



Ein Freund in der Not

- Der neue AMDS-Aortenstent für die Typ A-Dissektion

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Klinik und Poliklinik für Herzchirurgie

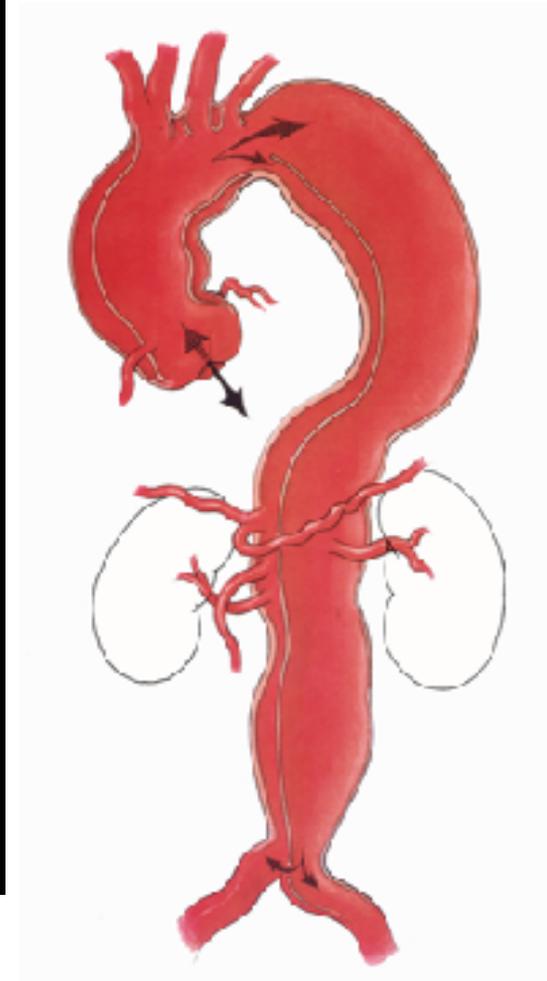
Herzzentrum der Uniklinik Köln

Ein Freund in der Not

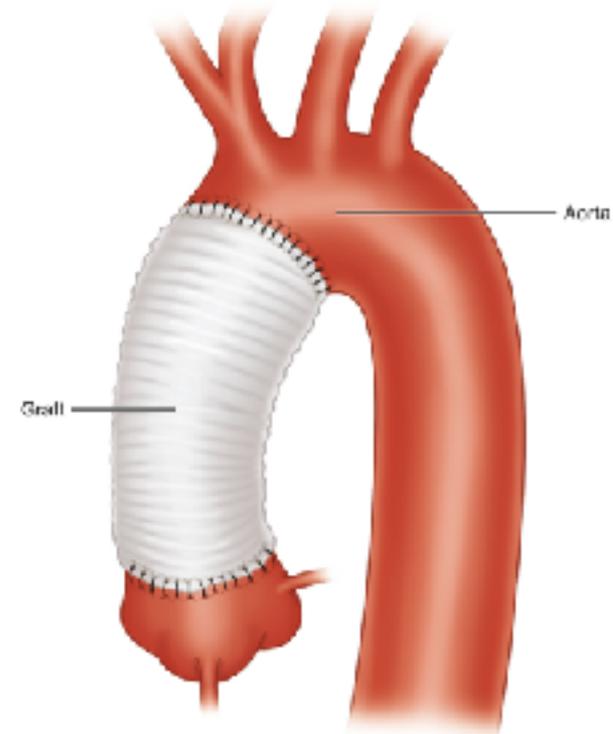
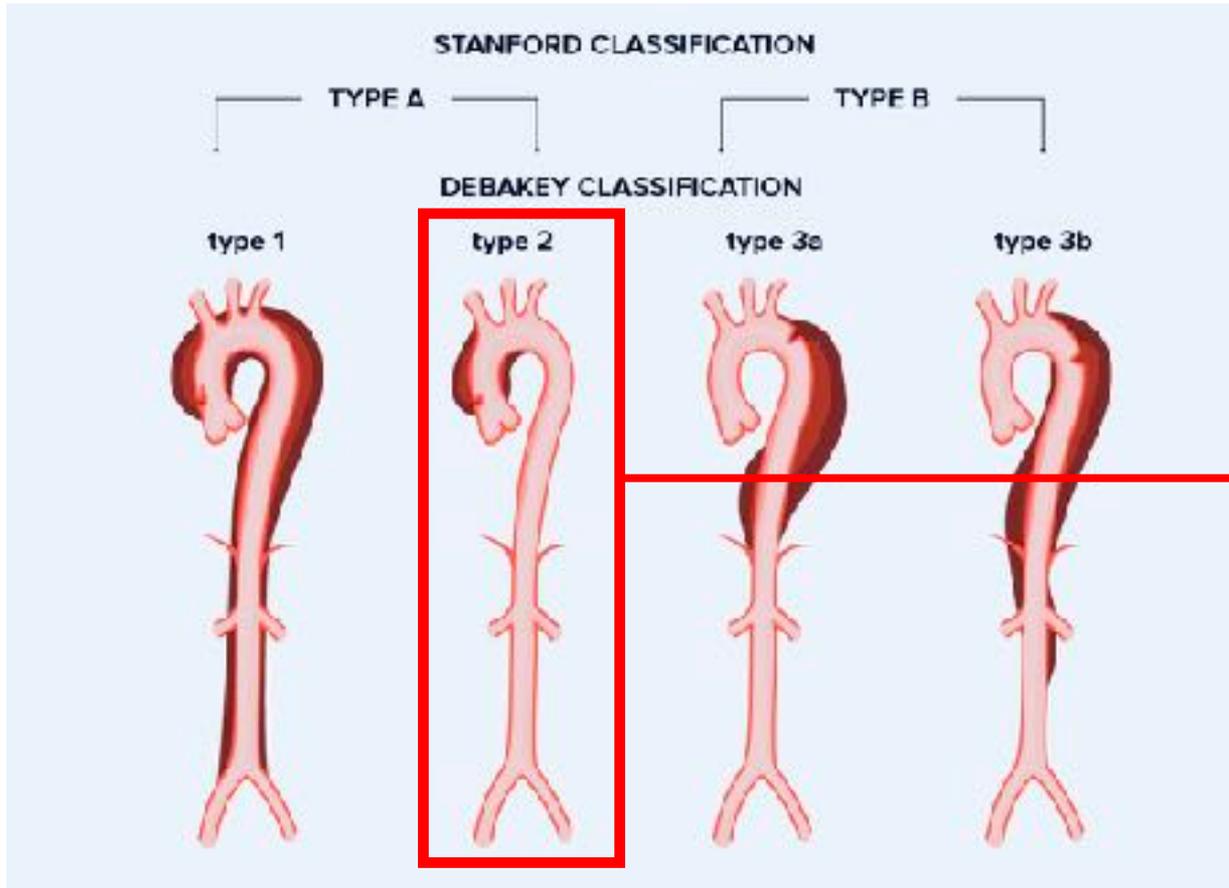


„...auch wenn die ganze Welt zusammenbricht!“

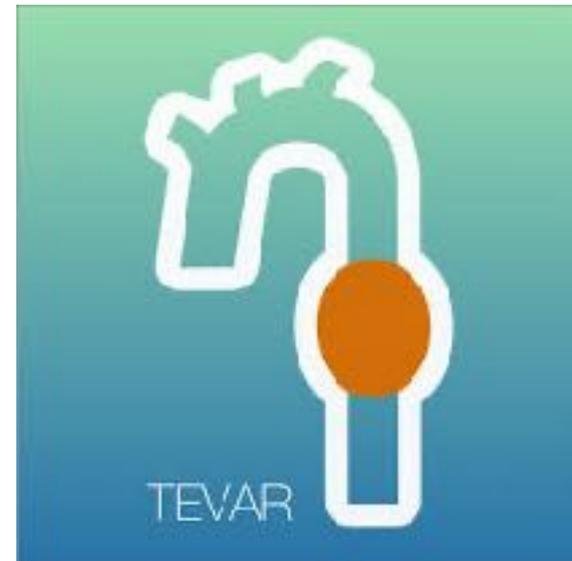
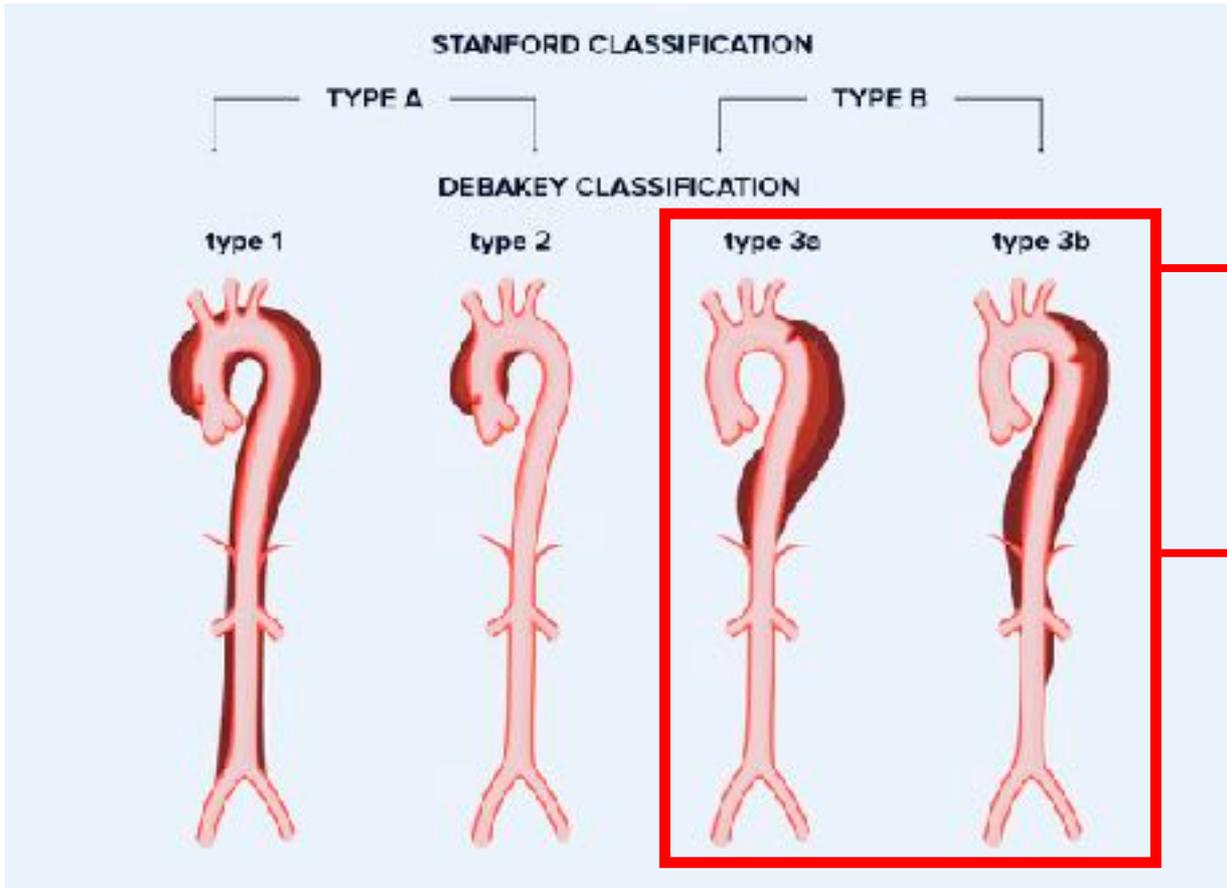
Aortendissektion – Notfall in der Herzchirurgie



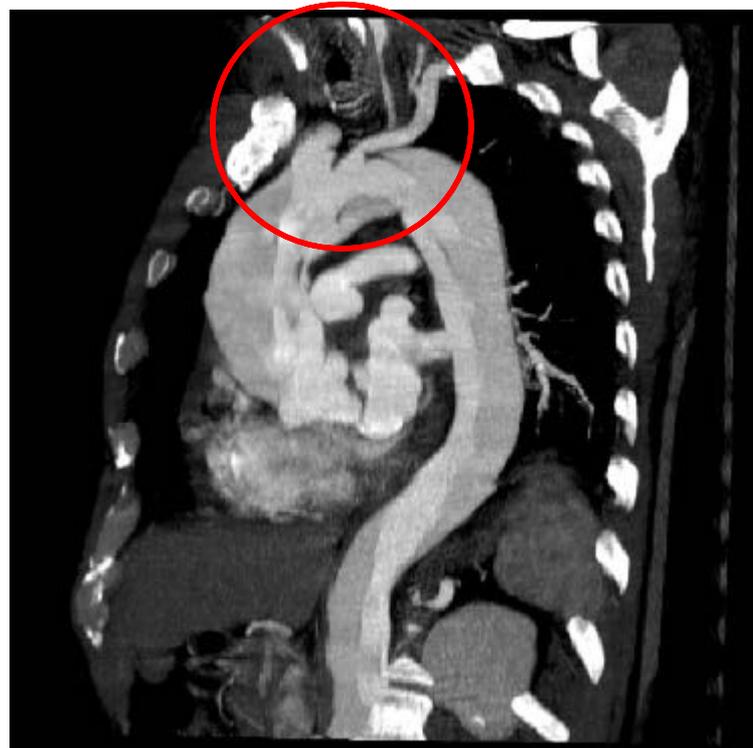
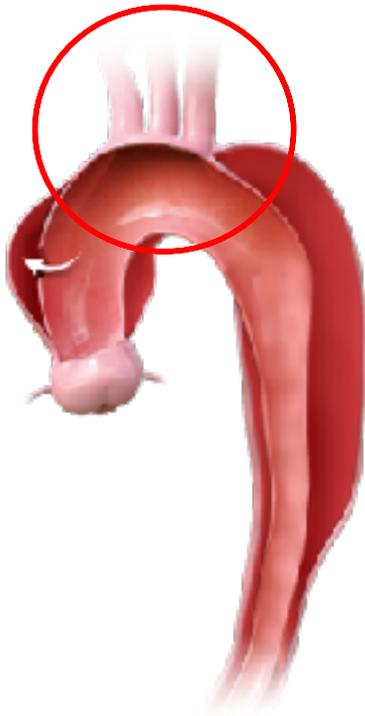
Klassifikationen & Behandlung



Klassifikationen & Behandlung

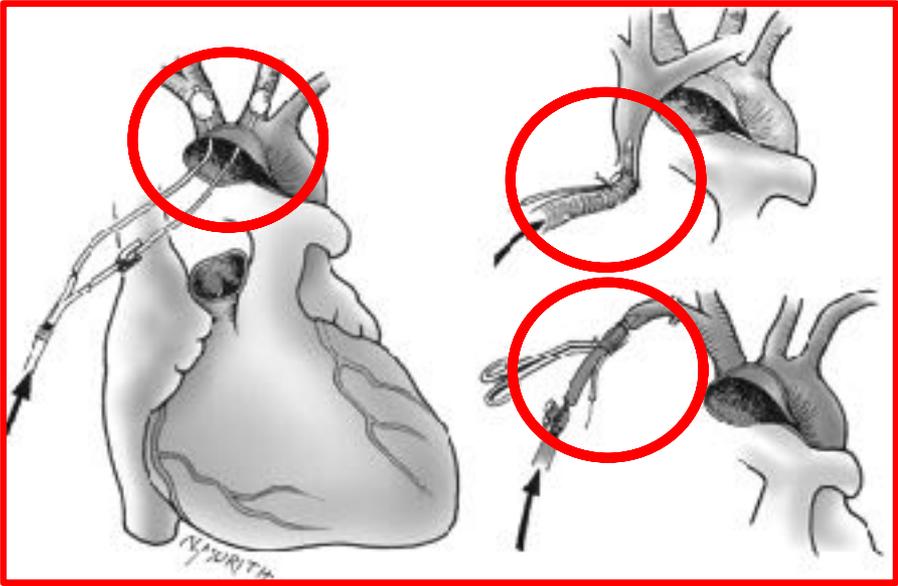
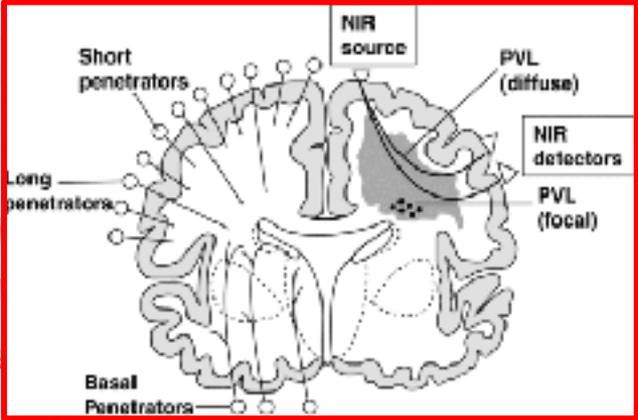
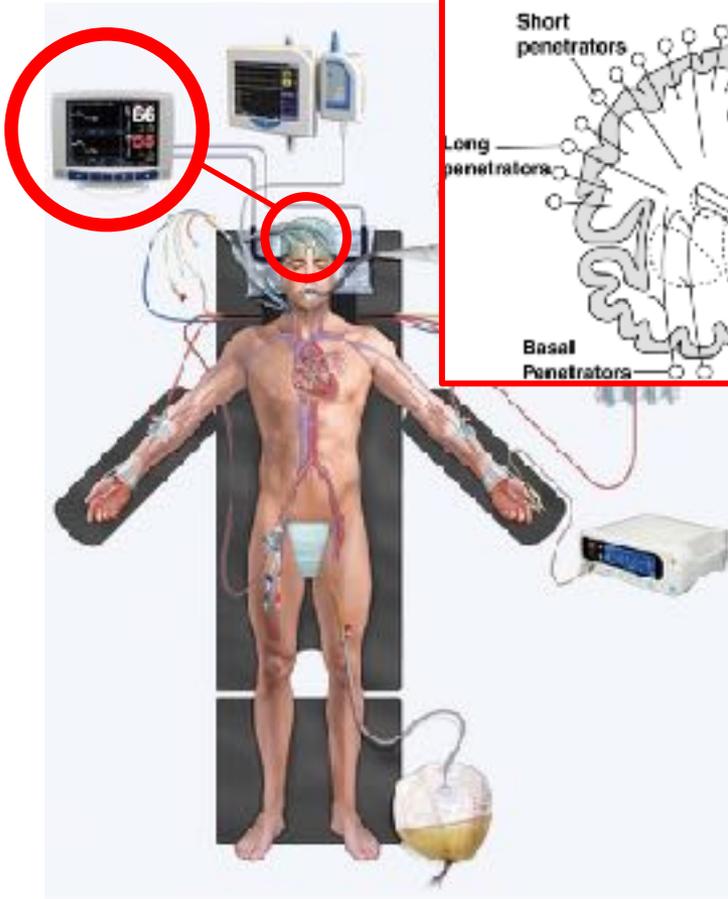


DeBakey Typ I Aortendissektion



Besondere Herausforderung: Aortenbogen!

Aortenbogen-Operation



Temperaturmanagement: Organprotektion

> J Thorac Cardiovasc Surg, 1975 Dec;70(6):1051-63.

Prosthetic replacement of the aortic arch

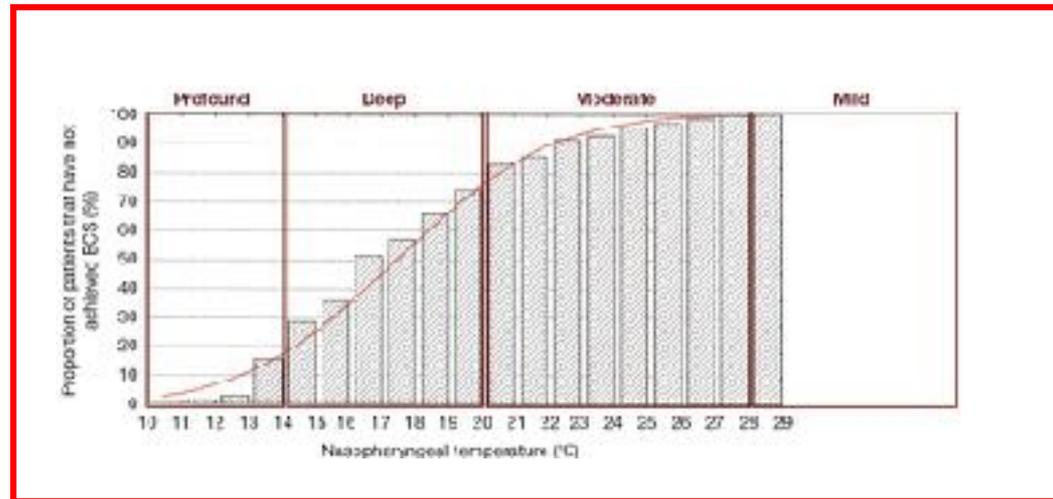
R B Griep, E B Stinson, J F Hollingsworth, D Buehler



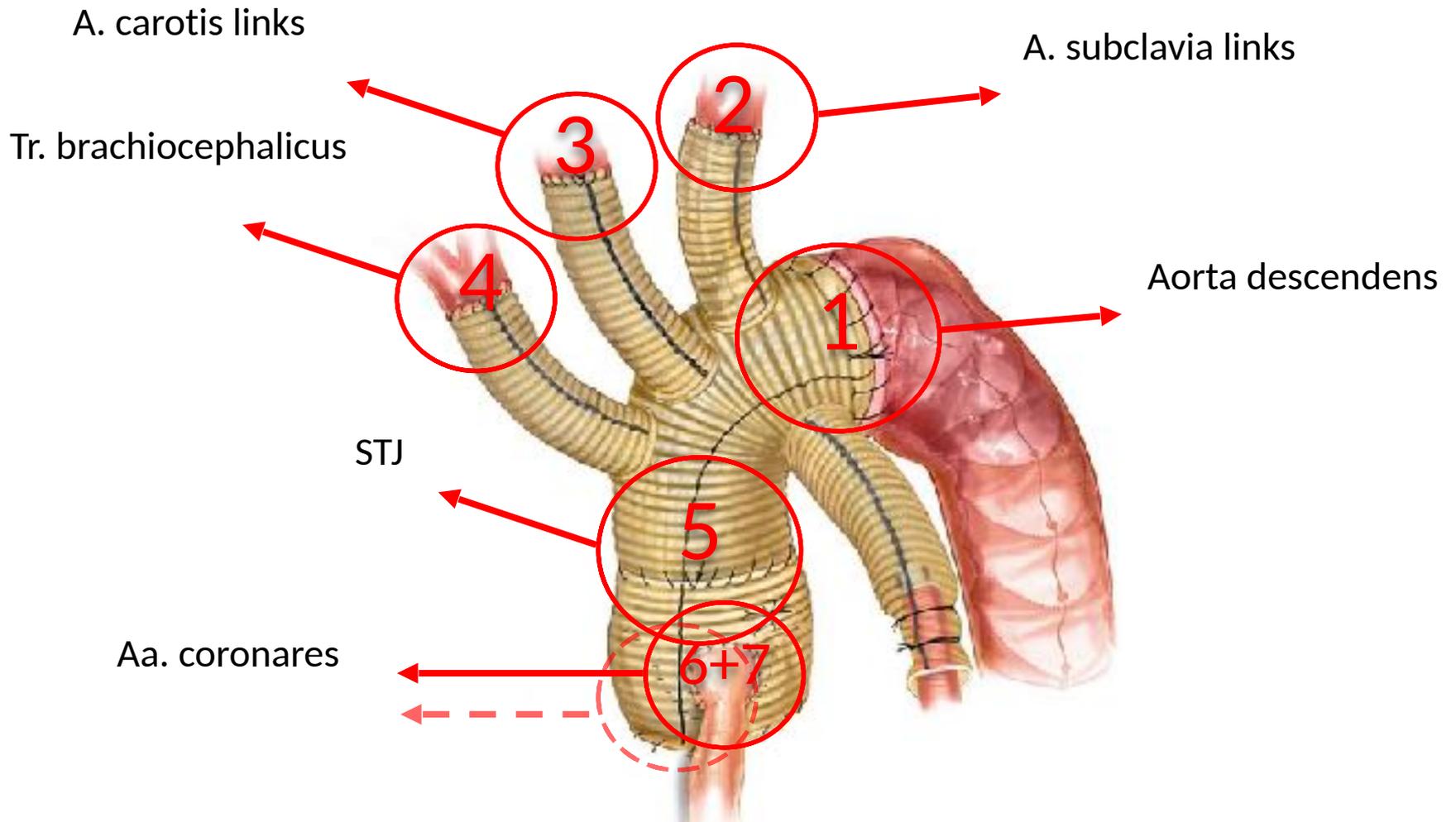
'Colder is always better' (R.B. Griep)

Table 2: Calculated safe durations of HCA at different temperatures with regard to the cerebral metabolic rate by McCullough et al. [18]

Temperature (°C)/level of hypothermia	Cerebral metabolic rate (% of baseline)	Calculated safe duration of HCA (min)
37 (normothermia)	100	5
30 (moderate)	56 [52-60]	9 (8-10)
25 (deep)	37 [33-42]	14 (12-15)
20 (profound)	24 [21-29]	21 (17-24)
15 (profound)	16 [13-20]	31 (25-38)
10 (ultra profound)	11 [8-14]	45 (36-62)



Aortenbogen-Operation: FET



Geplanter Aortenbogenersatz

European Journal of Cardio-Thoracic Surgery 50 (2016) 249–255
doi:10.1093/ejcts/ezw055 Advance Access publication 16 March 2016

ORIGINAL ARTICLE

Cite this article as: Urbanski PP, Luehr M, Di Bartolomeo R, Diegeler A, De Paulis R, Esposito G et al. Multicentre analysis of current strategies and outcomes in open aortic arch surgery: heterogeneity is still an issue. Eur J Cardiothorac Surg 2016;50:249–55.

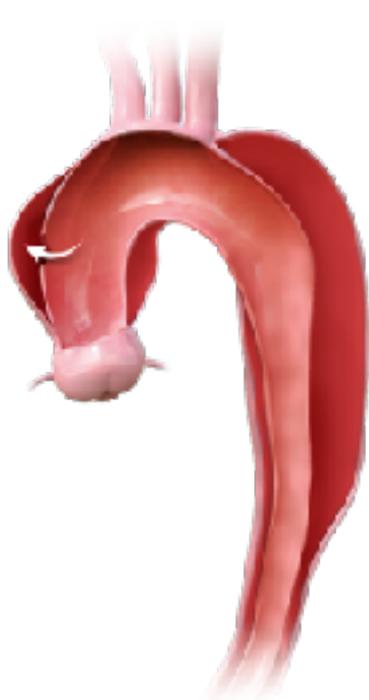
Multicentre analysis of current strategies and outcomes in open aortic arch surgery: heterogeneity is still an issue

Paul P. Urbanski^{a,*}, Maximilian Luehr^b, Roberto Di Bartolomeo^c, Anno Diegeler^a, Ruggero De Paulis^d,
Giampiero Esposito^e, Robert S. Bonser^f, Christian D. Etz^g, Klaus Kallenbach^h, Bartosz Rylskiⁱ,
Malakh Lal Shrestha^j, Konstantinos Tzagakis^k, Michael Zacher^l and Andreas Zierer^m

- Multi-zentrische Analyse: 1232 Patienten
- Geplante Operationen (keine Notfälle)
- Postoperative Sterblichkeit (30-Tage): **8.8%**



DeBakey Typ I Aortendissektion



- Sterblichkeit vor OP: **1-2%/Std.**
- Postoperative Sterblichkeit: **5-26%** (bis **40%** bei Malperfusion)

Risikoabschätzung: GERAADA score

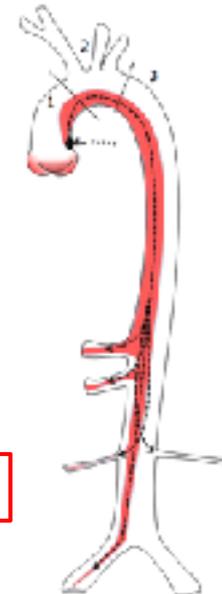
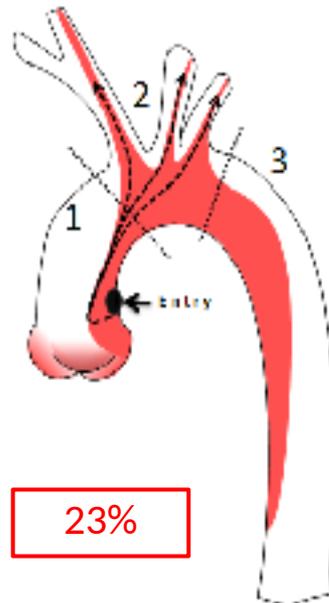
European Journal of Cardio-Thoracic Surgery 0 (2020) 1–7
doi:10.1093/ejcts/ezaa156

ORIGINAL ARTICLE

Cite this article as: Czemy M, Siepe M, Beyersdorf F, Feisst M, Gabel M, Pilz M et al. Prediction of mortality rate in acute type A dissection: the German Registry for Acute Type A Aortic Dissection score. Eur J Cardiothorac Surg 2020; doi:10.1093/ejcts/ezaa156.

Prediction of mortality rate in acute type A dissection: the German Registry for Acute Type A Aortic Dissection score

Martin Czemy^{A,B,*}, Matthias Siepe^B, Friedhelm Beyersdorf^{A,B}, Manuel Feisst^C, Michael Gabel^F, Maximilian Pilz^C, Jochen Pöling^D, Daniel-Sebastian Dohle^E, Konstantinos Sarvanakis^F, Maximilian Luehr^E, Christian Hagl^E, Arif Rawa^H, Wilke Schneider^I, Christian Detter^I, Tomas Holubec^H, Michael Borger^I, Andreas Böning^M and Bartosz Rylski^{A,B}

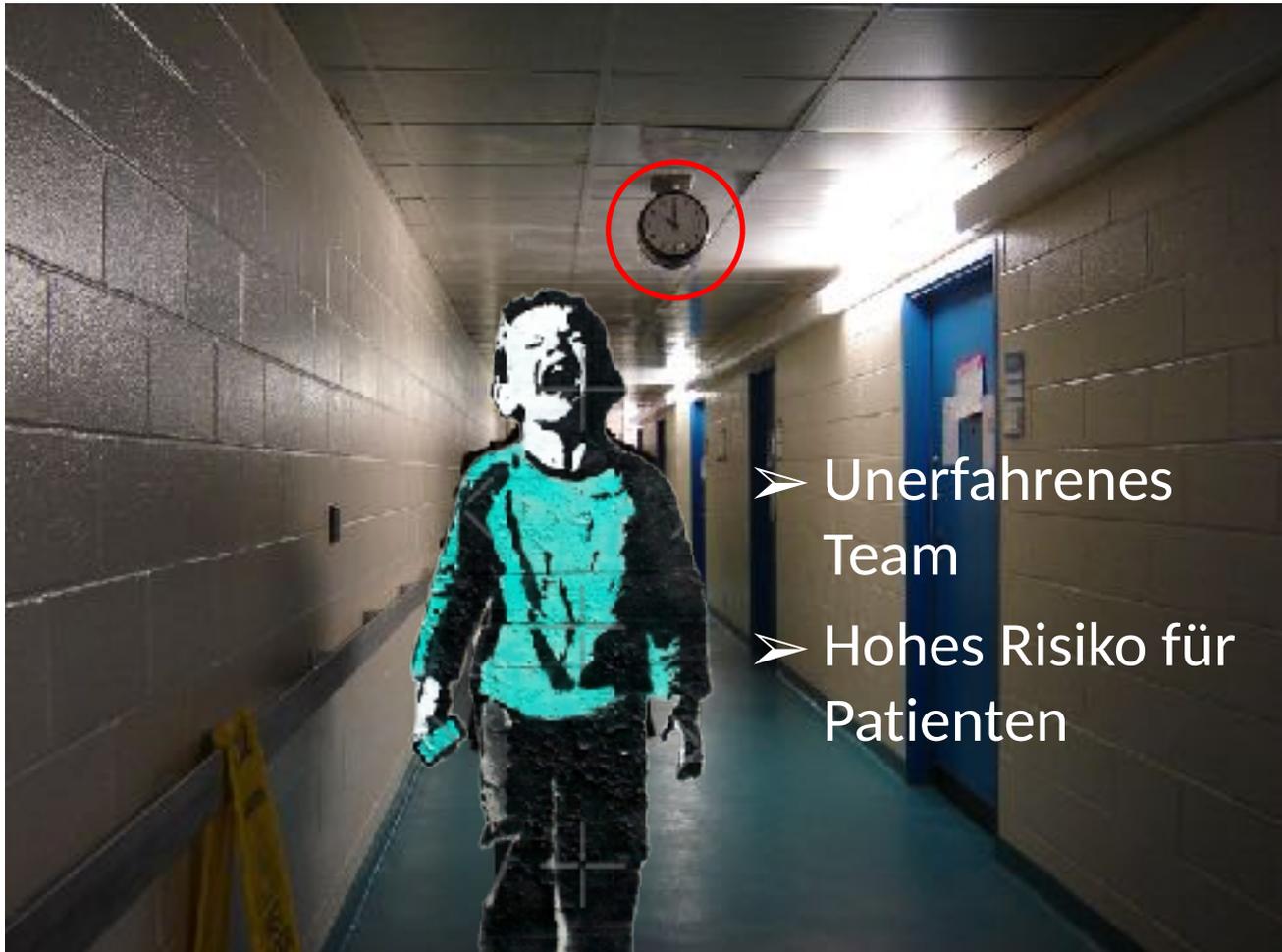


DeBakey Typ I mit Malperfusion



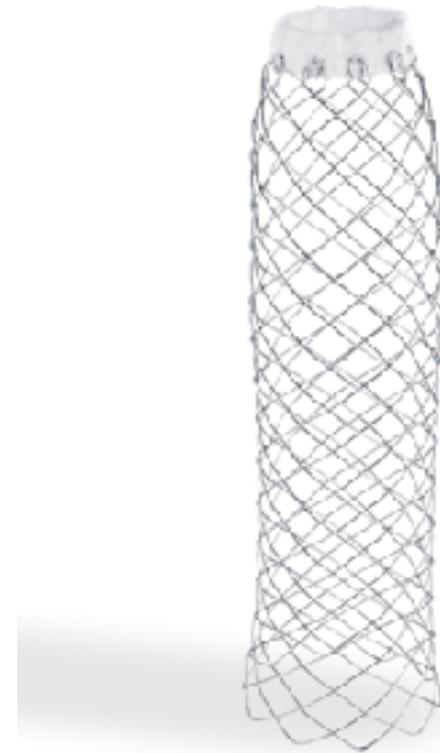
(Junger) Chirurg im Dienst

DeBakey Typ I mit Malperfusion



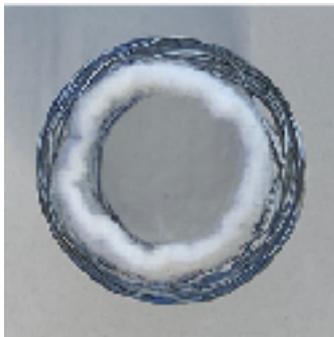
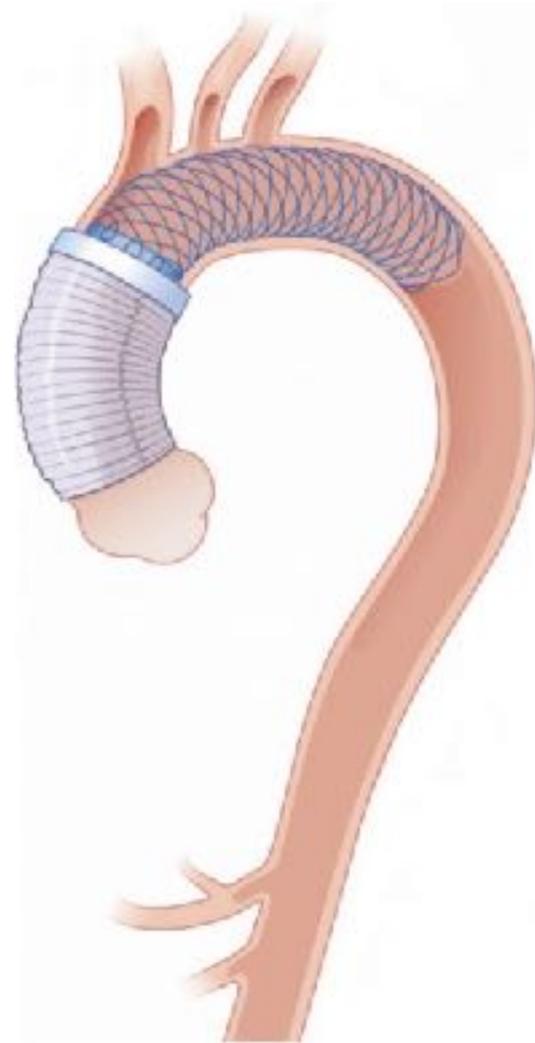
Chirurg **in Not**

„...auch wenn die ganze Welt zusammenbricht!“



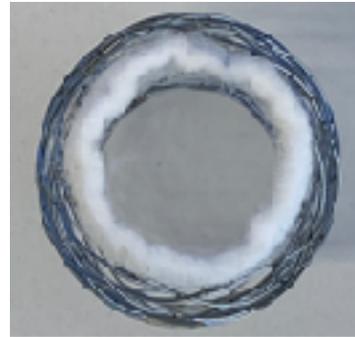
AMDS – Freund in der Not

Ascyrus Medical Dissection Stent (AMDS)



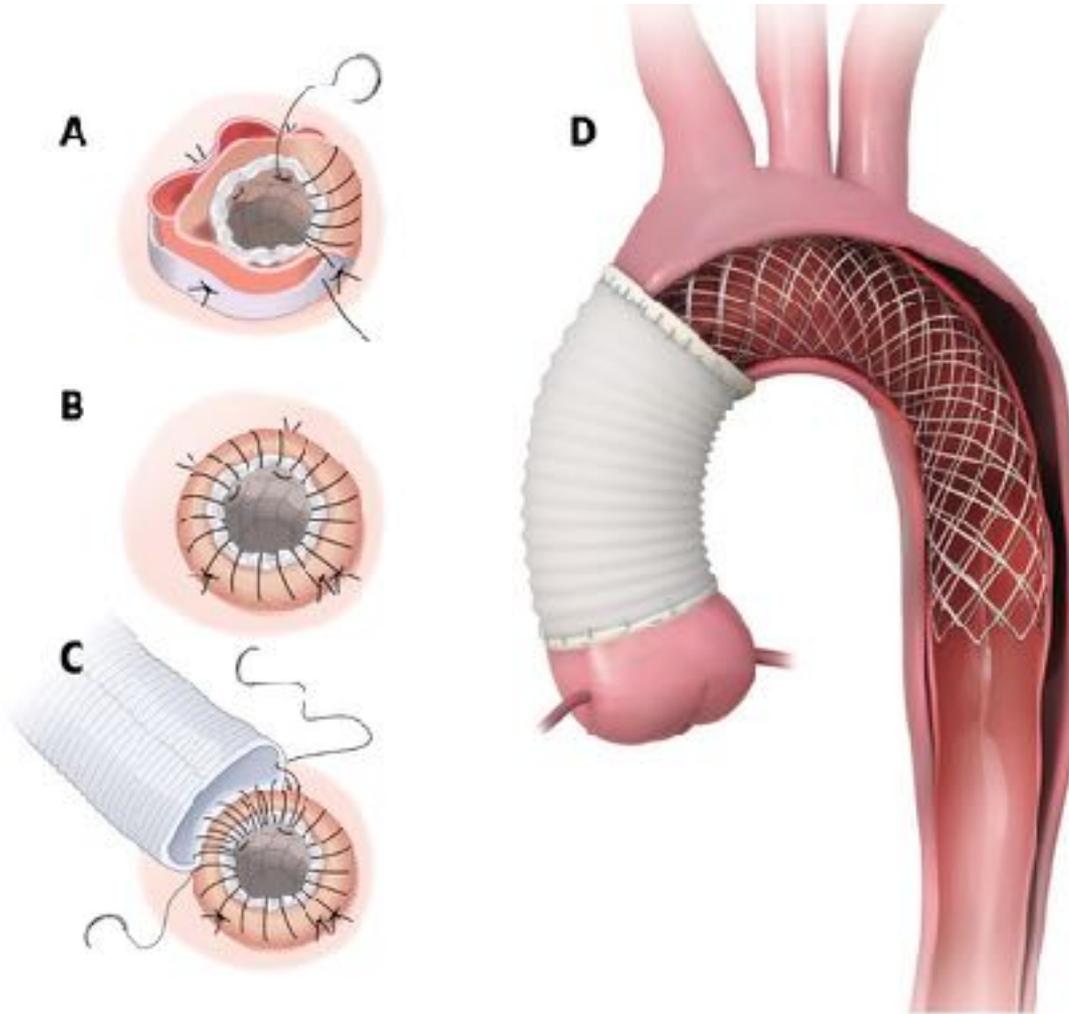
24 mm

vs.



32 mm

AMDS Operationstechnik



AMDS Operationstechnik



Erste klinische Erfahrungen

European Journal of Cardio-Thoracic Surgery 2022, 62(11), eaa2901
<https://doi.org/10.1093/ejcts/ezab358> Advance Access publication 22 December 2022

ORIGINAL ARTICLE

Cite this article as: Luehr M, Gaisendrees C, Yilmaz AK, Winderl L, Schlaichnerberger B, Van Linden A, et al. Treatment of acute type A aortic dissection with the Ascyrus Medical Dissection Stent in a consecutive series of 57 cases. Eur J Cardiothorac Surg. 2022; [doi:10.1093/ejcts/ezab358](https://doi.org/10.1093/ejcts/ezab358).

Treatment of acute type A aortic dissection with the Ascyrus Medical Dissection Stent in a consecutive series of 57 cases

Maximilian Luehr ^{1,2}, Christopher Gaisendrees ^{2*}, Abdul Kadir Yilmaz², Leila Winderl²,
 Georg Schlaichnerberger ², Arnaud Van Linden², Thorsten Wahlers², Thomas Walther ²
 and Tomas Holubec ²

ENDOVASCULAR AORTIC SURGERY

2 Deutsche Aortenzentren

- Retrospektive Datenanalyse
- 2020 – 2022
- 196 operierte Typ A Patienten

→ 57 AMDS Implantationen

→ **Mortalitätsrisiko (GERAADA score): 22%**

Table 1: Patient baseline characteristics

Parameters, n (%)	AMDS Patients (n = 57)
Age, mean ± SD	64.5 ± 10.3 years
Male gender	54 (95)
AV regurgitation	35 (61)
Mild to moderate	13 (23)
Moderate to severe	22 (39)
MV regurgitation	7 (12)
TV regurgitation	1 (5)
Pericardial tamponade	11 (19)
Arterial hypertension	44 (77)
Coronary heart disease	6 (11)
COPD	4 (7)
Renal insufficiency	11 (16)
Diabetes mellitus	3 (5)
Hyperlipoproteinaemia	8 (14)
Previous cardiac surgery	2 (4)
Preoperative neurologic deficit	
Ischaemic stroke	3 (4)
Haemorrhagic stroke	1 (7)
Hemiparesis	6 (11)
Paraparesis/paraplegia	5 (9)
Ventilation	7 (12)
Inotropes	7 (12)
CFR	4 (7)
TEA classification	
Type A	
E0	3 (5)
E1	50 (88)
E2	2 (4)
M0	11 (19)
M1	9 (16)
M2	16 (28)
M3	21 (37)
Clinical symptoms	39 (68)
Type non-A-non-B	
E2	2 (4)
M3	2 (4)
Clinical symptoms	2 (4)
GERAADA score, mean ± SD	21.7 ± 14.1%
EuroSCORE II, mean ± SD	15.7 ± 11.3%

Klinische Ergebnisse

Table 3: Postoperative outcomes

Parameters, n (%)	AMDS Patients (n=57)
ICU stay, median (IQR)	5 (3-13) days
Hospital stay, median (IQR)	12 (10-22) days
In-hospital mortality	9 (16)
Reintubation	5 (9)
Tracheostomy	8 (14)
Renal insufficiency	21 (37)
Temporary dialysis	9 (16)
Permanent dialysis	3 (5)
New neurologic deficits	
Temporary	
Delirium	15 (26)
Seizure	2 (4)
Permanent	
Stroke	2 (4)
Paraplegia	0 (0)
Retractorotomy/bleeding	8 (14)
AMDS collapse	5 (8)

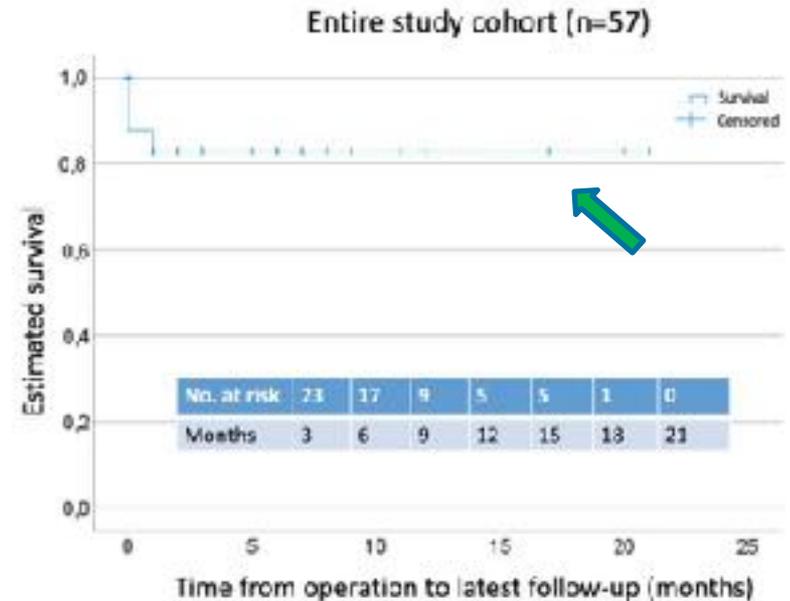


Figure 2: Estimated survival after Ascyrus Medical Dissection Stent treatment (n=57)

- Deutlich niedrigere 30-Tages Sterblichkeit (16% vs. 22%)
- Keine Reoperationen innerhalb des Follow-ups

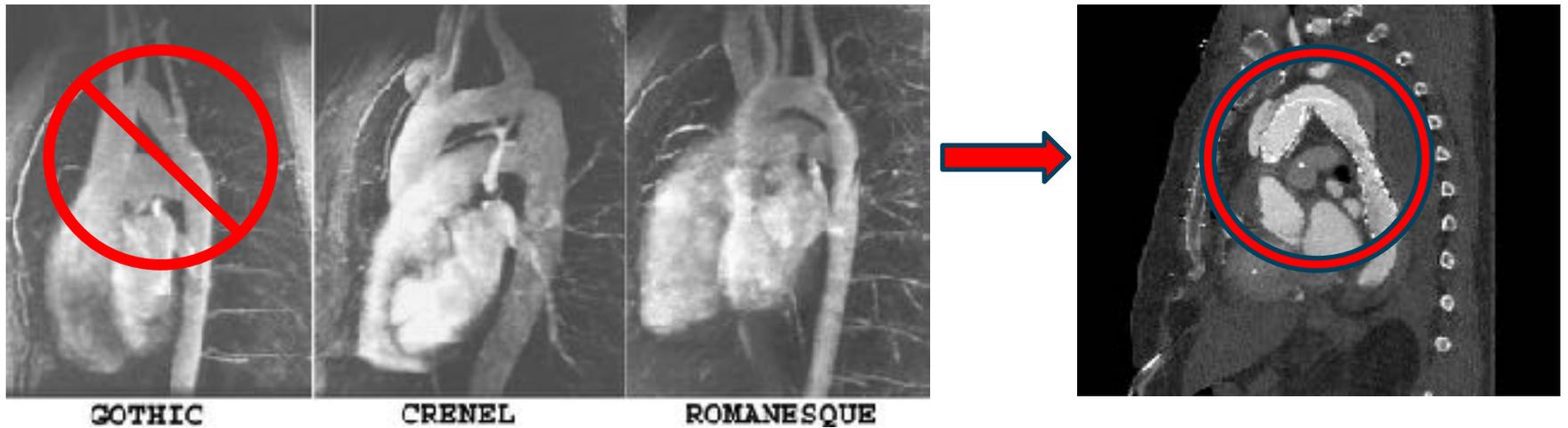
3 Tipps für eine langfristige Freundschaft

3 Tipps für eine langfristige Freundschaft



Anatomie

Die „richtige“ Anatomie



- Keine steilen Winkel im Aortenbogen oder in Aorta descendens
- Keine Einrisse (re-entries) der Aortenwand oder den Bogengefäßen

3 Tipps für eine langfristige Freundschaft

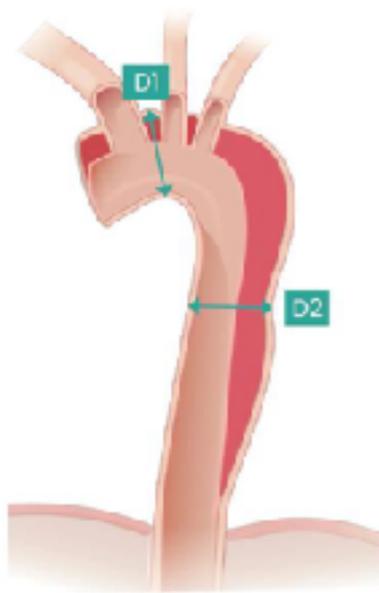


Anatomie



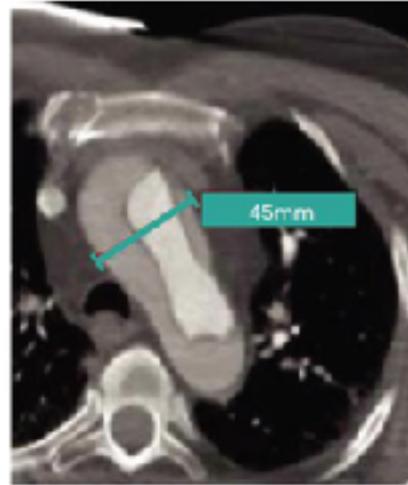
Größe

AMDS Größenmessung



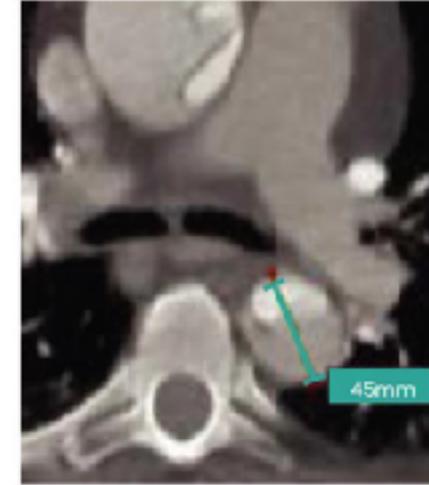
D1 Example

At the level between the innominate and left common carotid artery



D2 Example

At the level of the tracheal bifurcation



	Sizing		Device Specs.		
	D1: Proximal Aortic Diameter	D2: Distal Aortic Diameter	Felt Diameter	Stent Diameter (Free State)	Length Range*
AMDS 40	20-35	25-35	24	40	177 - 221
AMDS 40-30	20-35	20-24	24	40 prox., 30 dist.	178 - 218
AMDS 55	36-45	36-45	32	55	210 - 235
AMDS 55-40	36-45	27-35	32	55 prox., 40 dist.	203 - 228

3 Tipps für eine langfristige Freundschaft



Anatomie

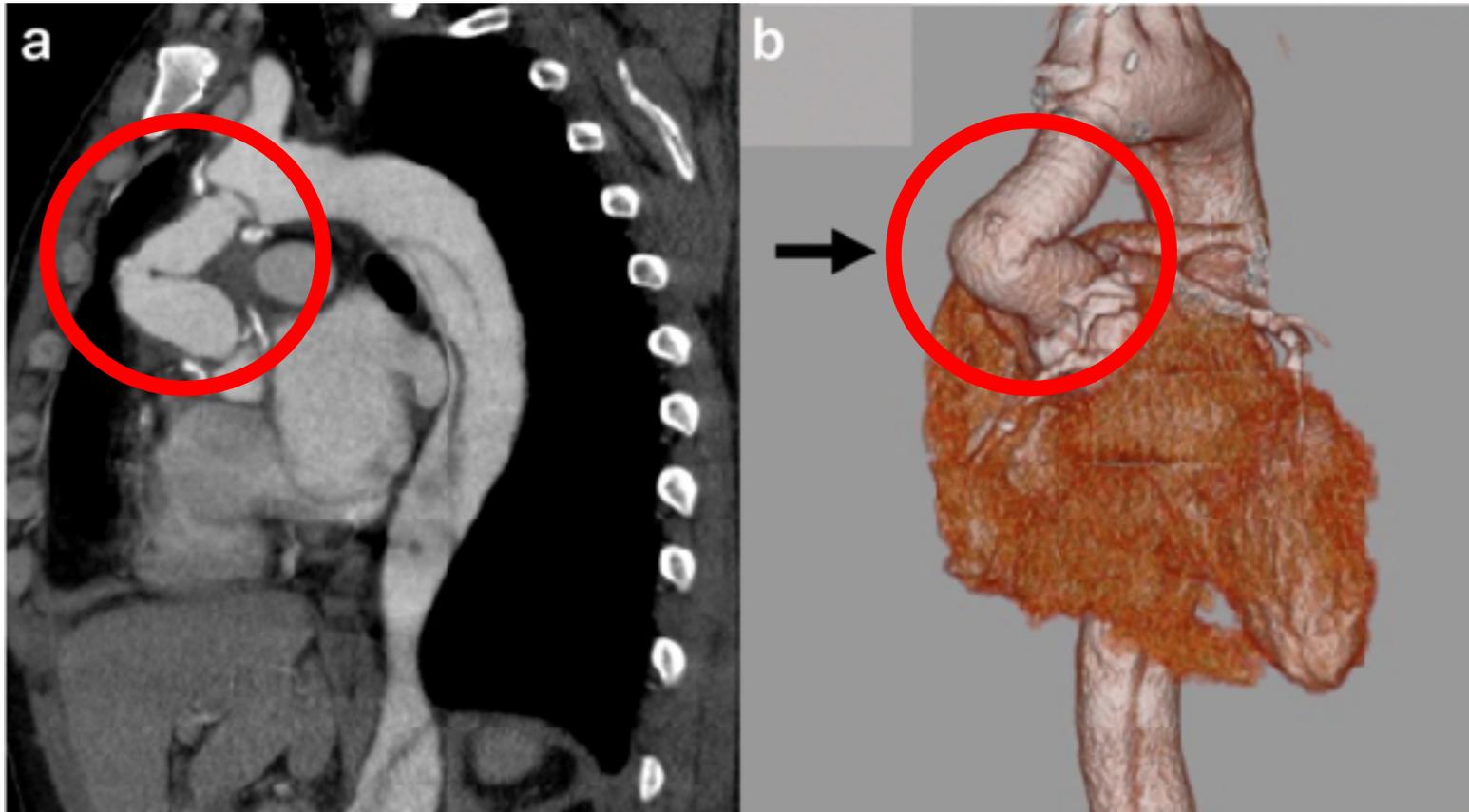


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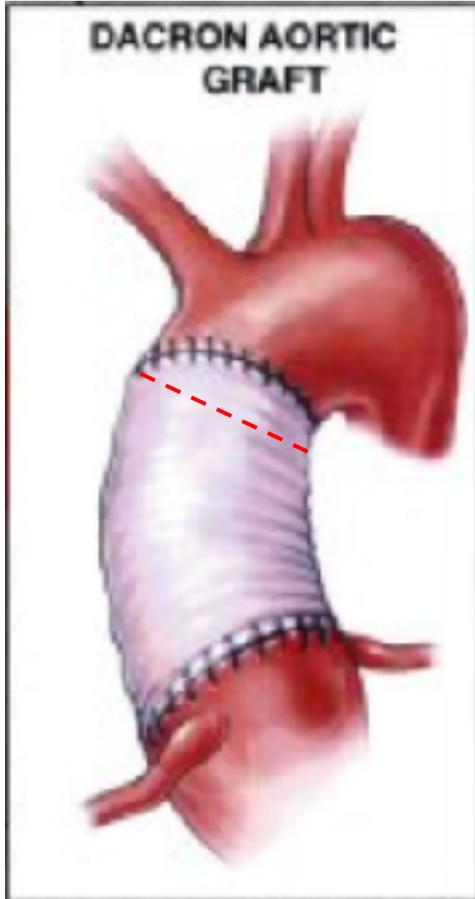


Abstand

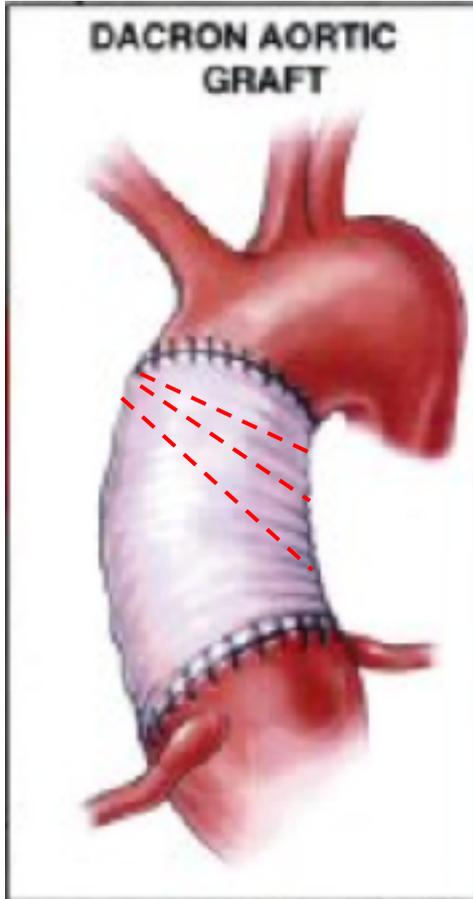
Zu lange Ascendens-Prothese



Ascendens-Prothese



Ascendens-Prothese



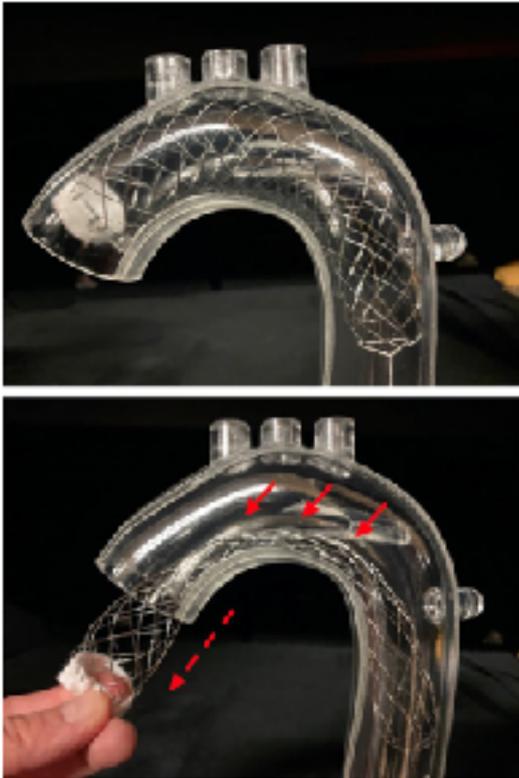
„3x abgeschnitten,
und immer noch zu kurz!“



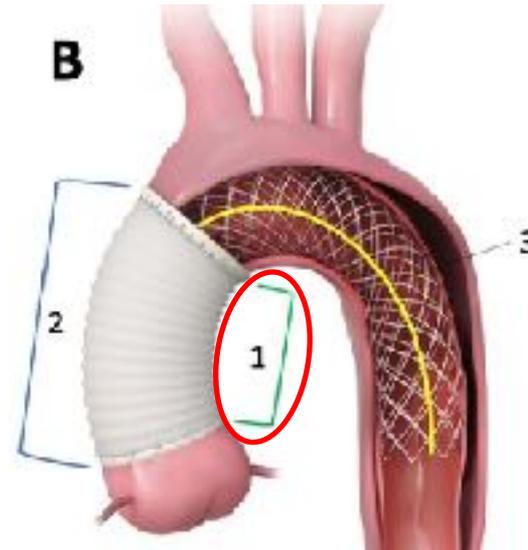
Theorie

vs.

Real-world



Luehr et al. EJCTS 2023



Parameters, n (%)	AMDS col- lapse (n = 5)	No collapse (n = 44)	P-value
Ascending aortic graft			
Inner length (mm), mean ± SD	30.0 ± 5.9	39.6 ± 10.9	0.029*
Outer length (mm), mean ± SD	48.5 ± 9.5	55.7 ± 14.7	0.066
AMDS stent portion, mean ± SD	227.4 ± 29.0	219.1 ± 23.6	0.394

➤ Erhöhter Zug durch kurze Prothese → Kollaps des AMDS

Schlussfolgerungen

1. Der neue AMDS hat sich erfolgreich als eine zusätzliche Behandlungsoption bei der akuten Typ A Dissektion etabliert
2. Eine individuelle präoperative Planung ist essentiell, um den richtigen Patienten bzw. die richtige Dissektion zu identifizieren
3. Weitere Vergleichsstudien mit größeren Patientenkollektiven notwendig, um Stellenwert des AMDS langfristig zu beurteilen
4. Der richtige “**Umgang**” erhält die Freundschaft dauerhaft 😊



SCAN ME

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