Möglichkeiten zur Therapie bei Prothesenschenkelverschluss mit Erhalt der A. iliaca interna

DEUTSCHE RÖNTGENGESELLSCHAFT
Gesellschaft für medizinische Radiologie e.V.

DGA
Deutsche Gesellschaft für Angiologie
Gesellschaft für Gefäßmedizin e.V.

Gefäßzentrum Klinikum Neuperlach (DGG, DGA, DRG)

Klinik für Gefäßchirurgie - Vaskuläre und Endovaskuläre Chirurgie – Gefäßmedizin

Dr. Gerrit Jan Geisler

MÜNCHEN KLINIK

Übersicht

- Inzidenz und Ursache von Schenkelverschlüssen
- Therapieoptionen
- Komplikationsmöglichkeiten im Rahmen der Revaskularisation
- Unser Vorgehen

MÜNCHEN KLINIK

Inzidenz

2002-2010
0-7,2 %

2010-2014
1-6,1 %

Table IV. Limb thrombosis in the literature

Author (registry)	*Year*	*Device*	*Type of study*	*No.*	*Mean follow-up, months*	*Occlusion rate, %*	*Significant risk factors identified*
Carroccio[9]	2002	Mixed	SC	351	20	3.7	Limbs ≤14 mm, EIA
Erzurum[10]	2004	Mixed	SC	823	24	2.7	Unsupported graft, EIA
Van Marrewijk[11] (EUROSTAR)	2005	Mixed	MC	6787	21	5	Vanguard device
Cochennec[12]	2007	Mixed	SC	460	23	7.2	Kinking, first graft generation, younger age
Maleux[13]	2008	Mixed	SC	351	39	3.1	—
Abbruzzese[14]	2008	Mixed	SC	565	30	6[a]	Outside one IFU[b]
Conrad[15]	2009	Mixed	SC	832	35	2.9	—
EVAR 1[16]	2010	Mixed	MC	624	72	3.2	—
EVAR 2[17]	2010	Mixed	MC	229	37	2.2	—
DREAM[18]	2010	Mixed	MC	178	77	6.7[c]	—
Mehta[19]	2010	Mixed	SC	1768	34	1.4	—
Karthikesalingam[20]	2010	Mixed	SC	553	31	1.1	Increased peak systolic velocity[d]
Sivamurthy[21]	2006	Zenith	SC	248	24	5.2	—
Greenberg (Zenith investigators)[22]	2008	Zenith	MC	736	30	2.6	—
Jean-Baptiste[23]	2009	Zenith	SC	447	24	1.8	—
Mertens[24]	2011	Zenith	SC	143	66	5.6	—
Peterson (Excluder investigators)[25]	2007	Excluder	MC	235	60	0	—
Bos[26]	2009	Excluder	SC	92	36	0	—
Maleux[27]	2012	Excluder	SC	121	49	1.6	—
Bastos Gonçalves[28]	2012	Excluder	SC	144	60	1.4	—
Pratesi (ITER)[29]	2014	Excluder	MC	872		1.1	—
Torsello[30]	2006	Talent	MC	165	53.2	6.1	—
Cao (TAURIS)[31]	2009	Talent	MC	349	25	2.3	—
Verhoeven[32]	2011	Talent	MC	365	40	4.4	—
Freyrie (Italian Registry)[33]	2011	Anaconda	MC	787	24	1.7	—
Qu[34]	2009	Powerlink	SC	612	62.4	1	—
Mangialardi[35]	2013	Ovation	SC	35	10	5.7	—
Torsello[3]	2010	Endurant	MC	45	1	2.2	—
Troisi[4]	2010	Endurant	SC	156	9	1.9	—
Van Keulen[5]	2011	Endurant	MC	100	12	3.0	—
Rouwet (prospective European trial of Endurant)[6]	2011	Endurant	MC	80	12	1.3	—
Stokmans (ENGAGE)[7]	2012	Endurant	MC	1151	1	2.0	—
van Zeggeren[8]	2013	Endurant	MC	496	20.4	4.0	Treating hospital
Current study (ENGAGE)	2014	Endurant	MC	1143	36	3.4	

MÜNCHEN KLINIK

Ursache

Table IV. Limb thrombosis in the literature

Author (registry)	*Year*	*Device*	*Type of study*	*No.*	*Mean follow-up, months*	*Occlusion rate, %*	*Significant risk factors identified*
Carroccio[9]	2002	Mixed	SC	351	20	3.7	Limbs ≤14 mm, EIA
Erzurum[10]	2004	Mixed	SC	823	24	2.7	Unsupported graft, EIA
Van Marrewijk[11] (EUROSTAR)	2005	Mixed	MC	6787	21	5	Vanguard device
Cochennec[12]	2007	Mixed	SC	460	23	7.2	Kinking, first graft generation, younger age
Maleux[13]	2008	Mixed	SC	351	39	3.1	—
Abbruzzese[14]	2008	Mixed	SC	565	30	6[a]	Outside one IFU[b]
Conrad[15]	2009	Mixed	SC	832	35	2.9	—
EVAR 1[16]	2010	Mixed	MC	624	72	3.2	—
EVAR 2[17]	2010	Mixed	MC	229	37	2.2	—
DREAM[18]	2010	Mixed	MC	178	77	6.7[c]	—
Mehta[19]	2010	Mixed	SC	1768	34	1.4	—
Karthikesalingam[20]	2010	Mixed	SC	553	31	1.1	Increased peak systolic velocity[d]
Sivamurthy[21]	2006	Zenith	SC	248	24	5.2	—
Greenberg (Zenith investigators)	2008	Zenith	MC	736	30	2.6	—
Jean-Baptiste[23]	2009	Zenith	SC	447	24	1.8	—
Mertens[24]	2011	Zenith	SC	143	66	5.6	—
Peterson (Excluder investigators)[25]	2009	Excluder	MC	235	60	0	—
Bos[26]	2009	Excluder	SC	92	36	0	—
Maleux[27]	2012	Excluder	SC	121	49	1.6	—
Bastos Gonçalves[28]	2012	Excluder	SC	144	60	1.4	—
Pratesi (ITER)[29]	[illegible]	[illegible]	[illegible]	872		1.1	—
Torsello[30]	2006	Talent	MC	165	53.2	6.1	—
Cao (TAURIS)[31]	2009	Talent	MC	349	25	2.3	—
Verhoeven[32]	2011	Talent	MC	365	40	4.4	—
Freyrie (Italian Registry)[33]	2011	Anaconda	MC	787	24	1.7	—
Qu[34]	2009	Powerlink	SC	612	62.4	1	—
Mangialardi[35]	2013	Ovation	SC	35	10	5.7	—
Torsello[3]	2010	Endurant	MC	45	1	2.2	—
Troisi[4]	2010	Endurant	SC	156	9	1.9	—
Van Keulen[5]	2011	Endurant	MC	100	12	3.0	—
Rouwet (prospective European trial of Endurant)[6]	2011	Endurant	MC	80	12	1.3	—
Stokmans (ENGAGE)[7]	2012	Endurant	MC	1151	1	2.0	—
van Zeggeren[8]	2013	Endurant	MC	496	20.4	4.0	Treating hospital
Current study (ENGAGE)	2014	Endurant	MC	1143	36	3.4	

- Beindurchmesser
- Landungszone AIE
- Device (ältere Systeme)
- Außerhalb der IFU
- (Implantierende Klinik)

MÜNCHEN KLINIK

Devices

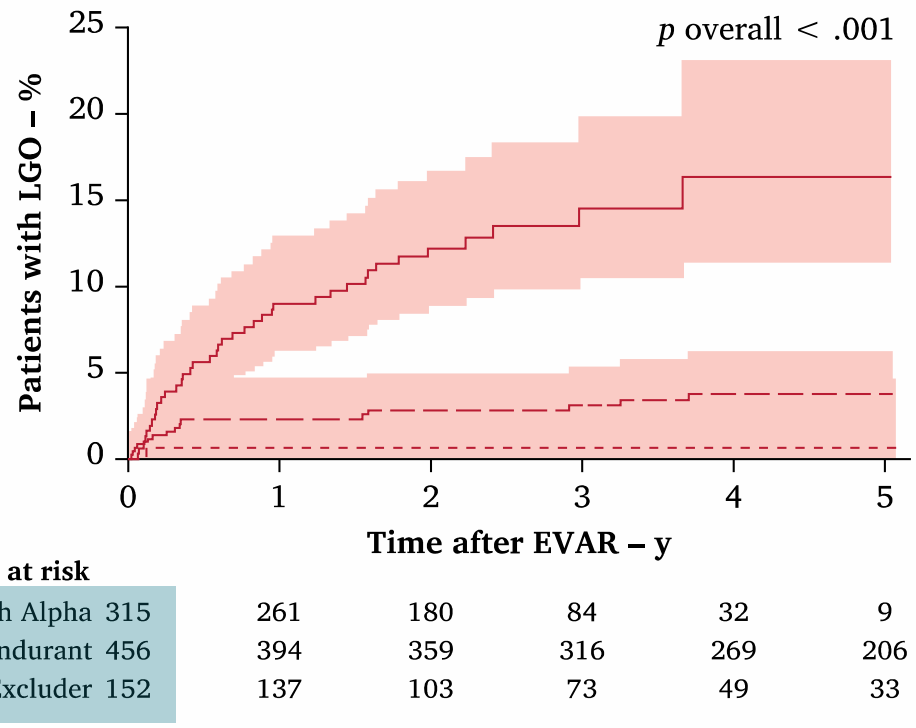
Aorta and Major Branches

Eur J Vasc Endovasc Surg (2021) 62, 532–539

EJVES Open Access

Limb Graft Occlusion Following Endovascular Aneurysm Repair for Infrarenal Abdominal Aortic Aneurysm with the Zenith Alpha, Excluder, and Endurant Devices: a Multicentre Cohort Study

Marko Bogdanovic [a], Otto Stackelberg [b,c], David Lindström [d], Samuel Ersryd [d,e], Manne Andersson [f,g], Håkan Roos [h,g], Antti Siika [a], Magnus Jonsson [a,i], Joy Roy [a,i,*]



Deviceabhängig ?

Figure 2. Cumulative Kaplan–Meier estimate of limb graft occlusion (LGO) during five years of follow up after standard endovascular aneurysm repair (EVAR), by endograft device type. Shaded areas represent 95% confidence intervals. Note the adapted scale for y axis.

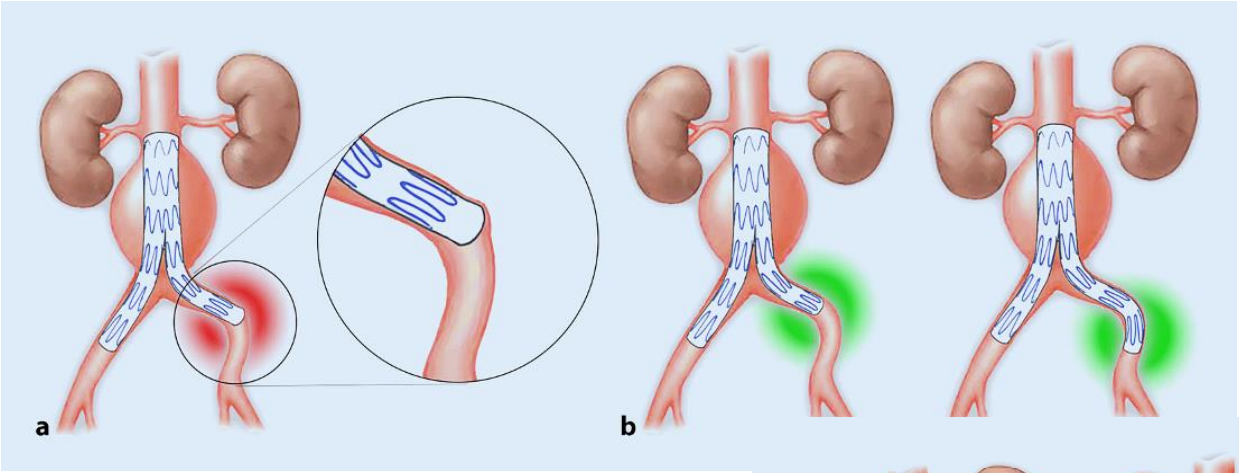
MÜNCHEN KLINIK

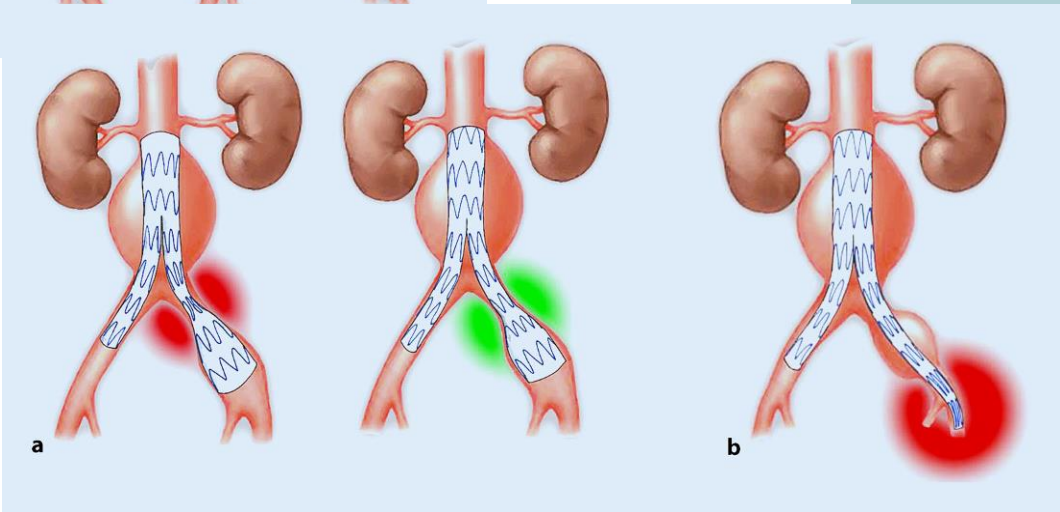
Ursache

Table 1 Risk factors for limb occlusion

	Risk factor	Reference
Anatomical factors	Iliac angulation/>60% tortuosity	[6, 10, 20, 27]
	Perimeter calcification >50%	[20]
Procedural factors	Oversizing >15%	[20, 21]
	Limb placement in EIA	[7, 10, 19]
	EIA diameter <10 mm	[10]

EIA external iliac artery



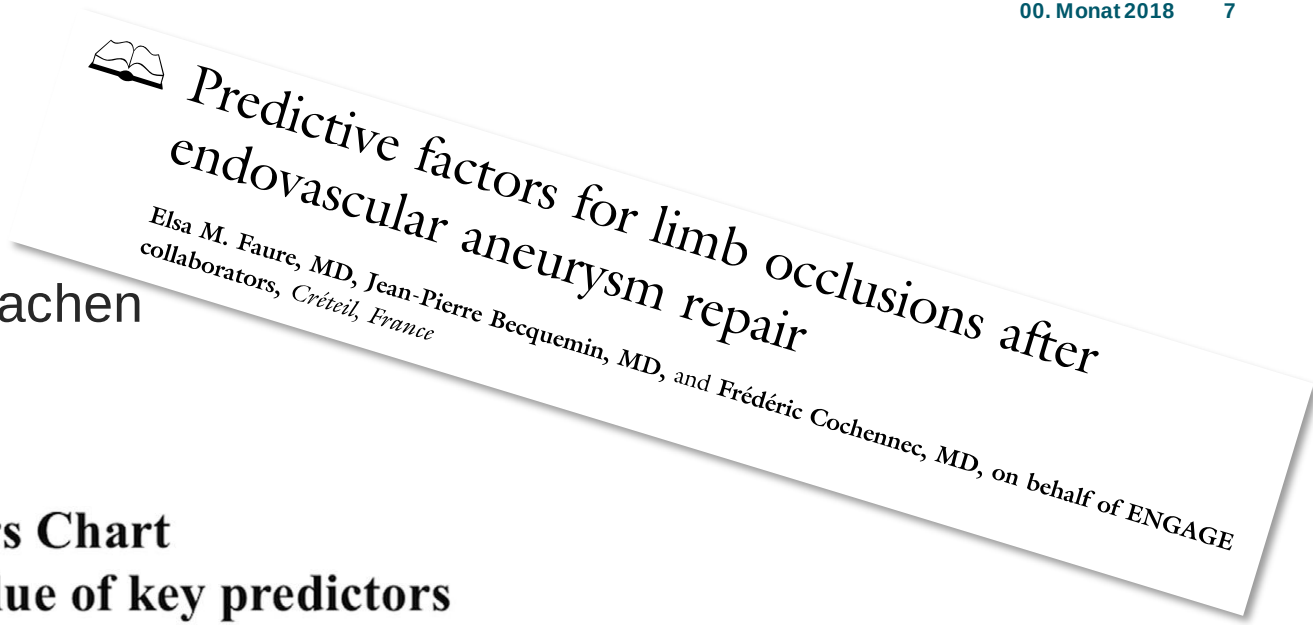


Meisenbacher - Gefässchirurgie 2019 · 24:306–312

MÜNCHEN KLINIK

Analyse der Ursache

- Prädisponierende Faktoren / Ursachen
  - A. iliaca externa!


Predictive factors for limb occlusions after endovascular aneurysm repair

Elsa M. Faure, MD, Jean-Pierre Becquemin, MD, and Frédéric Cochennec, MD, on behalf of ENGAGE collaborators, *Créteil, France*

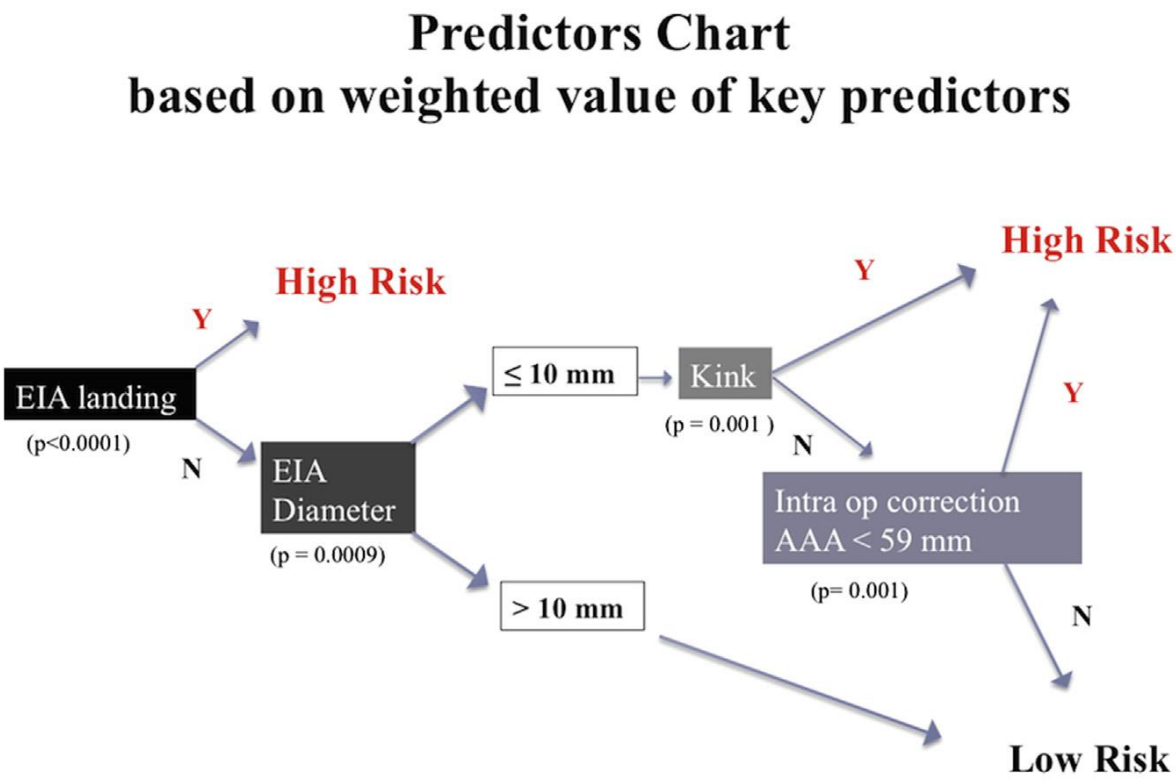


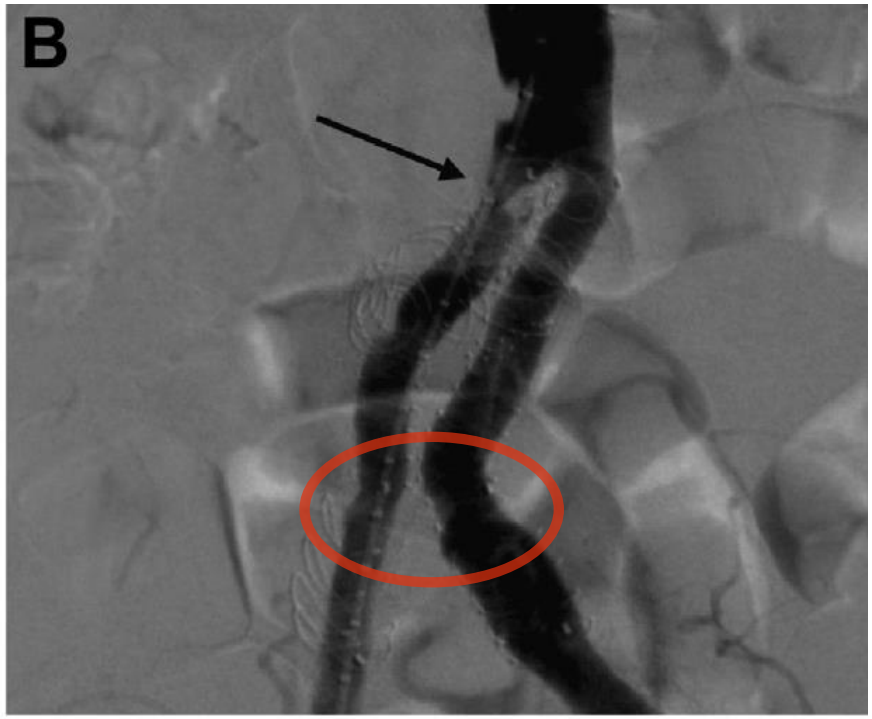
Fig 2. Decision tree based on iliac conditions (predictors). *AAA*, Abdominal aortic aneurysm; *EIA*, external iliac artery.

MÜNCHEN KLINIK

Therapie des Prothesenverschlusses und Outcome

A New Management for Limb Graft Occlusion after Endovascular Aneurysm Repair Adding a Vollmar Ring Stripper: The Unclogging Technique

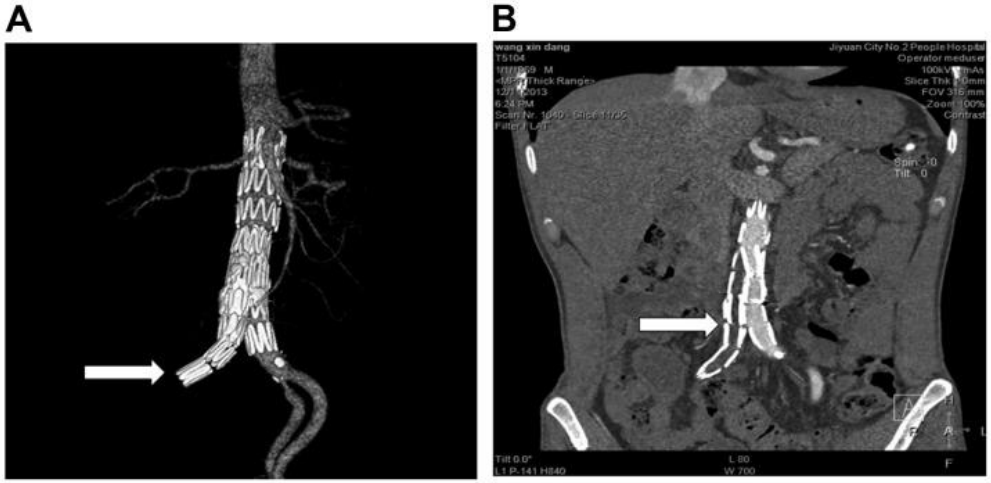
Salvatore Ronsivalle,[1] Francesca Faresin,[1] Francesca Franz,[1] Luigi Pedon,[2] Carlo Rettore,[3] Loretta Zonta,[3] and Armando Olivieri,[4] Padua, Italy

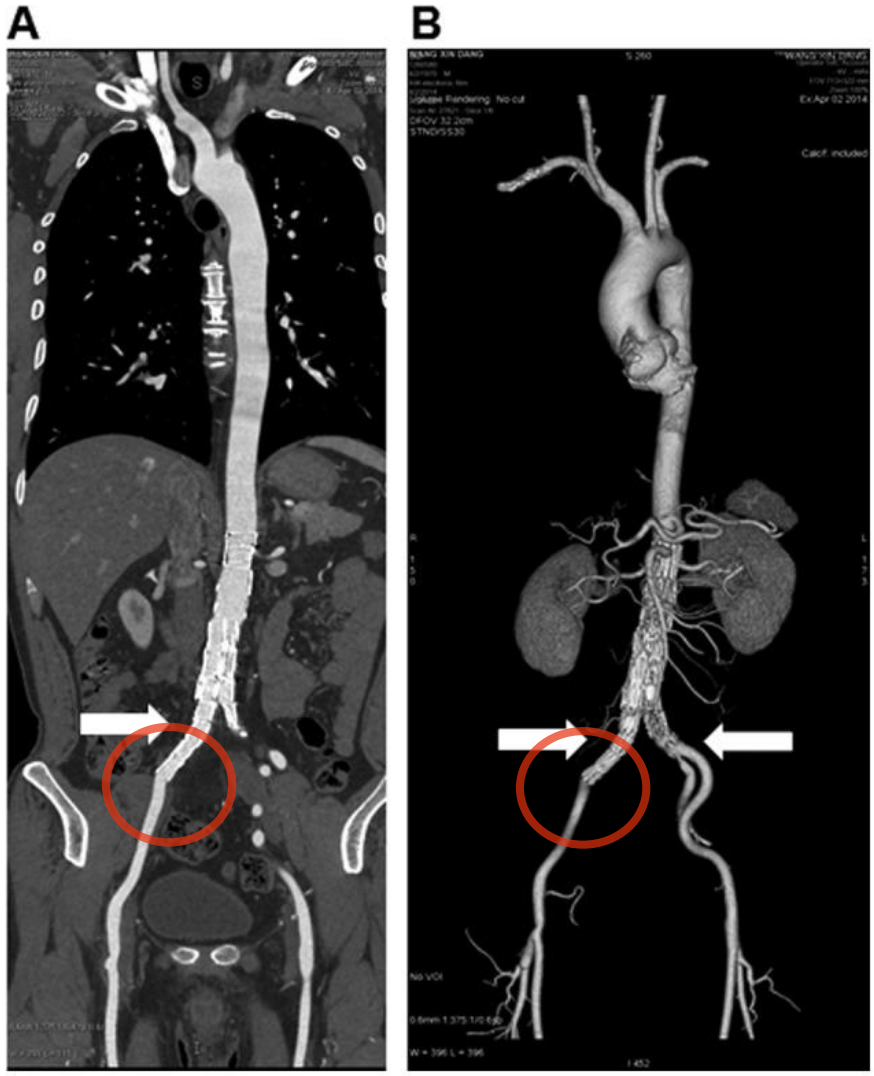


Ann Vasc Surg 2013; 27: 1216–1222

MÜNCHEN KLINIK

Endovaskuläre Rekanalisation mit Verlust der AII





Wang - Exp Ther Med. 2017 Aug;14(2):1763-1768.

MÜNCHEN KLINIK

Therapieoptionen des Prothesenverschlusses

- Offen chirurgisch mit Bypass — Therapie Nr. 2 in Neuperlach

First line treatment bei 60%

Thurley PD, Glasby MJ, Pollock JG et al (2010) Endovascular management of delayed complete graft thrombosis after endovascular aneurysm repair. Cardiovasc Intervent Radiol 33:840–843

Hammond A, Hansrani V, Lowe C et al (2018) Meta-analysis and meta-regression analysis of iliac limb occlusion after endovascular aneurysm repair. J Vasc Surg 68:1916–1924e7

Van Zeggeren L, Bastos Goncalves F, Van Herwaarden JA et al (2013) Incidence and treatment results of Endurant endograft occlusion. J Vasc Surg 57:1246–1254 (discussion 1254)

- Endovaskulär
  - Angiojet
  - Rotarex/Aspirex
  - Penumbra
  - Ballon / Stent
  - Thrombolyse

Primärer technischer Erfolg 60%

Fairman RM, Baum RA, Carpenter JP et al (2002) Limb interventions in patients undergoing treatment with an unsupported bifurcated aortic endograft system: a review of the Phase II EVT Trial. J Vasc Surg 36:118–126

- Hybrid Techniken — Therapie Nr. 1 in Neuperlach

Gefahr der Embolisation
- peripher
- kontralateral
- All

Zusätzlich Therapie der Verschlussursache erforderlich

Reverschlussrate 30%

Van Zeggeren L, Bastos Goncalves F, Van Herwaarden JA et al (2013) Incidence and treatment results of Endurant endograft occlusion. J Vasc Surg 57:1246–1254 (discussion 1254)

MÜNCHEN KLINIK

Fallbeispiel

- Z.n. Y-Prothese bei BAA
- Anastomosenaneurysmatas
- Aorto-monoiliacaler Stentgraft (re) mit X-Overbypass und innerem AIE-AII Bypass (li) mit Viabahn
- Akuter Verschluss trotz doppelter TAH
  - Stentgraft
  - X-Overbypass
  - Viabahn

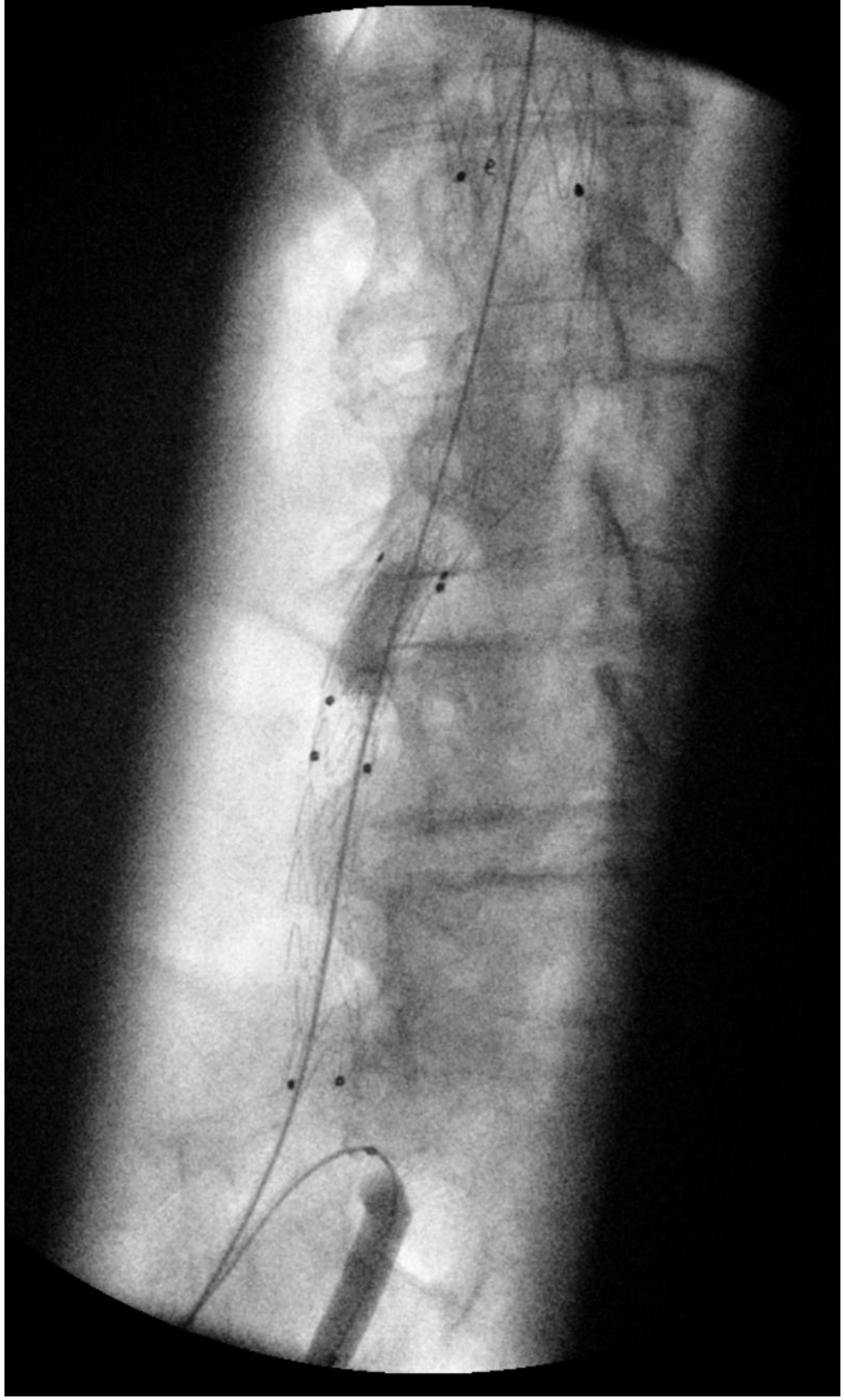
  (Covid-Infekt ???)

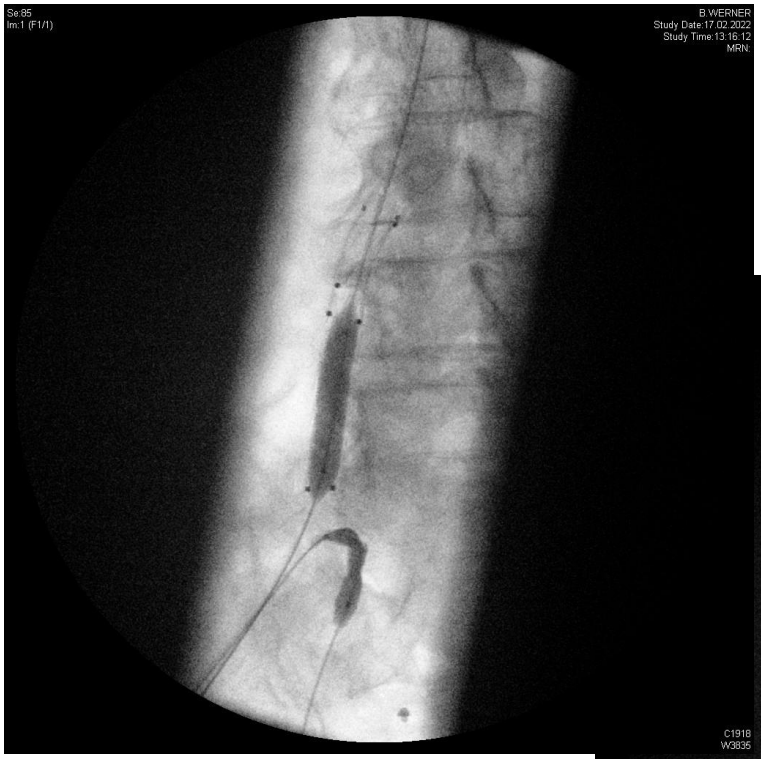
Versorgung untere Extremitäten nur noch über AII rechts auf AII links

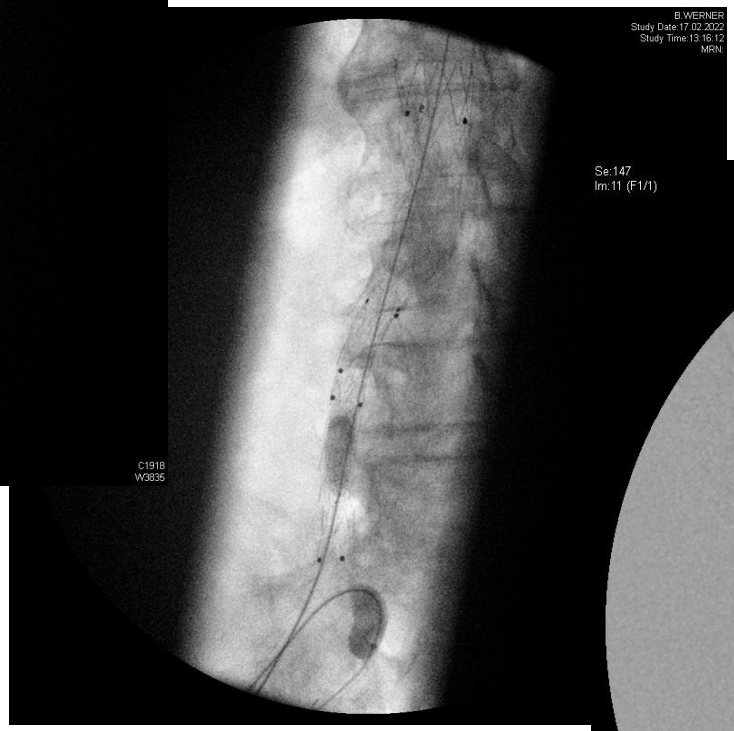
MÜNCHEN KLINIK

Operative Therapie

- Freilegung AFC
- Sondierung AII (re)
- Ballon (6-40 mm) in AII
- Sondierung Aorta (double wire)
- Wechsel auf Lunderquist
- Thrombektomie über Draht
- Angioplastie gesamtes Beinchen
- Sicherer Erhalt der AII rechts
- Thrombektomie Via AII links







Erhalt beider AII

MÜNCHEN KLINIK

Vielen Dank

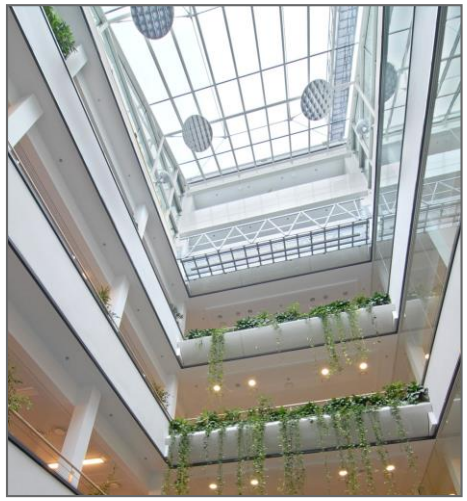
DEUTSCHE RÖNTGENGESELLSCHAFT
Gesellschaft für medizinische Radiologie e.V.

DGA
Deutsche Gesellschaft für Angiologie
Gesellschaft für Gefäßmedizin e.V.

Gefäßzentrum Klinikum Neuperlach (DGG, DGA, DRG)

Klinik für Gefäßchirurgie - Vaskuläre und Endovaskuläre Chirurgie – Gefäßmedizin

Dr. Gerrit Jan Geisler



MÜNCHEN KLINIK