Post Dissection TAAA Endovascular Solutions

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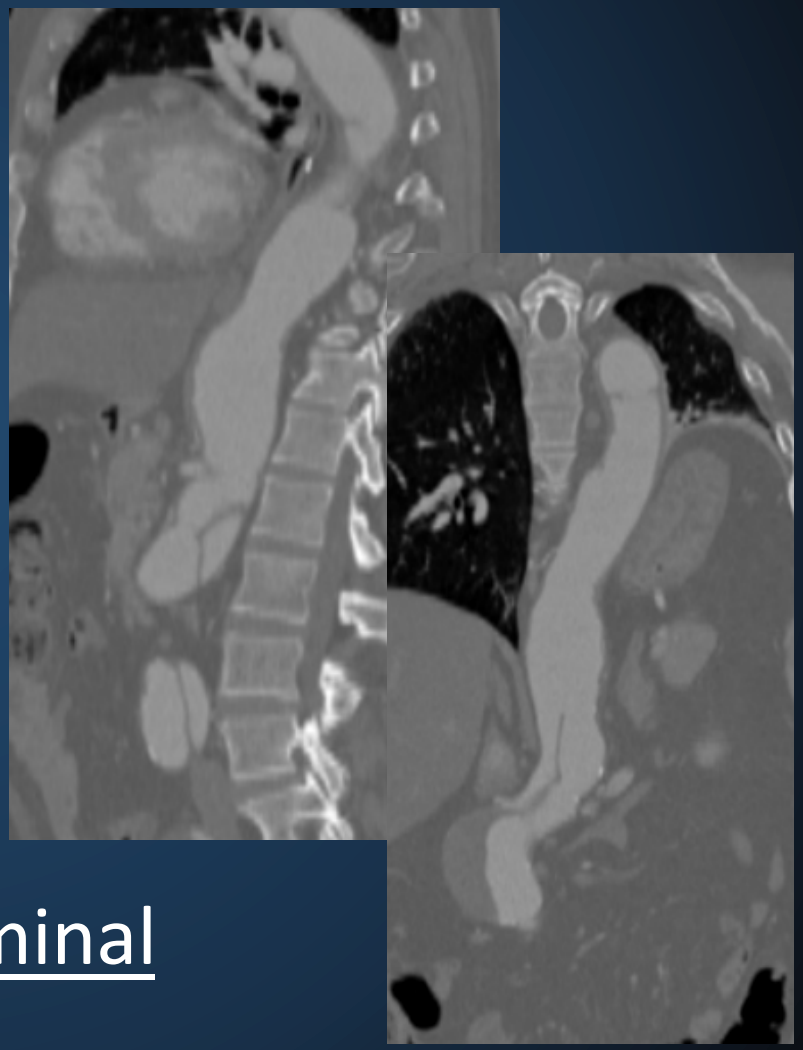
Conflict of Interest

- P.M. Kasprzak
  - Consultant for Cook
  - W.L. Gore & Associates
  - Bard
  - Maquet
  - Medtronic
  - Vascutek

Chronic Dissection

- Aortic Growth Rate in CD 7.1mm/y
- 20-40% post dissection Aneurysms
- (Thoracic) / Thoracoabdominal



Endovascular Treatment Options

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. Patterson, P.J.E. Holt*, 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

Benefit of TEVAR in CD uncertain

TEVAR ?

Predictors of Outcome after Endovascular Repair for Chronic Type B Dissection

K. Mani [a,d,*], R.E. Clough [a,b], O.T.A. Lyons [a,c], R.E. Bell [a], T.W. Carrell [a,b], H.A. Zayed [a], M. Waltham [a,c], P.R. Taylor [a,b]

European Journal of Vascular and Endovascular Surgery 43 (2012)

- 58 Pt
- Low perioperative Mortality (5%)
- Complete FL Thrombosis in **13% with TAAA**

TEVAR in CD only reasonable for thoracic Aneurysms

TEVAR ?

Endovascular repair of complicated chronic distal aortic dissections: Intermediate outcomes and complications

Woong Chol Kang, MD, PhD,[a,d] Roy K. Greenberg, MD,[a,b] Tara M. Mastracci, MD,[a] Matthew J. Eagleton, MD,[a] Adrian V. Hernandez, MD, PhD,[c] Akshat C. Pujara, BA,[b] and Eric E. Roselli, MD[b]

The Journal of Thoracic and Cardiovascular Surgery • November 2011

- 76 Pt
- Low perioperative Mortality (5%)
- Complete FL Thrombosis in **23% with type IIIB Dissection**

Satisfactory mid-term outcome after TEVAR in CD remains a challenge

What about ?

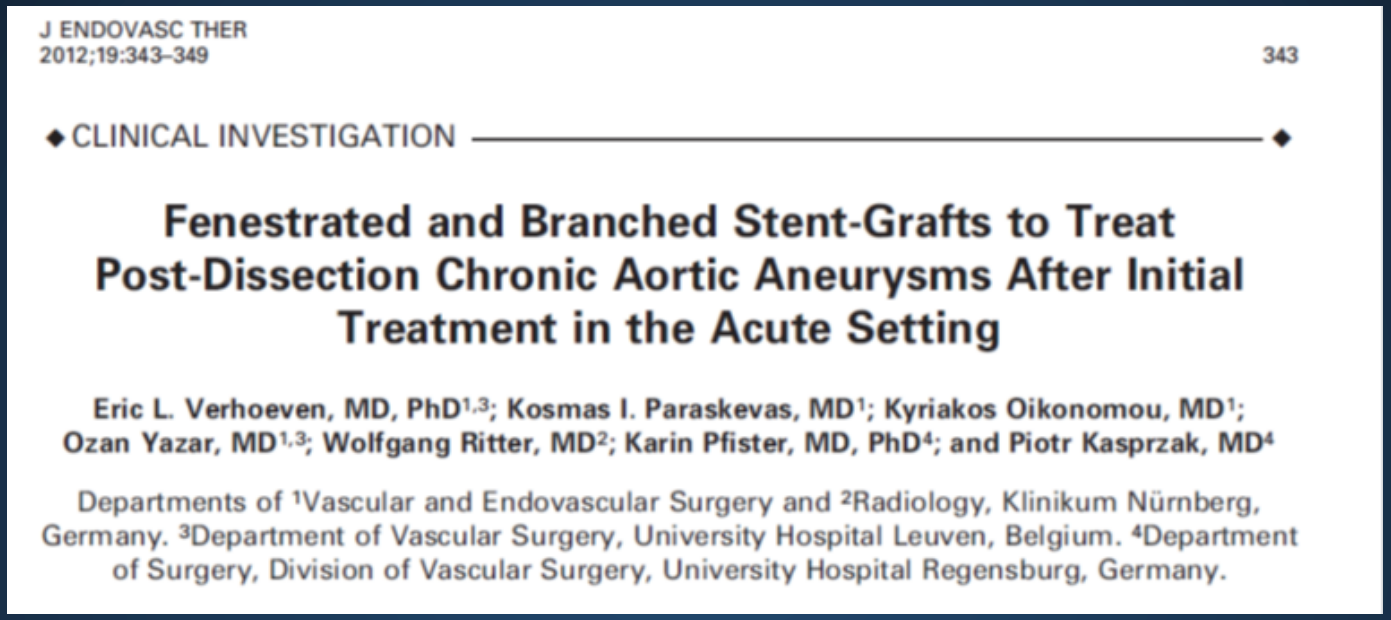
Technical Challenges

- Thoracoabdominal Extend
- Distal Landing Zone
- Stiff Dissection Flap
- Small true Lumen
- Target Vessels from FL/TL

F/B-EVAR Considerations

- Complete Aortic Coverage
- Proximal Tube to open the TL
- Fenestrations / (Branches)
- Switch from TL to FL when necessary

Feasibility



J ENDOVASC THER
2012;19:343–349

◆ CLINICAL INVESTIGATION ◆

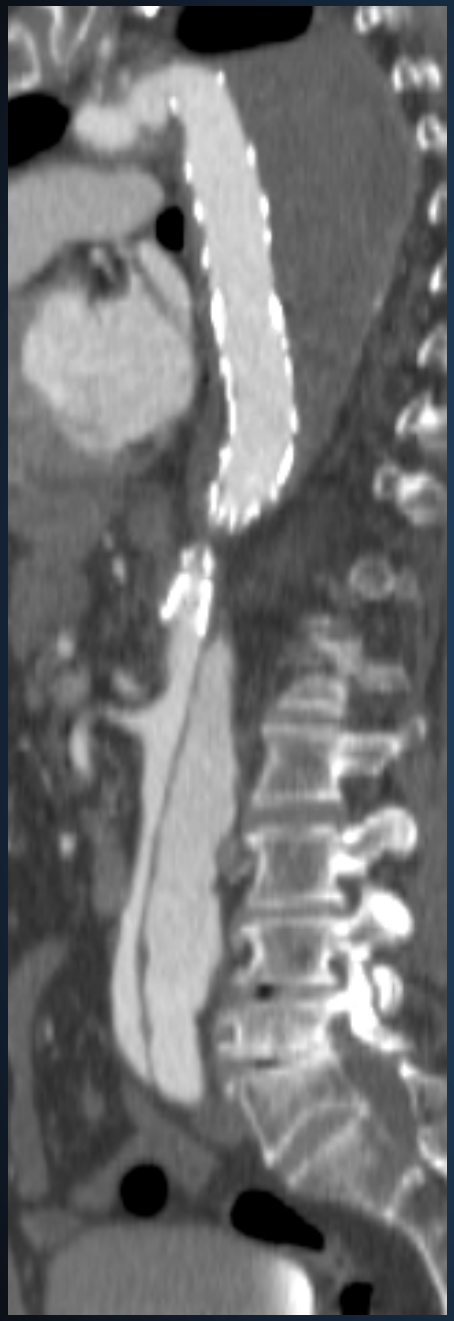
Fenestrated and Branched Stent-Grafts to Treat Post-Dissection Chronic Aortic Aneurysms After Initial Treatment in the Acute Setting

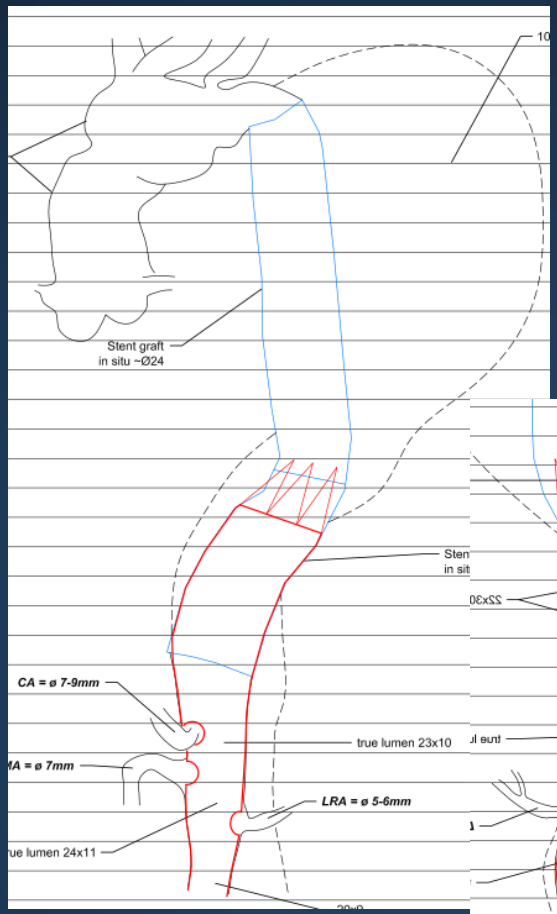
Eric L. Verhoeven, MD, PhD[1,3]; Kosmas I. Paraskevas, MD[1]; Kyriakos Oikonomou, MD[1]; Ozan Yazar, MD[1,3]; Wolfgang Ritter, MD[2]; Karin Pfister, MD, PhD[4]; and Piotr Kasprzak, MD[4]

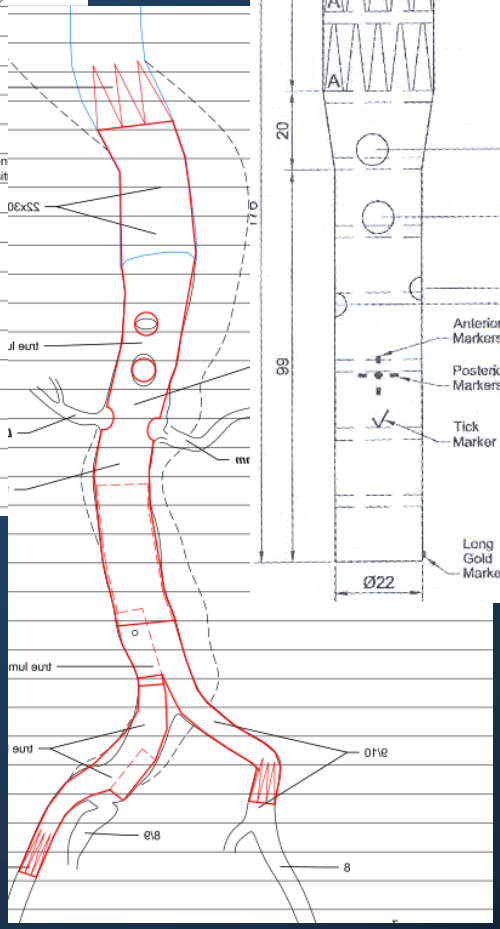
Departments of [1]Vascular and Endovascular Surgery and [2]Radiology, Klinikum Nürnberg, Germany. [3]Department of Vascular Surgery, University Hospital Leuven, Belgium. [4]Department of Surgery, Division of Vascular Surgery, University Hospital Regensburg, Germany.

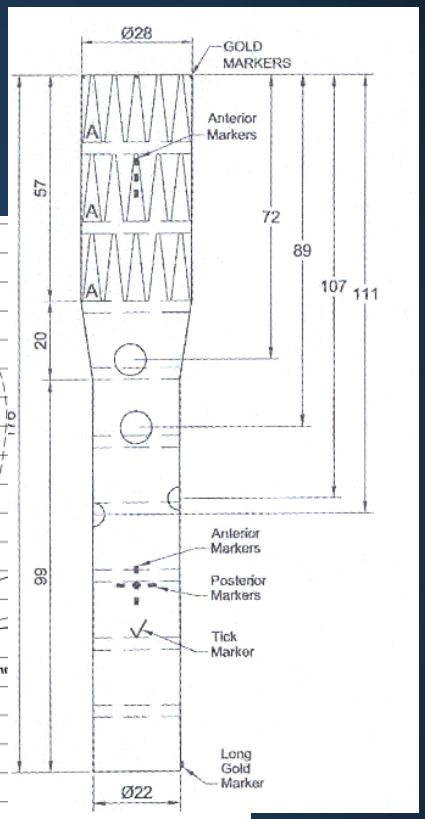
First 6 Pt

- Able to work in small true lumen
- Able to switch from TL to FL when necessary




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




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

Fenestrated and branched endovascular aortic repair for chronic type B aortic dissection with thoracoabdominal aneurysms

Atsushi Kitagawa, MD,[a] Roy K. Greenberg, MD,[a,b] Matthew J. Eagleton, MD,[a] Tara M. Mastracci, MD,[a] and Eric E. Roselli, MD,[b] *Cleveland, Ohio*

Cleveland Experience

- 15 extensive TAAA dissections
- 15 focal dissections (w/o thoracic aorta involvement)

Conclusions: FEVAR is feasible for patients with chronic dissections and TAAA. Concerns regarding visceral vessel access and graft compression resulting from narrow true lumen diameters were not relevant in our experience. Favorable sac and lumen morphologic changes, coupled with a low mortality and complication risk, makes this an attractive means of handling this clinical problem. (J Vasc Surg 2013;58:625-34.)

Eur J Vasc Endovasc Surg (2014) Volume 48, Issue 6, December 2014, Pages 641–648

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

Objectives: Fenestrated/branched thoracic endovascular repair (F/Br-TEVAR) is increasingly applied for atherosclerotic thoracoabdominal aortic aneurysm (TAAA); however, use in post-dissection TAAAs is still very limited. Experience with F/Br-TEVAR in the treatment of post-dissection TAAA is presented.

Methods: Data were analysed from prospectively maintained databases including all patients with post-dissection TAAAs that underwent F/Br-TEVAR within the period January 2010 to July 2013 in two vascular institutions. Evaluated outcomes included initial technical success, operative mortality and morbidity, late survival, endoleak, aneurysm diameter regression, renal function, and reintervention during follow-up (FU).

Results: A total of 31 patients (25 male, mean age 65 ± 11.4 years) were treated. Technical success was 93.5% and 30-day mortality 9.6%. Temporary spinal cord ischaemia occurred in four (12.6%) patients, with no case of permanent paraplegia. Mean FU was 17.0 ± 10 months. There were seven late deaths, all aneurysm unrelated. Estimated overall survival rates were 83.9 ± 6.7, 76.4 ± 7.9 and 71.6 ± 8.7% at 6, 12, and 18 months, respectively. Impairment of renal function occurred in two (6.4%) patients. Endoleaks were diagnosed in 12 patients during FU, including six type IB endoleaks and six type II endoleaks. Reintervention was required in seven (22.5%) patients. Mean aneurysm sac regression was 9.3 ± 8.7 mm, with a false lumen thrombosis rate of 66.7% and 88.2% for patients with a FU longer than 6 and 12 months respectively.

Conclusions: F/Br-EVAR is feasible for patients with a post-dissection TAAA. Although associated with additional technical challenges, and a significant need for reintervention, it leads to favourable aneurysm morphologic changes, and may play a more prominent role in the future for this type of pathology if long-term results confirm the good initial outcome.

Early Experience of Endovascular Repair of Post-dissection Aneurysms Involving the Thoraco-abdominal Aorta and the Arch

ejvs.2015.

R. Spear, J. Sobocinski, N. Settembre, M.R. Tyrrell, S. Malikov, B. Maurel, S. Haulon

- 23 Pt (16 TAAA; 7 Arch)
- Technical Success 100% in TAAA; 73% in Arch
- 12M median FU – 1 aneurysm unrelated death

Complex Endovascular repair in CD is a viable alternative to open repair

Experience Regensburg (N=29) (01/2008-09/2016)

- 22/29 after previous surgery:
  - Open surgery for type A (N=7)
  - Open Surgery/TEVAR for type B (N=15)
- Type of Graft:
  - Fenestrations only (N=18)
  - Combination of Fenestrations/Branches (N=7)
  - Branches only (N=4)

Operative Data

OR Time	320 ± 149 min
Fluoroscopy Time	53 ± 25 min
Contrast Agent	298± 94 ml

Perioperative Results

- Technical Success: N=26 (89.6%)
  - 1 Conversion; 1 LRA/1 RRA catheterization Failure;
- 30-day Mortality: N=2 (6.9%)
  - Cardiac (N=1)
  - Caval Vein rupture upon post-op catheter placement (N=1)

Perioperative Results

- SCI: N=6
  - Temporary Paraparesis Uni-/Bilateral N=4
  - Paraplegia with incomplete recovery to Paraparesis N=2

Late Results
F/U: 24 months (2-60)

- Target vessel occlusion:

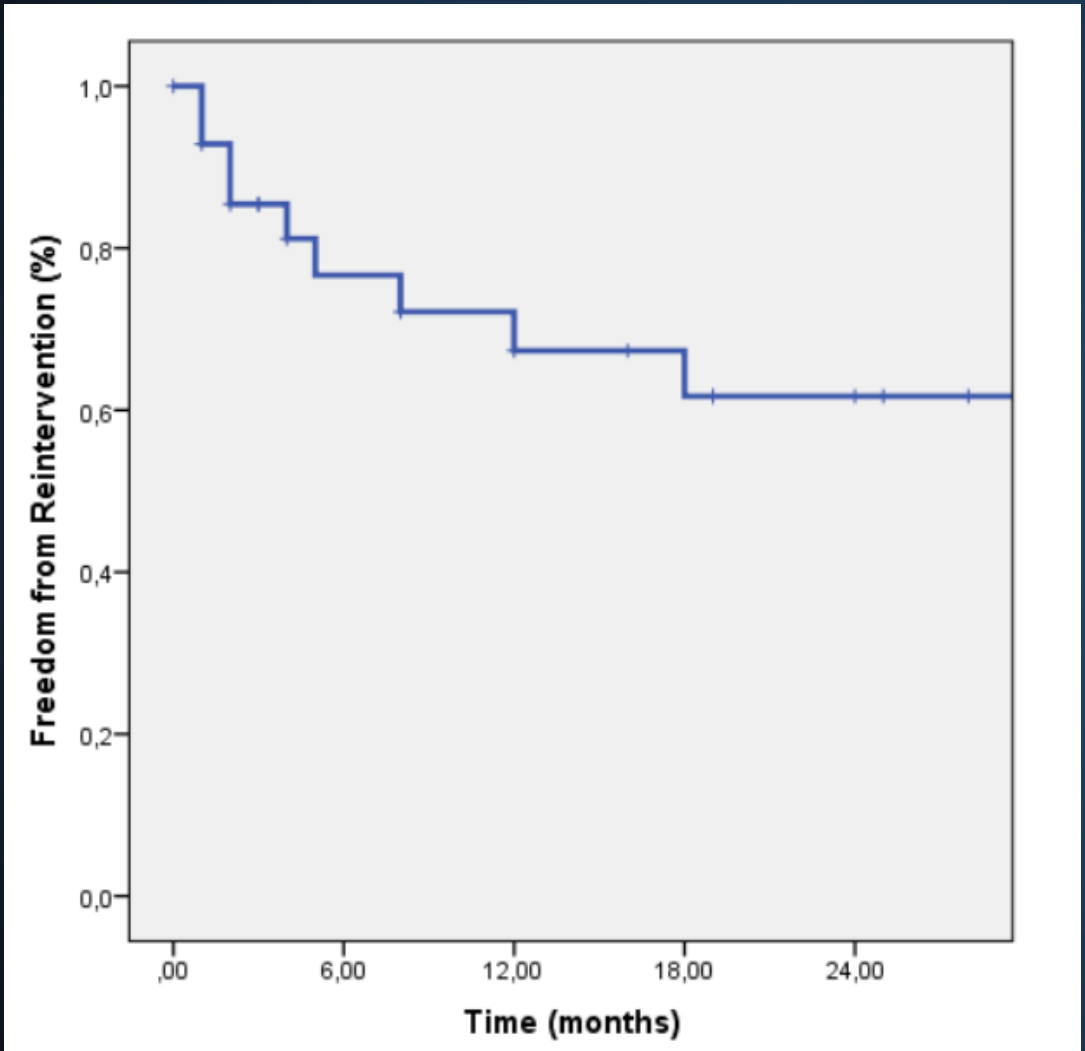
  N = 1 LRA Occlusion at 2M

- Endoleak: N = 13
  - Type Ib Endoleak from target vessel (n=5)
  - Type Ib from Iliac arteries (n=2)
  - Type II Endoleak (n=6)

Late Results
F/U: 24 months (2-60)

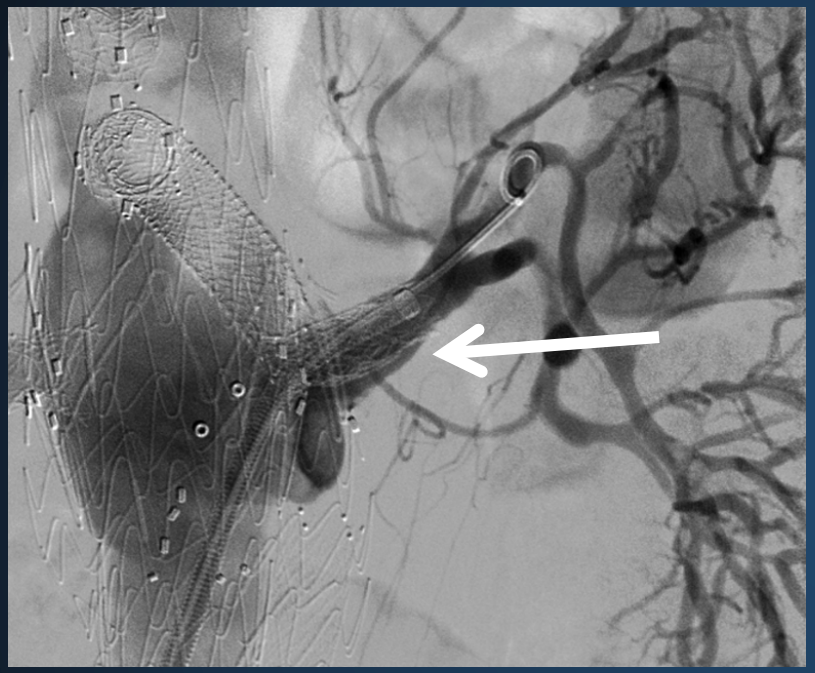
- Reinterventions due to Endoleak
  - Stent graft extension for LRA (n=1)
    SMA (n=1)
    CA (n=1)
    RRA&SMA (n=1)
    RRA&LRA (n=1)
  - IBD left (n=2)
  - Embolization Lumbar (n=1)
  - Lap. Clipping IMA (n=1)

Freedom from Reintervention

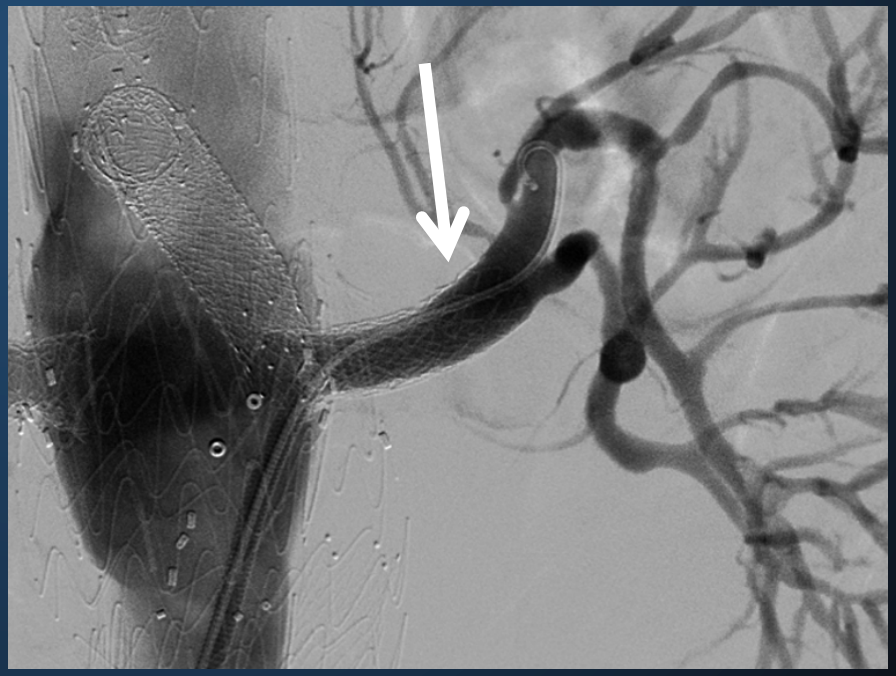


67.3 ± 9.7% 1 Year
61.7 ± 10.4% 2 Years

Type Ib EL (LRA)



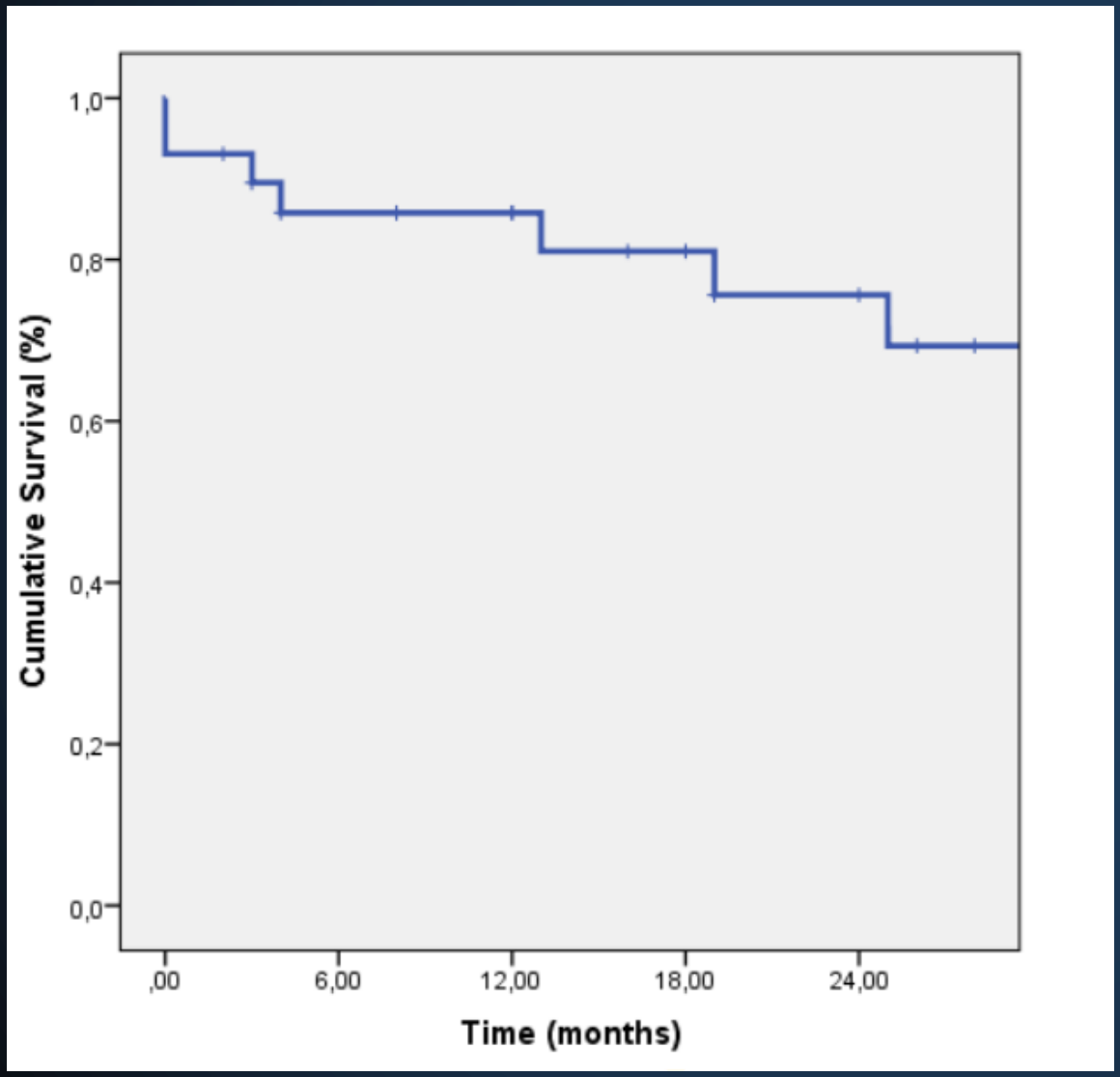
LRA Stent-graft Extension



Late Results
F/U: 24 months (2-60)

- 5 Aneurysm unrelated deaths

Cumulative Survival



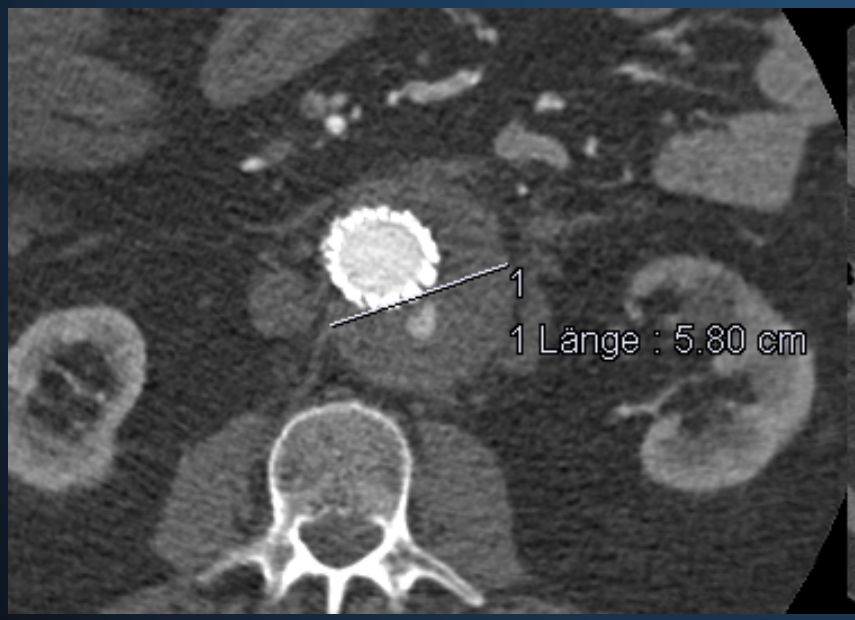
85.8 ± 6.6 % 1 Year

75.6 ± 8.9 % 2 Years

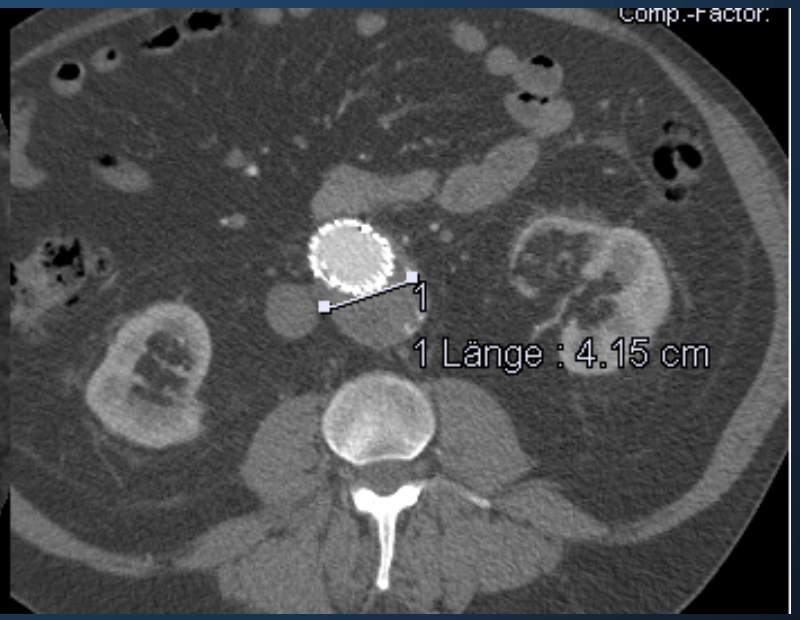
False Lumen Thrombosis

24/27 (88%) Patients that survived the early postoperative period

Post-op



CT 2 years



False Lumen Thrombosis

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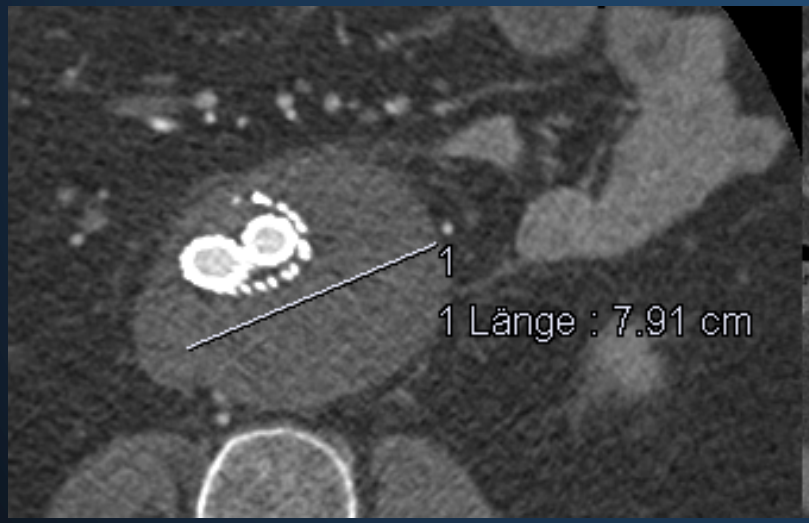
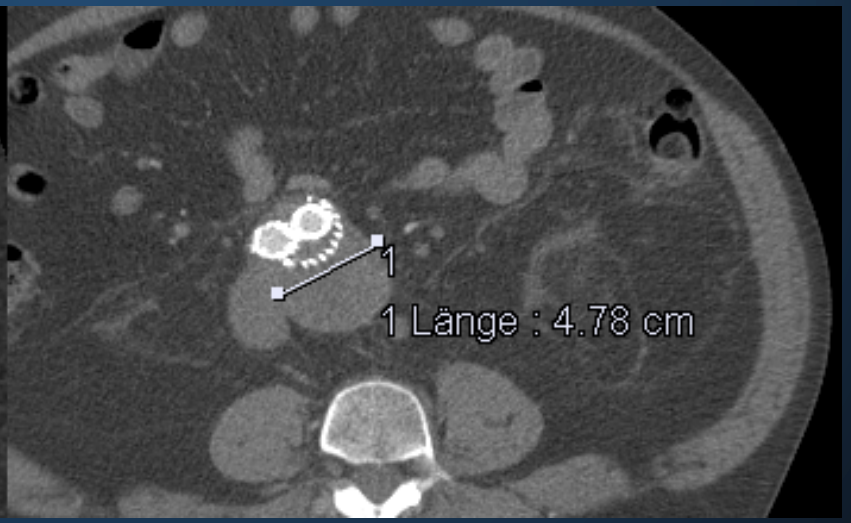


CT 2 years



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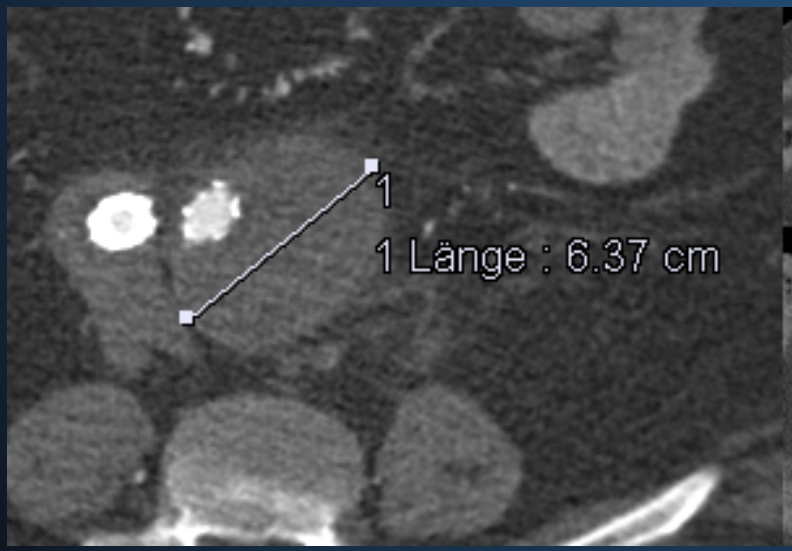
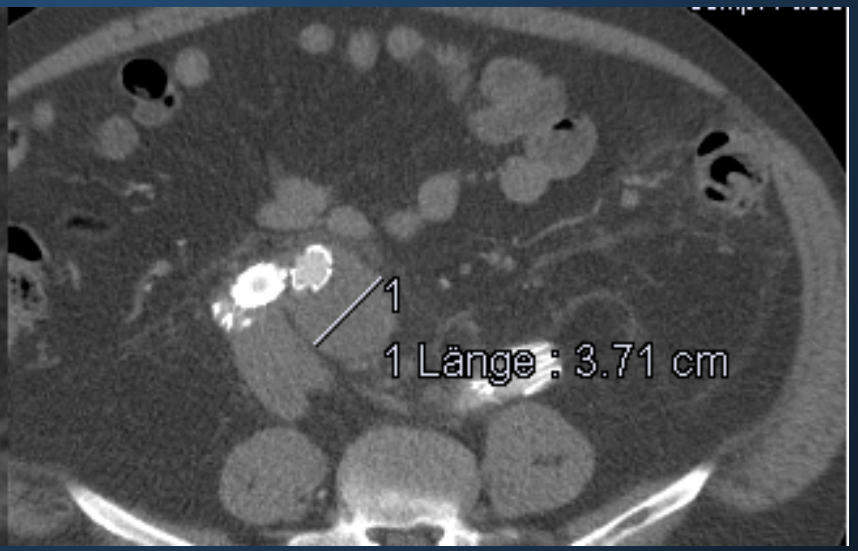


CT 2 years



Follow-Up

Mean Aneurysm diameter (Dmax)

64 ± 12 mm ⟶ 52 ± 15 mm

Endovascular Solutions for post dissection Aneurysms

TEVAR only for Aneurysms limited to the thoracic Aorta

Endovascular Solutions for post dissection Aneurysms

F/B-EVAR for post dissection TAAA

- Feasible despite technical challenges
- High Technical Success
- High Rate False Lumen Thrombosis

but...

- Significant Reintervention Rate

Endovascular Solutions for post dissection Aneurysms

F/B-EVAR for post dissection TAAA