



MEET2014
MULTIDISCIPLINARY EUROPEAN
ENDOVASCULAR THERAPY

Treatment of short-term complications after TEVAR for acute B dissection

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MEET²⁰¹⁴

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Faculty disclosure: *G. Torsello*

I have **no financial relationships** to disclose.

TEVAR Systematic Reviews of 5880 patients

Cheng D, et al. *J Am Coll Cardiol*. 2010;55(10):986-1001

Compared with OR, TEVAR may reduce:

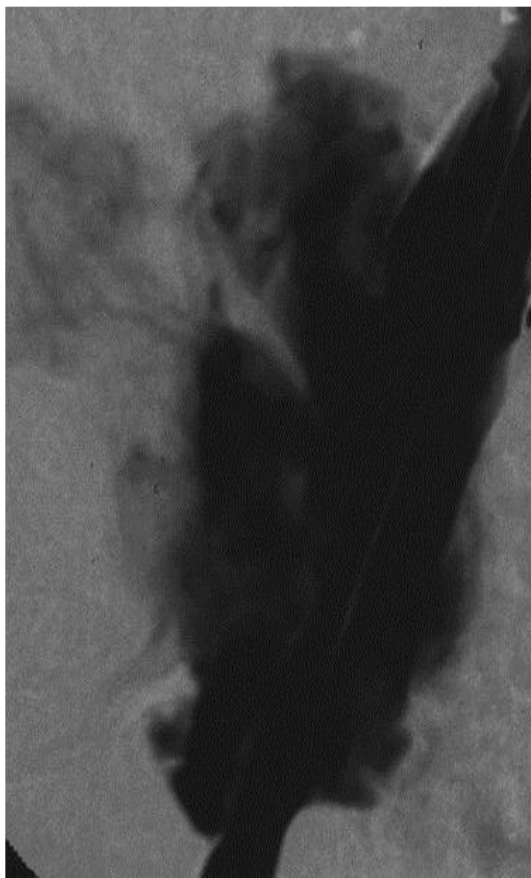
- early death
- paraplegia
- renal insufficiency
- transfusions and reoperation for bleeding
- cardiac complications, pneumonia
- length of stay

Trials for patients with dissection

Study	Year	N	Mortality 30-d	Stroke 30-d	SCI 30-d
VIRTUE	2006-2012	Acute 50	4/50 (8%)	4/50 (8%)	1/50 (2%)
		Sub-acute 24	0	0	0
		Chronic 26	0	0	1/26 (3.8%)
STABLE	2007-2009	Acute 20 <u>Subacute 6</u> Chronic 10	2/40 (5%)	4/40 (10%)	1/40 (2.5%)
INSTEAD	2001-2007	72	2/72 (2.8%)	1/72 (1.5%)	2/72 (2.9%)

TEVAR begins with the access

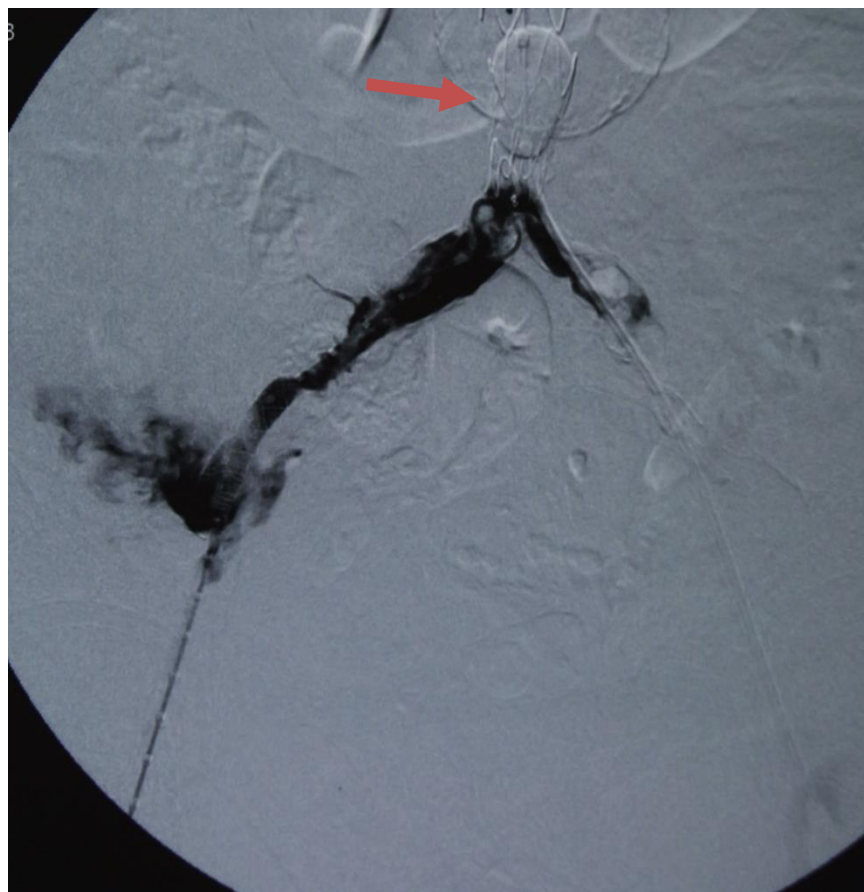
Iliac damage after TEVAR



Higher risk in:

- Women
- Young people
- Asian patients
- Tortuosity/calcification

Treatment of the bleeding



- Hold the wires in place
- Inflate a large balloon (from contralateral side)
- Deploy a stent-graft (long enough)
- Surgery for complete transsection of EIA



Complication:
dissection EIA

Access:
contralateral
percutaneous

treated by PTA

Deployment complications

Acute B dissection
Malperfusion
syndrome
thoracic pain

Droop effect

IMPLANTATION OF
2° DEVICE



Branch vessels

■ LSA sacrifice may result in different complications¹

- 6% Arm Ischemia
- 4% Spinal Cord Ischemia
- 2% Vertebrobasilar Ischemia
- 5% Anterior Circulation Stroke
- 6% Death

■ Absolute indications (arm isch, LIMA etc)

■ Relative indications (SCI and stroke)

¹Rizvi AZ, Murad MH, Fairman RM, Erwin PJ, Montori VM. The effect of left subclavian artery coverage on morbidity and mortality in patients undergoing endovascular thoracic aortic interventions: a systematic review and meta-analysis. *J Vasc Surg* 2009;50:1159-69.

Occlusion of the Left Subclavian Artery With Stent Grafts Is Safer With Protective Reconstruction

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Background. Safe fixation of endovascular stent grafts in thoracic aortic disease often requires covering of the left subclavian artery (LSA) with the stent graft. It is controversial whether this occlusion can be done without additional risk of ischemic complications.

Methods. In 102 patients treated with endovascular stent grafts, the LSA was covered. In a nonrandomized clinical practice, unprotected occlusion of the LSA was performed in 63 patients (61%), whereas 39 patients underwent extrathoracic subclavian to carotid artery revascularization before ($n = 28$) or concomitantly with ($n = 11$) the endovascular procedure.

The low incidence in general, but the covered length of the aorta was significantly longer in the protected group. Arm ischemia after unprotected LSA occlusion occurred in 25%.

Conclusions. The interpretation of the results remains speculative because many factors contribute to left cerebral ischemia. However, in terms of overall complications, there is a significant difference in favor of the group protected by revascularization of the LSA either before or simultaneously with stent grafting. Arm ischemia is mostly mild and can be managed secondarily. Subclavian revascularization is associated with relatively low

From the Society for Vascular Surgery

Neurologic complications associated with endovascular repair of thoracic aortic pathology: Incidence and risk factors. A study from the European Collaborators on Stent/Graft Techniques for Aortic Aneurysm Repair (EUROSTAR) Registry

Joach Beck, MD,¹ Peter L. Harris, MD,² Rodolfo H. Hirs, MD,³ Randolph van Tijn, MD,⁴ Philippe Corcos, MD,⁵ Lucien Dujin, MD,⁶ and Lander Tielbeek, MD,⁷ Endovasc, the Netherlands, and Liverpool, United Kingdom

Objective. Endovascular treatment of thoracic aortic disease has become widely used, but neurologic complications. The authors report the incidence and risk factors for neurologic complications in patients treated with endovascular repair of thoracic aortic disease.

Methods. The European Collaborators on Stent/Graft Techniques for Aortic Aneurysm Repair (EUROSTAR) database prospectively recorded 461 patients. Thoracic endovascular repair was performed with stent-grafts, which included deployment coverage of the LSA and coverage of the LSA with or without concomitant subclavian artery revascularization. In this article, we review the LSA anatomy and consequences of LSA coverage as a backdrop for a discussion of the ramifications of LSA coverage during endovascular thoracic aortic repair (TEVAR).

Early series reported high rates of LSA revascularization as an adjunct to endovascular repair for aortic pathology adjacent to the LSA ostium. Initial reports of low morbidity associated with simple LSA coverage are not supported by contemporary literature, which suggests revascularization reduces the risk of cerebrovascular accident and spinal cord ischemia. Coverage of the LSA without revascularization may be justified only in emergency situations or when thorough investigations of cerebral and vertebral-basilar circulation have concluded that the risk to brain and spinal cord is low. Subclavian revascularization should be considered in the presence of a dominant left vertebral artery, bilateral carotid artery disease, an occluded/dominant right vertebral artery, presence of a left internal mammary artery graft, or when a long length of thoracic aorta is covered.

J Endovasc Ther 2008;15:168-176

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J ENDOVASC THER
2008;15:168-176

• ENDOVASCULAR THERAPY REVIEWS •

Management of the Left Subclavian Artery During Endovascular Repair of the Thoracic Aorta

Nadim Noor, PhD, FRCS¹; Umar Sadat, MBBS, MRCS²; Paul D. Hayes, MD, FRCS³; Matthew M. Thompson, MD, FRCS⁴; and Jonathan R. Boyle, MD, FRCS⁵

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Endovascular repair is rapidly becoming the treatment of choice for thoracic aortic disease, which often involves or lies in close proximity to the left subclavian artery (LSA). In order to extend the proximal landing zone for the stent graft and obtain an adequate seal, the LSA ostium is often covered, with or without concomitant subclavian artery revascularization. In this article, we review the LSA anatomy and consequences of LSA coverage as a backdrop for a discussion of the ramifications of LSA coverage during endovascular thoracic aortic repair (TEVAR).

Early series reported high rates of LSA revascularization as an adjunct to endovascular repair for aortic pathology adjacent to the LSA ostium. Initial reports of low morbidity associated with simple LSA coverage are not supported by contemporary literature, which suggests revascularization reduces the risk of cerebrovascular accident and spinal cord ischemia. Coverage of the LSA without revascularization may be justified only in emergency situations or when thorough investigations of cerebral and vertebral-basilar circulation have concluded that the risk to brain and spinal cord is low. Subclavian revascularization should be considered in the presence of a dominant left vertebral artery, bilateral carotid artery disease, an occluded/dominant right vertebral artery, presence of a left internal mammary artery graft, or when a long length of thoracic aorta is covered.

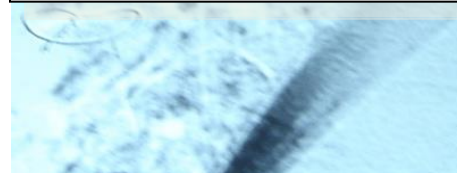
J Endovasc Ther 2008;15:168-176

Key words: thoracic endovascular aortic repair; thoracic aneurysm; subclavian artery; revascularization; carotid-subclavian transposition; carotid-subclavian bypass

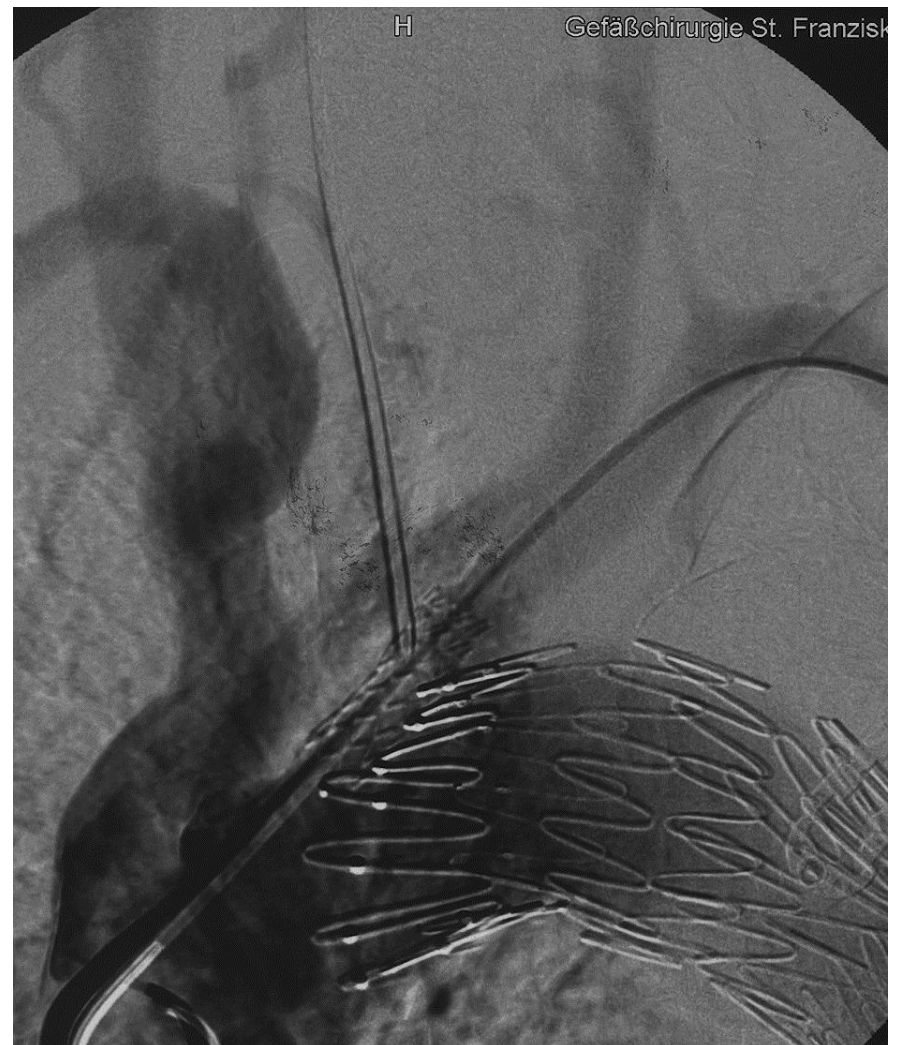
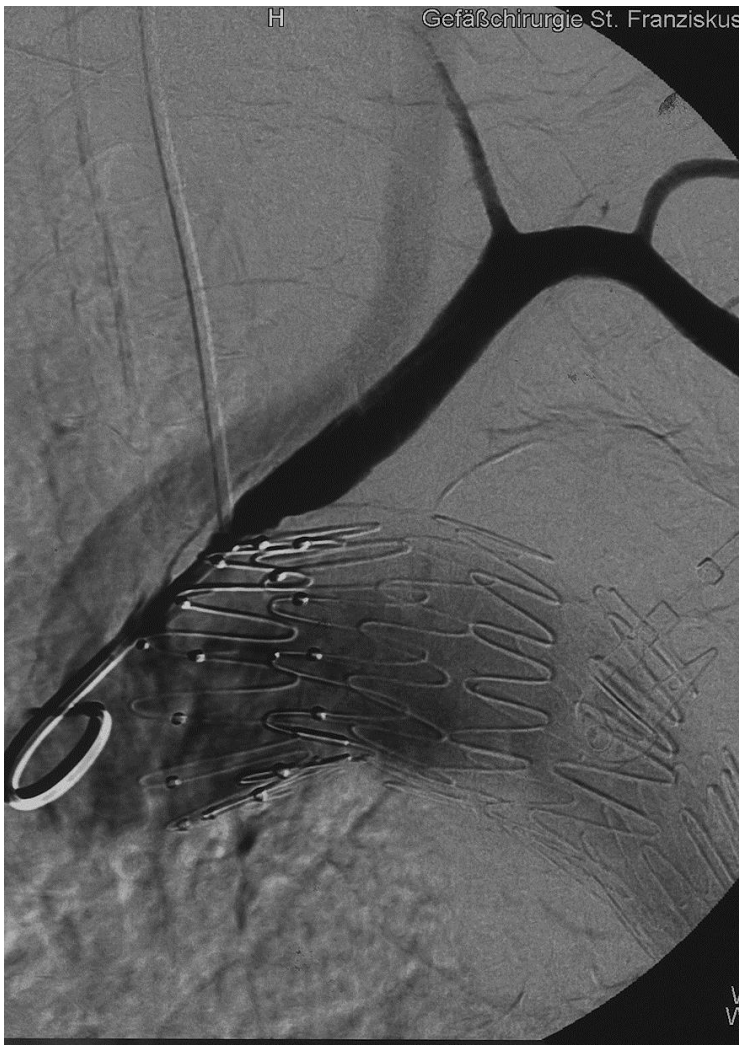
The Society for Vascular Surgery Practice Guidelines: Management of the left subclavian artery with thoracic endovascular aortic repair

Jon S. Matsumura, MD,^a W. Anthony Lee, MD,^b R. Scott Mitchell, MD,^c Mark A. Farber, MD,^d Mohammad Hassan Murad, MD, MPH,^e Alan B. Lumsden, MD,^f Roy K. Greenberg, MD,^g

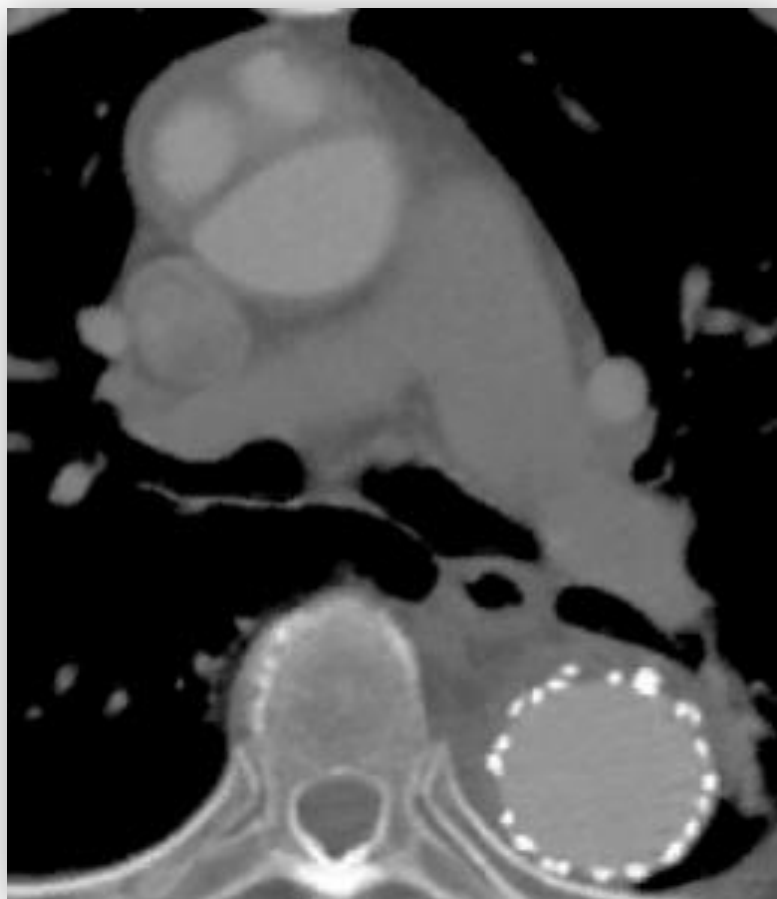
Hazim J. Safi, MD,^h and Ronald M. Fairman, MD,ⁱ for the Society for Vascular Surgery, Gainesville, Fla; Palo Alto, Calif; Chapel Hill, NC; Rochester, Minn; Houston, Tex; Cleveland, Ohio; and Philadelphia, Pa



Catheterization of the LSA helps identifying the vessel and perform chimney, if required



Retrograde Type A Dissection after TEVAR



- Incidence 1.33%
- 36% in hospital
- 42% mortality
- 81% for aortic dissection
- 83% proximal bare stent

Retrograde Type A Dissection after TEVAR

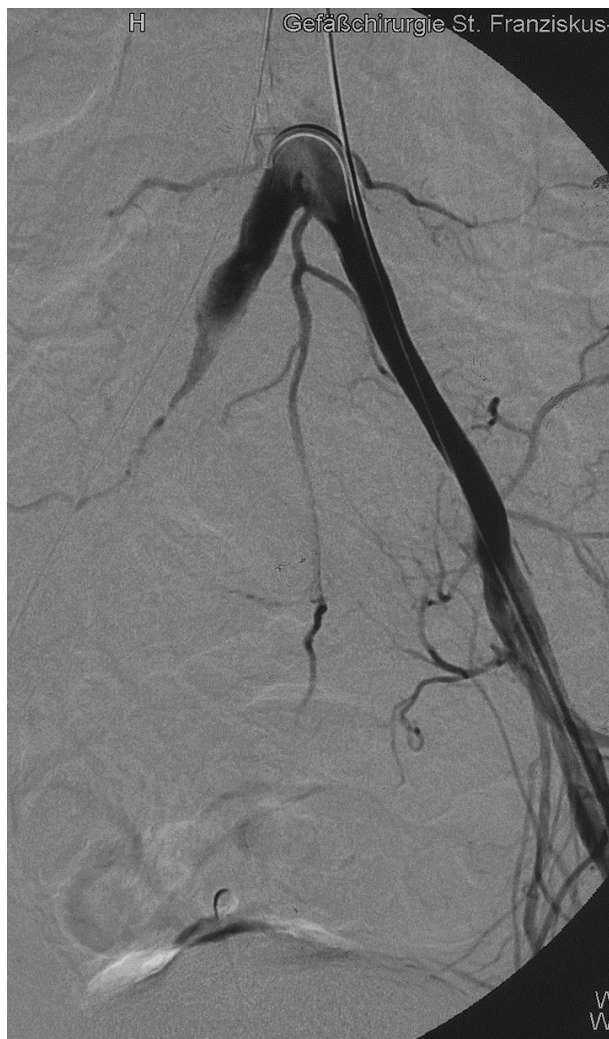


- TAA: 0.9%
- Acute dissection 8.4%
- Chronic dissection 3%

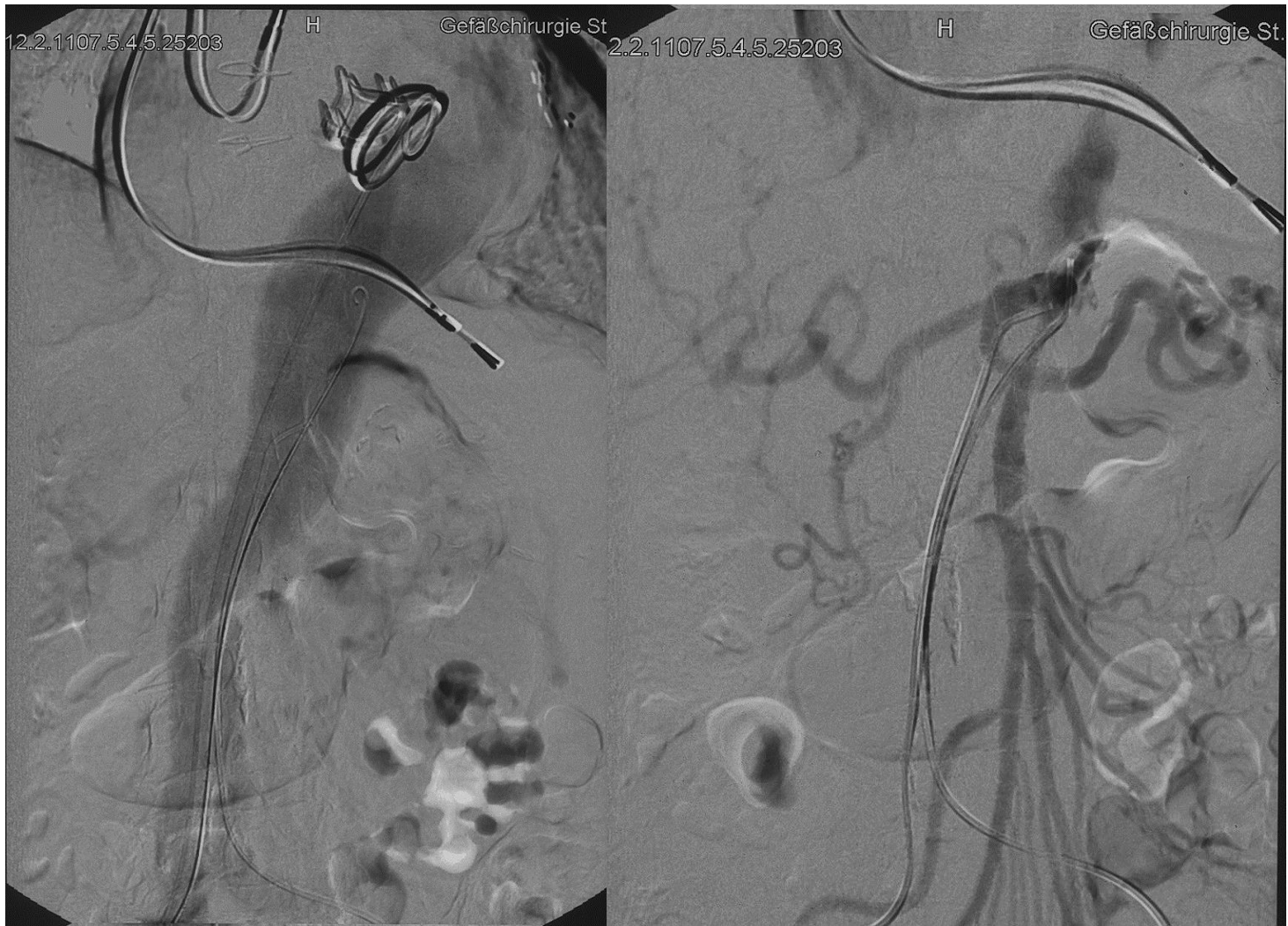
Persisting malperfusion - If there is still severe compression of the TL, use of bare stents across the visceral segment



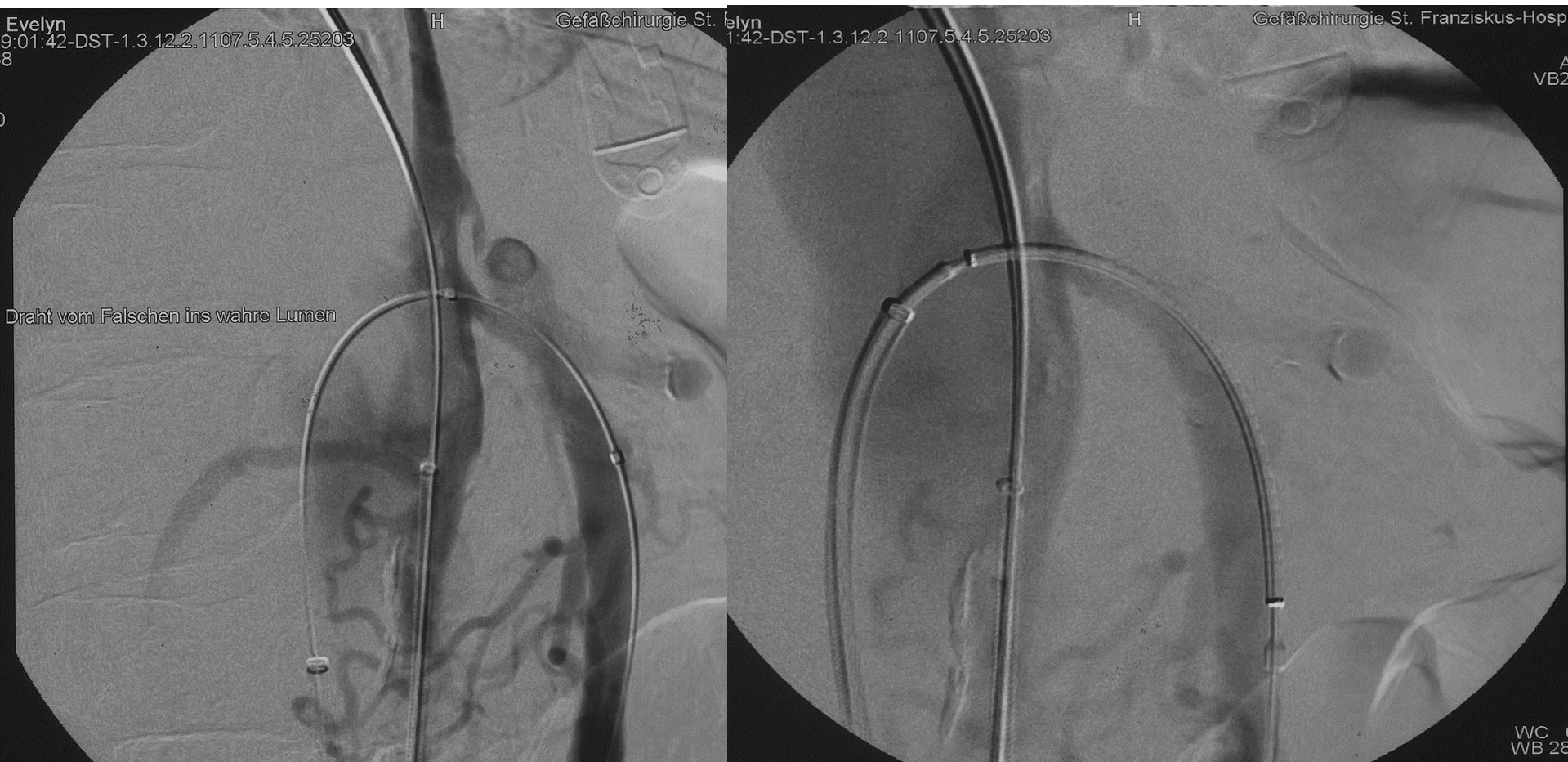
Persisting extremity malperfusion after thoracic endografting



Visceral malperfusion after TEVAR



PTA and stenting of the SMA after fenestration of the lamella



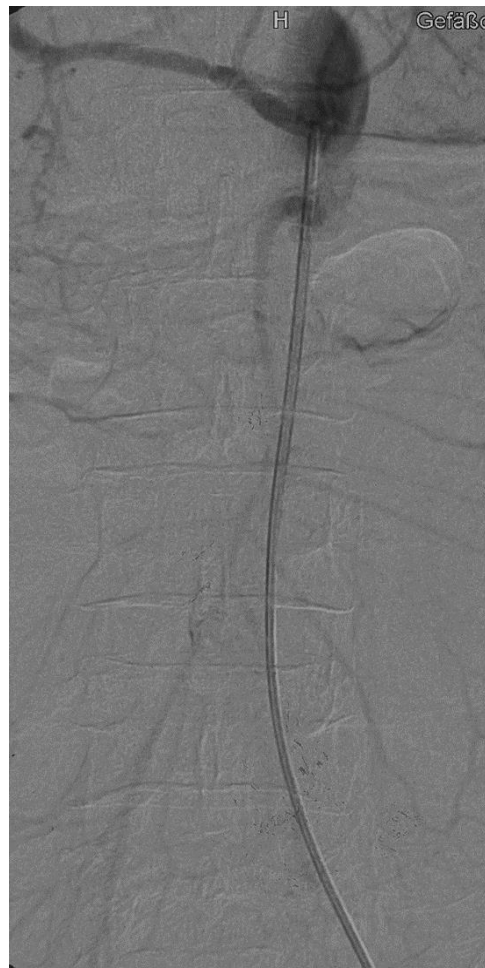
Completion angiography after fenestration and stenting of the SMA



Fenestration of the lamella with the scissors



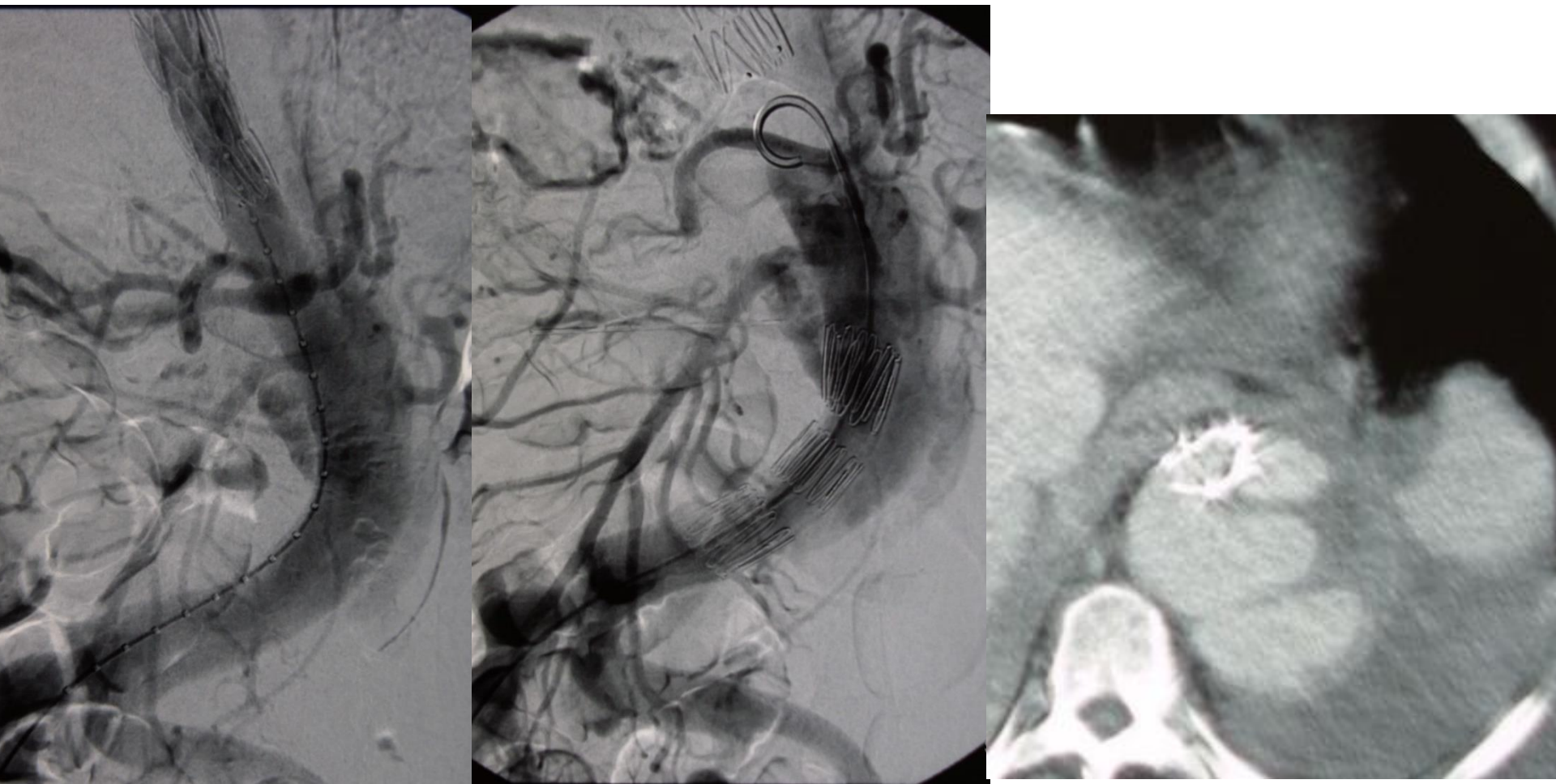
Use ballooning or stent when aortic occlusion occurs after use of scissors



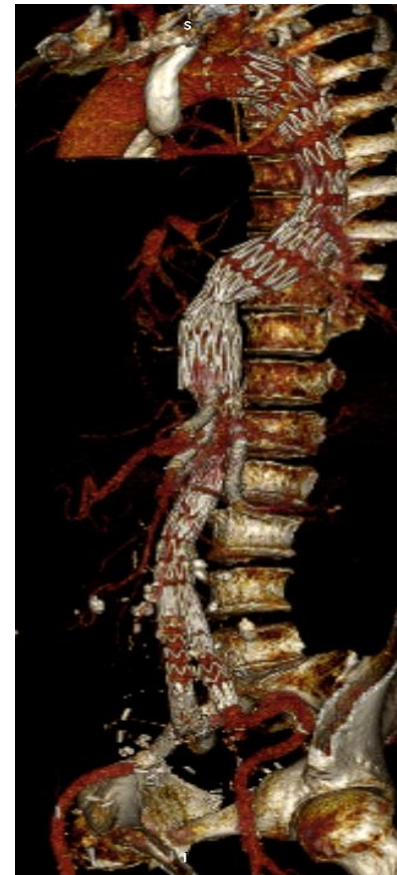
Extremities and visceral ischemia after type B dissection – Crossover wire



Insufficient bleeding control even after aortic stenting



Treatment of the the rupture with the thoracoabdominal t-Branch



Summary: therapy of malperfusion

- If there is still severe compression of the TL, stent graft extension down to the celiac takeoff or use of bare stents across the visceral segment
- Adjunctive stenting of the aortic branches when branch malperfusion persists
- Large fenestration in cases in which TEVAR or stenting of isolated branches is not feasible/needed

Therapy of aortic rupture

- Placement of a stent graft to cover the ruptured aorta and the intimal tear at entry and reentry
- Angiography to check the complete control of the bleeding
- If bleeding control uncompleted, use of branched/fenestrated endografts or surgical therapy



homepage: www.gefaesschirurgie-muenster.de

Thank you!



Universitätsklinik Münster



St. Franziskushospital Münster