

STS/EACTS Latin America Cardiovascular Surgery Conference

November 15-17, 2018

Hilton Cartagena | Cartagena, Colombia



TEVAR vs SURGICAL ARCH RECONSTRUCTION

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Disclosure

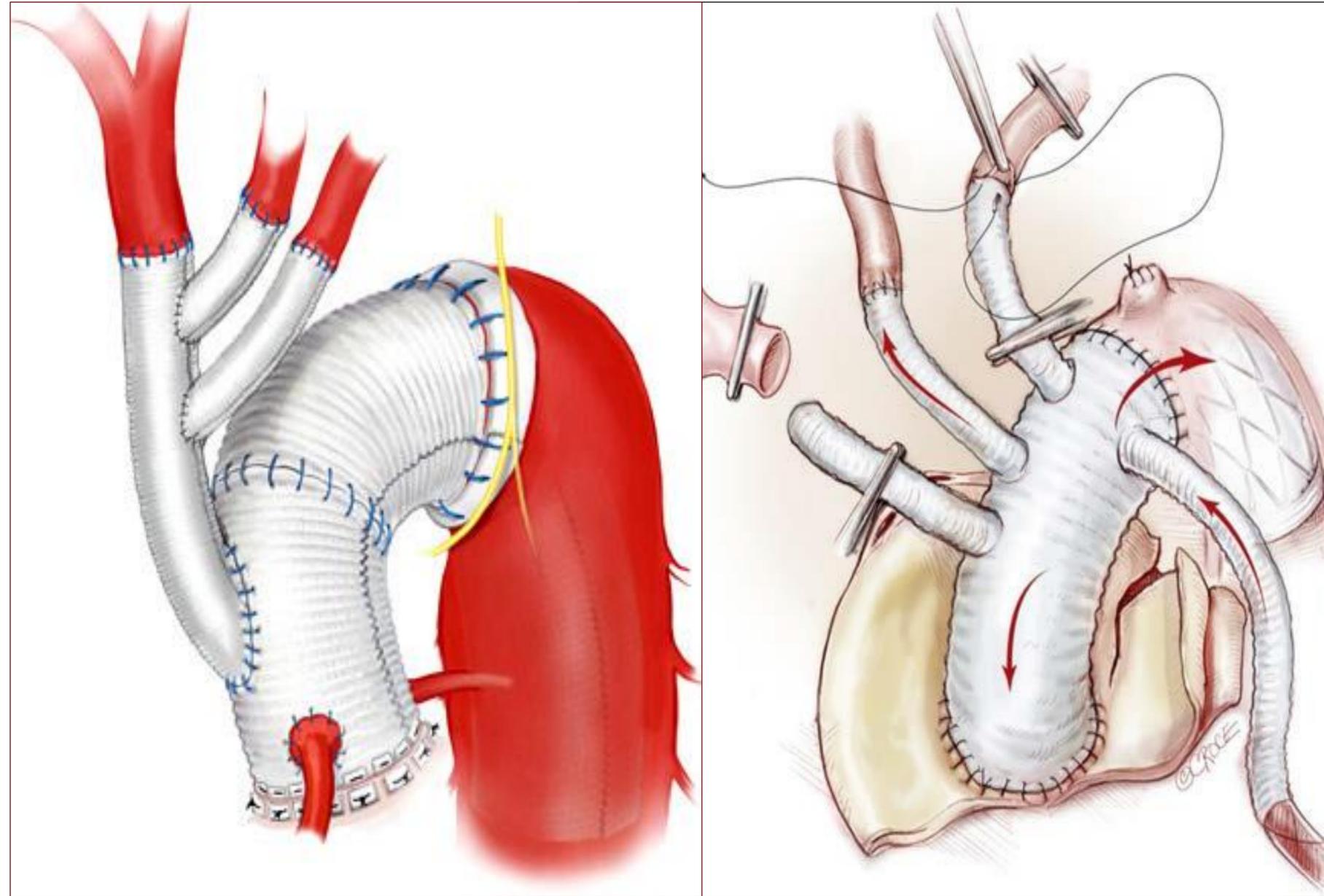
- Consultant and proctor for Edwards Lifesciences
- Institutional grant/research support from Edwards Lifesciences
- Institutional grant/research support from Medtronic

Background

- **Surgical arch replacement** is the standard of care
 - Sternotomy, CPB, aortic X-clamp, cardioplegia, circulatory arrest...
 - ± Elephant trunk
- **TEVAR for the descending aorta** is an established technique
 - TF access
 - For aneurysms, rupture and type B dissections
- **TEVAR for the arch** is a promising technique
 - Performed in high-risk (redo) patients
 - New techniques: laser, custom-made endoprosthesis, debranching...

1. Aortic arch surgery

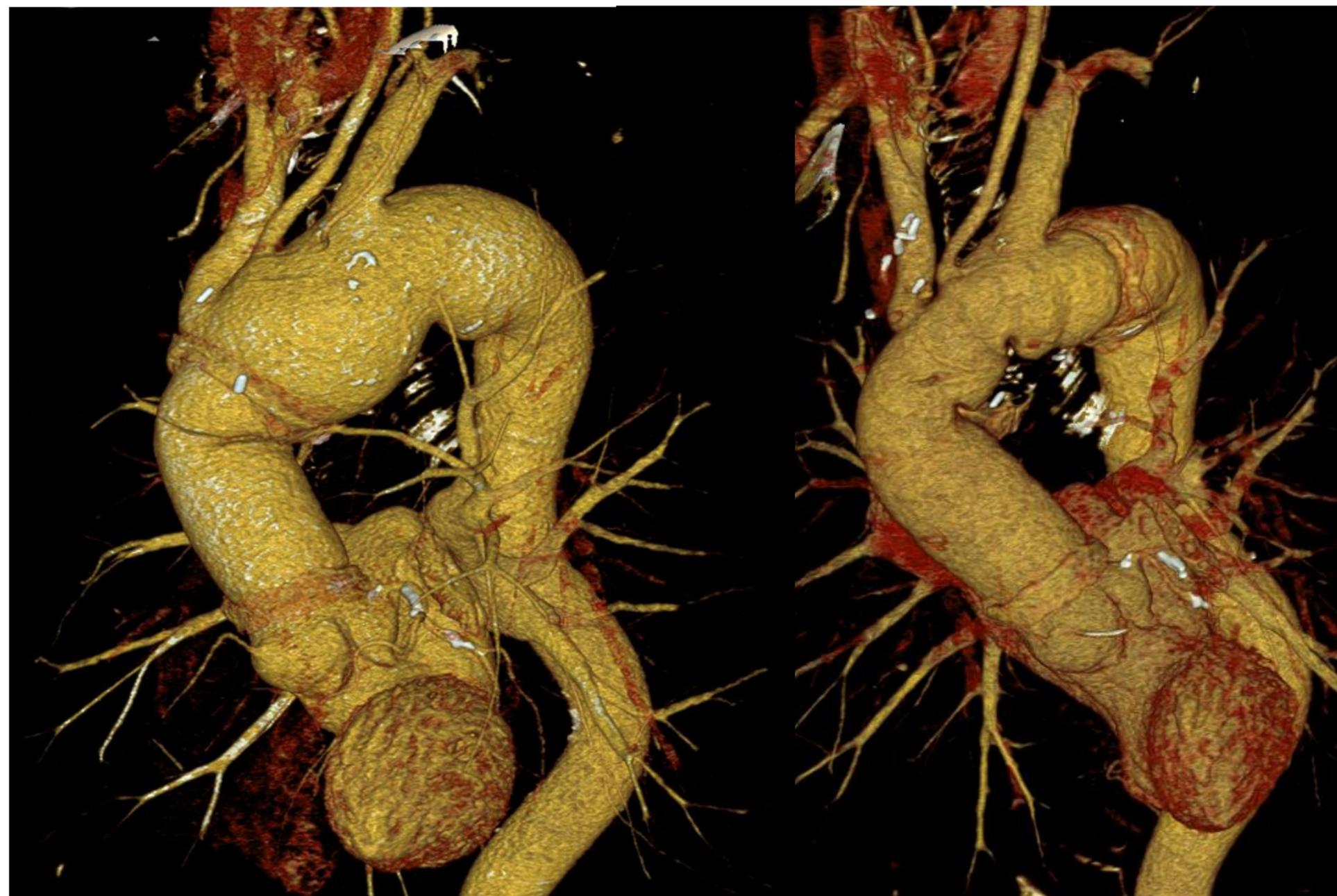
- Gold standard technique
- CPB, aortic X-clamp, cardioplegia, hypothermia (25-28°C), circulatory arrest, cerebral perfusion
- Use of vascular grafts ± side branches and CPB inflow
- Elephant trunk (frozen)



1. Surgical arch and elephant trunk

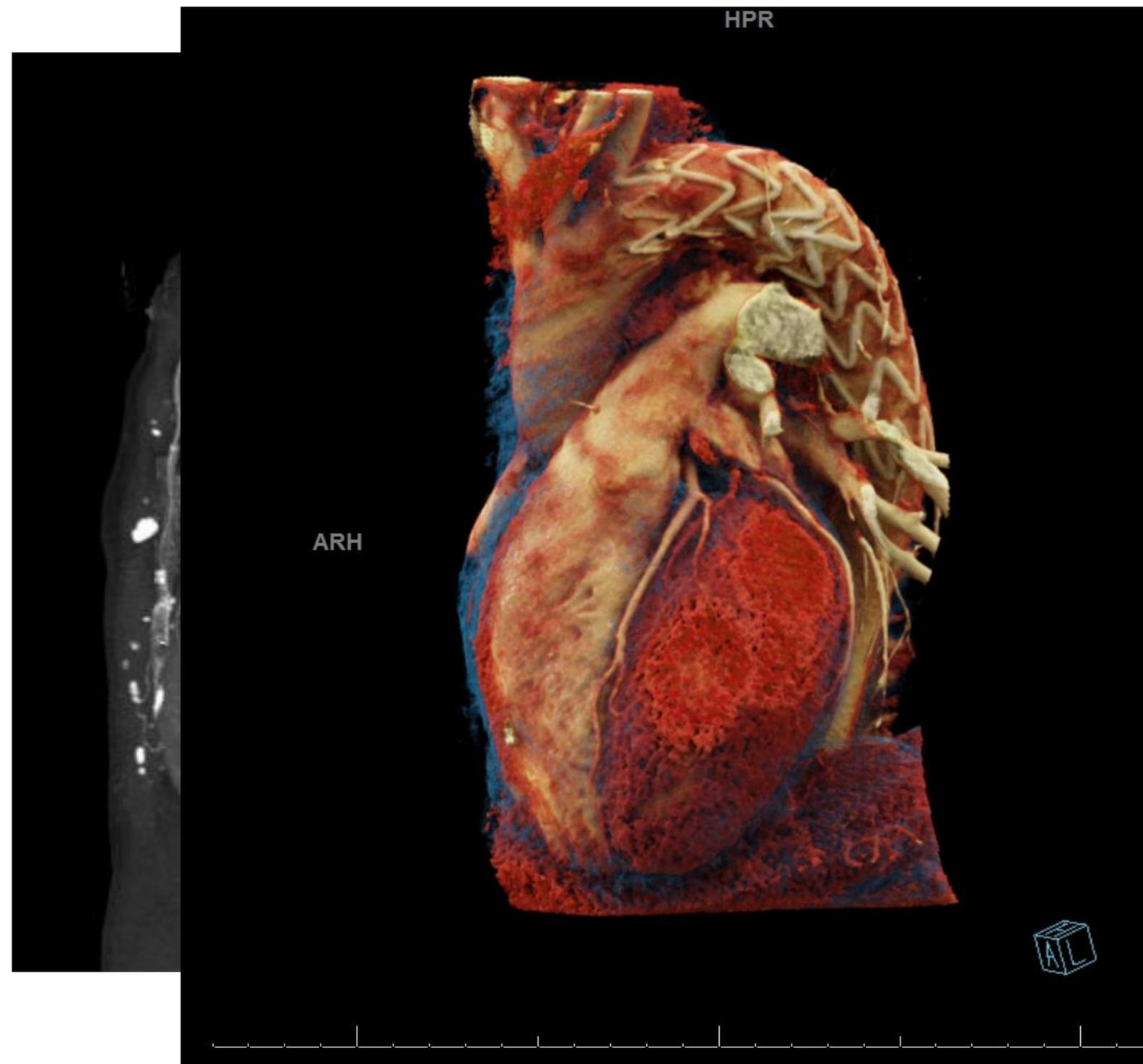
Case report

- 64 years-old man
- 2014: ascending aorta replacement
- Arch diameter increased of 4mm (54mm) at CT-scan
- Redo surgery: 28°C arrest and standard elephant trunk

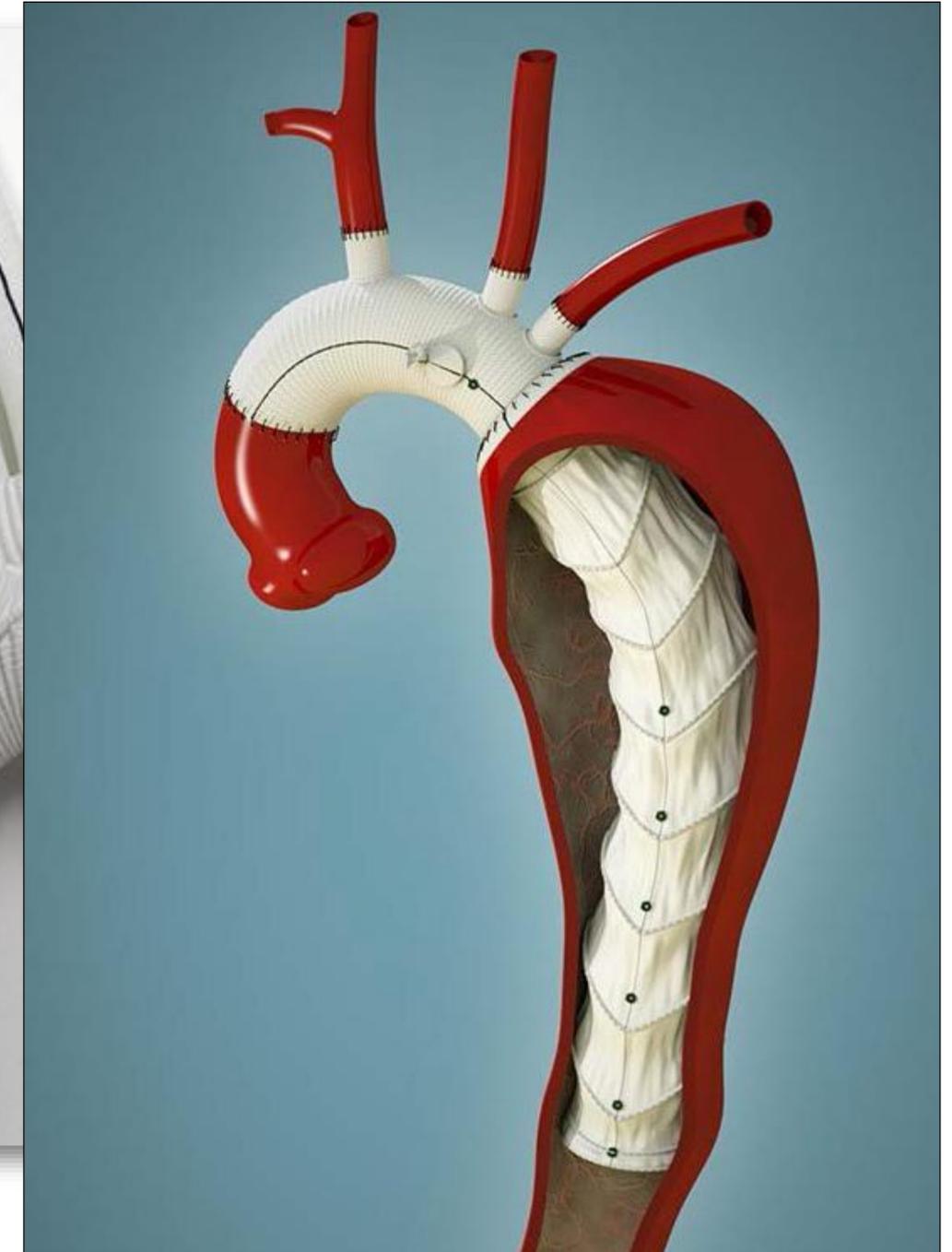
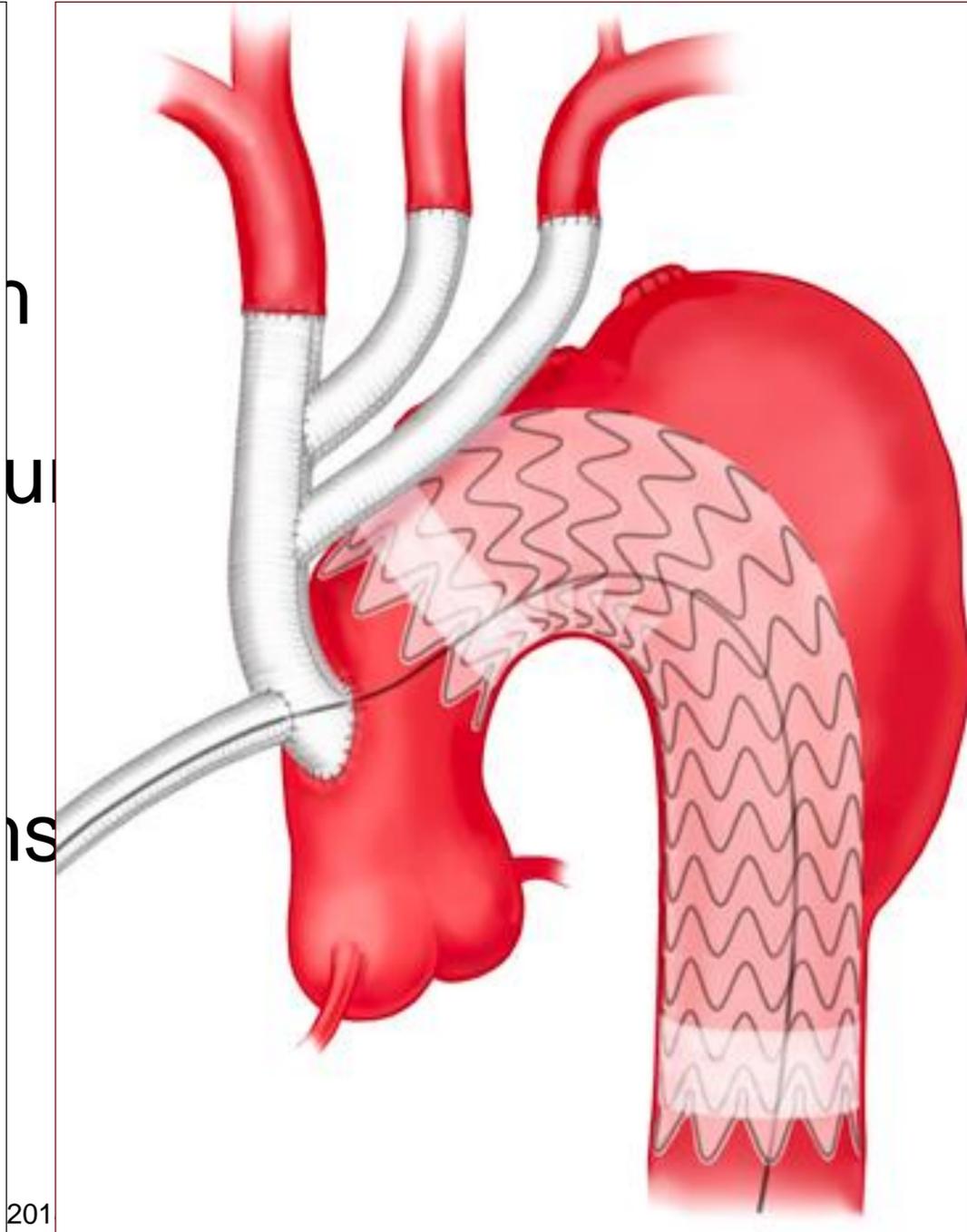
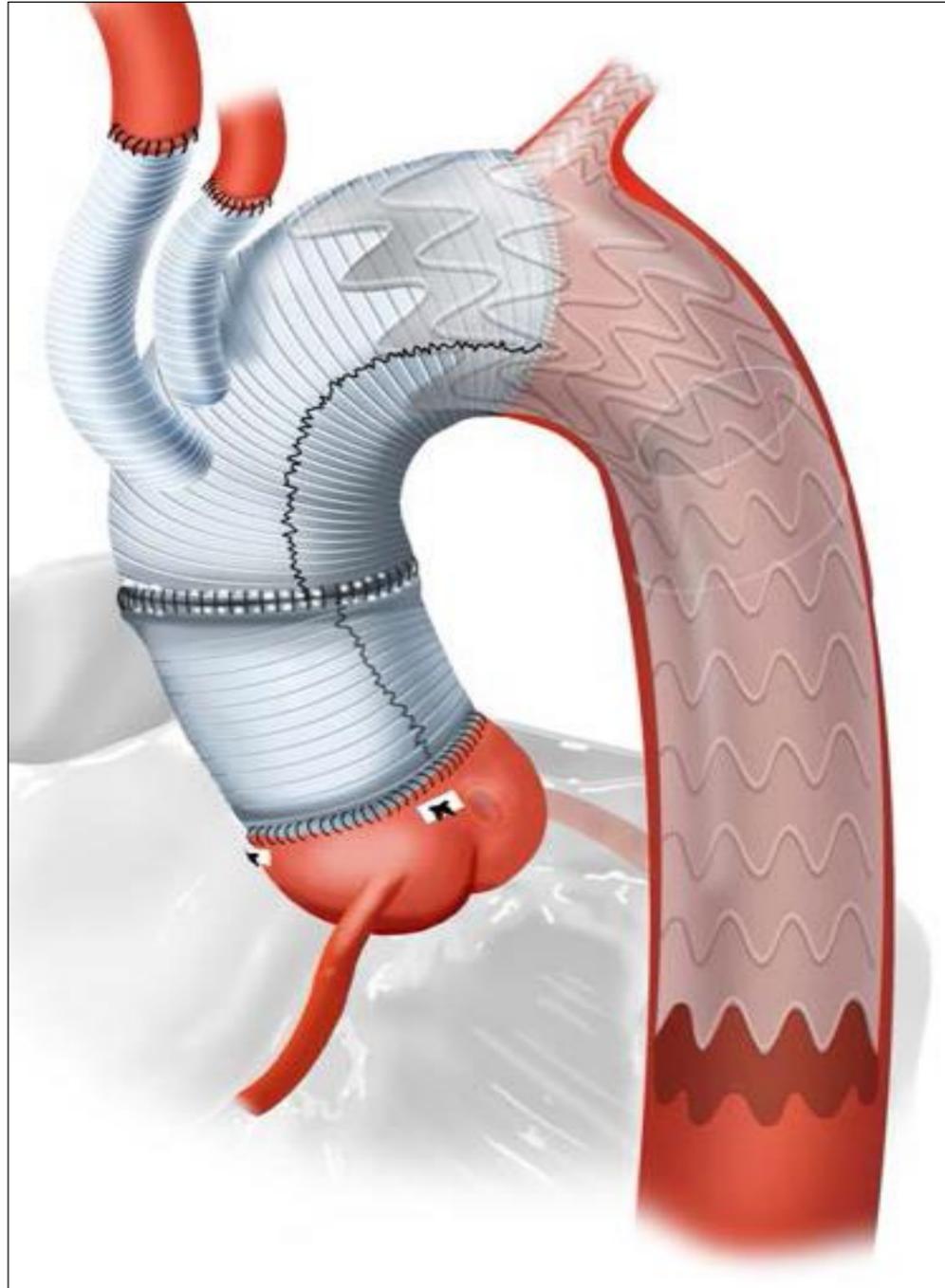


2. TEVAR for descending aorta

- New gold standard for descending aorta (rupture, PAU, Type-B, aneurisms)
- 2nd step in elephant trunk
- Surgical femoral access
- Standard endoprosthesis (size on CT)
- Risk of paraplegia (!)



3. Arch surgery + TEVAR



4. Debranching + TEVAR for the arch

Challenging for proximal arch TEVAR

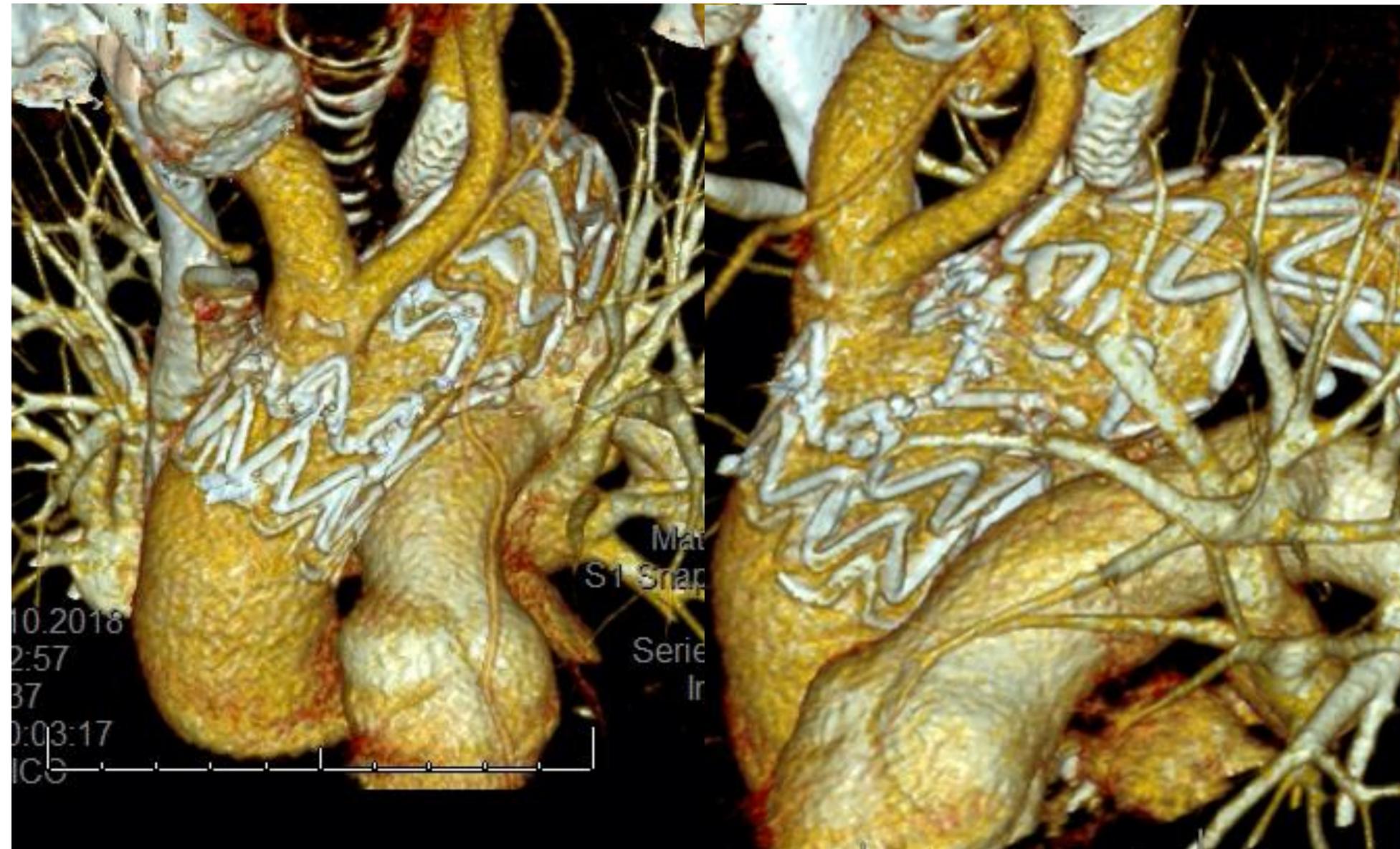
- Anatomy / morphology / curved aorta
- Supra-aortic branches
- Specifically designed TEVAR devices with side-branches or laser
- Hybrid skills and multidisciplinary team



4. Laser cut + custom-made endograft

Case report

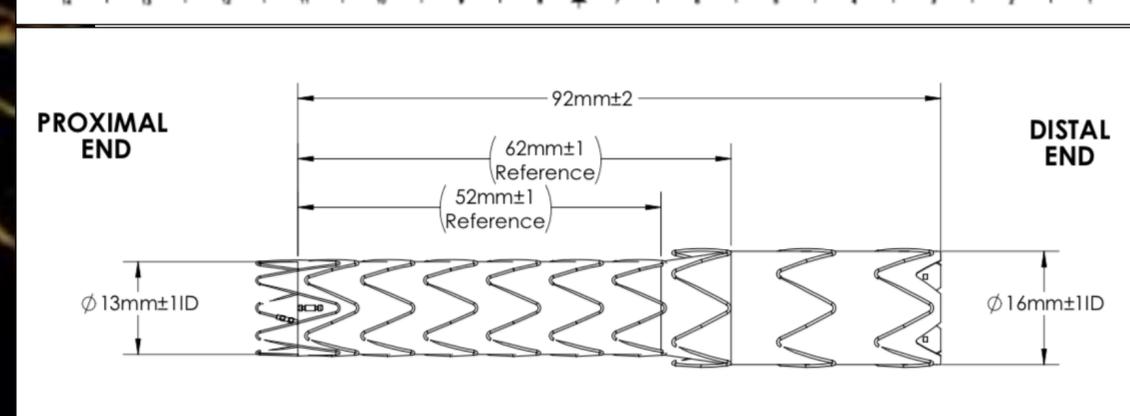
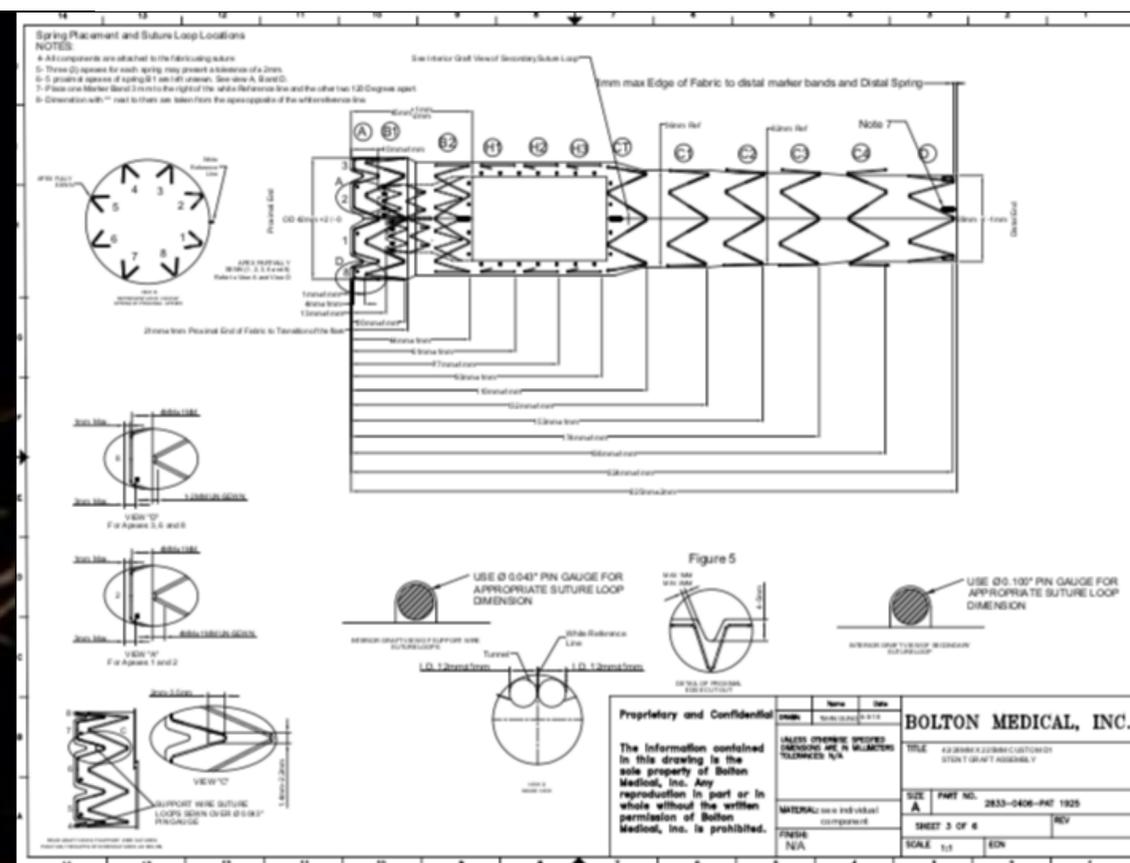
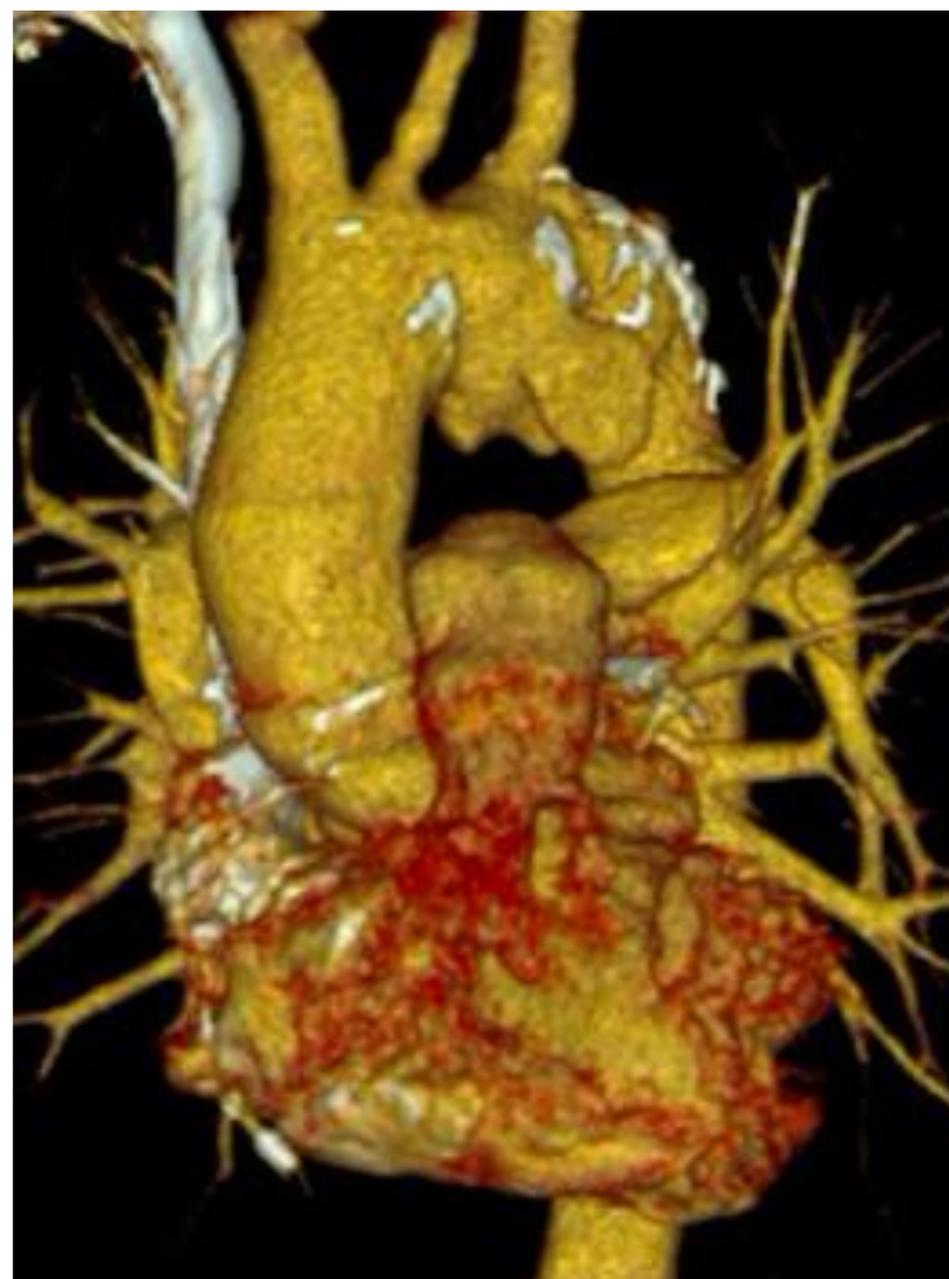
- 79 years-old man
- CAD, COPD
- Aortic arch aneurysm
- Custom-made fenestrated endograft (Bolton Relay) + laser cut from the left subclavian artery and stenting



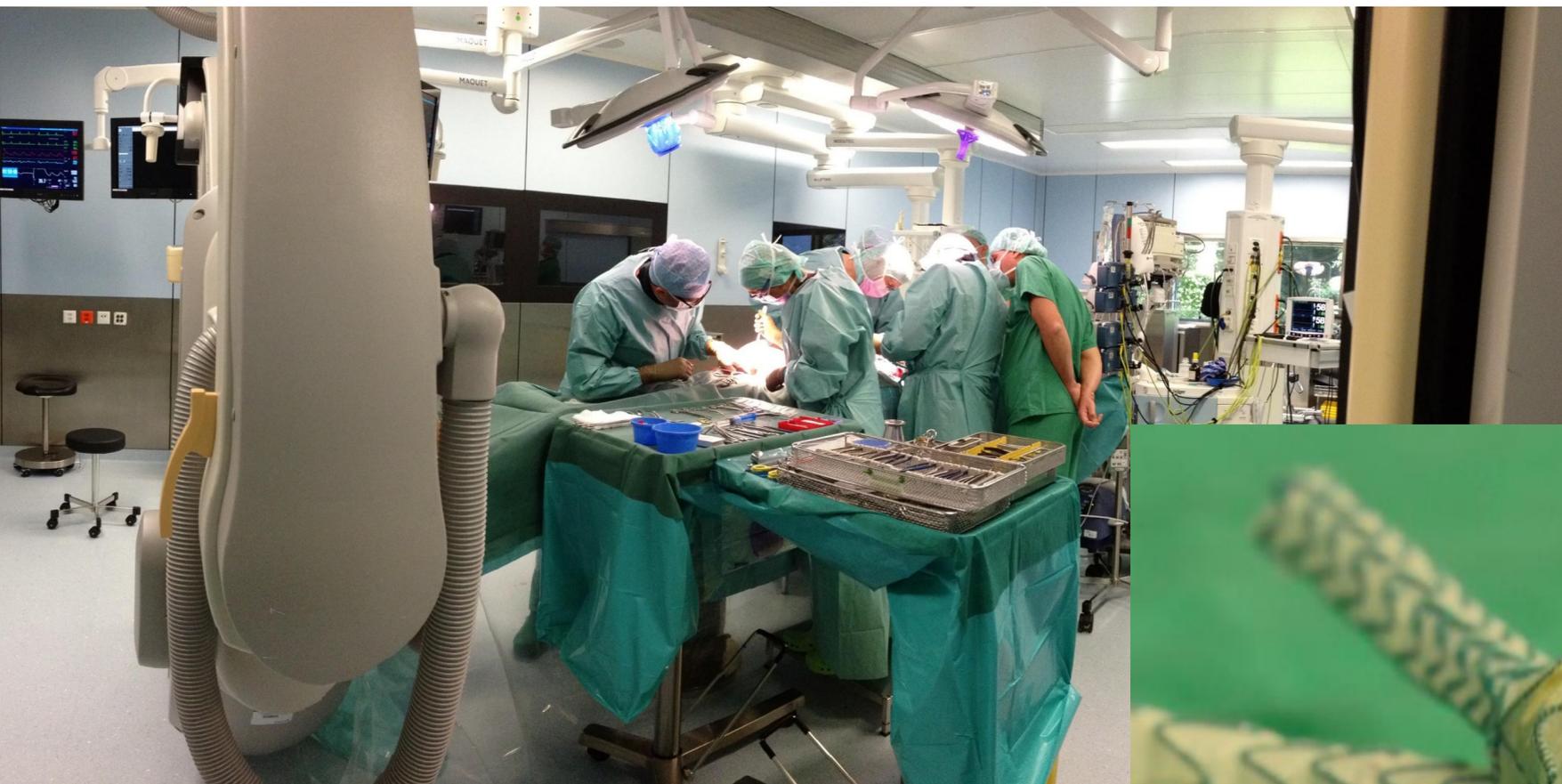
4. Debranching + new endografts

Case report

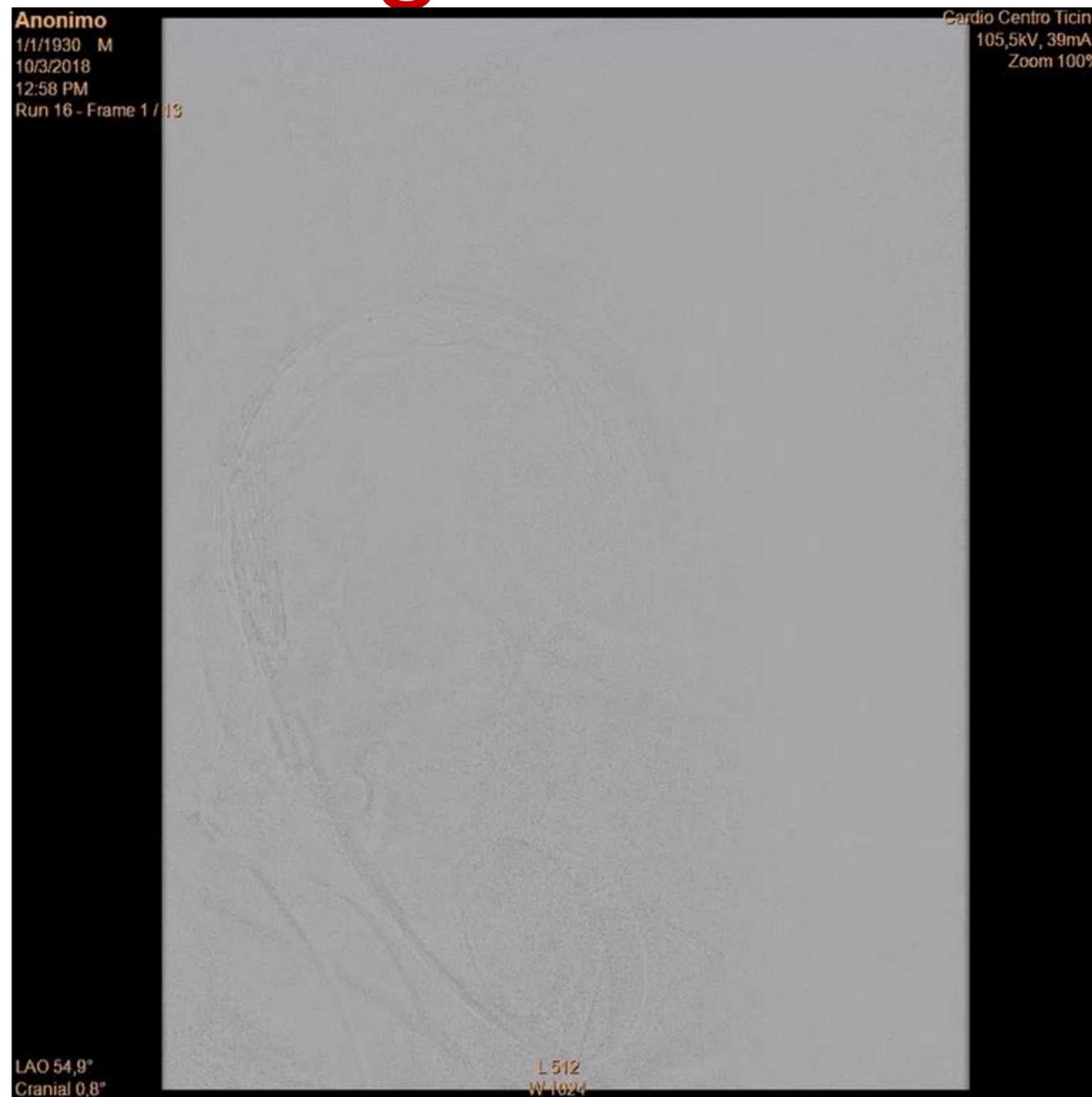
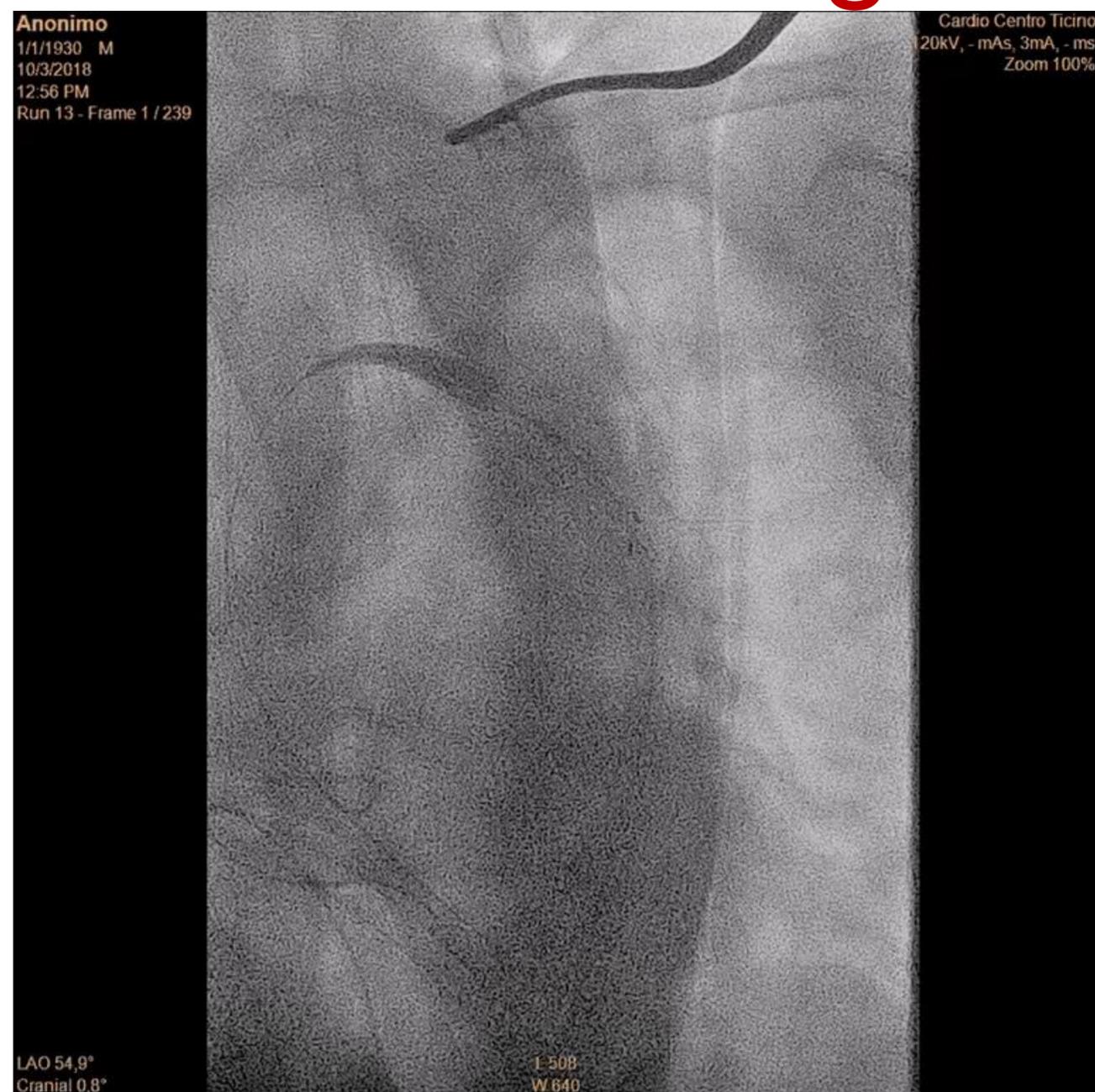
- 84 years-old man
- Aortic arch aneurysm
- Left carotid-subclavian bypass surgery
- 3 endografts (access: carotids and femoral)
- 1st case in Switzerland



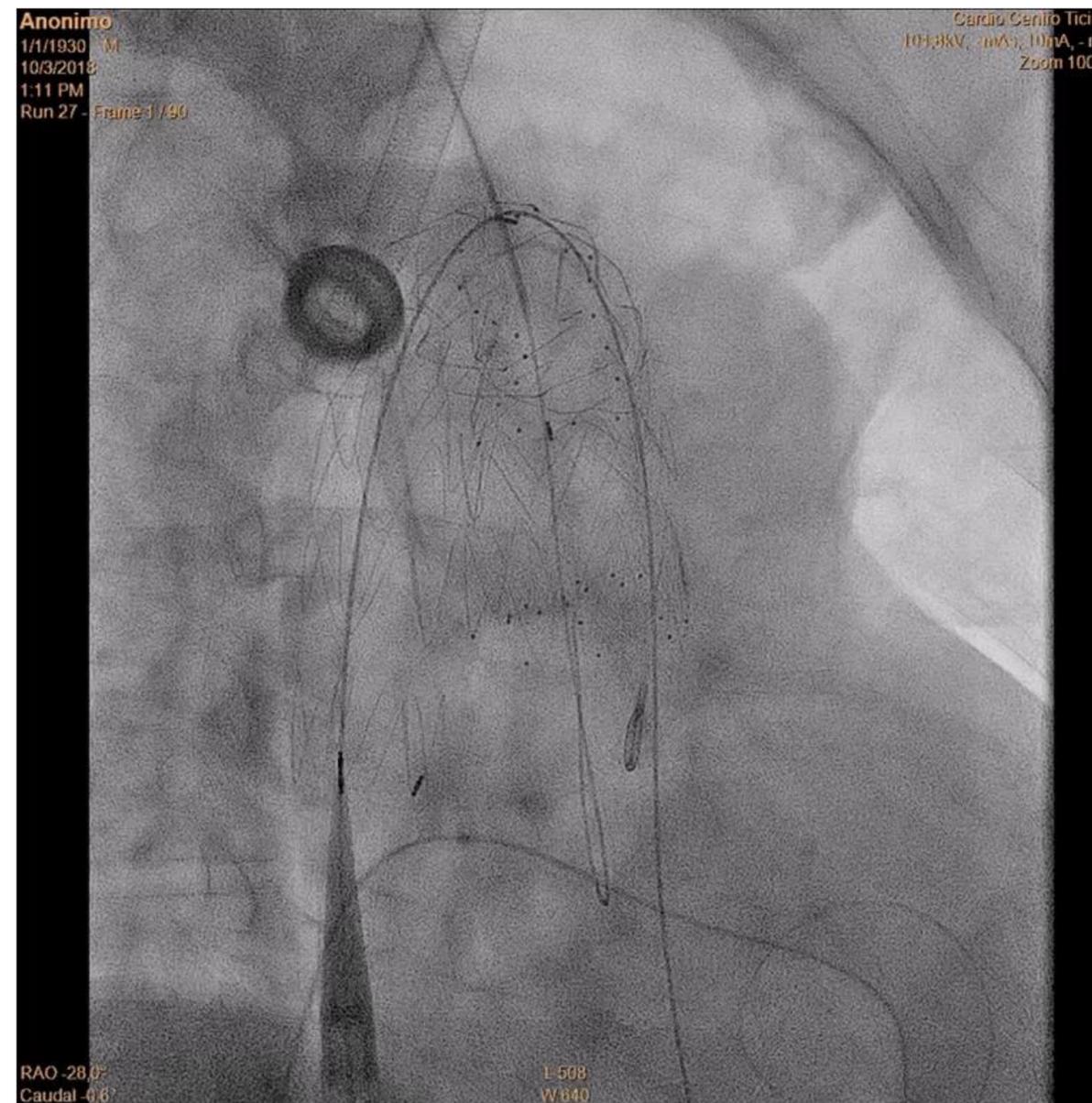
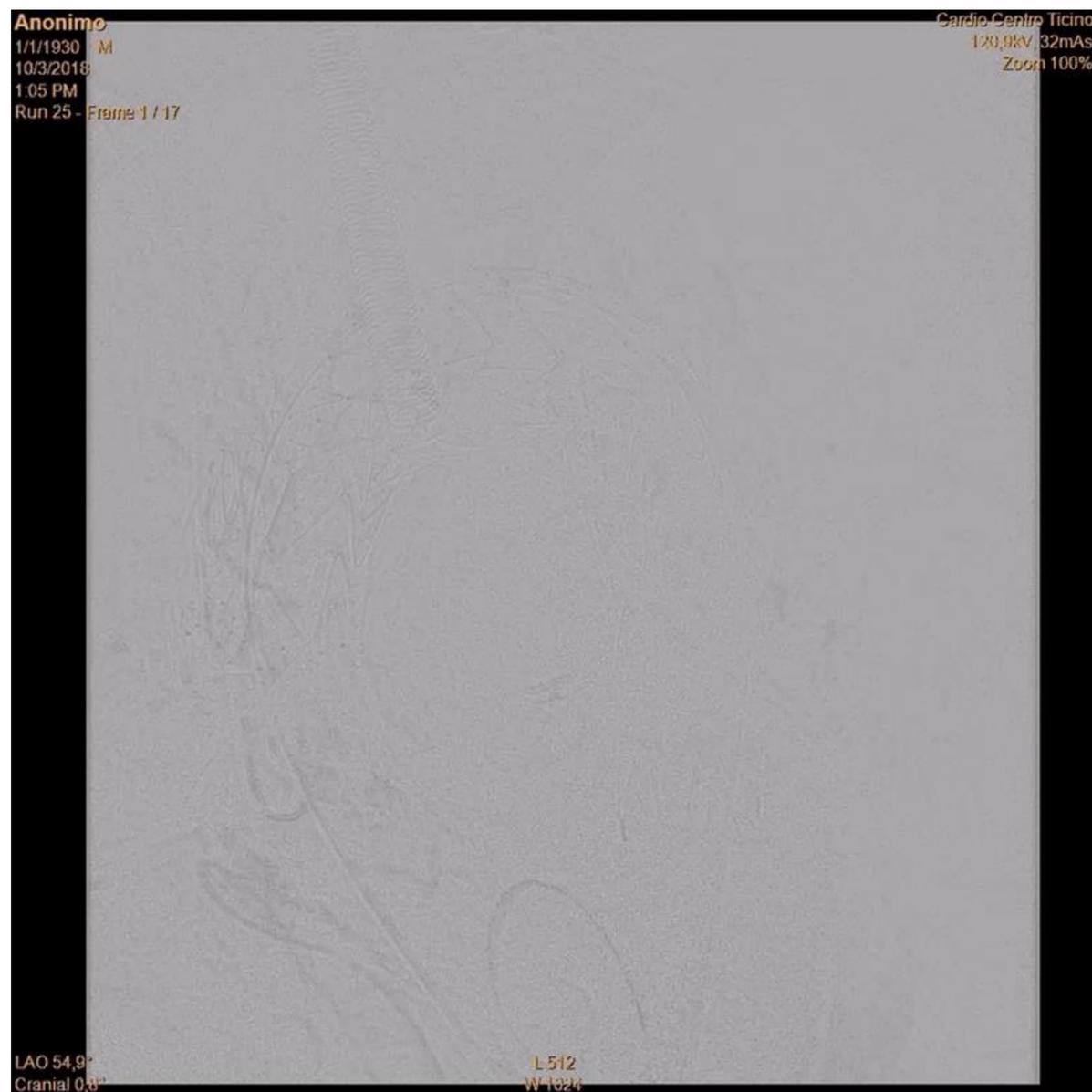
4. Debranching + new endografts



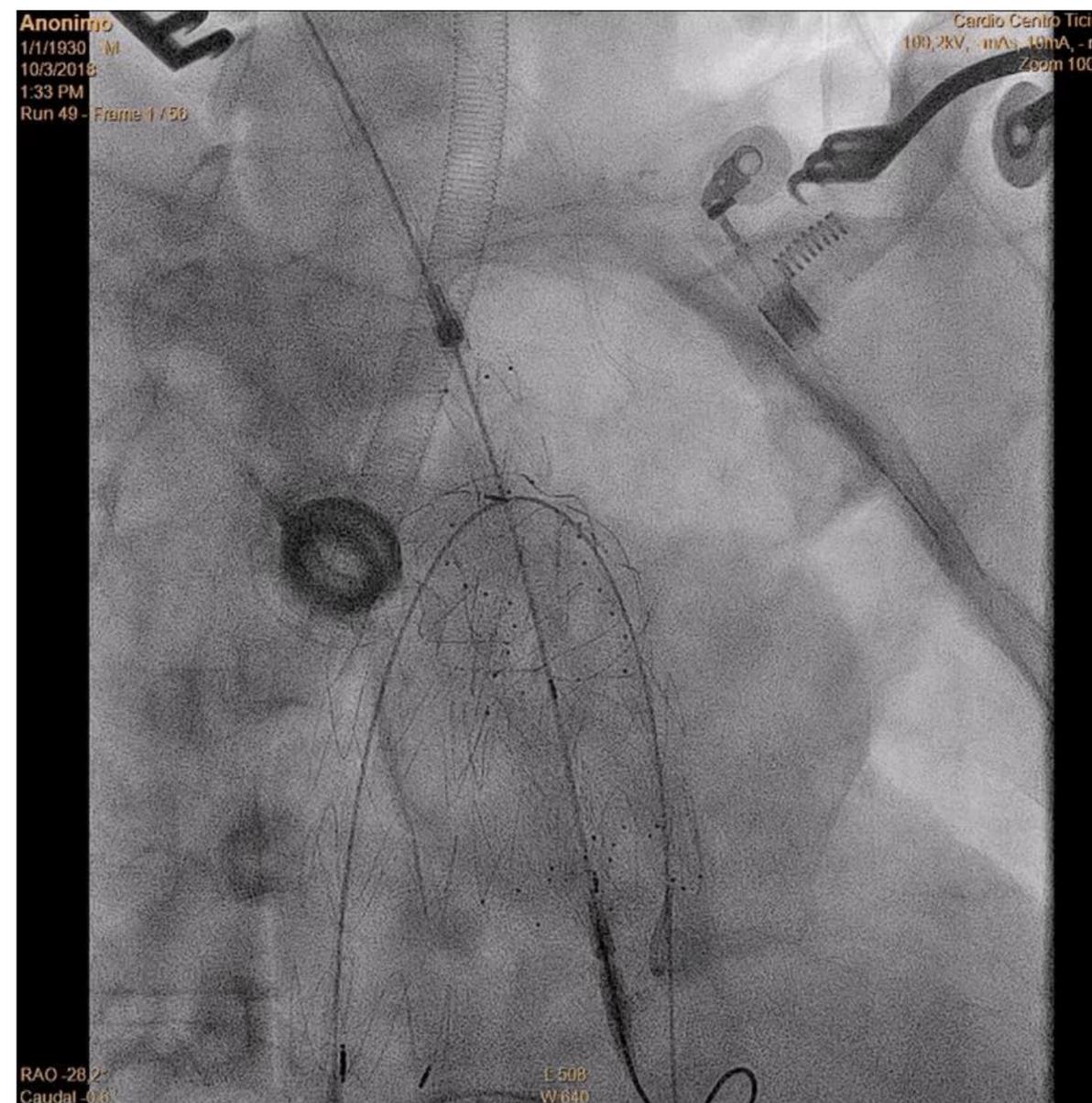
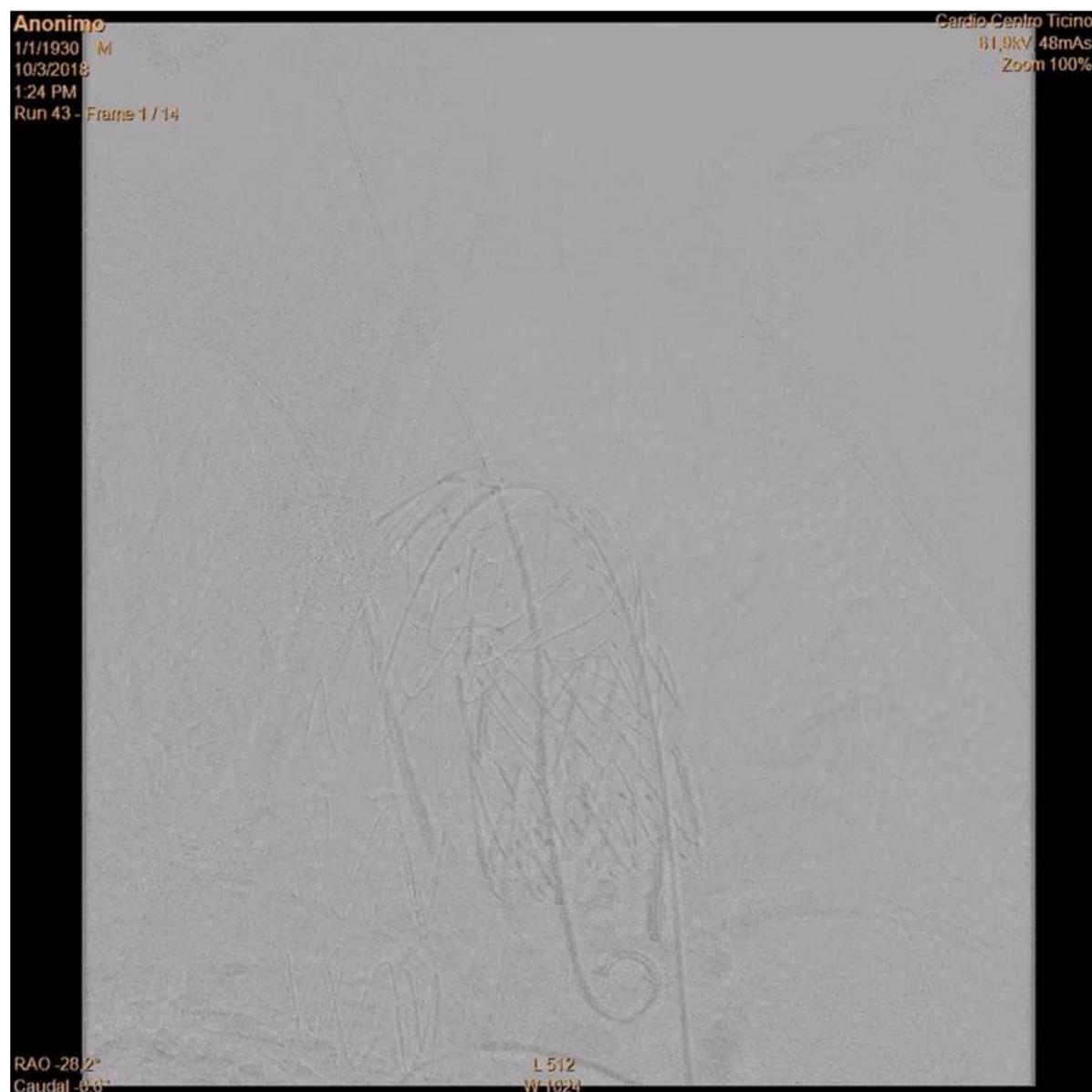
4. Debranching + new endografts



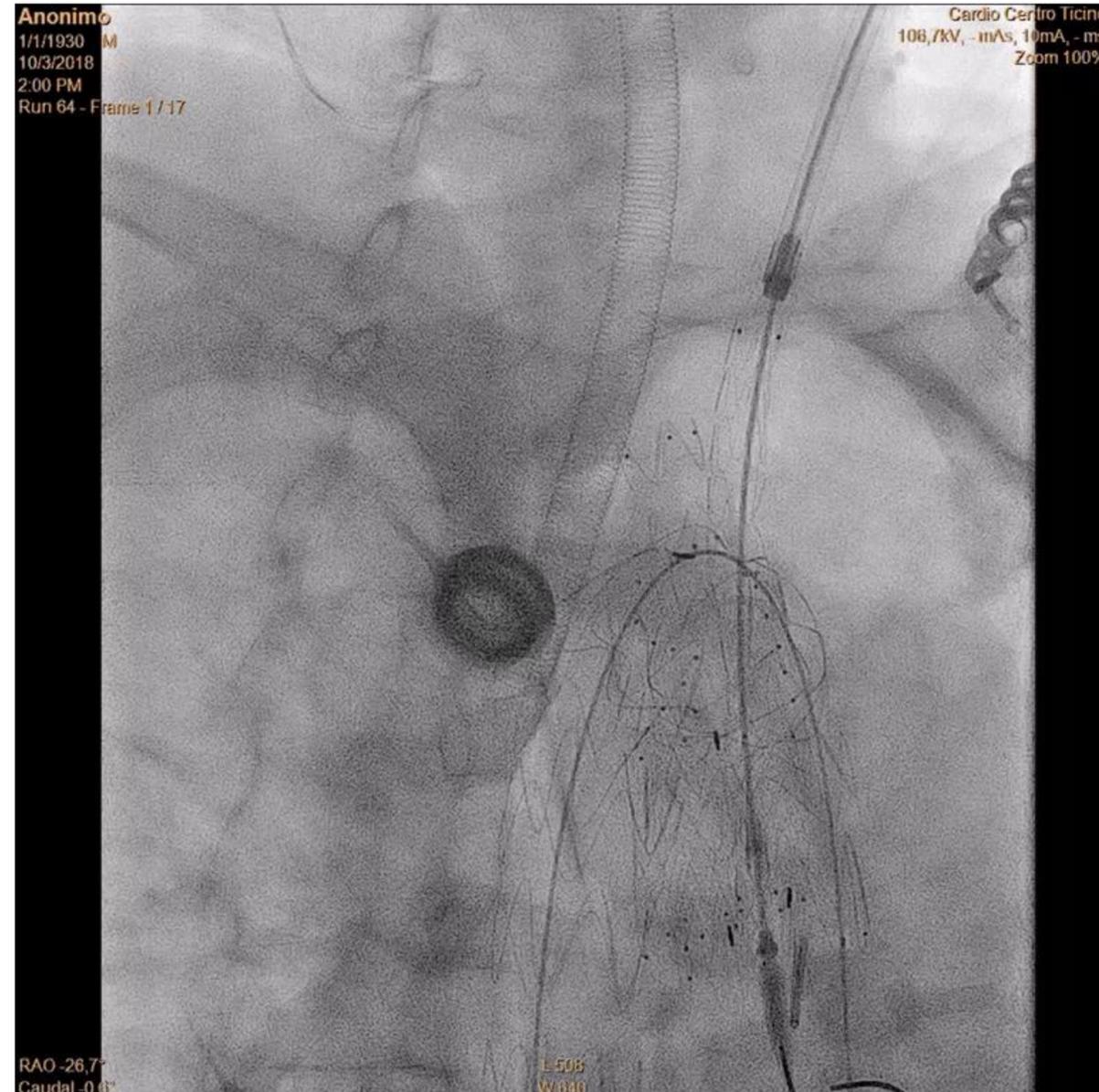
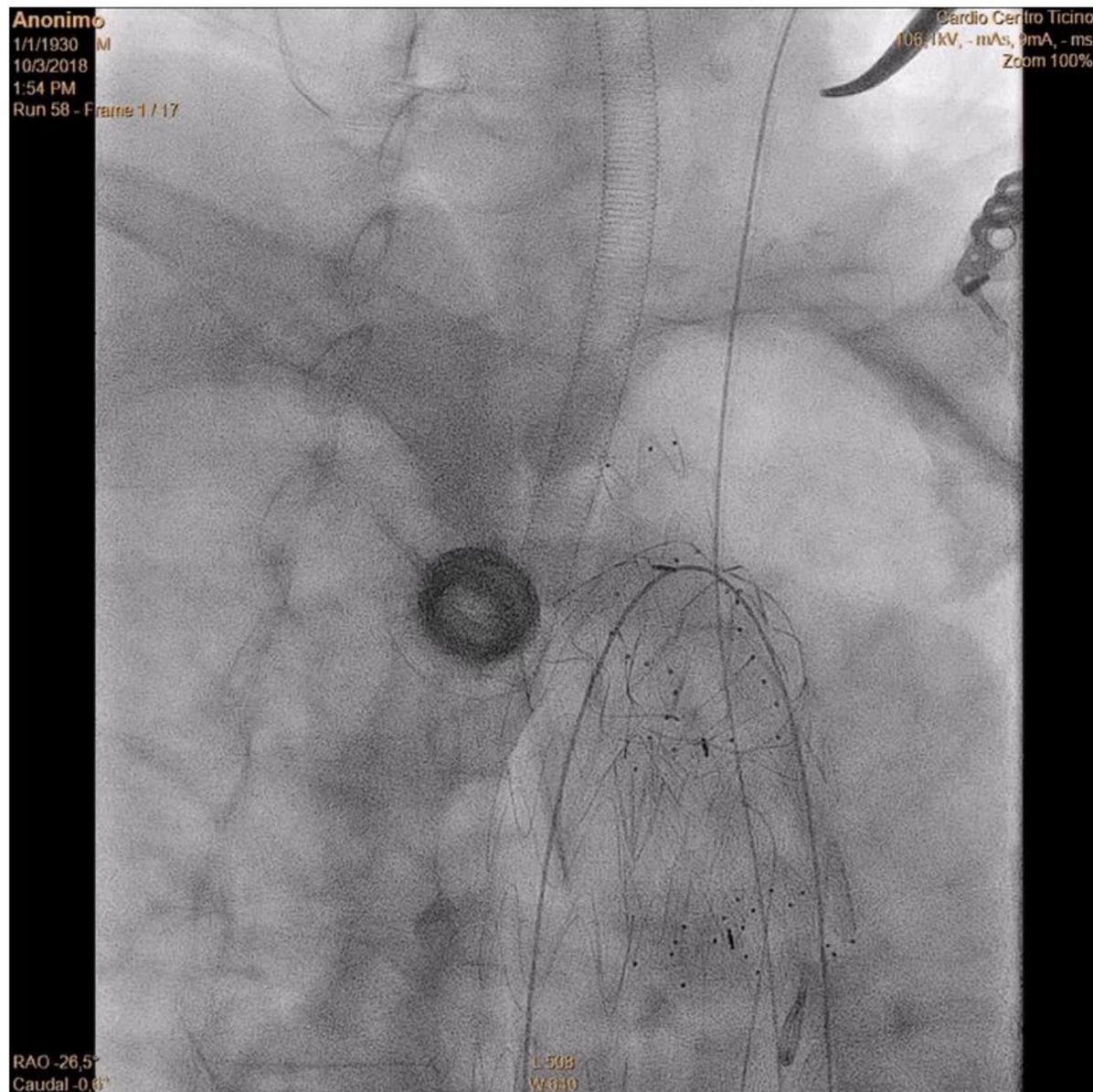
4. Debranching + new endografts



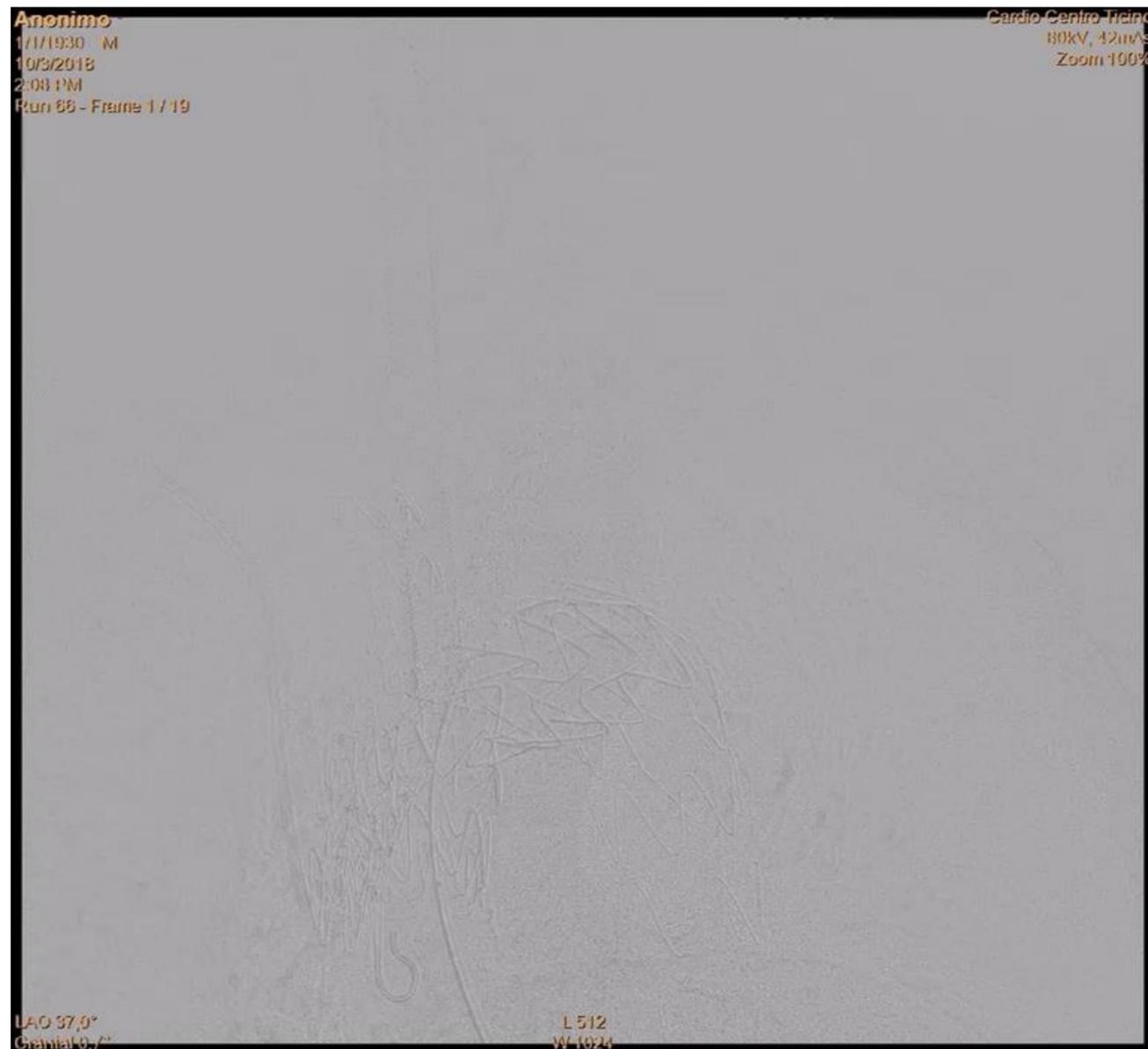
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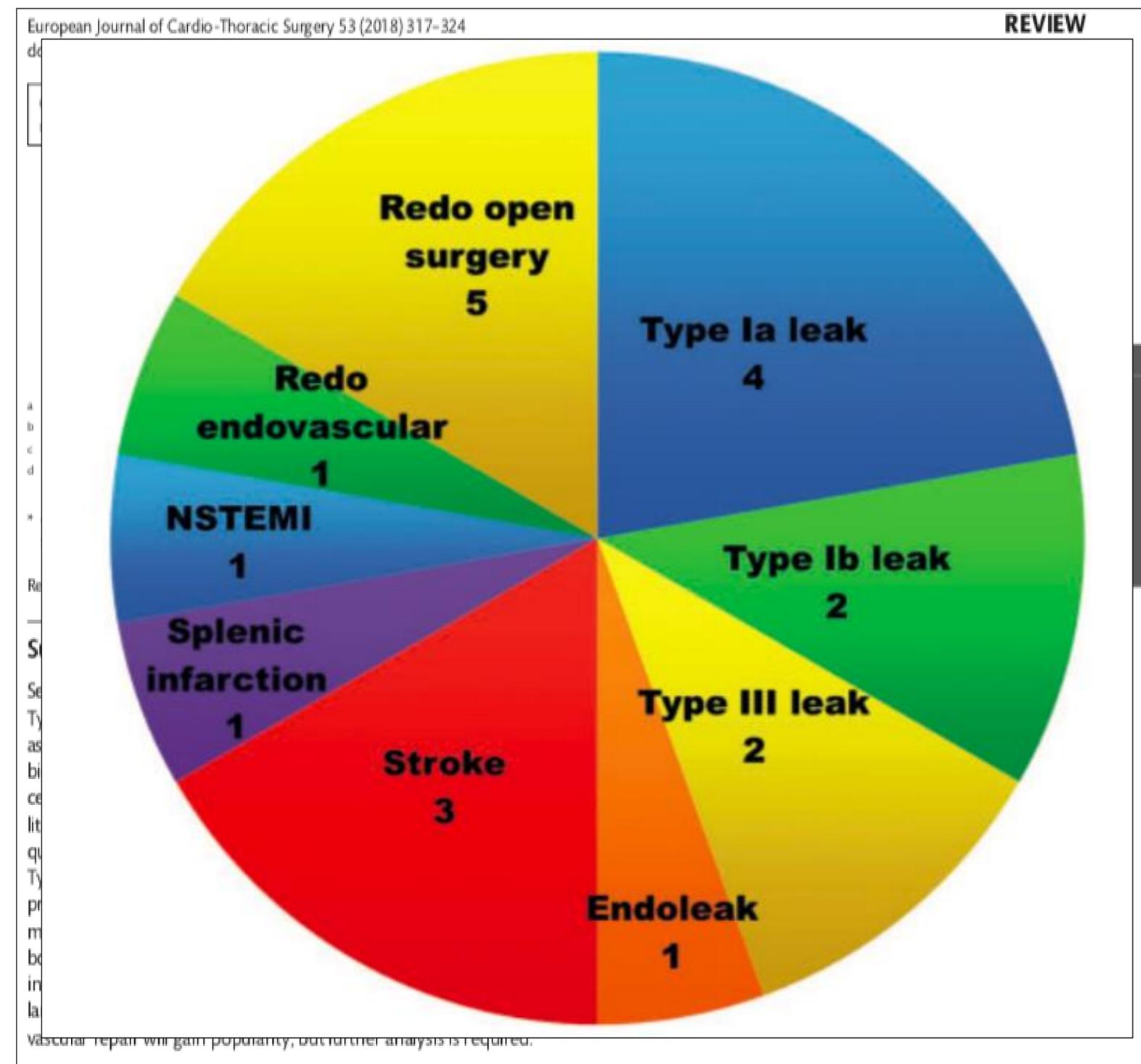
Discussion (TEVAR vs Surgery in Arch)

- TEVAR in the arch has lower risk of paraplegia vs thoracic TEVAR
- Challenging bilateral carotid (or subclavian) surgical access
- Risk of stroke (!)
- CT-scan based endograft sizing and graft-tailoring
- Hybrid room, catheter skills and multidisciplinary team are strongly required

Future steps?

Zone zero (ascending aorta)

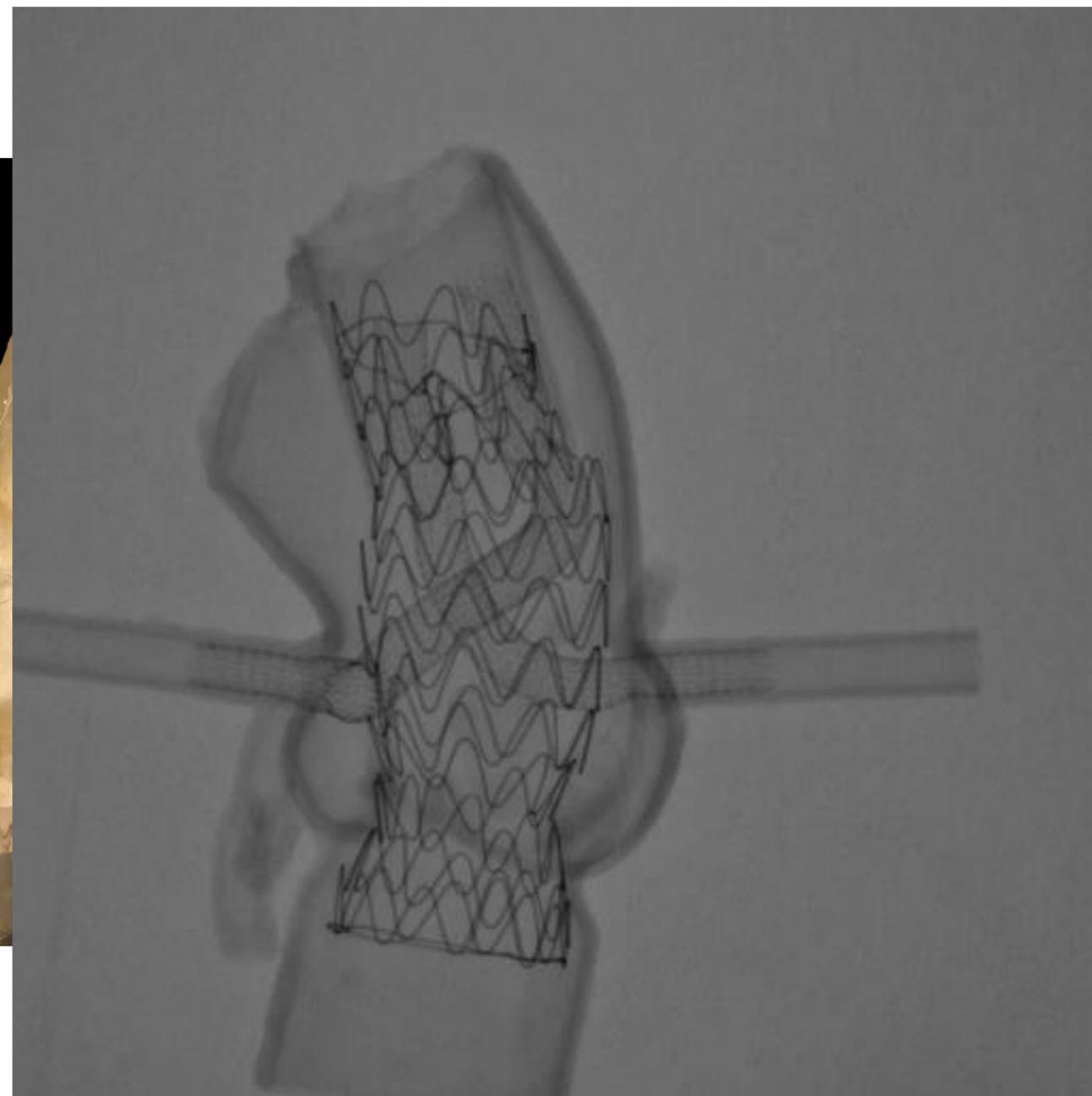
- Review of 67 published cases (all high-risk or inoperable patients)
- Early mortality rate 2.9%
- Thoracic endgrafts are not ideal for the ascending aorta



Future steps?

Transcatheter Aortic Root Replacement (TARR)

- Laboratory
- 3D printed root
- Chimney-graft technique
- Presented at ISMICS 2018



Conclusions

- Standard aortic arch surgery is challenging but guarantees good and reliable results in standard patients.
- TEVAR + debranching is a promising and improving technique indicated in high-risk patients or redo cases (selection).
- New endografts and multidisciplinary Vascular-Teams will be the key for the success of TEVAR in the arch (and all aorta).

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THANK YOU

