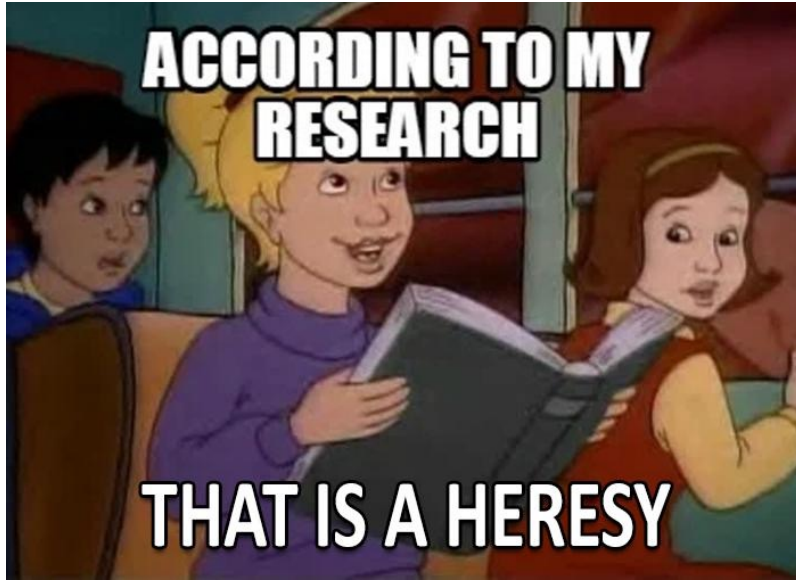


Technical Considerations When Using Stent Grafts



Peter Rossi, MD, FACS, DFSVS

Professor of Surgery, Radiology and Orthopedic Surgery

Chief, Division of Vascular and Endovascular Surgery

Medical Director, Froedtert/MCW Aortic Program

Department of Surgery, Medical College of Wisconsin

Disclosures

Consultant/speaker board: Cook Medical, Gore Medical, Atricare, Shockwave

Research funding: Gore Medical, Terumo Aortic, Endologix, Atricare

DSMB: Endospan

All payments go to division slush fund, not to me personally (but I get to pay taxes on them which is awesome)

Objectives

- General considerations
- Access site considerations
- Proximal fixation
- Work down from arch to groins
- How to plan for the future – failing forward

**...is discuss whether EVAR/TEVAR is safe it patients with genetic aortopathies!
That would be it's own symposium!**

Downloaded from jamanetwork.com by Medical College of Wisconsin user on 09/30/2025

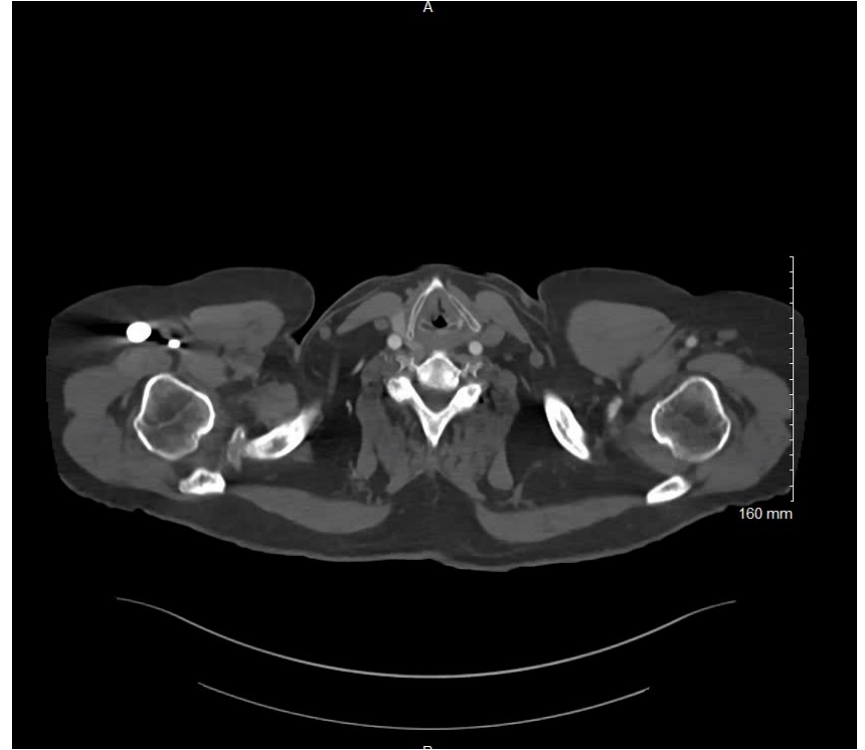
General Considerations

- Assume degeneration at edges of stent graft will happen at some point
 - This applies to aorta and to peripheral vessels
- Oversize less than 10%
- Balloon dilation only when absolutely necessary
 - Sealing in previous graft
 - Opening dissection flap
- Underlying pathology
 - Endovascular management safer in MFS and LDS than in EDS
 - Phenotype considerations and individual surgical history

Aortic Arch

- Previous surgery – landing in existing grafts
- Creating a landing zone for future open work
- Proximal landing zone
 - Dacron graft v FET
 - Arch vessel anatomy
 - Underlying CTD pathology
 - What happens next – and what is the bailout?
- Distal landing zone
 - What happens if they degenerate?
 - Septal fenestration to assure distal seal if needed

52 M Marfan Syndrome – total arch + FET



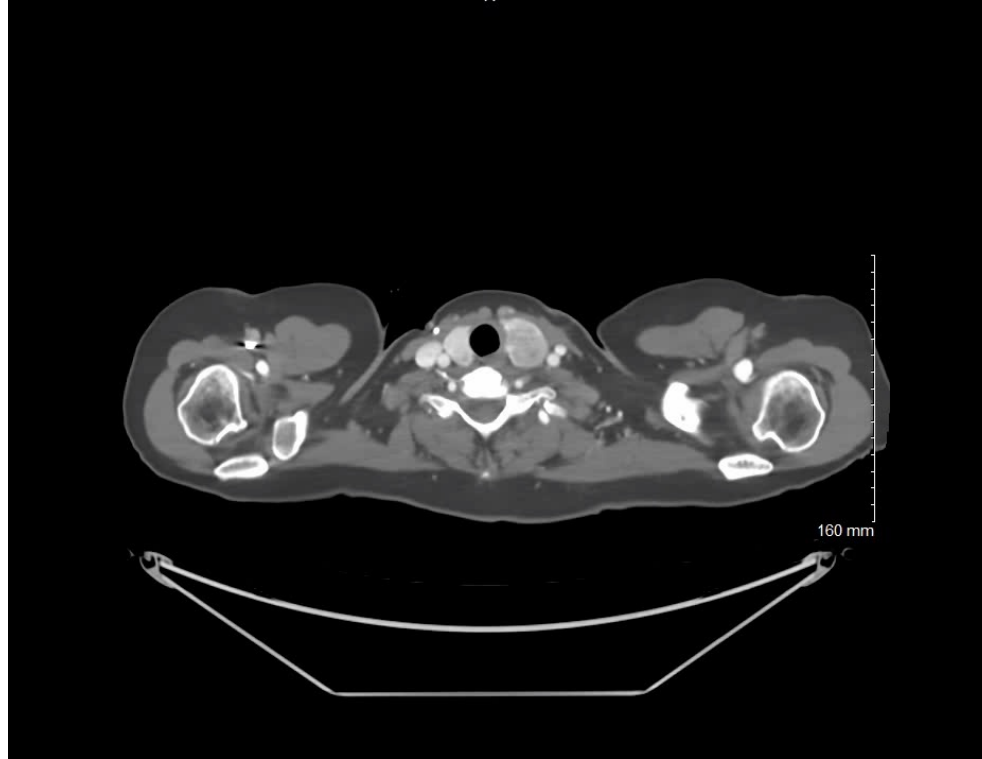
52M Marfan Syndrome – total arch + FET

- Complete remodeling of zones 3 and 4
- Stent sized to total aortic diameter zone 4
- Sometimes better accomplished by good old-fashioned FET rather than by hybrid arch grafts (Thoraflex)
- Fenestrate proximal septum but be sure of the true lumen location
- Externalizing a wire from the groin (TEE guidance) can be helpful for complex dissections – place device antegrade over wire from open arch
- If distal is dicey – reverse FET (either same day or day before)

39F Marfan Syndrome – fancy RFET

- Two previous sternotomies
- Hemorrhagic stroke from ruptured distal ICA aneurysm with good recovery
- Pectus excavatum
- Open DTAA repair and open TAA repair as separate operations (two prior left thoracotomies)
- Enlarging arch aneurysm for several years
- Complete recovery after CVA

39F Marfan Syndrome

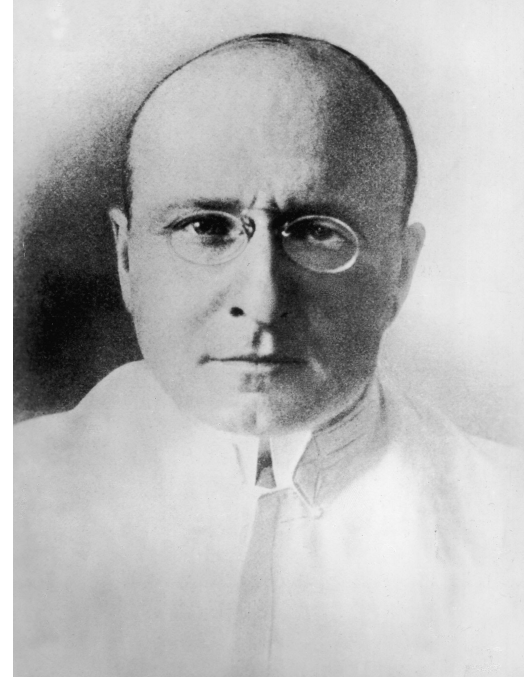


39F Marfan Syndrome

- **Considerations?**
 - 1. Two sternotomies, two thoracotomies
 - 2. Difficult distal exposure for open total arch
 - 3. Endo options limited
 - Arch debranching with zone 0 TEVAR/TBE – size mismatch
 - Degenerated Carrel patch

Alexis Carrel

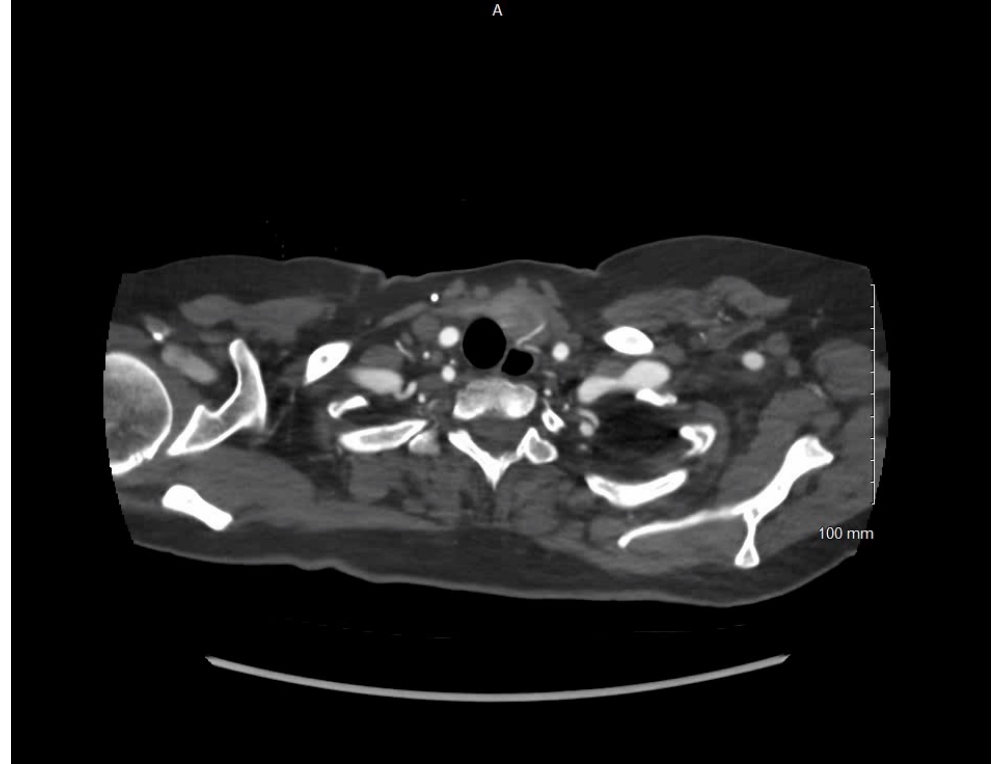
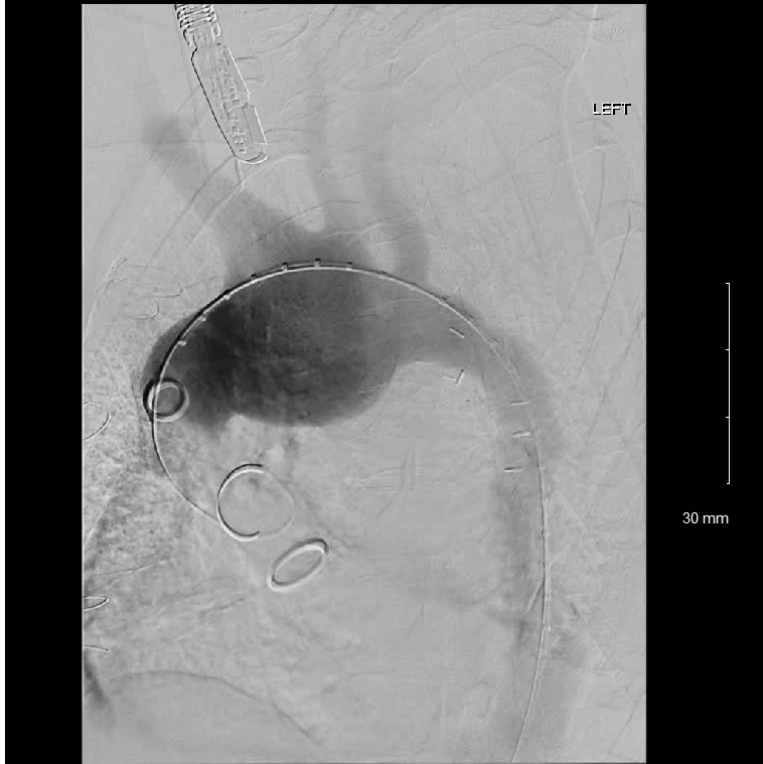
- Nobel prize in 1912 for three-point blood vessel anastomosis
- Sadi Carnot (1894)
- The Carrel patch: a great idea; except in CTD!
- Fail forward
- End-to-end for viscerals/renals to avoid abnormal aorta with risk for future degeneration



39F Marfan Syndrome

- Leave at least 4cm proximal/distal for future endo if needed
- Now what?
- Create a distal landing zone for open total arch replacement
- How?
- A really crappy TBE might do it....

39F Marfan Syndrome



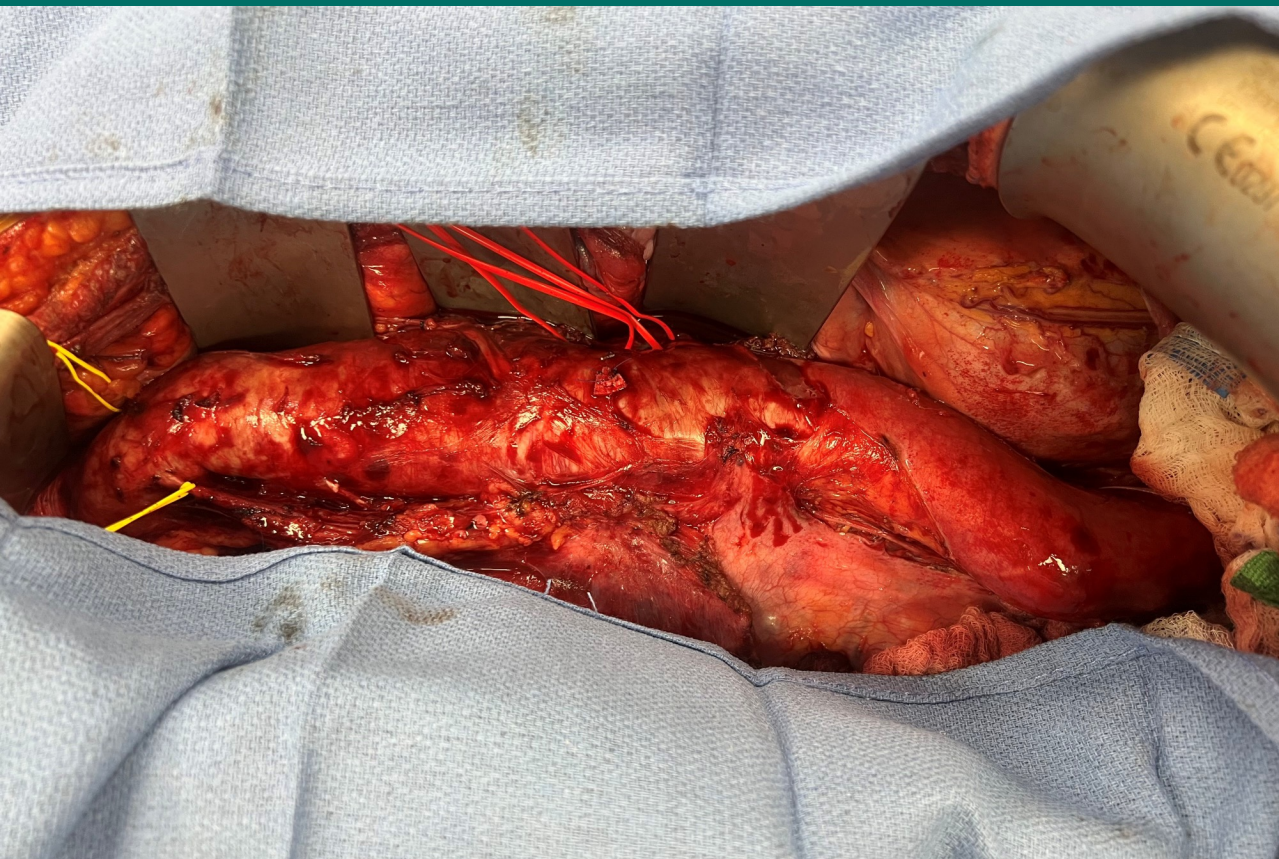
39F Marfan Syndrome

- **Considerations?**
 - 1. Two sternotomies, two thoracotomies
 - 2. Difficult distal exposure for open total arch
 - 3. Endo options limited
 - Arch debranching with zone 0 TEVAR/TBE – size mismatch
 - Degenerated Carrel patch
- TBE created a distal sewing ring for total arch – sized to DTA.
- Really good cardiac surgeon (who initially said this was overkill): “If that thing hadn’t been there, she would be dead”
- In hospital for 6 days after total arch with excellent recovery and no complications

Distal landing zone?





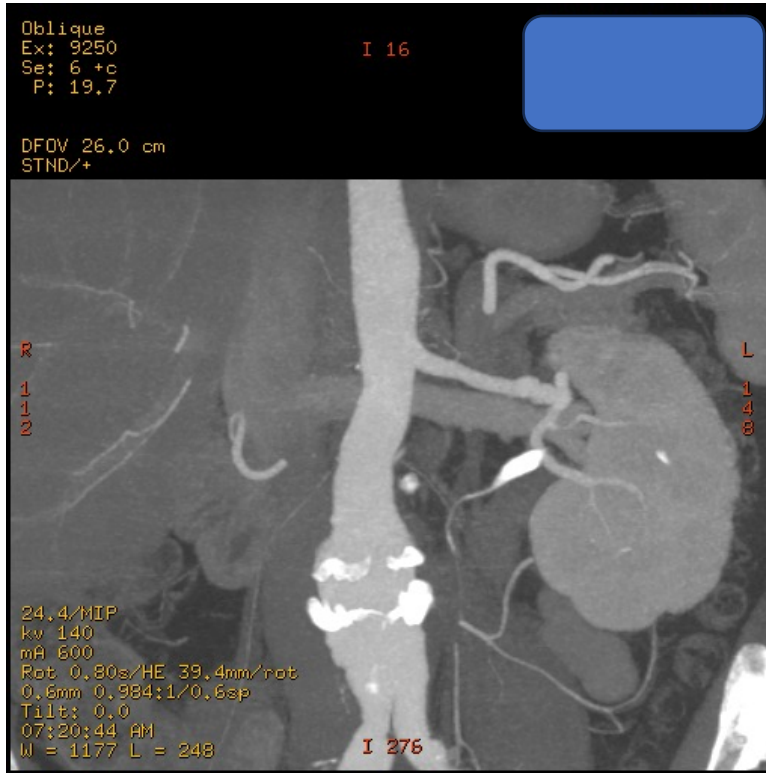


Abdominal Aorta

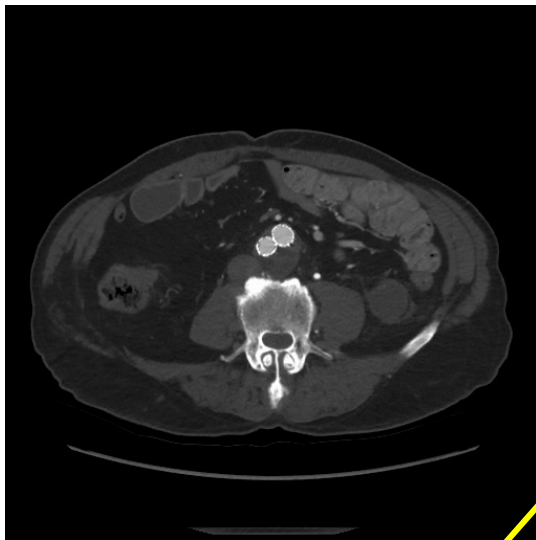
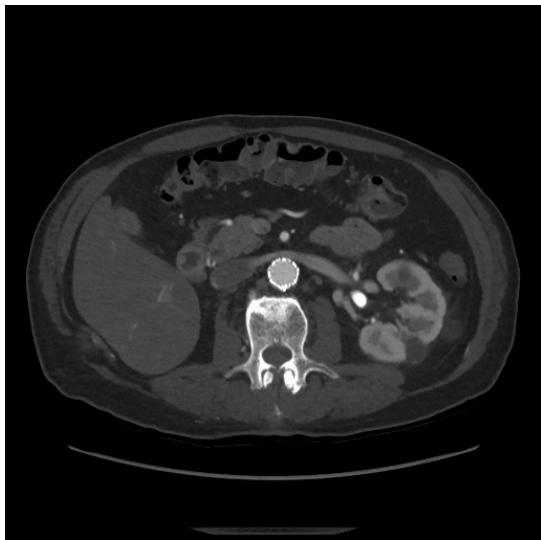
- General consideration: make young patients aware of likelihood of sexual dysfunction with open surgery
- If endo fails, you can come back and take it out
- Avoid suprarenal fixation if at all possible
- OK for most patients with MFS and LDS – avoid endo in VEDS except in life-threatening emergencies*
- Pathogenicity of these conditions is a spectrum, not binary
- Keep both family history and individual vascular history in mind



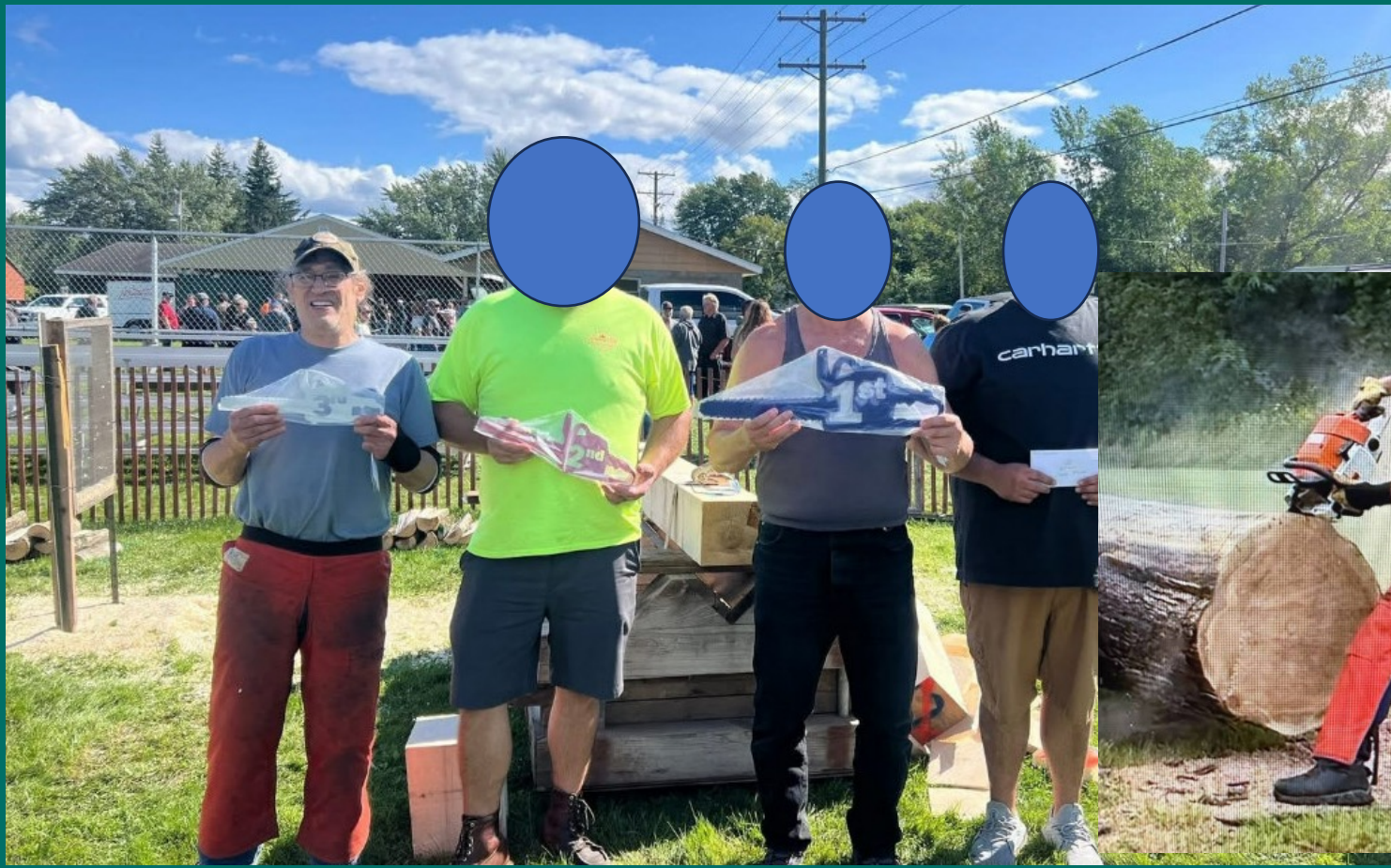
59M LDS-III, 2013, open convert to endo



Now 71 and semi-pro chainsaw racer



I fixed that a few months ago

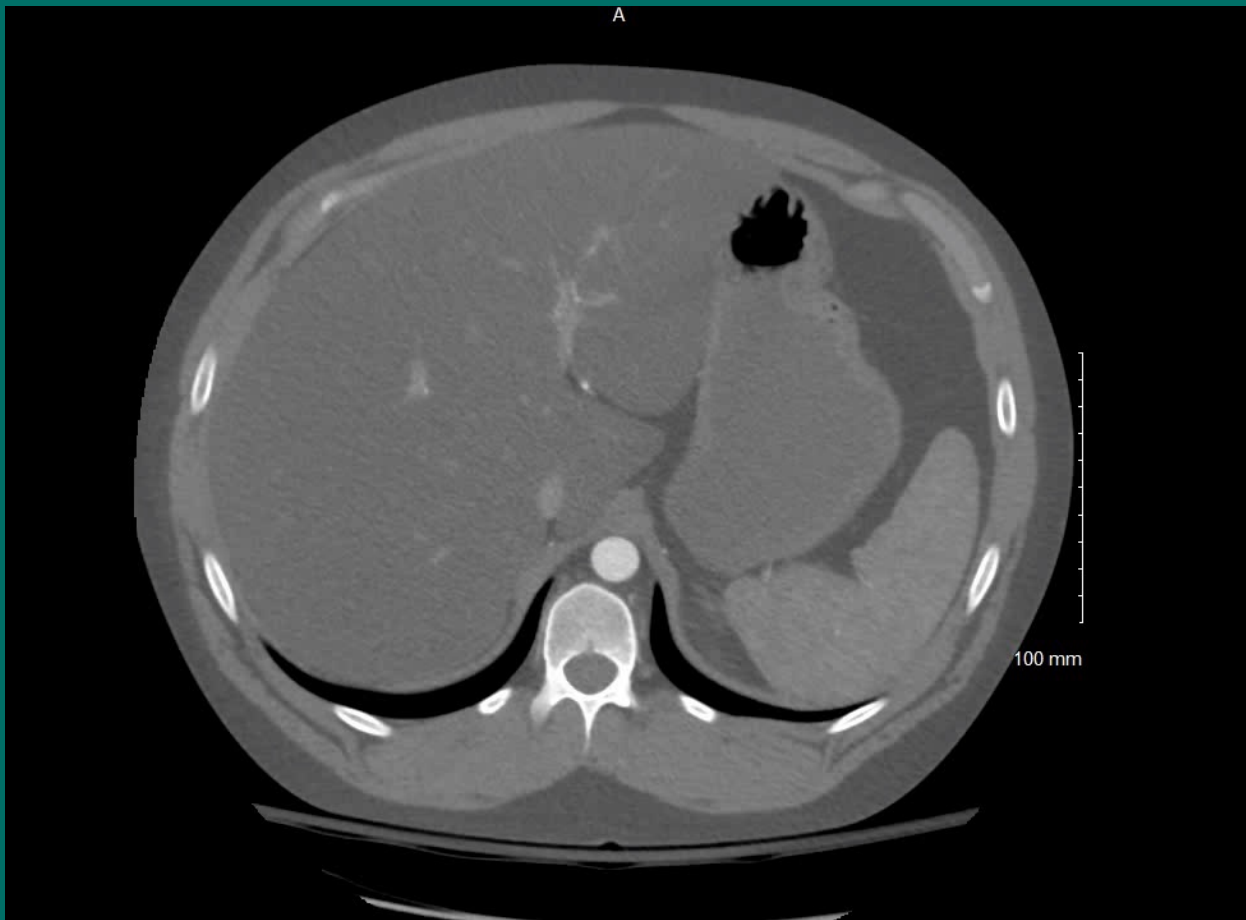


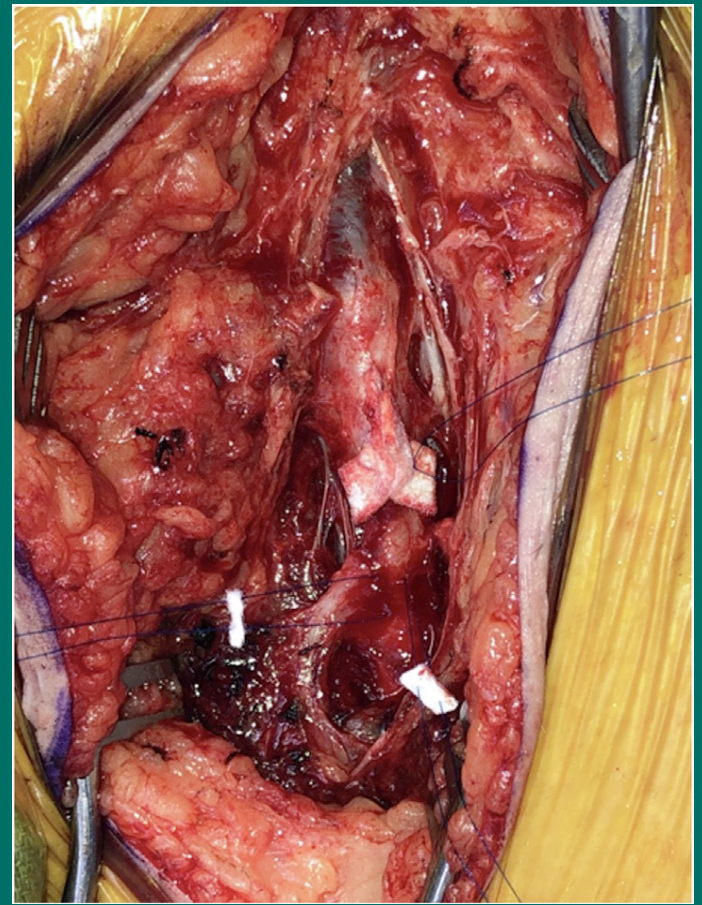
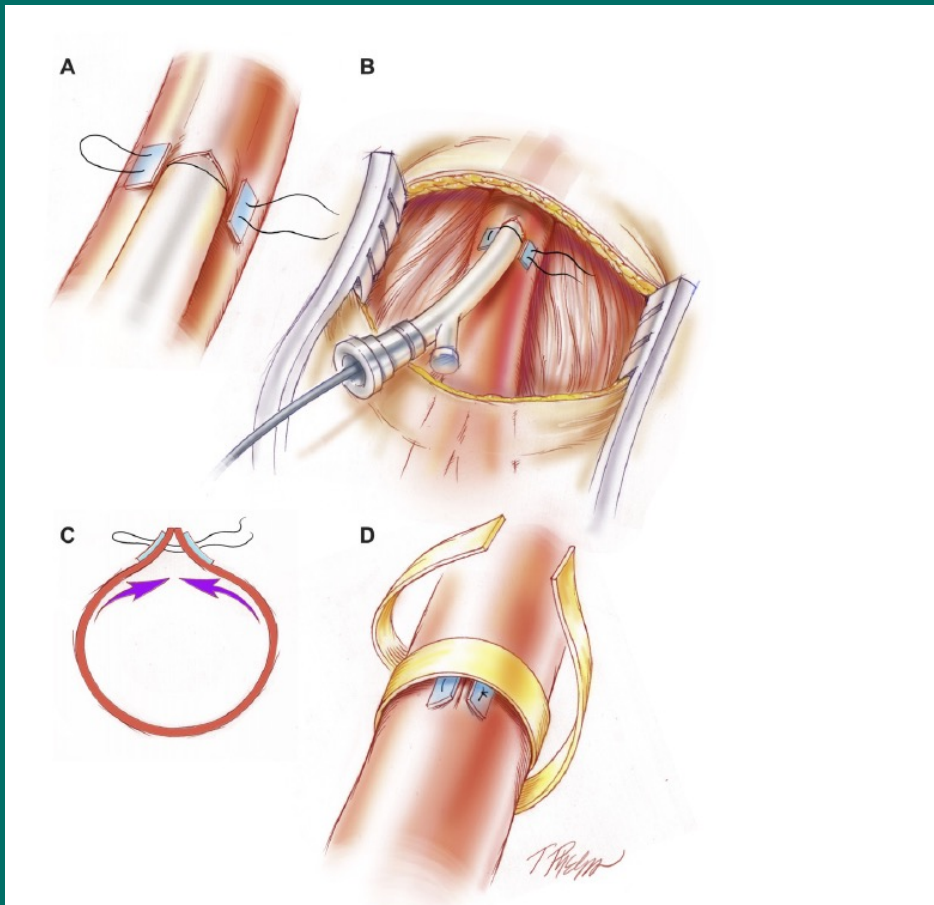
Graft sizing

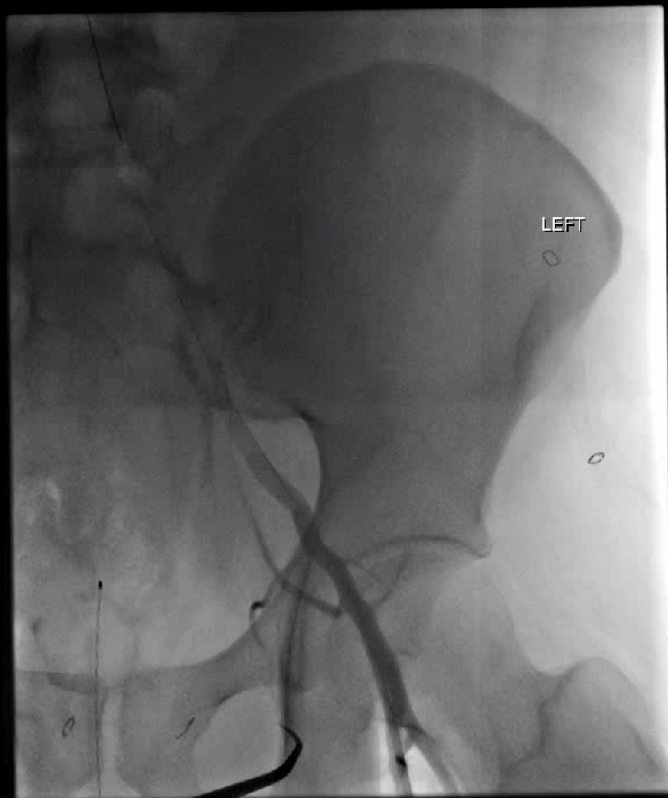
- Focus on seal length (ideally > 20mm)
- Oversize less than 10%
- Plan for failure at proximal and distal seal – what do you do next?
- Avoid bare fixation stents when possible
 - Terumo Relay NBS, Cook ZDEG for TEVAR
 - Gore Excluder for infrarenal EVAR
 - Easier to sew to these during arch and TAAA replacement

Access vessels?

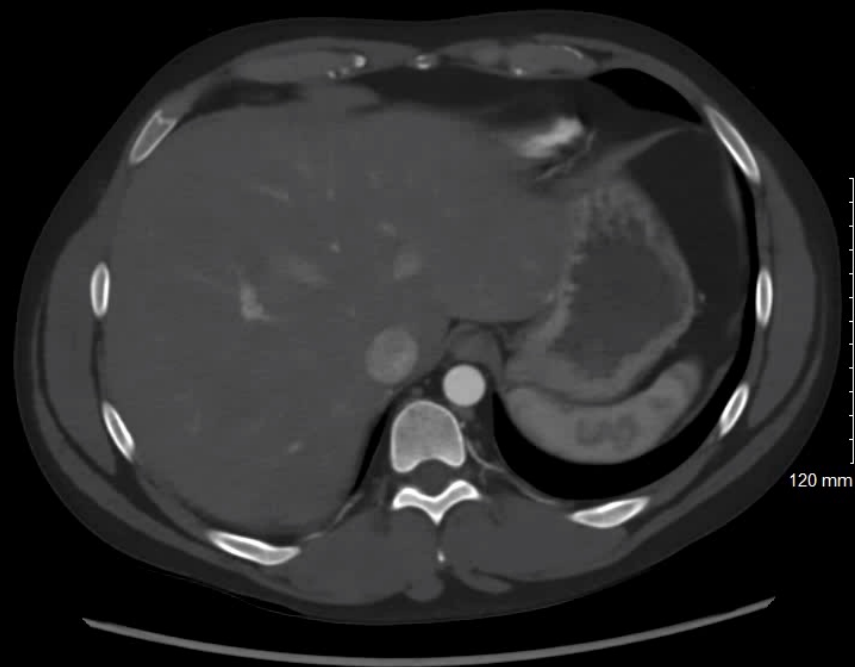
- **MFS and LDS**
 - Access as usual, no special considerations unless ectatic/aneurysmal
- **VEDS**
 - Try to access vessels that can be sacrificed if absolutely necessary (radial, SFA)
 - 6F and smaller – percutaneous
 - Larger – open access and careful selection and repair
 - We usually keep intubated with strict BP management for 48 hours with deep extubation, duplex of access site prior to extubation





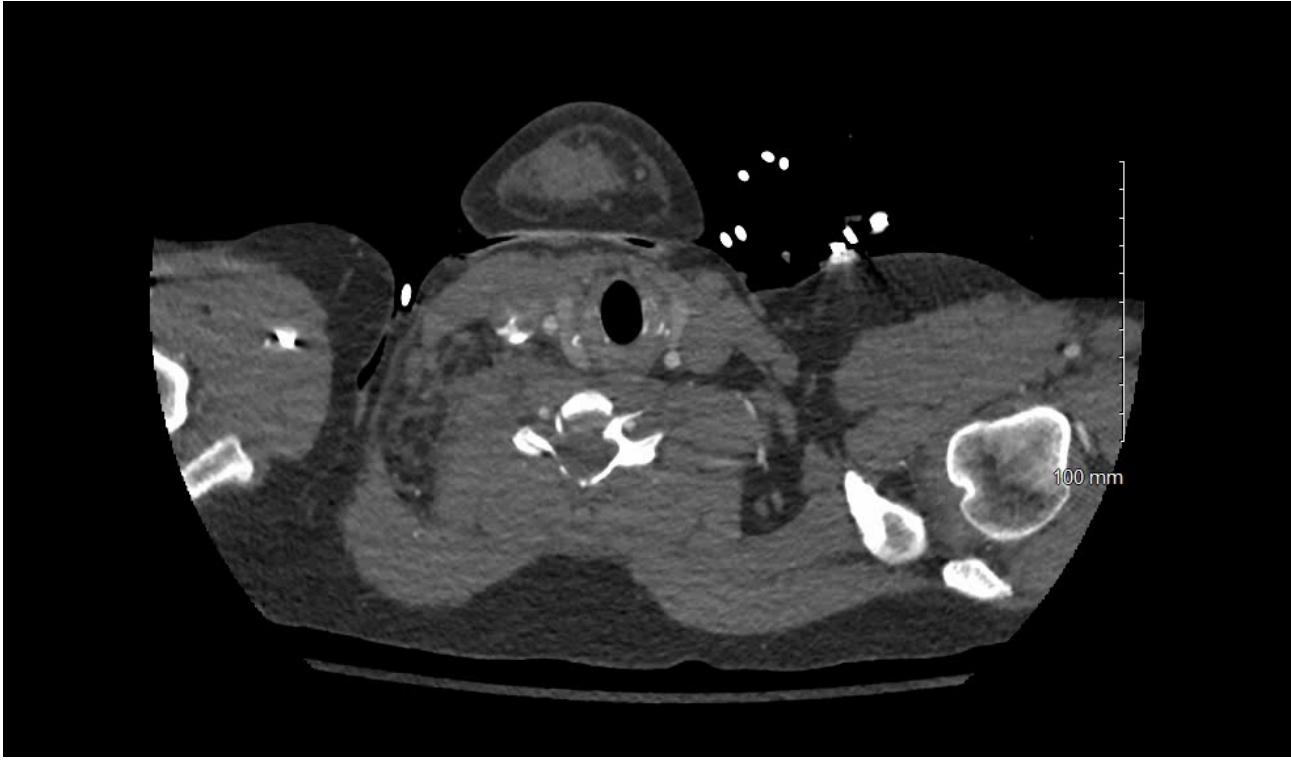


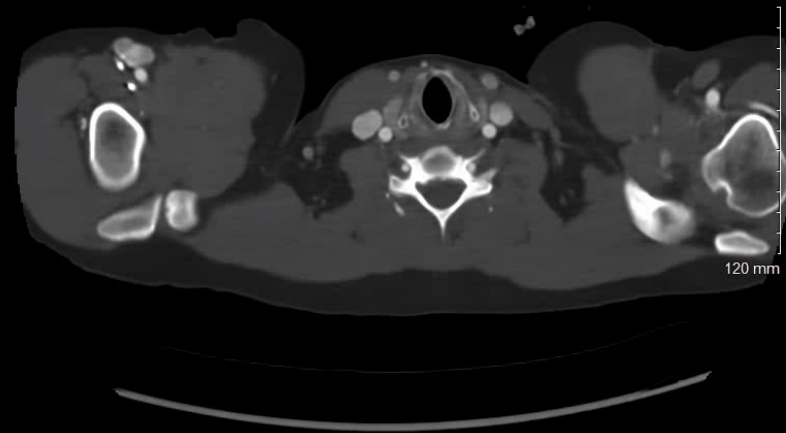
100



120 mm

Edge failure





Summary

- General considerations
- Access site complications and how to prevent them
- Proximal fixation, overlap for future procedures
- Failure at the edges – both in aorta and peripheral vessels
- Plan to fail forward

Thank You!

