MARCH 21 & 22 2024
COPENHAGEN/MALMÖ
SCANDIC TRIANGELN, MALMÖ

First European Experience with a Novel 3-Branched Device for the Treatment of the Aortic Arch

Alexander Zimmermann

Lombard MEDICAL

USZ Universitäts Spital Zürich

Universität Zürich[UZH]

Disclosure

Speaker name: **Alexander Zimmermann**

X I have the following potential conflicts of interest to report:

X Receipt of honoraria and travel support

Artivion, Cook, Medtronic, **Lombard**, Terumo, **Microport/Endovastec**, iVascular

❑ Participation in a company-sponsored speaker bureau

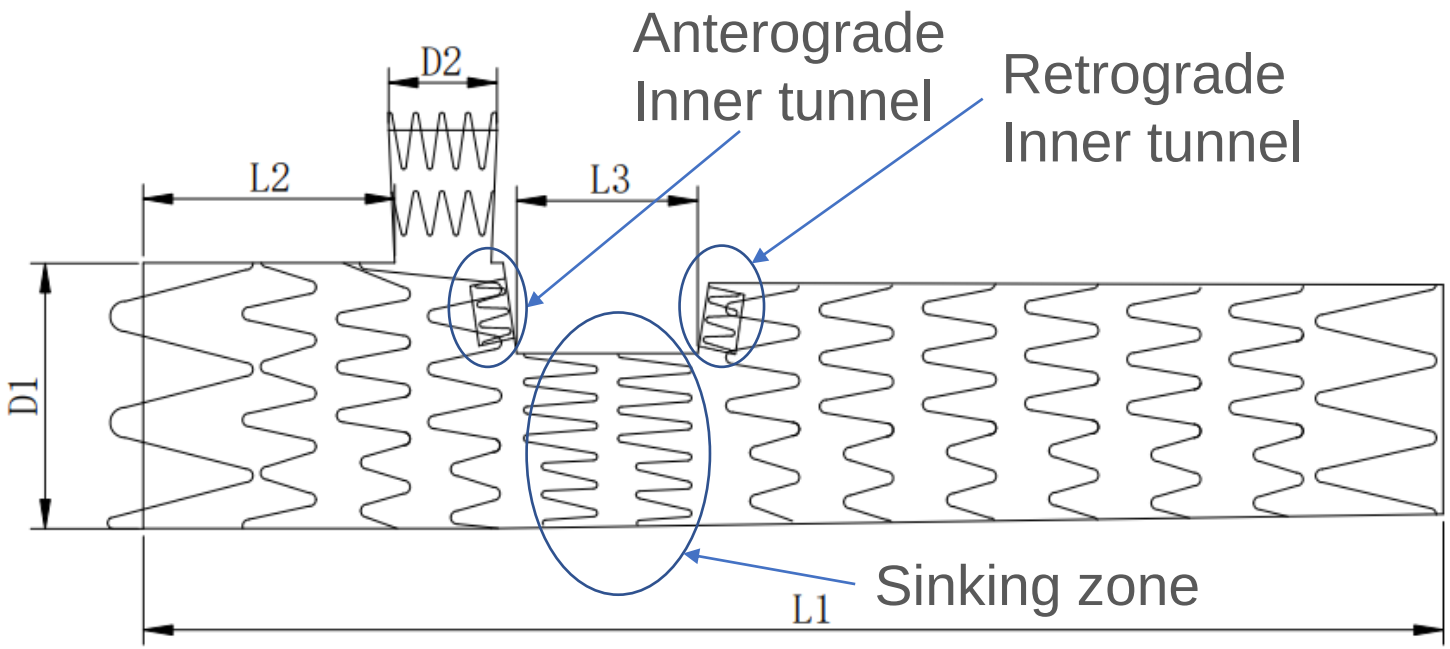
❑ Employment in industry

❑ Shareholder in a healthcare company

❑ Owner of a healthcare company

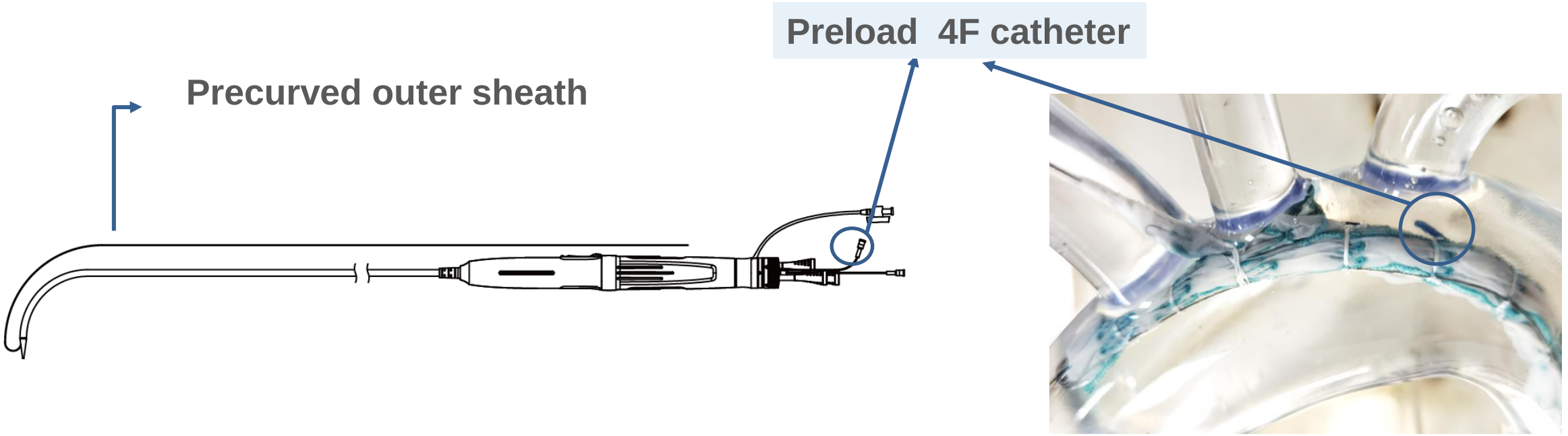
❑ I do not have any potential conflict of interest

The Stent Graft



- Sinking zone: spare space for cannulation and accommodate separate branch stents
- Partial restrain of sinking zone: further spare space for LCCA cannulation
- Inner tunnels to eliminate type III endoleak
- Anterograde tunnels for LCCA to maintain anterograde blood flow
- Sinking zone length accommodate variation of LCCA-LSA distance

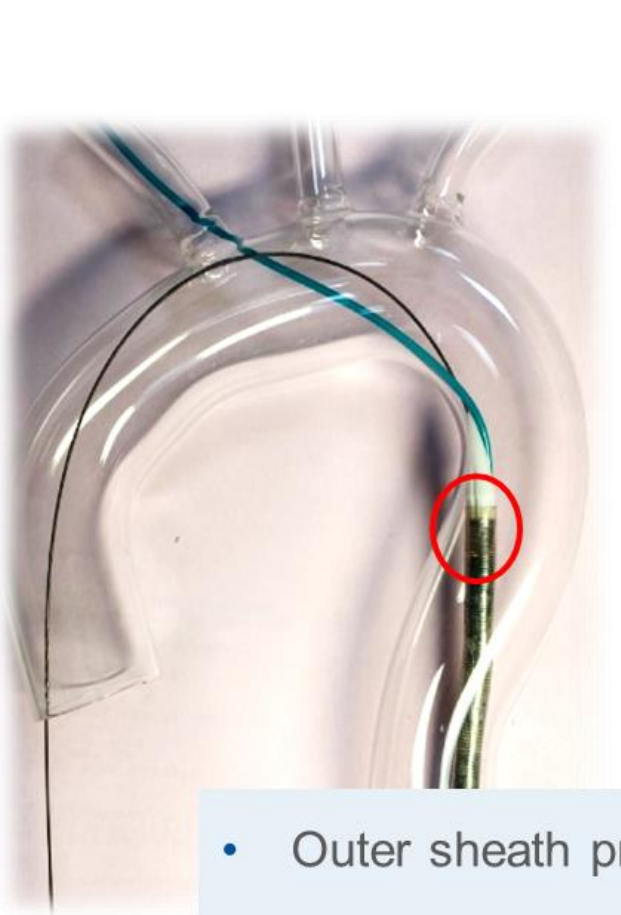
Mainbody Delivery System

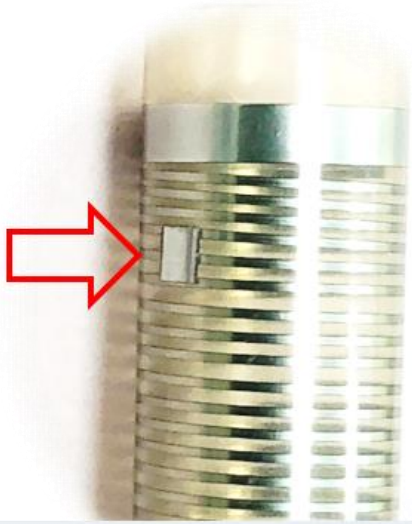


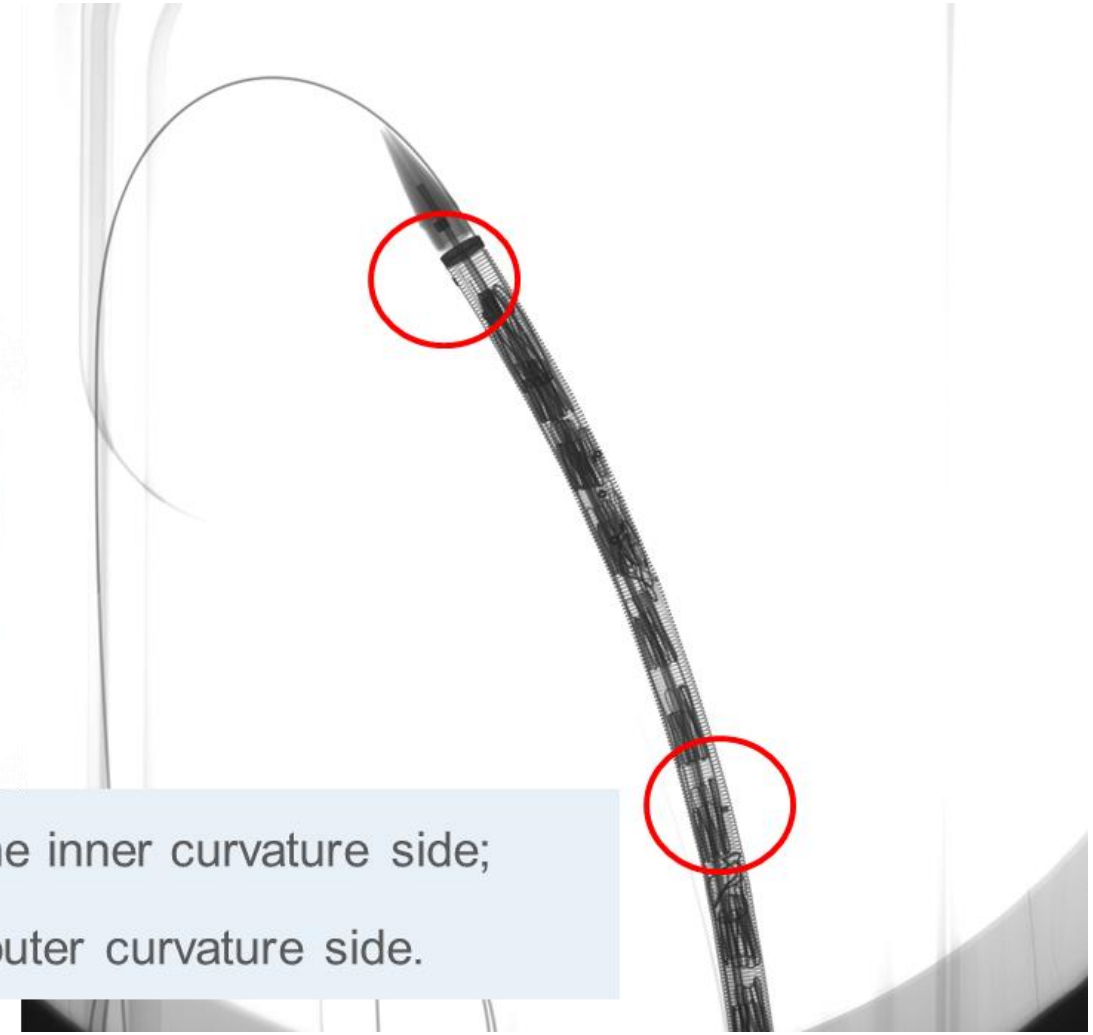
Maintain three branch artery perfusion perioperatively

- Precurved outer sheath to facilitate passing arch
- Preloaded 4F catheter(0.035) to simplify LSA cannulation

Introduce Mainbody System And Detwist



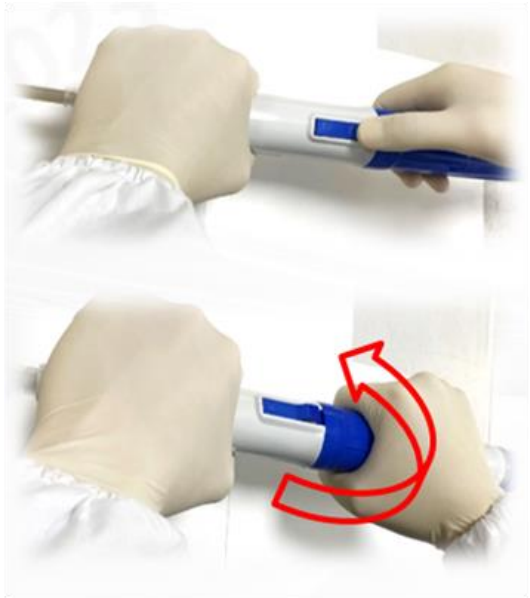




- Outer sheath proximal marker at the inner curvature side;
- Preloaded catheter marker at the outer curvature side.

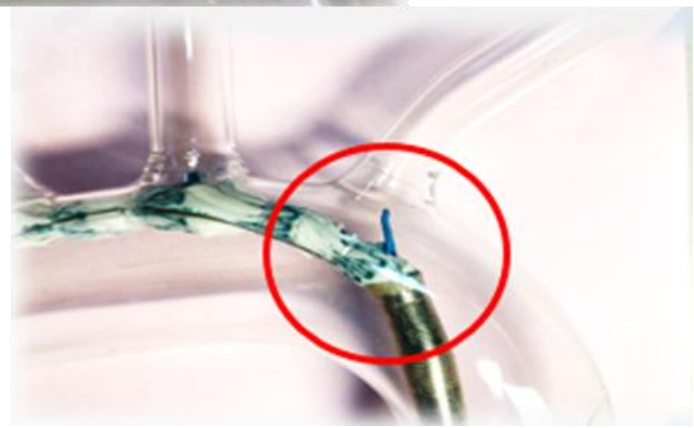
Retract Outer Sheath

1. Unlock the misuse-proof switch, rotate the handle to retract the outer sheath.

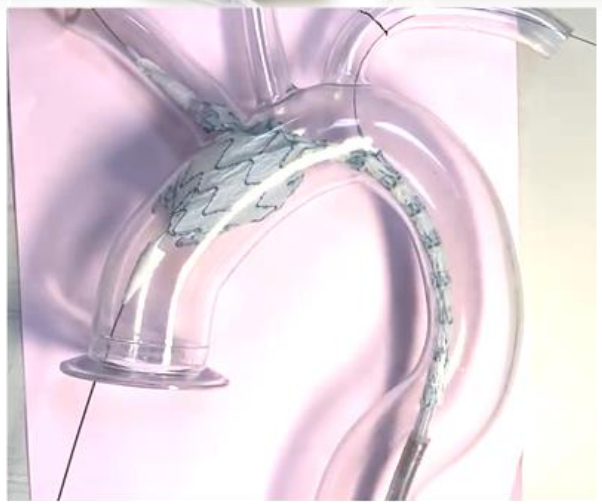


2. Pull branch guidewire to introduce the IA branch stent into IA

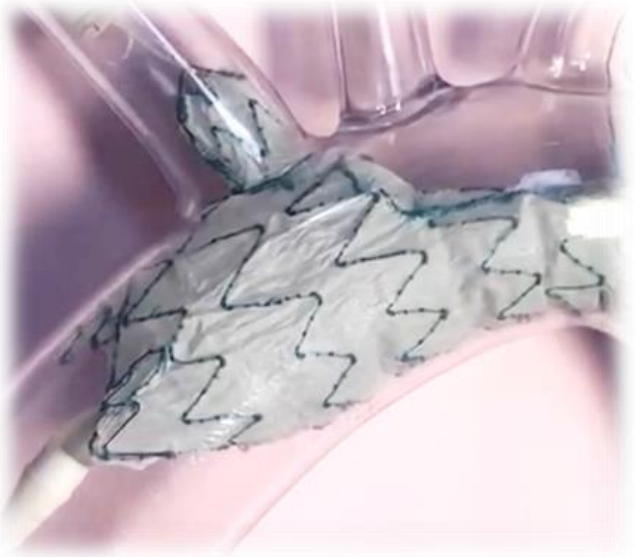
2. Further withdraw the outer sheath to expose the preloaded catheter



Release Mainbody & Deploy IA Stent



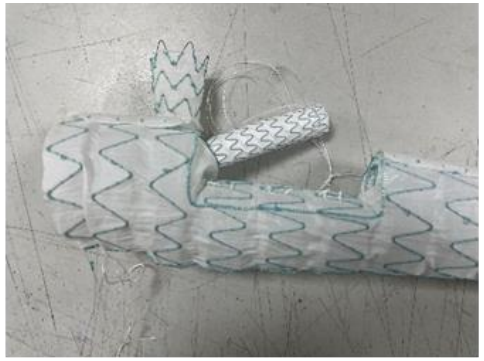
1. Rotate the control dial part to unlock the mainbody trigger wire, Pull the trigger wire to deploy the mainbody stent



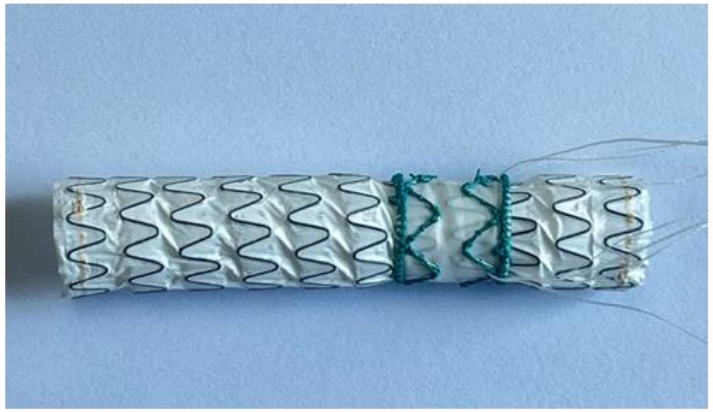
2. Pull the branch guidewire to deploy the IA integrated stent.

The bare stent of IA stent is still captured by branch guidewire. Open IA blood flow while maintain IA control

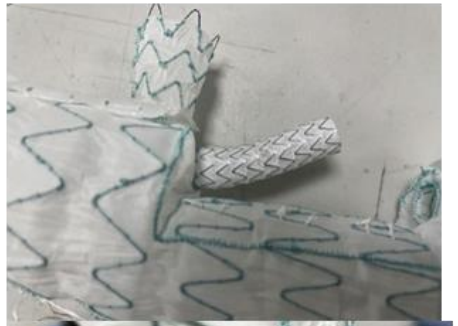
Pull Out Force



Case 1: 5mm inner tunnels
Average force **4.71N**



Case 2: 15mm inner tunnels
Average force **4.4N**

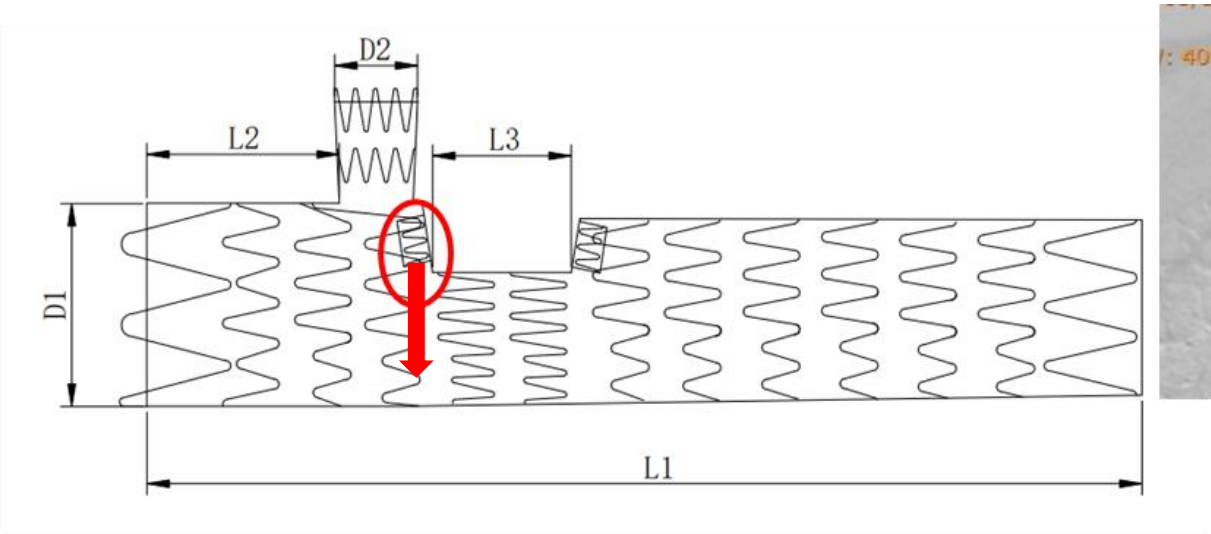


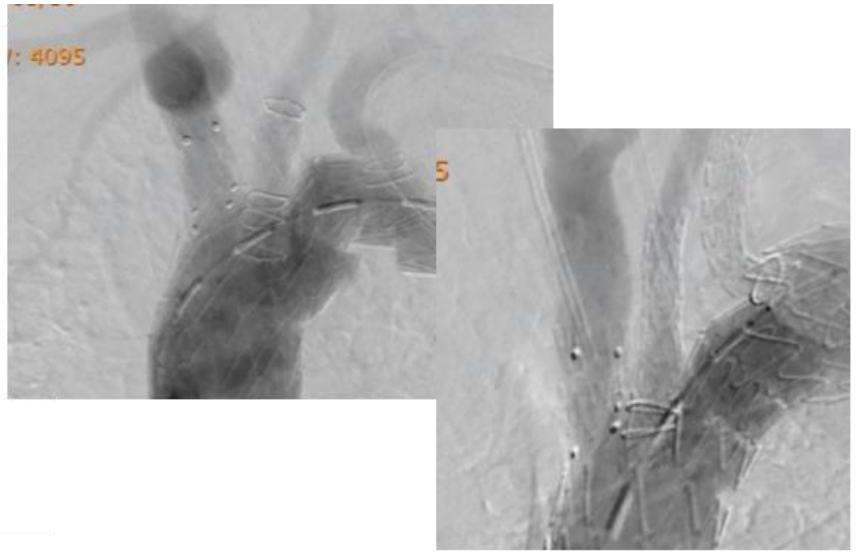
Case 3: BE stent with flare
Average force **8.09N**

Inner tunnel length increased from 5mm to 15mm didn't increase detaching force.

Balloon expandable stent with distal flare significantly increase the detaching force.

Partially Covering The IA Ostium



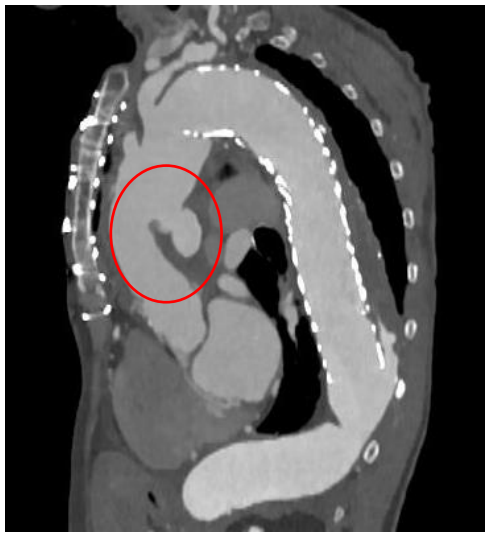


Hector inner tunnels are actually fenestrations +Mini CUFFs. The Mini CUFFs are not fixed to the mainbody stent. When deployed supera arch, the LCCA stent are most likely to be vertical, which will not interfere IA opening.

First-In-Human Results from Prof. Lu

Time	2022.12-2023.8
Total	n=11
Age（yr）	63.2±9.8 (39-74)
Gender（Male）	100%（11/11）
Disease type	
Aneurysm	64%(7/11)
Dissection	36%(4/11)
Operation	
Time	153.7min±38.7(70min-190min)
Technical success rate	100%（11/11）
M&M	Endoleak:0, Stroke:0, Paraplegia:0, Branch occlusion:0, RTAD:0

Edited Case

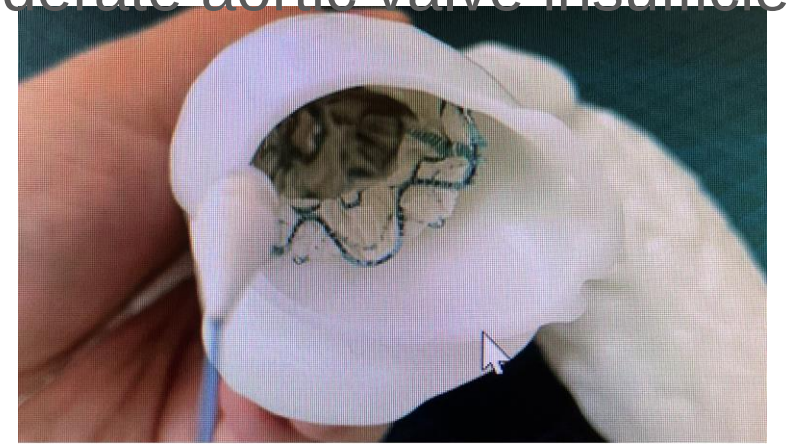


83-year female patient

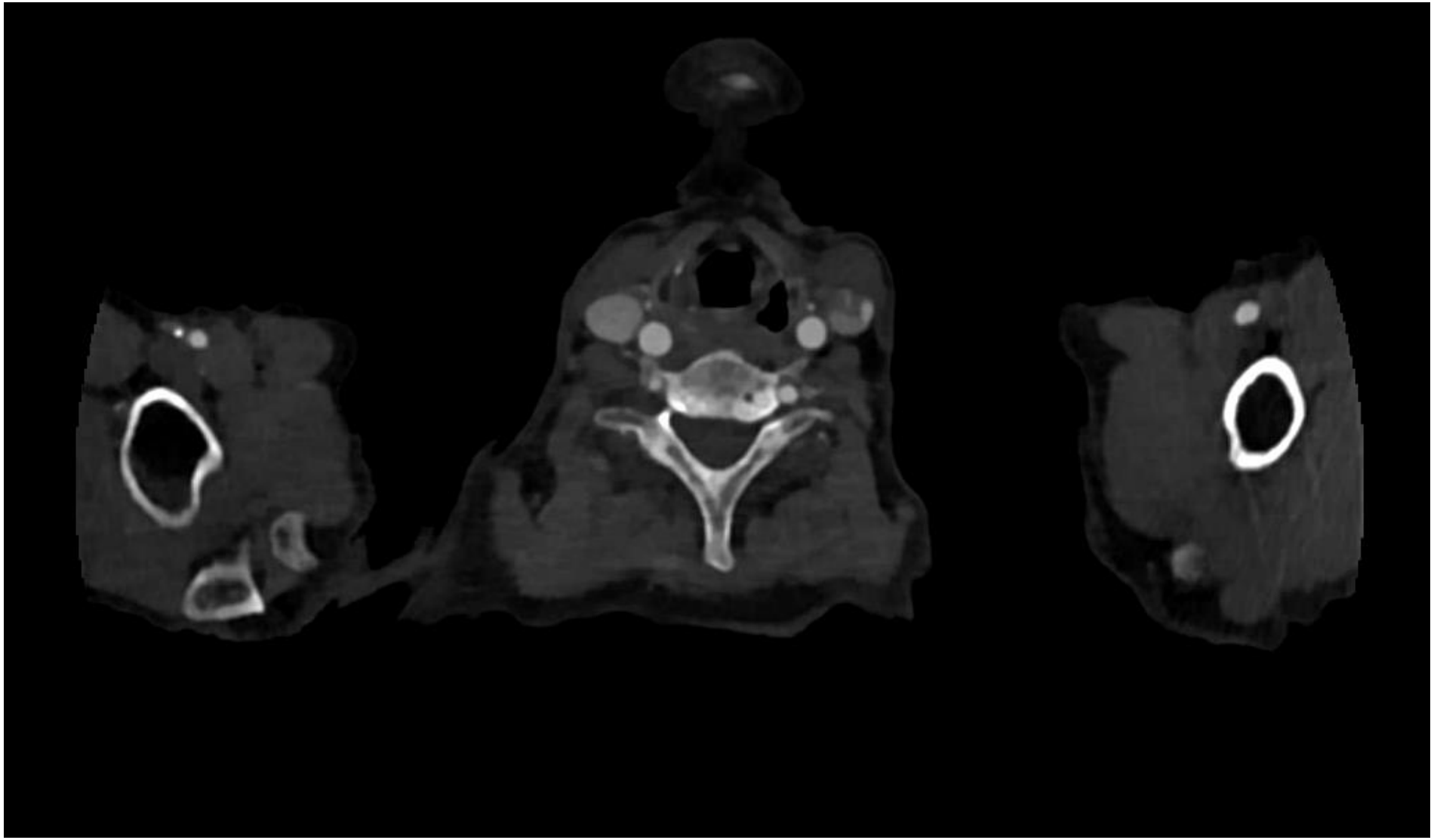
Large ***pseudoaneurysm*** of the distal anastomosis
after ***supracoronary ascending replacement*** (9/2020)
History of acute ***type A dissection*** 9/2020

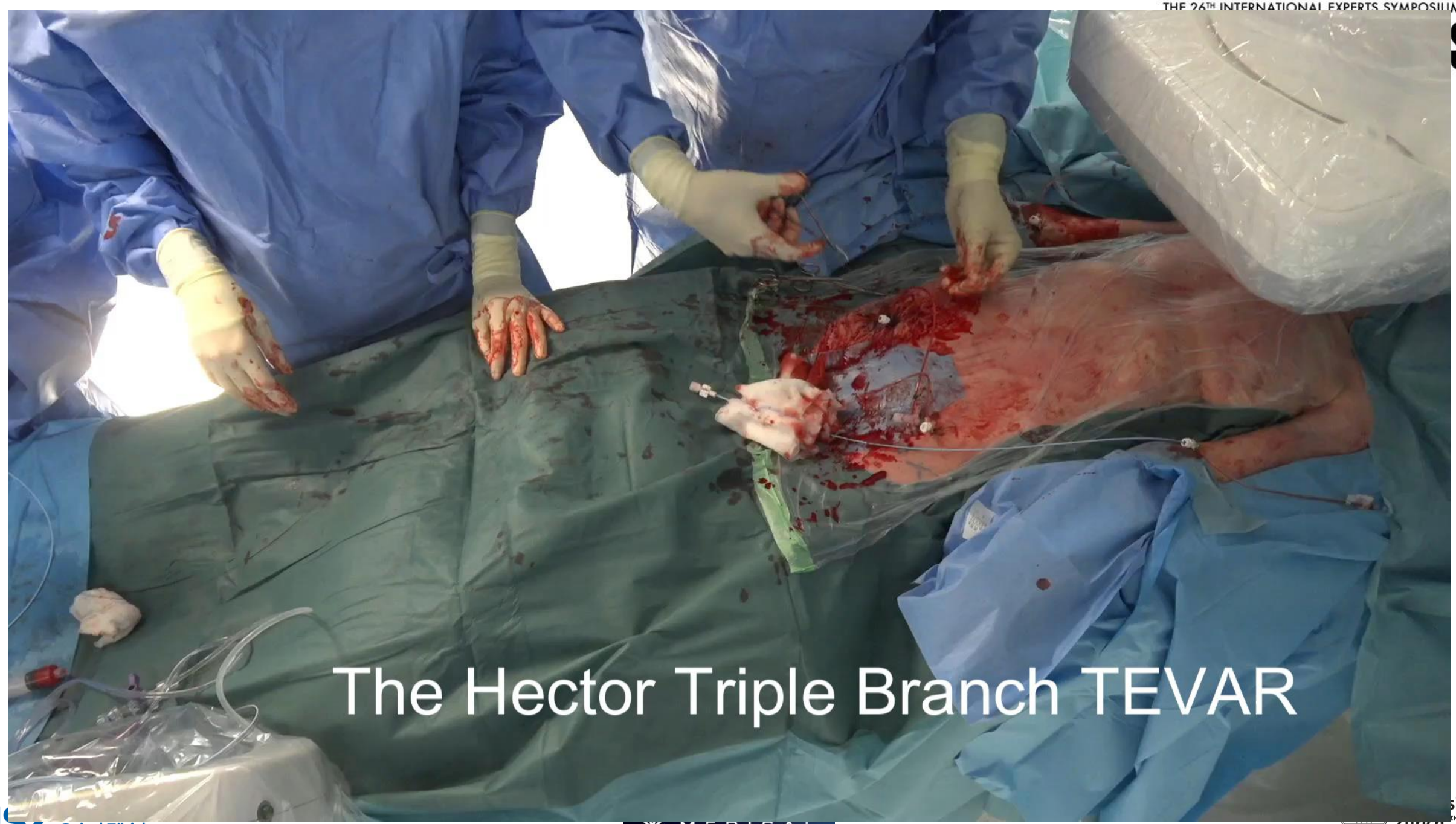
Comorbidities

- TEVAR type B dissection 3/2020
- Valvular heart disease (mild to moderate aortic valve insufficiency)
- Arterial hypertension
- Dyslipidaemia
- COPD GOLD 2b

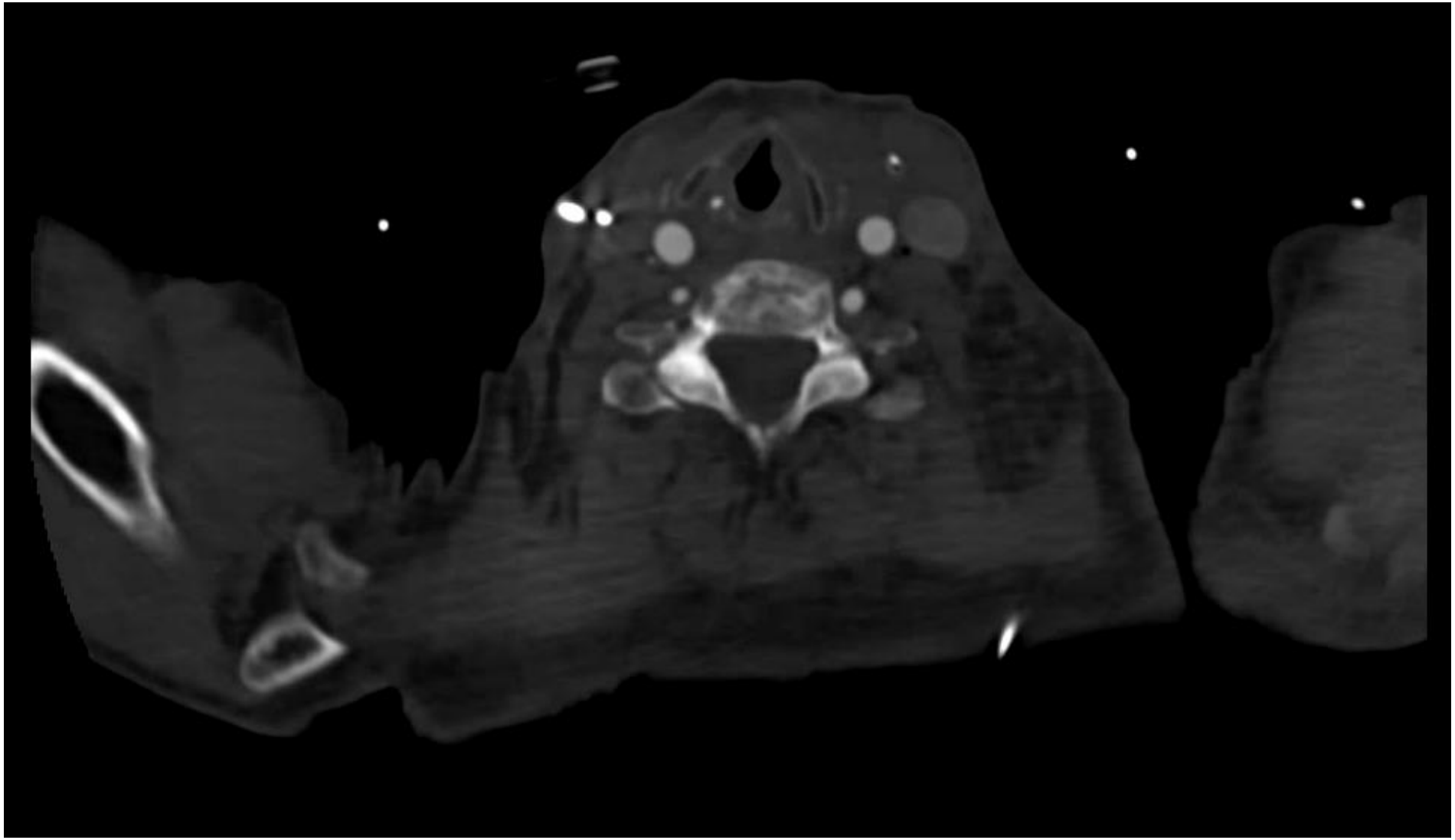


Pre OP CT-Scan

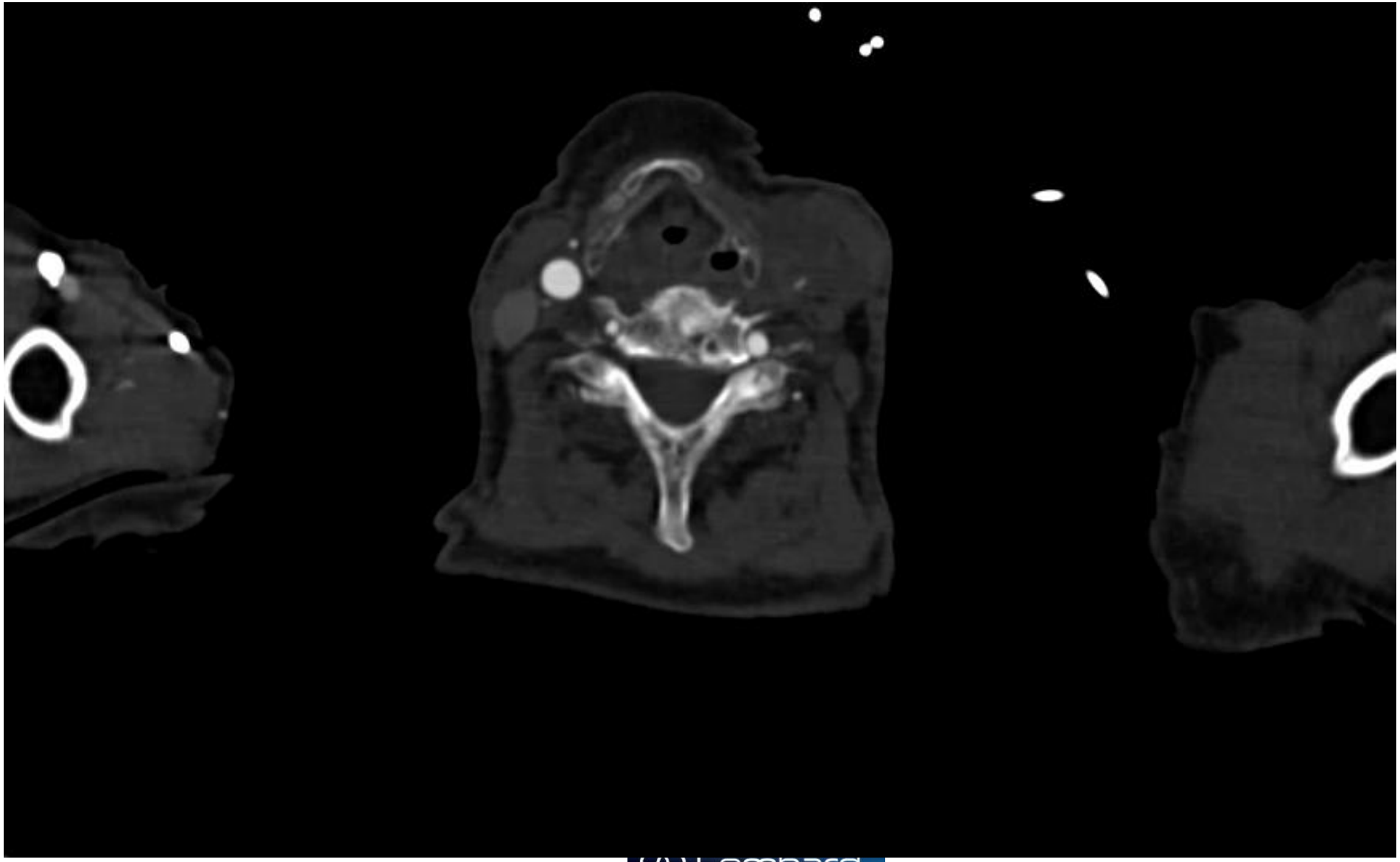



The Hector Triple Branch TEVAR

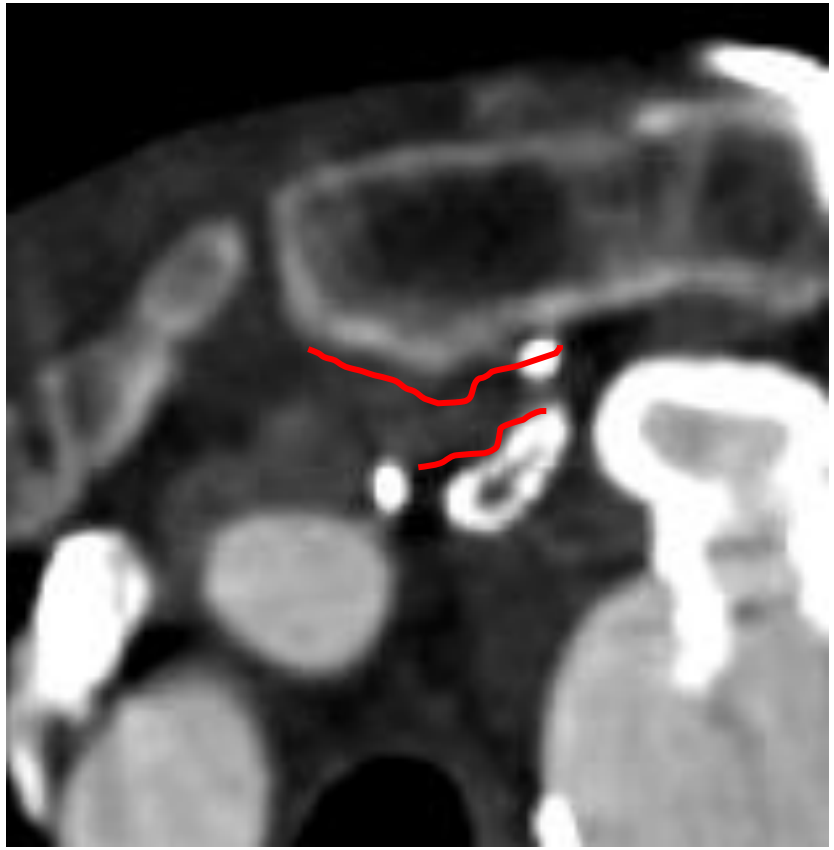
Post OP CT Scan 1-day after

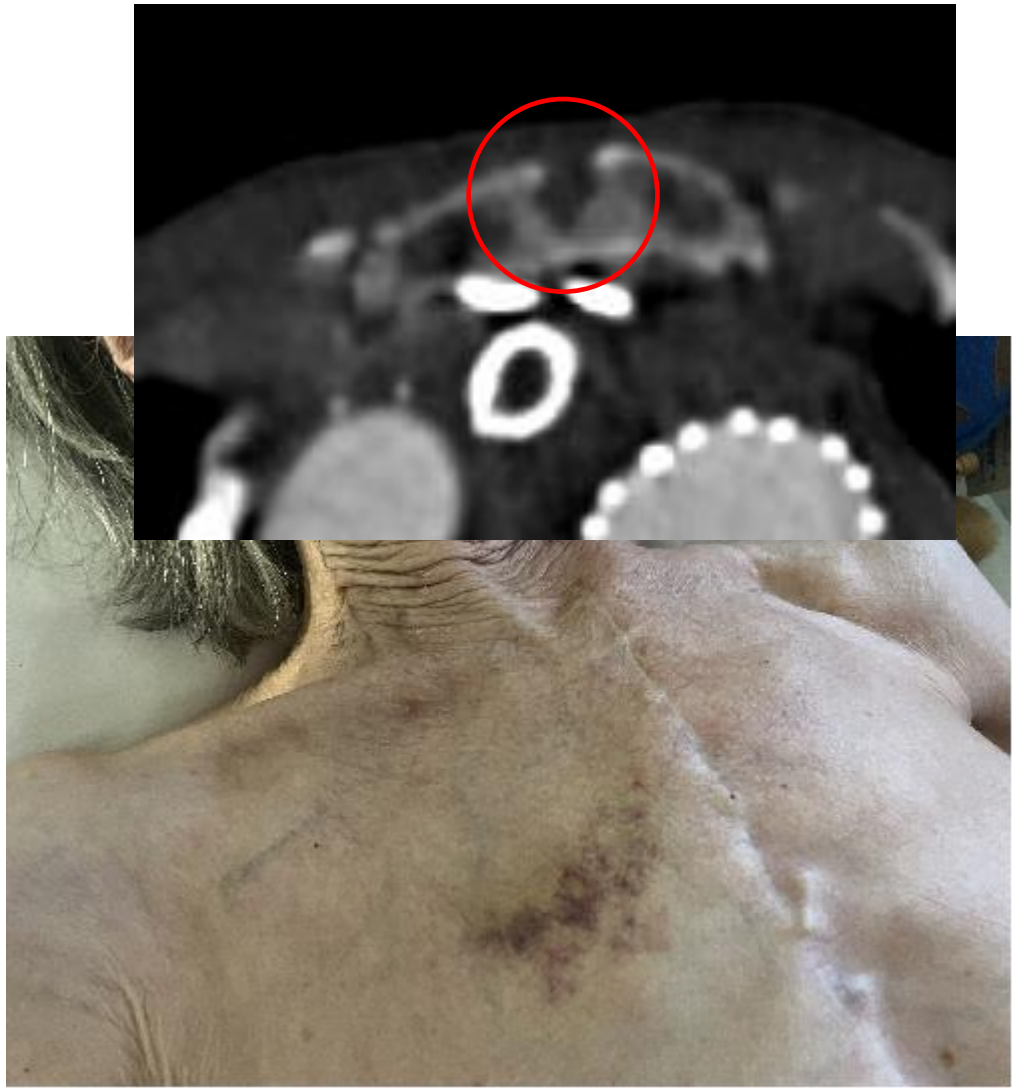


Post OP CT Scan 4-weeks after



Bridging Stent Graft Compression





Conclusion

- The novel triple-branched stent-graft can be used to endovascular repair of not only aortic arch aneurysm, but also aortic dissection.
- The unique design of unibody outer branch combined with inner branch makes more stable to avoid potential endoleaks and reduce the incidence of stroke.
- The special design of stent-graft and deploy method can enable us to challenge some difficult cases.
- The preliminary result is encouraging, a multicenter study is needed to further evaluate the efficacy and safety.


Thank You