



west-german heart- and vascular center essen



True lumen stabilization for acute type I aortic dissection complicated from malperfusion: is stenting of the thoracoabdominal aorta with uncovered stents a solution?

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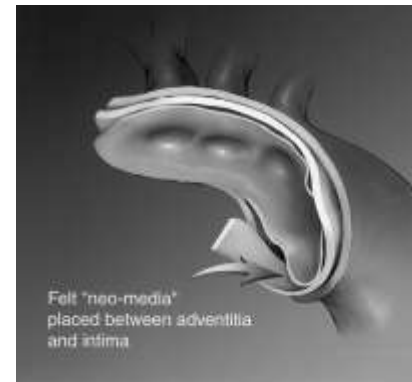
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Standard Treatment in Acute A AD

Replacement of the ascending aorta
± hemiarch with an open distal anastomosis

Aim of standard treatment

- Release Tamponade
- Proximal entry resection
- Stabilize the circulation



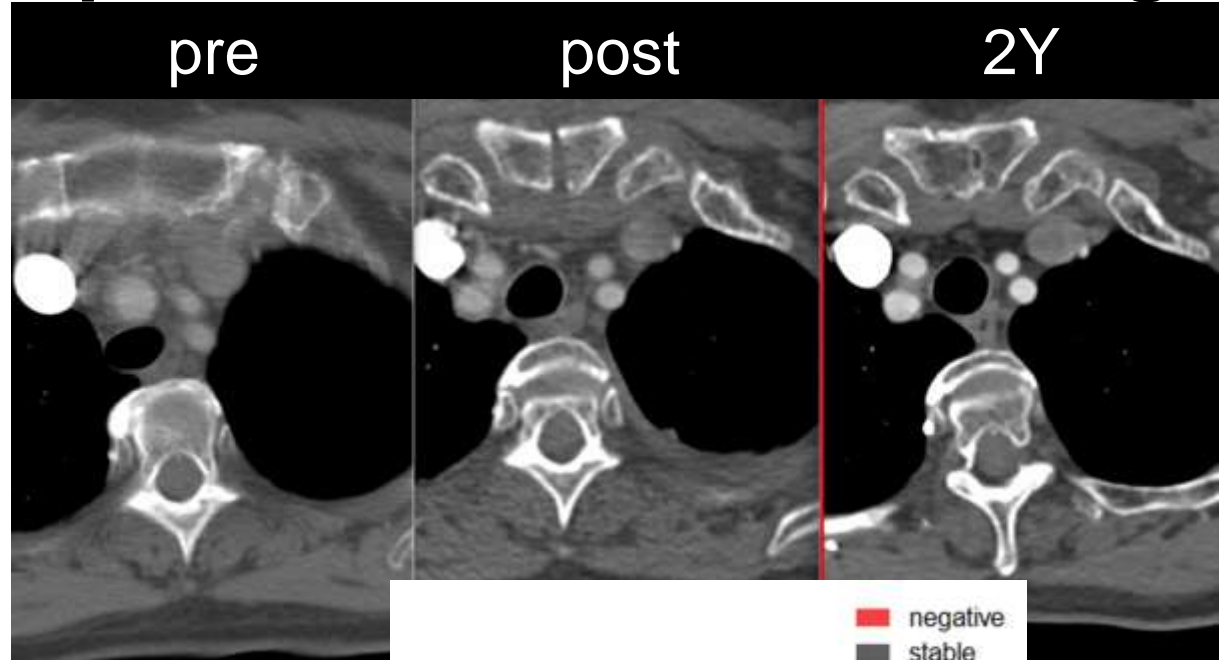
Thoracoabdominal Aorta ?



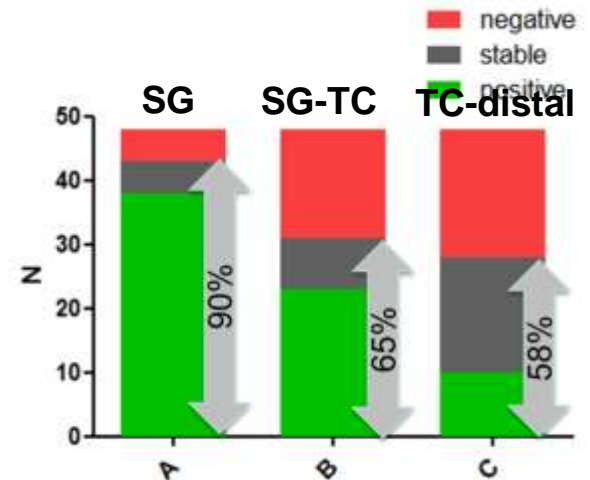


Frozen Elephant Trunk

True Lumen Expansion + Ao. Remodelling

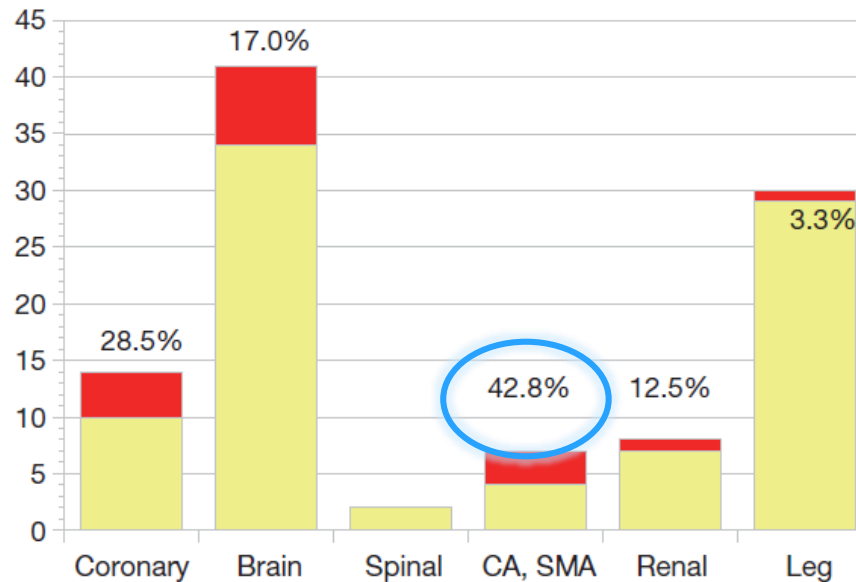


Remodeling (1y)
volume changes





Visceral Malperfusion “the killer”

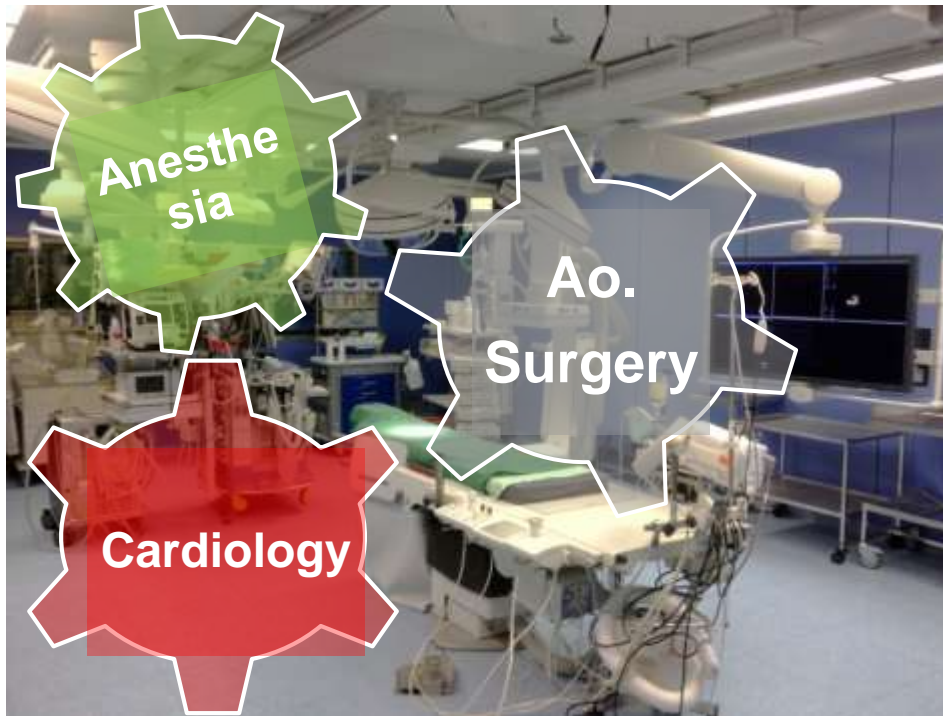


Okita et al, Ann Cardiothorac Surg 2016





Essen Concept in Acute AD (since 2005) Diagnostic + Treatment in Hybrid OR



The Rational of Hybrid OR Concept

Angiography for on time detection of dissection extent and malperfusion [coronary, cerebral, visceral, peripheral]

Evaluation of coronary artery disease

Endovascular TL stabilization and restoration of organ perfusion

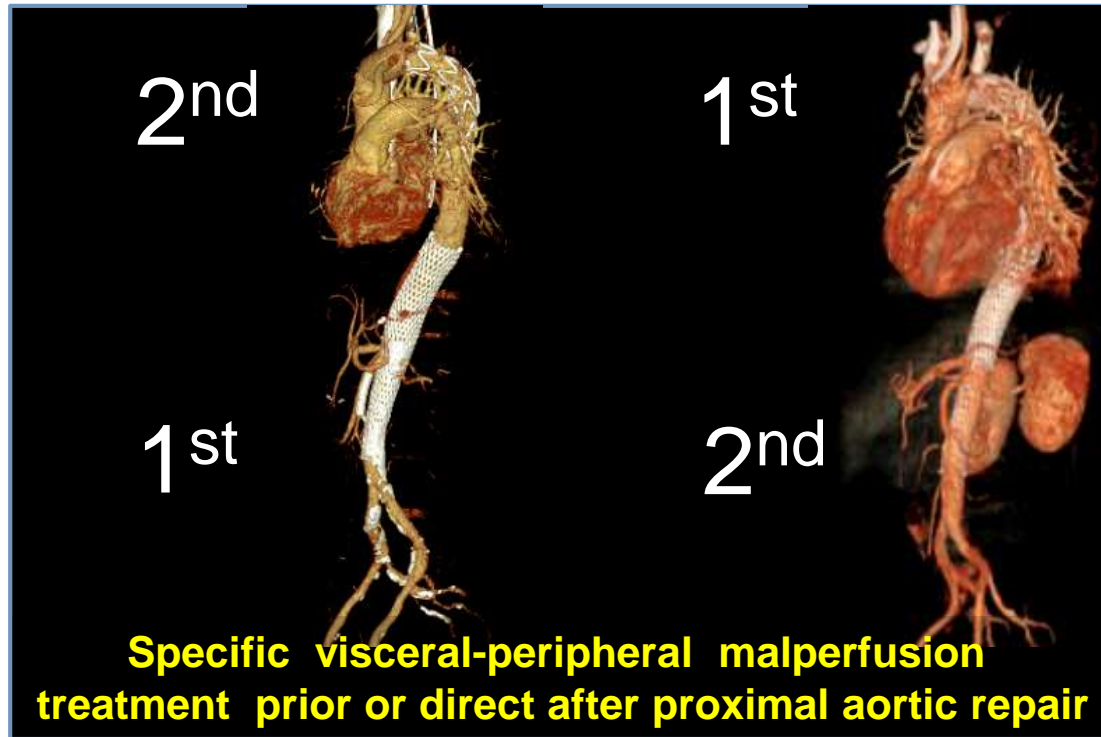
Control angiography postop., if required

Endo + Surg. on the same table
– no patient transport





Complementary Endovascular Treatment in Timely Prolonged Visceral Malperfusion



Hybrid Concept in Acute Type I AD Case Example

67yrs, female, Tamponade, TL collapse, Visceral + Peripheral Mal.



Pericardial Drainage + EVAR prior to Surgery



7 years FU

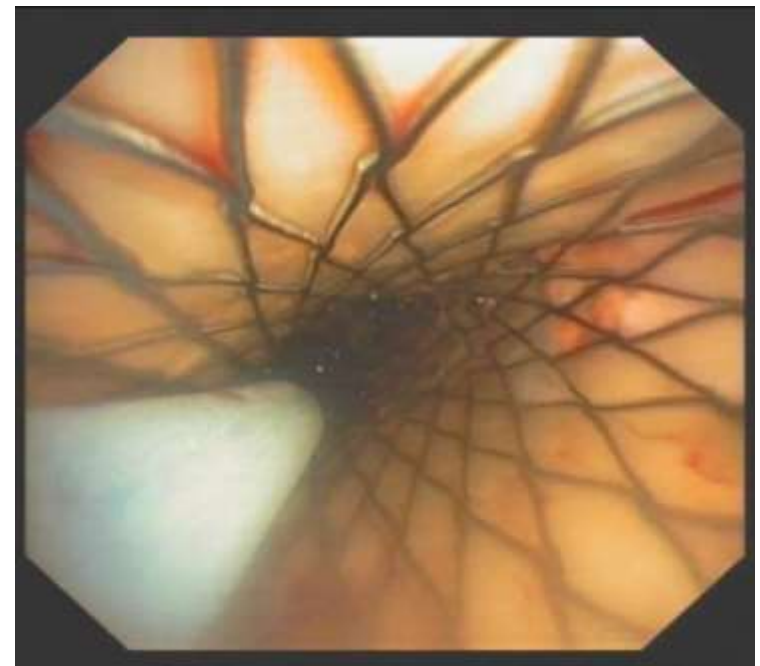
Implantation of Uncovered Stents



Retrograde implantation



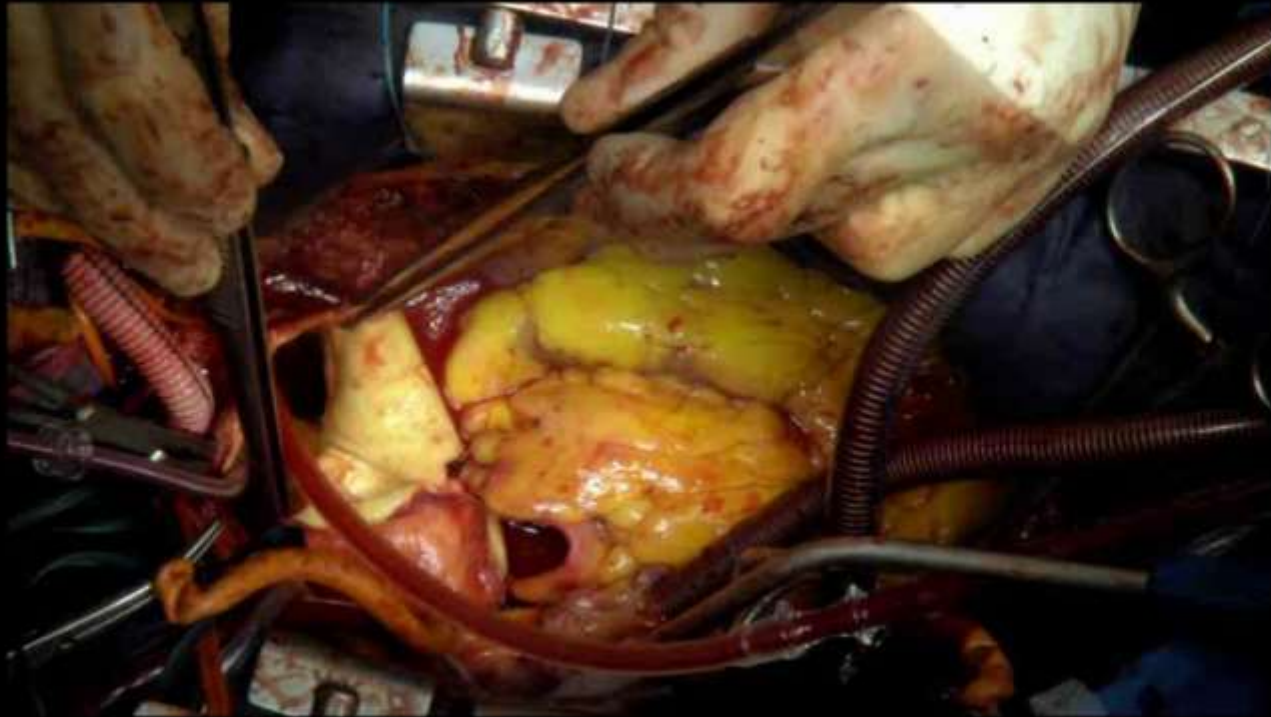
Antegrade implantation





TAAA Stenting –Case (antegrade)

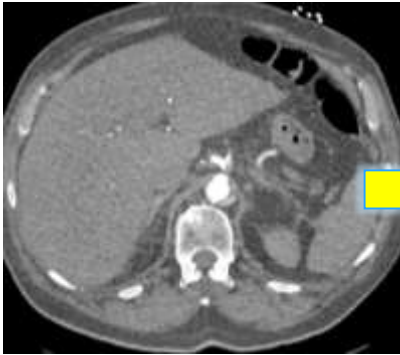
75yrs, male, acute Type I AD, visceral malperfusion
abdominal pain, vomitus, creatinine 1.8mg/dl



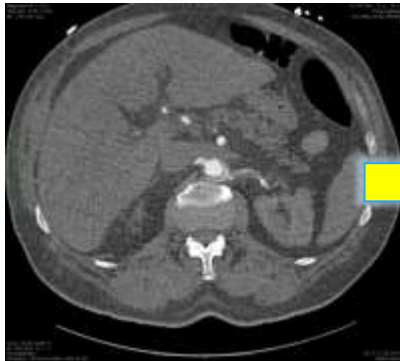


TAAA Stenting –Case (antegrade)

Preop.



Postop.





Aortic repair in Acute A AD

01.2005-04.2019
376 acute Type A AD patients

modified Type II*
N = 109 (29%)



DeBakey Type I
N = 267 (71%)



Proximal repair
N = 96 (36%)

FET (E-vita open)
N = 171 (64%)

+ TAAA stenting
N = 20 (7%)



TAAA Stenting - Results

	N = 20
Age	57±11
Male	17 (85)
Malperfusion	
Visceral	9 (45)
Limbs	1 (5)
Visceral+limbs	10 (50)
Number of stents	
1	6 (30)
2	10 (50)
3	4 (20)
Additional artery stenting	7 (35)





TAAA Stenting - Results

	N = 20
Mortality 30 days	3 (15)
Laparotomy	4 (20)
diagnostic	3
resection	1
Peripheral ischemia	2 (10)
New stroke	-
Paraplegia	-
Renal replacement therapy (temporary)	11 (55)

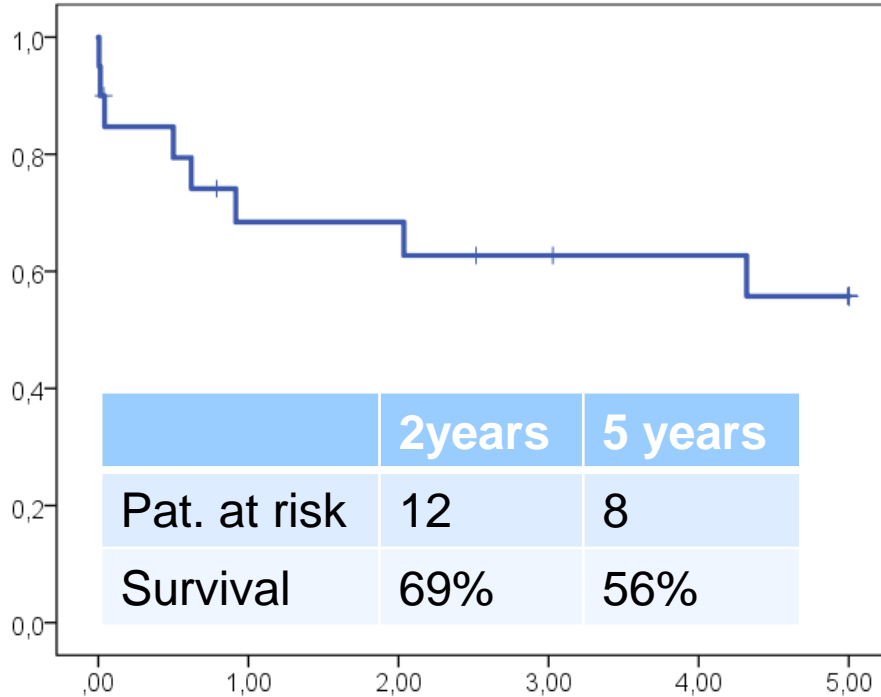




TAAA Stenting - Survival

Follow up 3.5 ± 2.2 years

Cumulative survival



Aortic related event N = 2/16
1 thoracoabdominal surgery
1 unknown death



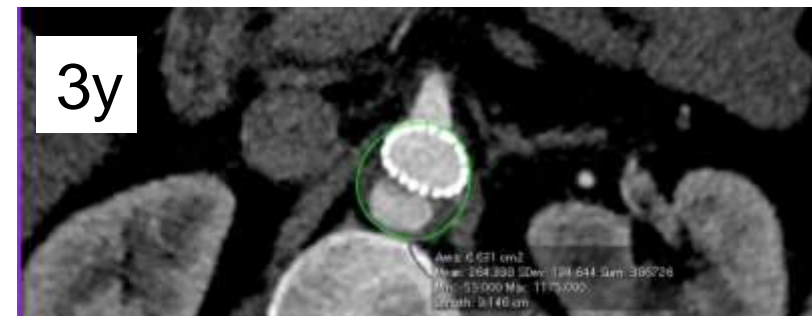
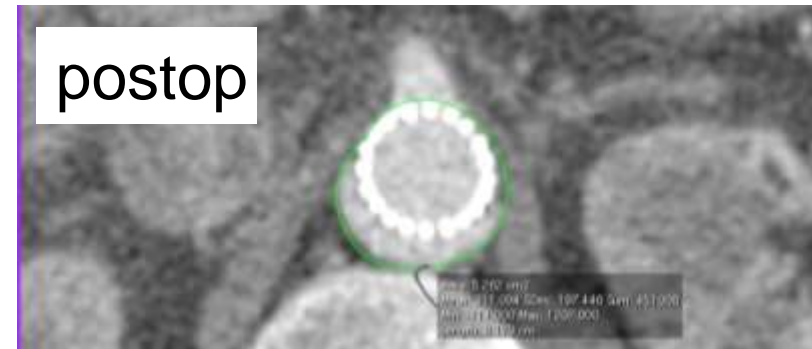
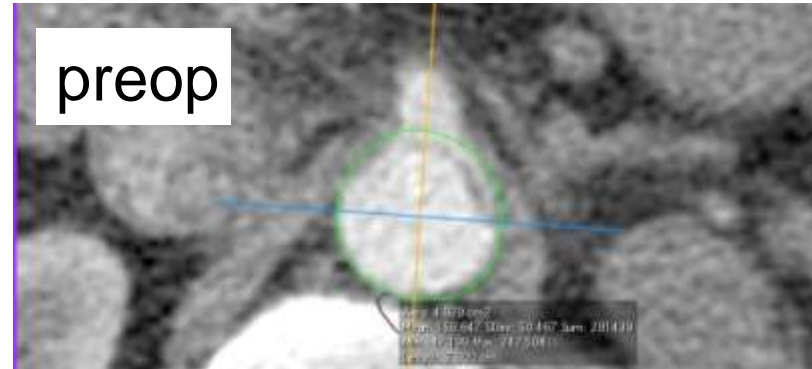
True Lumen Stabilization - Uncovered Stents

N = 20 patients

- No occlusion of visceral arteries
- No nitinol fracture
- Diameter abdominal aorta
Enlargement (p=0.027)
0.8 mm / year
- Area ratio TL/AL
Stable (p=0.280)



No significant
FL progress

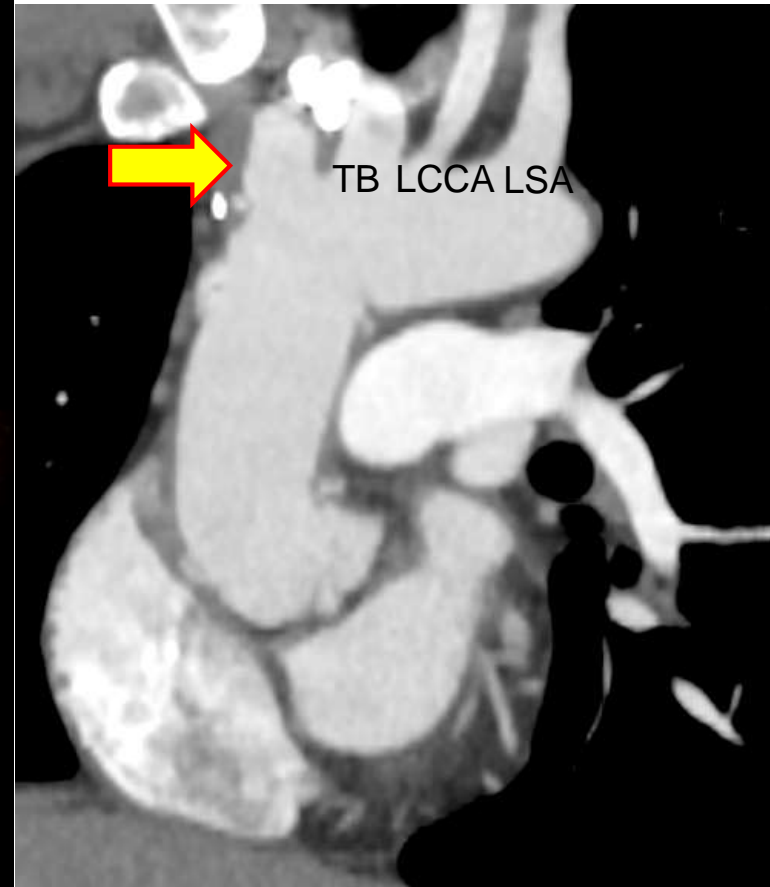


Fate of uncovered Stents - Case Example

55 y/o, male
6 years after TL stabilization
by 3 E-XL stents and
ascending aorta replacement
for Type I AD and
Penn BC clinical status



Re-OP for Pseudoaneurysm
at distal anastomosis





Fate of uncovered Stents - Case Example

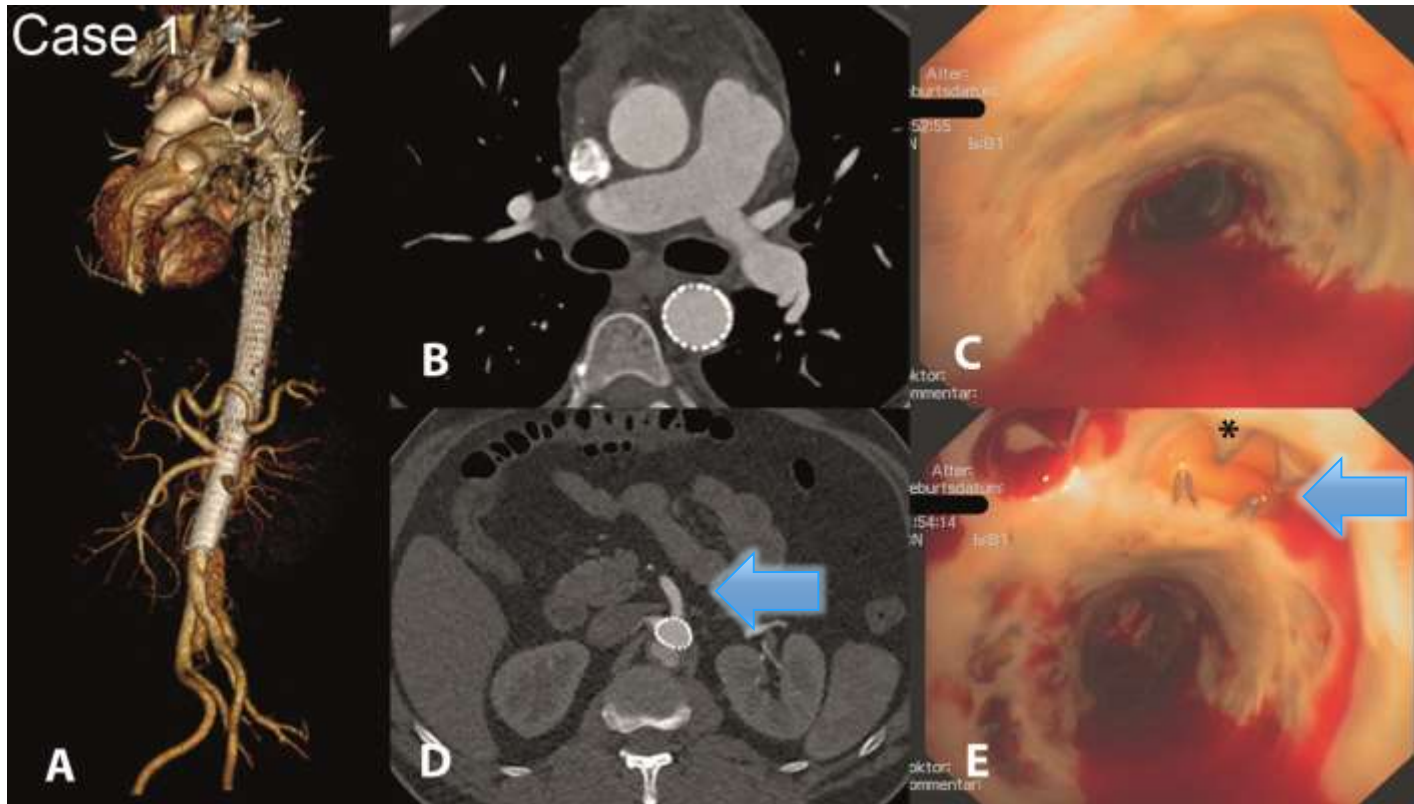
Angioscopy downstream

Endothelialization – Neo Intima throughout the stented ao. segments



Experience with uncovered stents in the thoracoabdominal aorta

6 years result post thoracoabdominal stenting (E-XL) for acute AD



Conclusions

Extended aortic repair by thoracoabdominal stenting (uncovered stents)

- enables abolishment of malperfusion
- enables durable TL stabilization
- Reinforcement of the dissected aortic wall by the stent (neointima) may provide



Petticoat + FLIRT concept can be complementary for complete FL treatment