Complex endografts vs.

false lumen occlusion

in chronic AD

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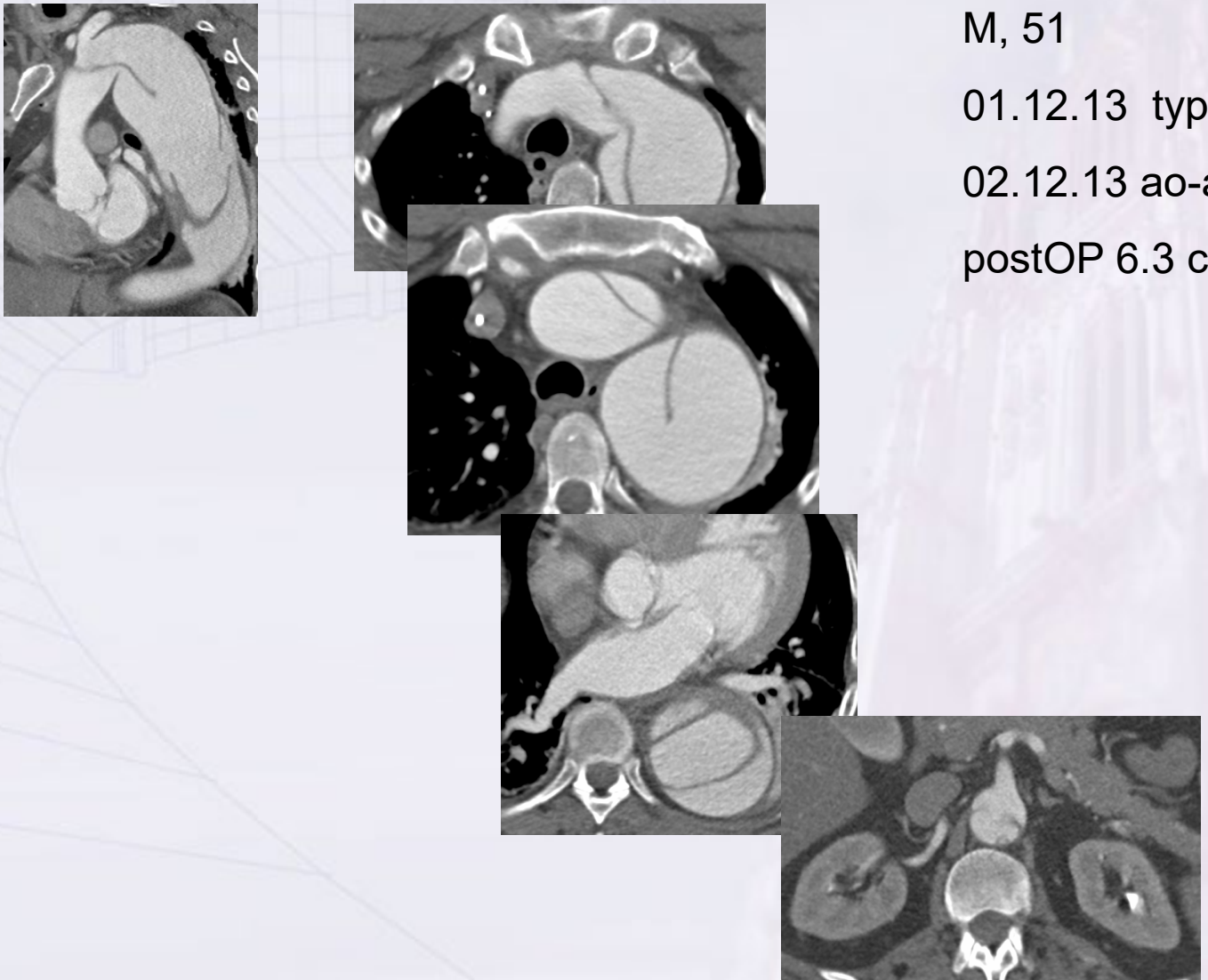
Disclosures Prof. Dr. Kasprzak (grants, speaker fee, development)
Cook, Gore, Vascutek, Bard, Medtronic, Maquet, UCB, Bentley

Case presentation



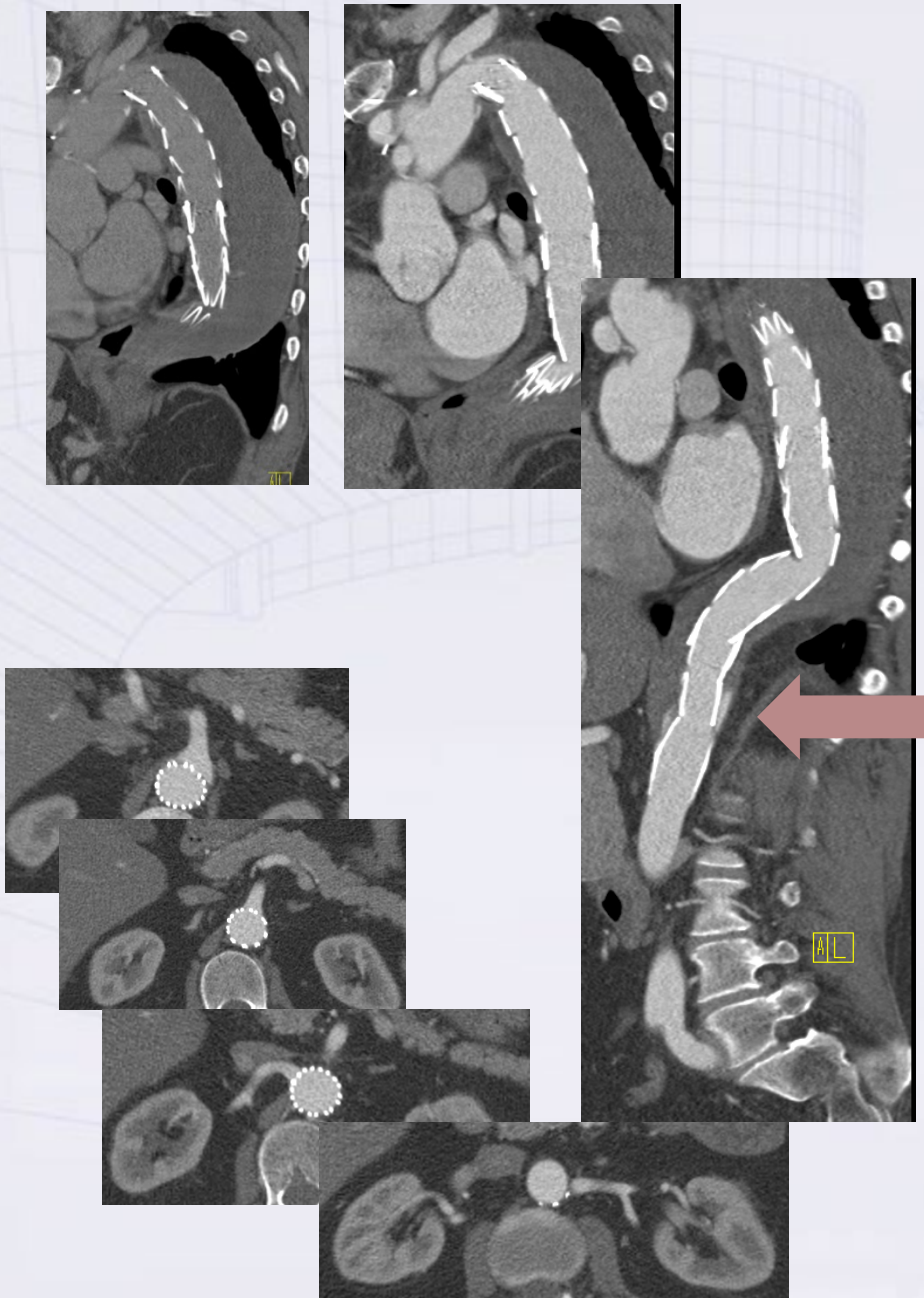
M, 51

01.12.13 type A AD

02.12.13 ao-asc repair

postOP 6.3 cm TAAA

CTA 01.10.14



M, 51

Type A aortic dissection

02.12.13 ao-asc repair

postOP 6.3 cm TAA

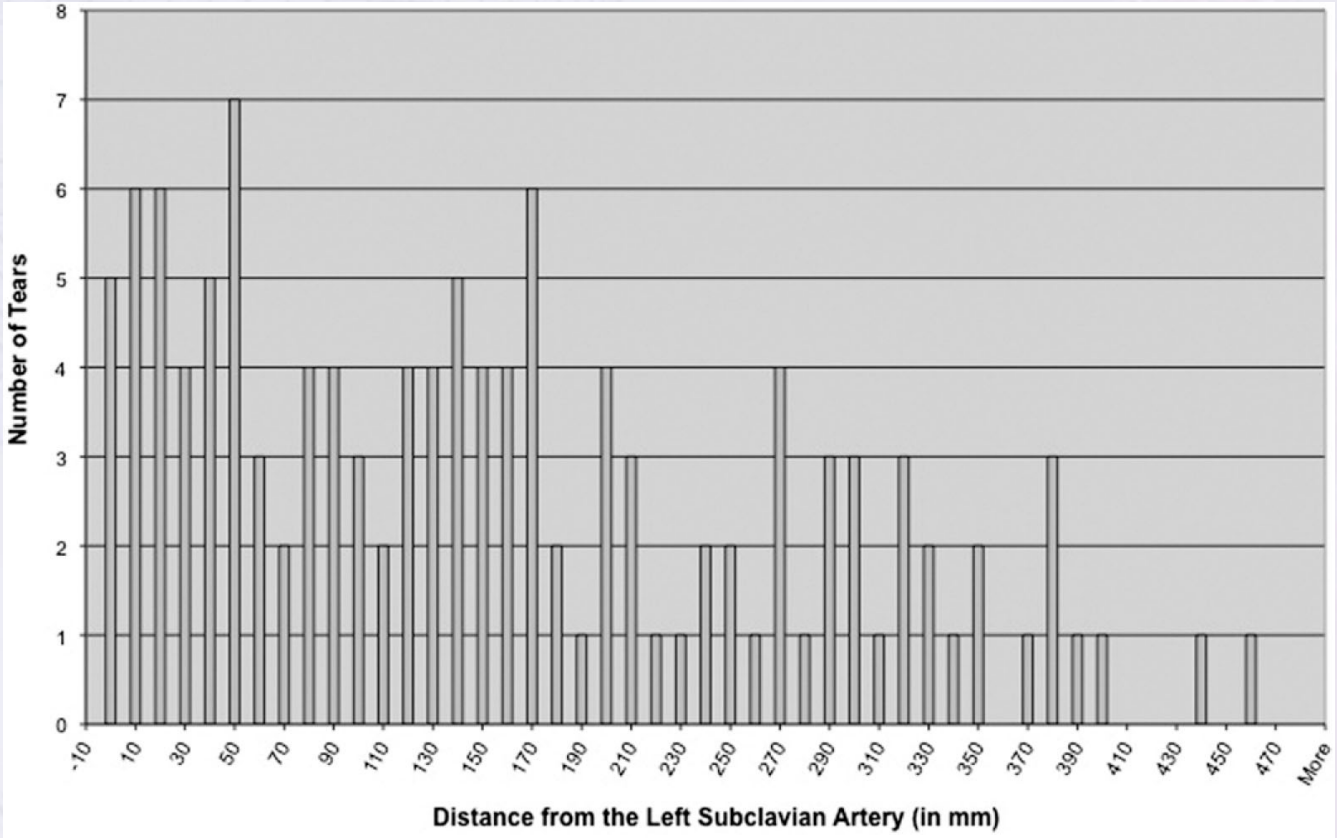
16.12.13 TEVAR
(Cook Zenith 26-32-162;
distal: Zenith 34x152 and
Zenith Dissection Stent 36/123)

TAA progression after TEVAR i cTBAD

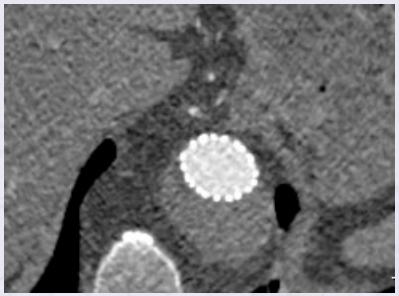
- Retrograde perfusion of the false lumen over distal tears
- Often conditioned by outflow through open intercostal arteries
- Stiff membrane prevents remodeling after TEVAR
- Diameter progression
- Exclusion of proximal endoleaks after TEVAR (Ia, II-LSA, III)

Distribution of intimomedial tears in patients withtype B aortic dissection

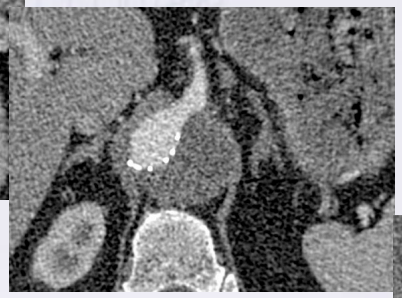
Khoynezhad A. et al. (2010) JVS 52;3:562-8

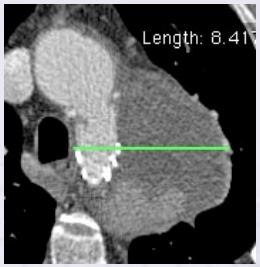


37% 52% 66% 81% (Celiac at 282mm)

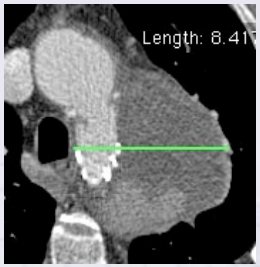



Dissection Type B with Aneurysm Reno-mesenterial
after TEVAR und EVAR


Length: 8.41


Aorta_Thor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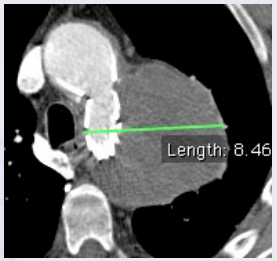
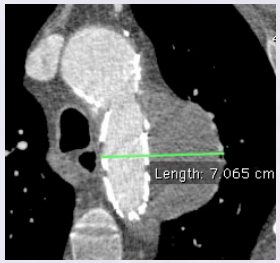
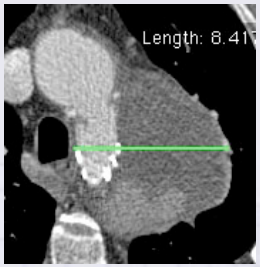

Length: 8.46


Length: 7.065 cm


Aorta_Thor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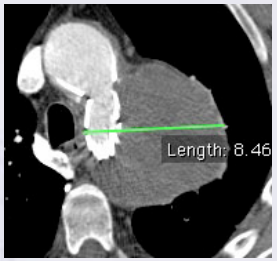
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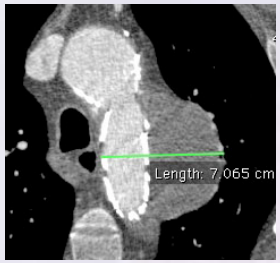
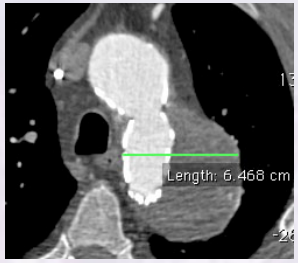
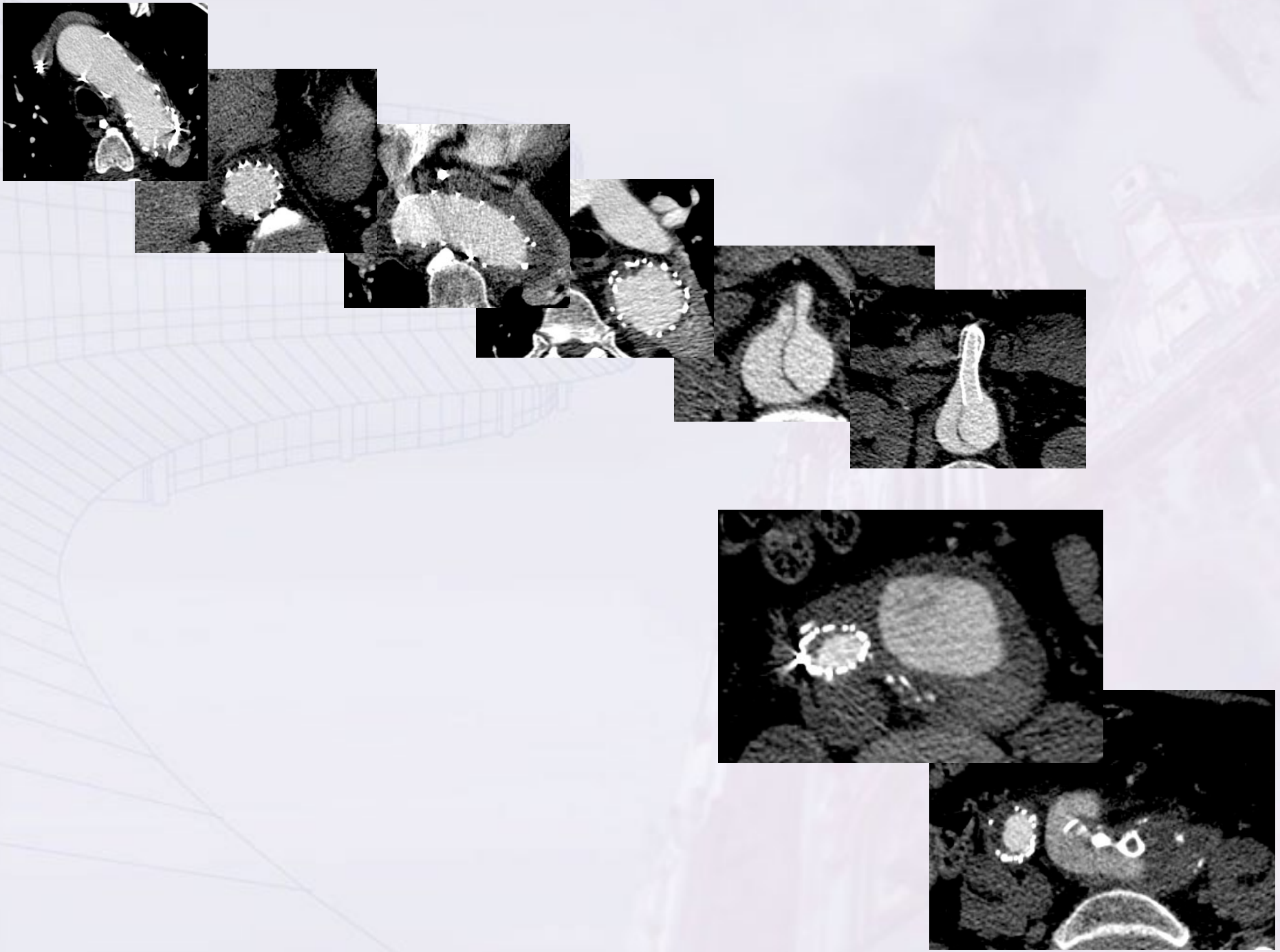
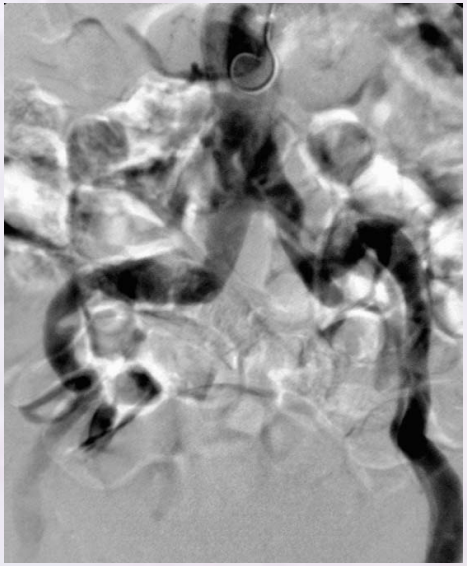

Length: 7.065 cm


Length: 6.468 cm


Aorta_Thor



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%

  Kusagawa H. et al. Changes in false lumen after transluminal sten-graft placement in aortic dissections: six years experience. Circulation 2005

- 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 CME

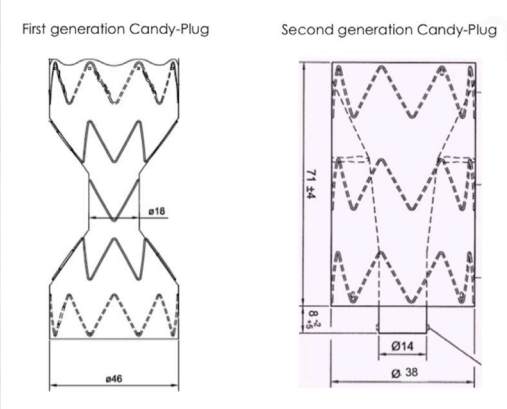
S.G. Thrumurthy, A. Karthikesalingam, B.O. R.J. Hinchliffe, I.M. Loftus, M.M. Thompson

Eur J Vasc Endovasc Surg (2011)

- 527 Pt (17 Studies)
- Technical Success 59.1-100%
- 8% Ongoing Aneurysmal Dilatation

False Lumen Embolization after TEVAR

2003	Loubert	balloons, thrombin, occluders
2012	Hofferberth	coils, cyanoacrylate glue
2013	Kölbel	candy-plug
2014	Idrees, Roselli	iliac occluders
2015	Mendes	18-22mm plugs
2017	Wojtaszek	Amplatzer
2018	Rohlffs, Kölbel	2. generation candy-plug



JCS 2018 online

JOURNAL OF ENDOVASCULAR THERAPY
A SAGE Publication
An official publication of the ISEVS

Journal of Endovascular Therapy
2017, Vol. 24(4) 549–555

DOI: 10.1177/1526602817709252
www.jevt.org
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The Candy-Plug Technique: Technical Aspects and Early Results of a New Endovascular Method for False Lumen Occlusion in Chronic Aortic Dissection

Fiona Rohlffs, MD[1], Nikolaos Tsilimparis, MD[1], Beatrice Fiorucci, MD[1,2], Franziska Heidemann, MD[1], Eike Sebastian Debus, MD, PhD[1], and Tilo Kölbel, MD, PhD[1]

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.

Clinical Investigation

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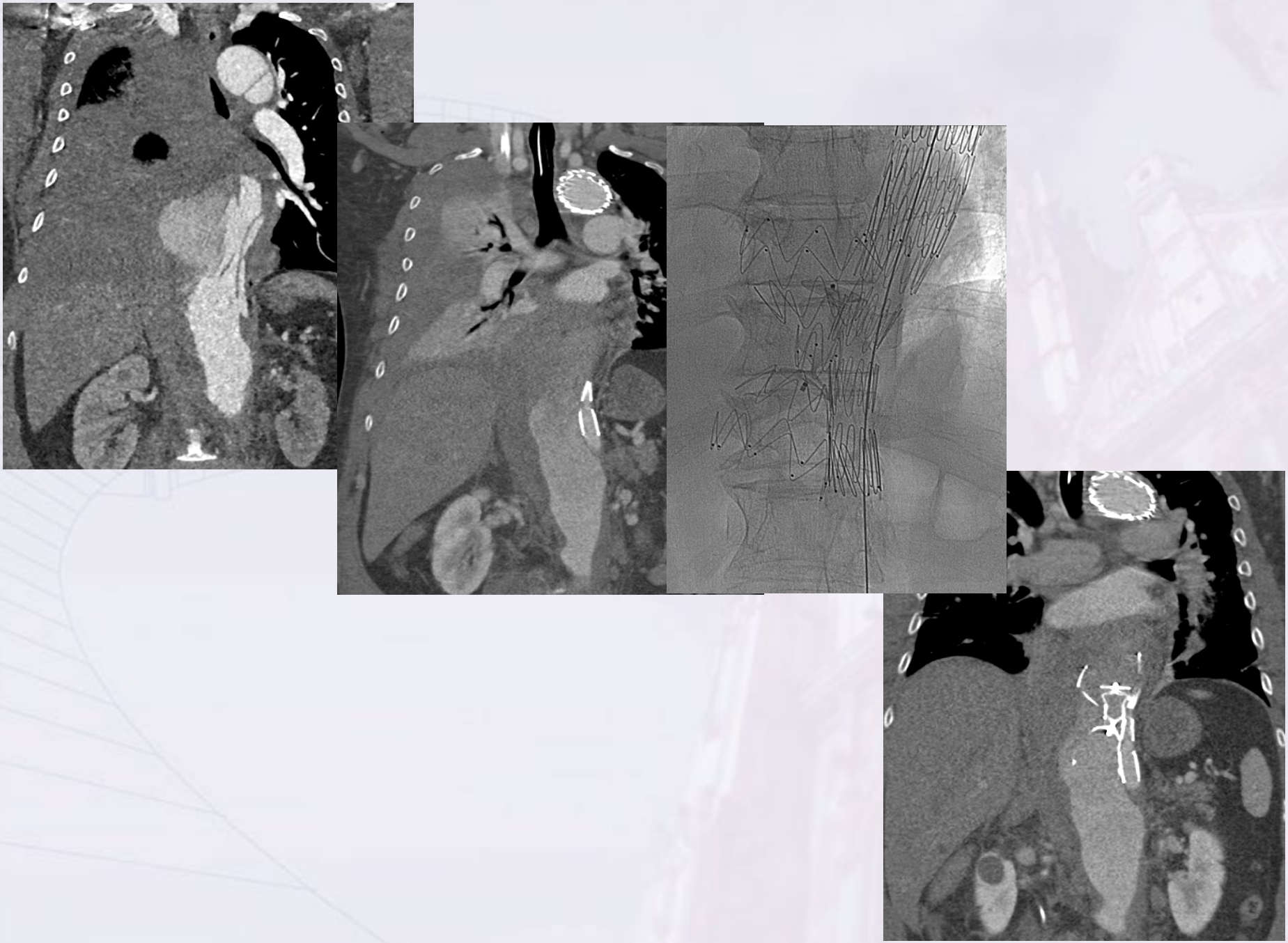
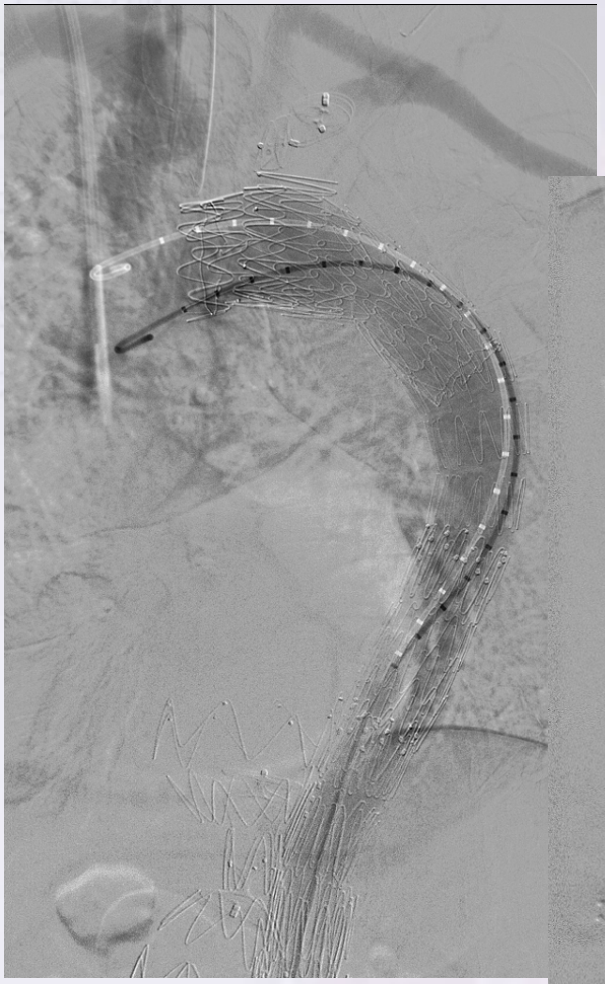
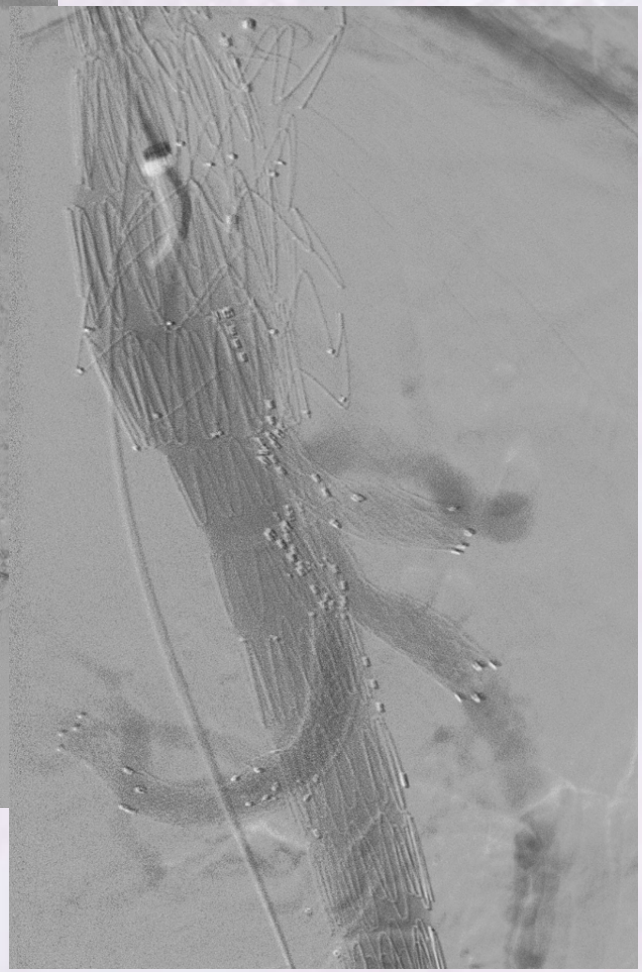
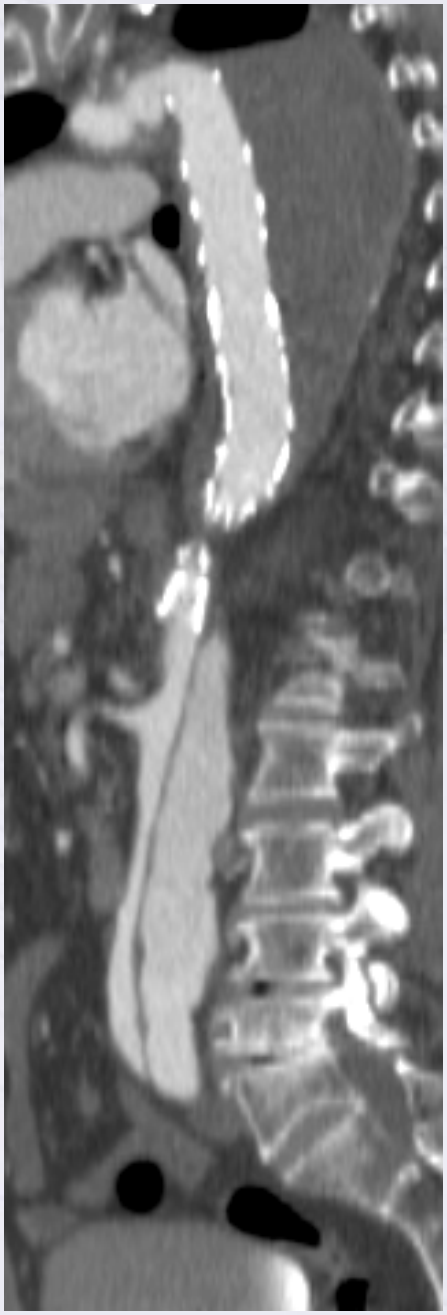
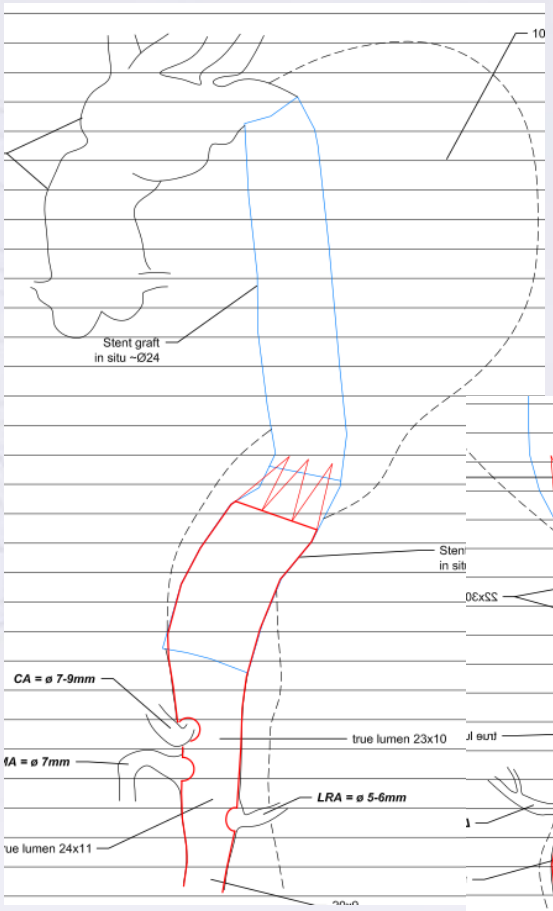
2 patients received F/BEVAR

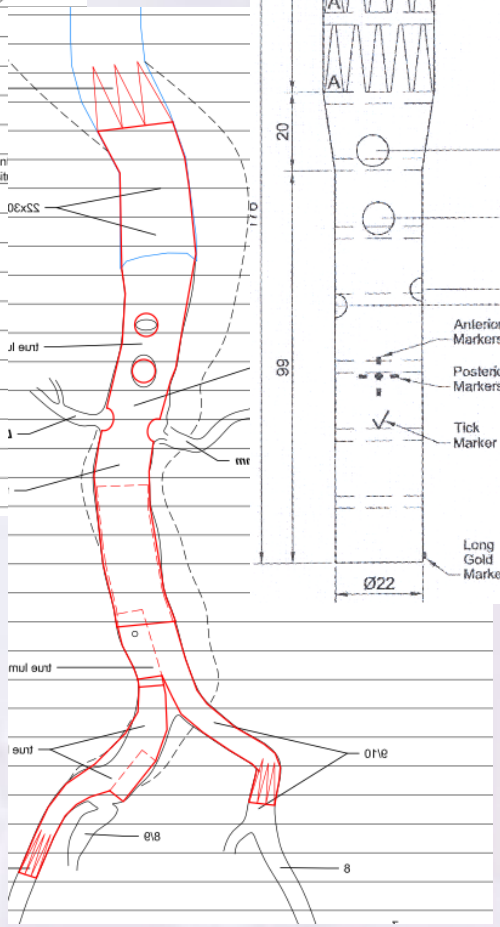


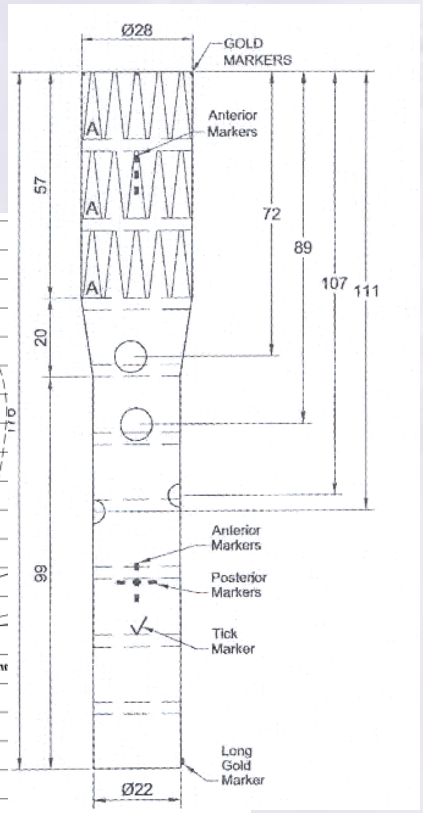







Stent graft
in situ ~Ø24
CA = ø 7-9mm
true lumen 23x10
LRA = ø 5-6mm




Ø28
GOLD
MARKERS
Anterior
Markers
57
72
89
107
111
20
99
Anterior
Markers
Posterior
Markers
Tick
Marker
Long
Gold
Marker
Ø22

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)

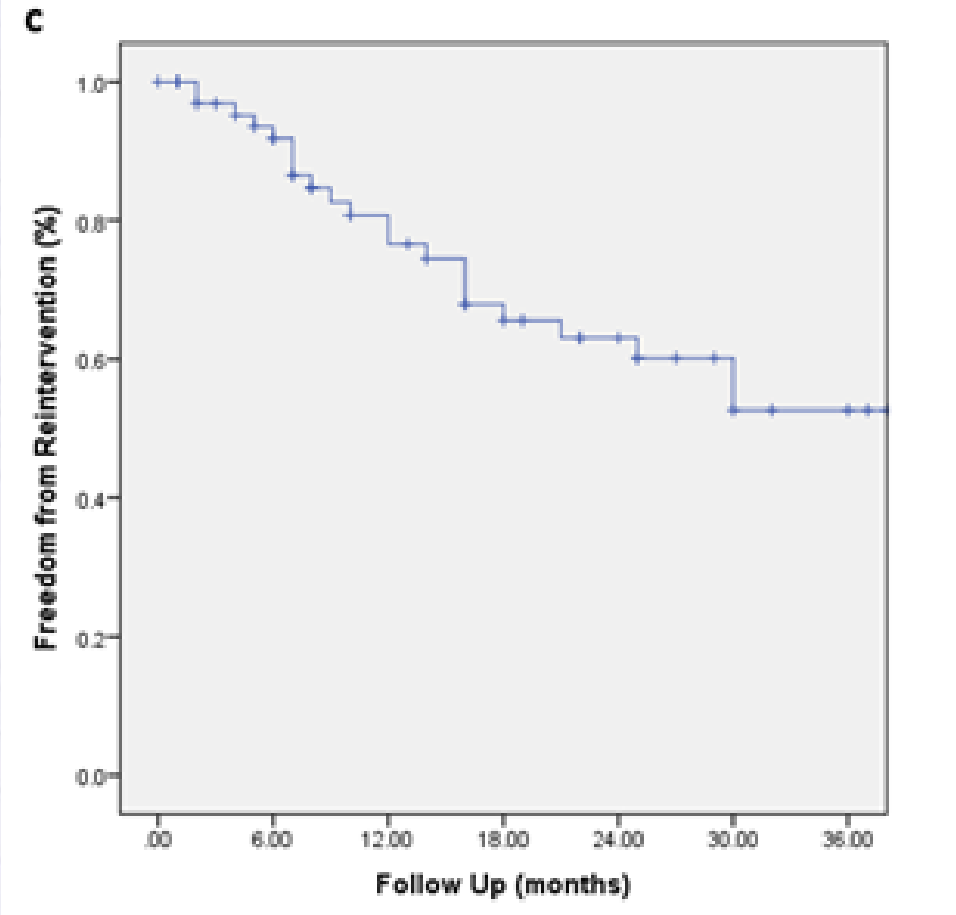
Perioperative Results

- 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%)

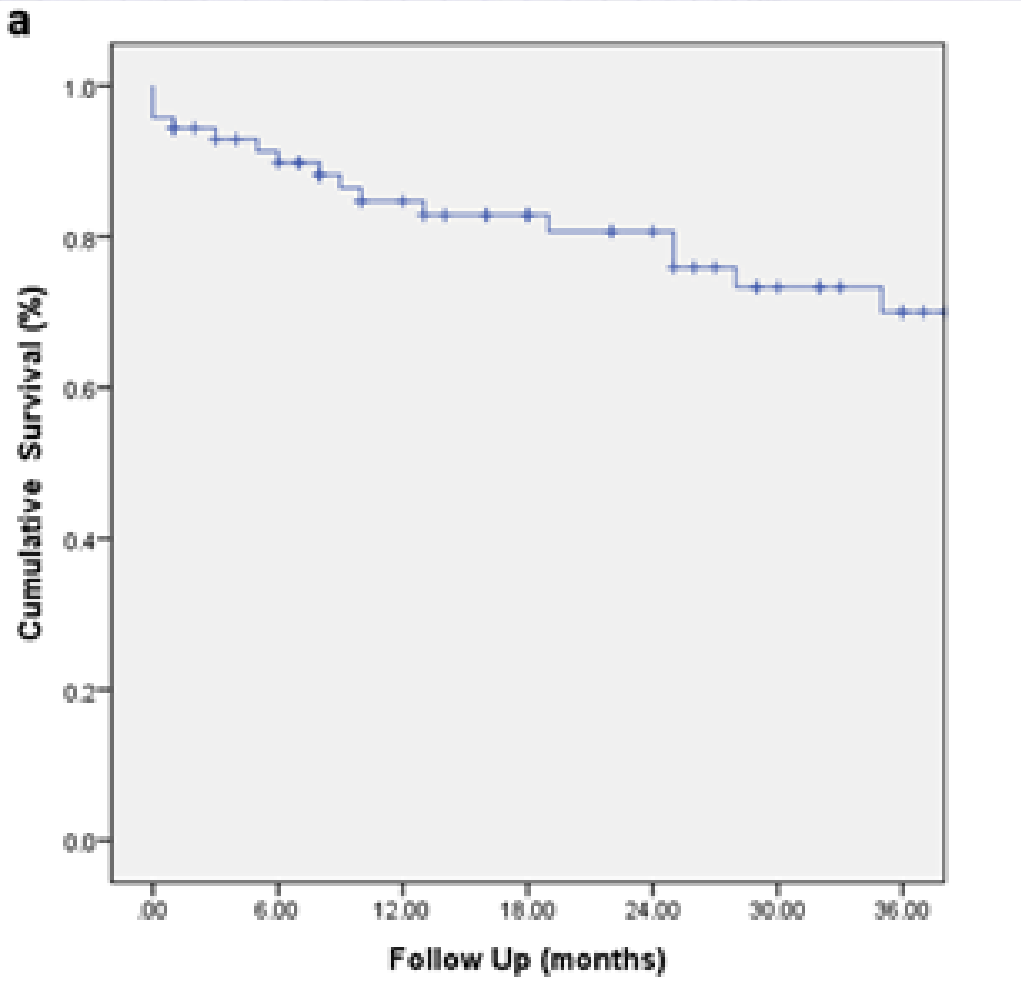
Freedom from Reintervention



80.7 ± 5.3% 1 Year

52.6 ± 8.0% 3 Years

Cumulative Survival



84.7 ± 4.5% 1 Year

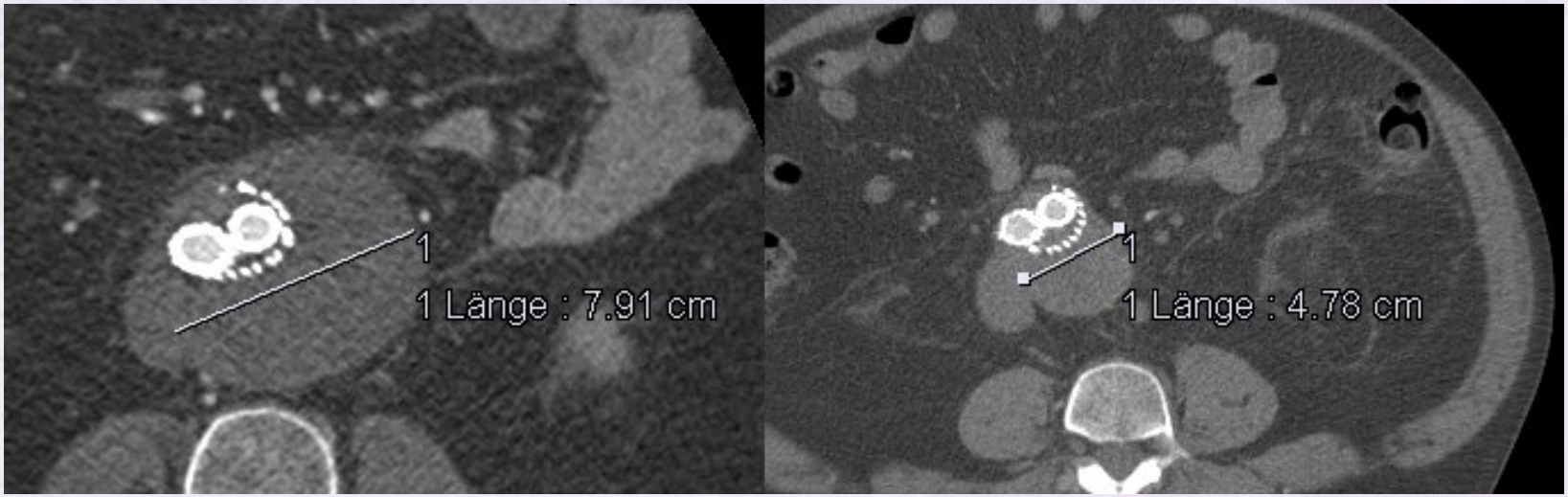
70.0 ± 6.7% 3 Years

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.