrograde perfusion after TEVAR in acute and chronic aortic dissection type B.

• Each of both methods of treatment is indicated depending on the form of aneurysmatic dilatation (TAA vs. TAAA) and should be used complementary.