

2022 MID-ATLANTIC CONFERENCE
10th ANNUAL CURRENT CONCEPTS IN
VASCULAR THERAPIES

2022



Hilton Virginia Beach Oceanfront
Virginia Beach, Virginia

APRIL 28-30



Sentara Vascular Specialists



CEPHALIC VEIN THROMBOSIS WITH ILLUSORY ANEURYSM

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Open Arch Reconstruction

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Disclosures

- Medical Consultant
 - Edwards Lifesciences
 - Medtronic
 - Paragonix



Objectives

- Indications for Open Arch Reconstruction
- Principles of Open Arch Reconstruction
- Traditional Open Arch Reconstruction
- Open Arch Reconstruction in the modern era
- Review of cases of Open Arch Reconstruction



Open Arch Reconstruction: Indications

- Aneurysmal disease
 - Involving arch, proximal descending
- Dissection
 - Tear involving arch, proximal descending
 - Dissection involving arch, proximal descending



Open Arch Reconstruction: Concepts

- Operation performed on CPB with DHCA
 - Cannulation, cerebral protection strategy
 - Any other concomitant necessary procedures
- Plan for arch vessels
 - Formal debranching, reimplantation
- Plan for distal arch/descending
 - Location to place distal graft, distal graft length



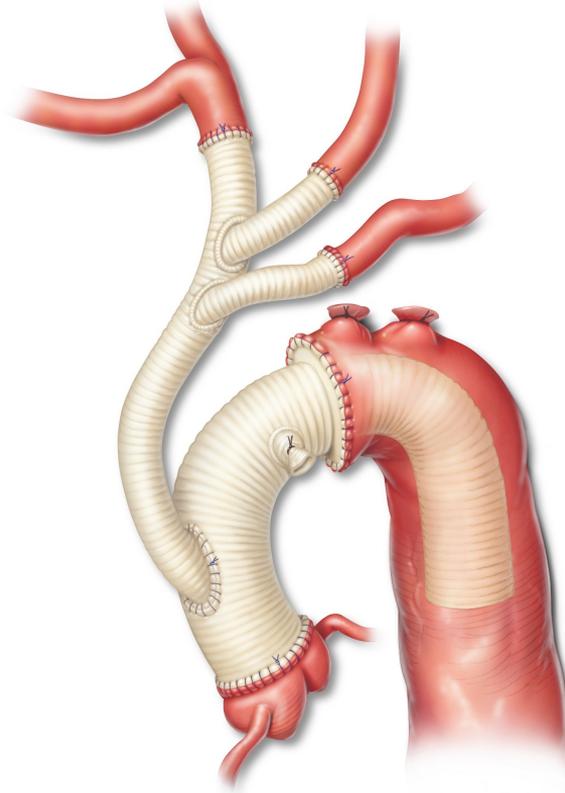
Open Arch Reconstruction: Operation

- Arch vessel dissection pre CPB
- Cannulation and commencement of CPB
- Cardioplegic arrest and cooling
- Perform proximal/concomitant procedures
- DHCA with ACP for FET (+/- IVUS)
- Rewarm and complete proximal anastomosis



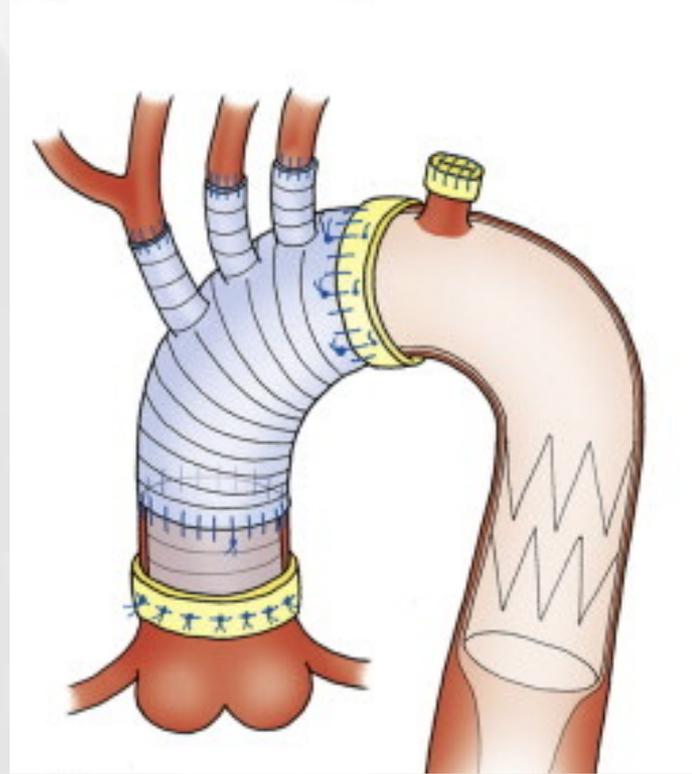
Traditional Open Arch Reconstruction

- Elephant Trunk



Modern Open Arch Reconstruction

- Frozen Elephant Trunk

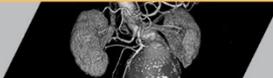
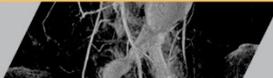
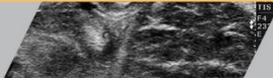
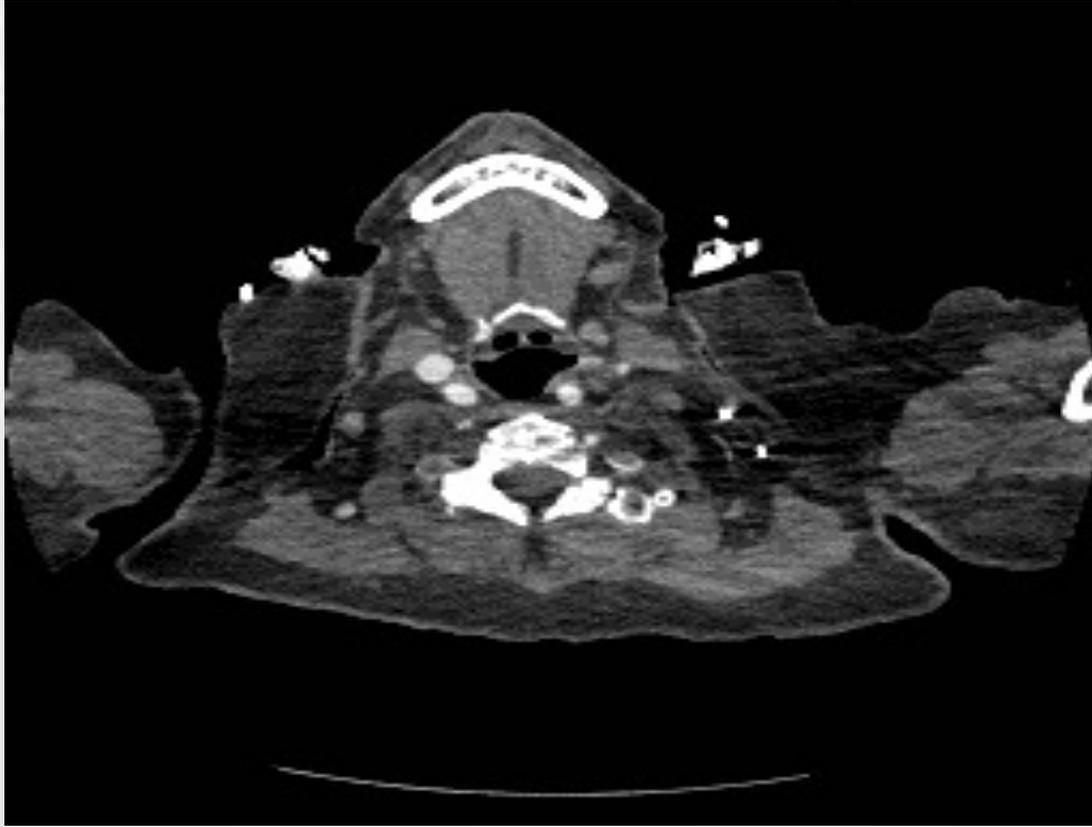


Case 1: Aneurysm

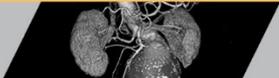
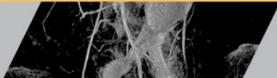
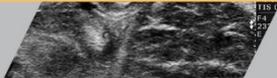
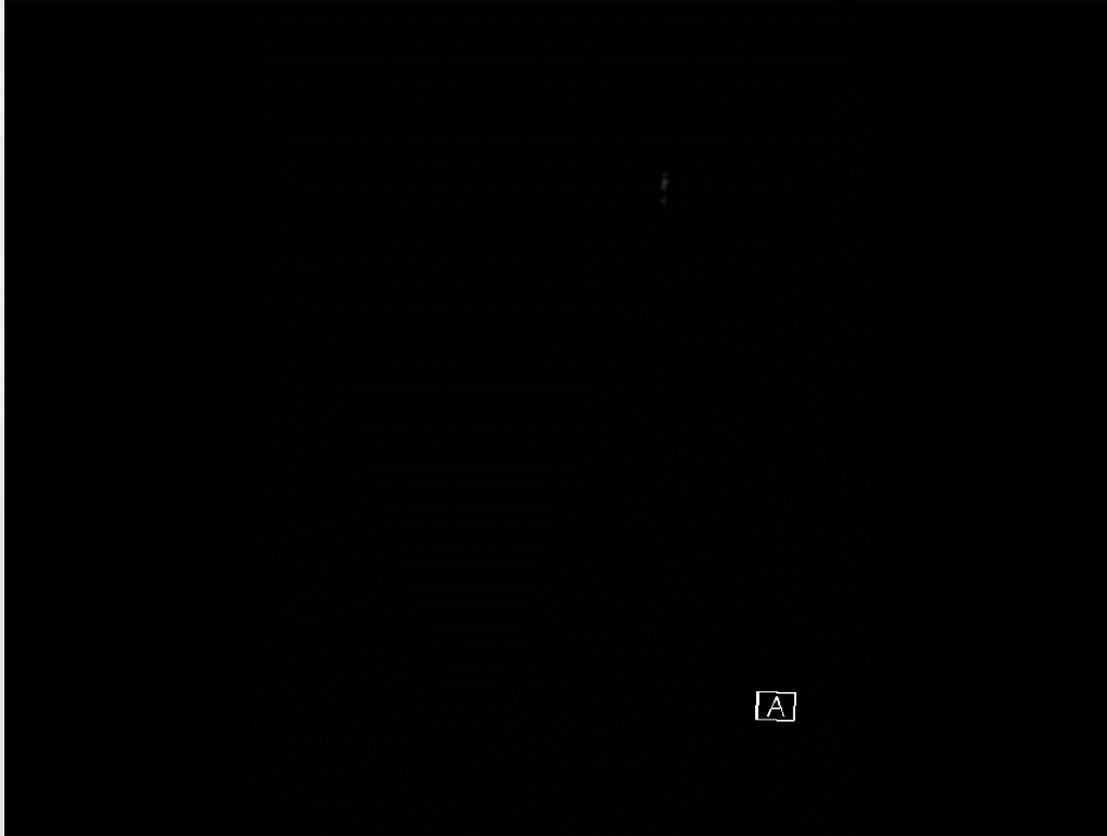
- 78F with worsening dyspnea on exertion
 - Workup revealed severe AI on echocardiogram
 - Further workup revealed root, ascending/proximal arch aneurysm
 - Referred to CTS clinic for definitive repair



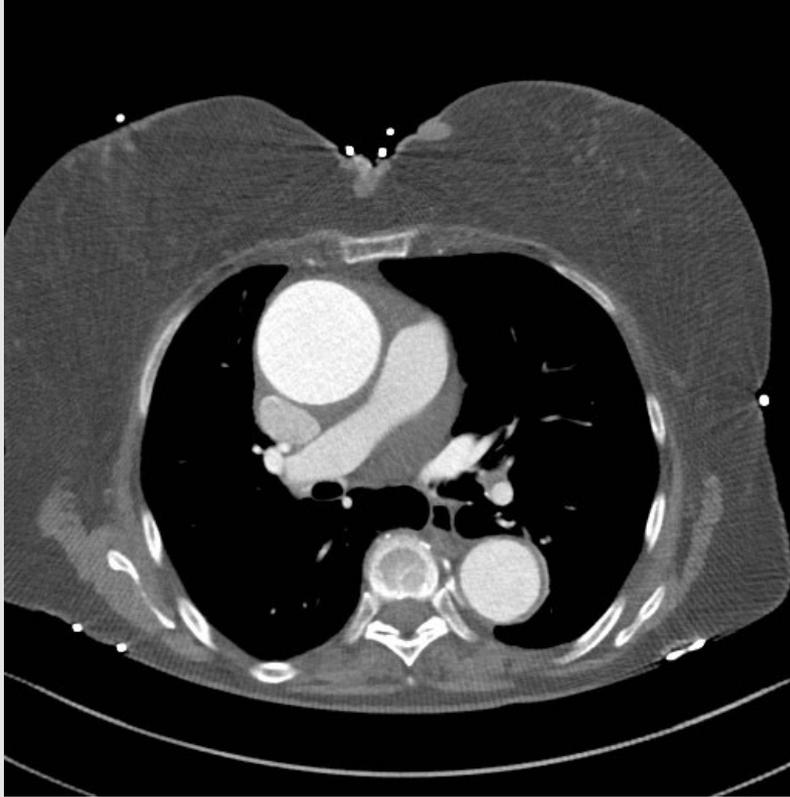
Case 1: Aneurysm



Case 1: Aneurysm



Case 1: Aneurysm



Case 1: Aneurysm

- Intraoperative findings
 - Severe AI from 5.7cm aortic aneurysm, effacement of STJ
 - Largest point of aneurysm distal ascending
 - Aneurysm continued into mid-arch



Case 1: Aneurysm

- Total Arch Replacement with debranching, FET
 - 21mm bioprosthetic AVR root conduit
 - 30mm graft for arch reconstruction
 - Debranching
 - Direct reimplant of the SCA
 - 14mm for innominate, 7mm LCCA
 - 40mm x 10cm thoracic stent graft for FET

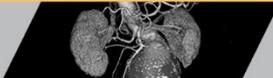
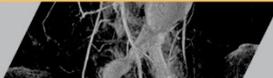
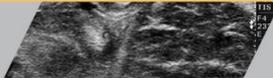
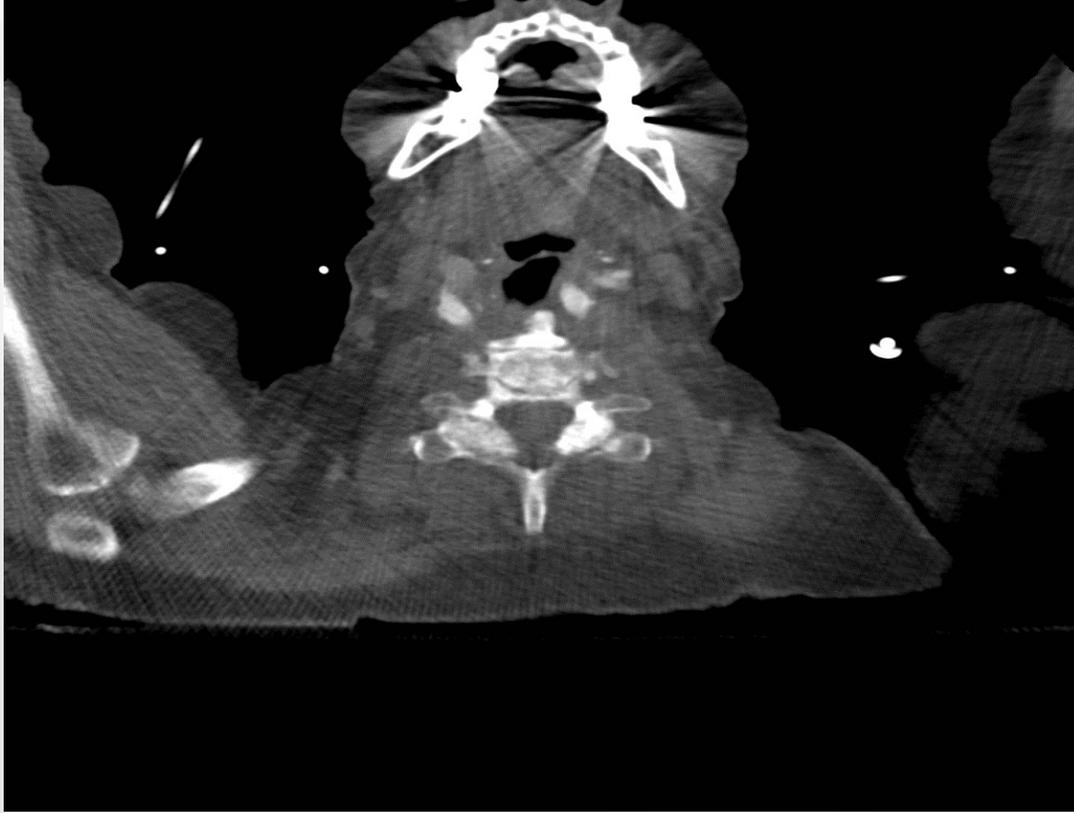


Case 1: Aneurysm

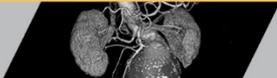
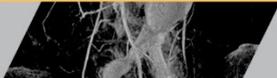
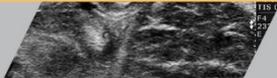
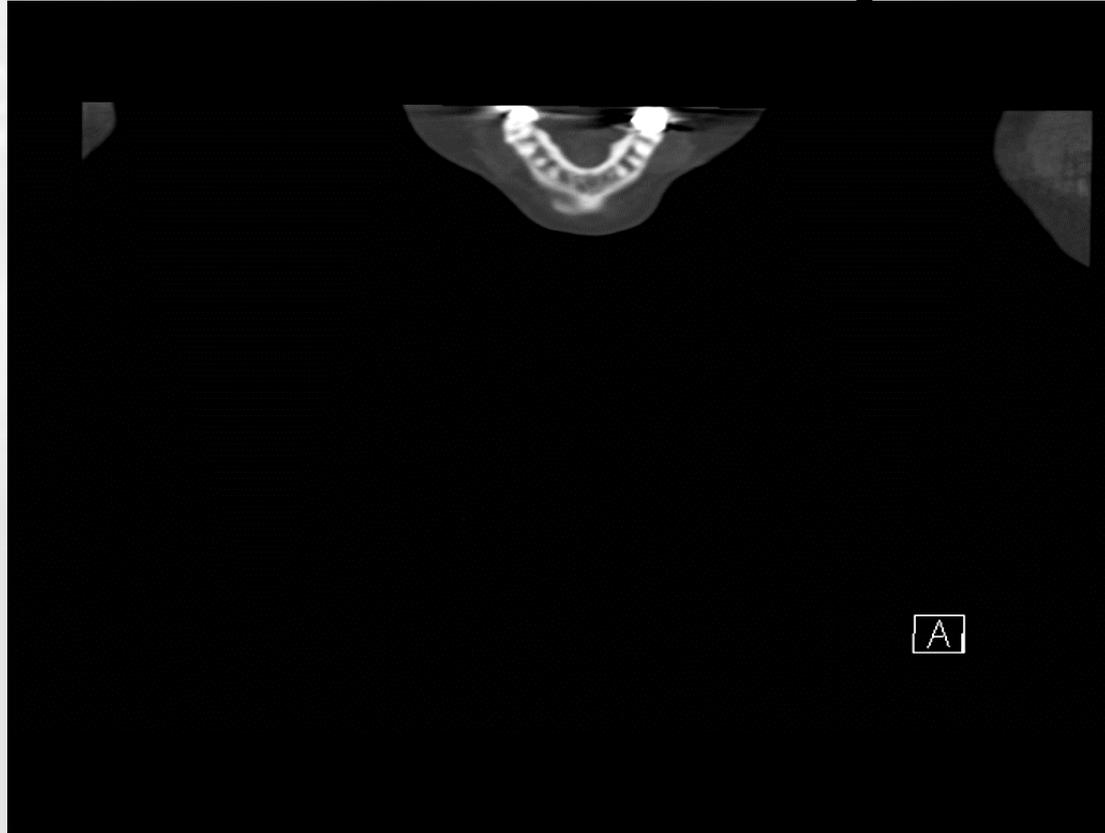
- Total Arch Replacement with debranching, FET
 - CPB 273m
 - XC 178m
 - DHCA @ 18C with ACP 53m
- Closed, 5FFP, 3 plts
- Discharged POD 14



Case 1: Aneurysm



Case 1: Aneurysm



Case 1: Aneurysm

- Plan for followup
 - Continued surveillance
 - Option for extending TEVAR if necessary



Case 2: Dissection

- 67M with sudden onset neck/arm pain
 - History of robotic MV repair
 - Known ascending aortic aneurysm
 - CTA – Type A dissection from coronaries into femorals
 - Cool left lower extremity without fem/distal pulses

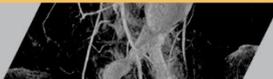
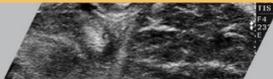
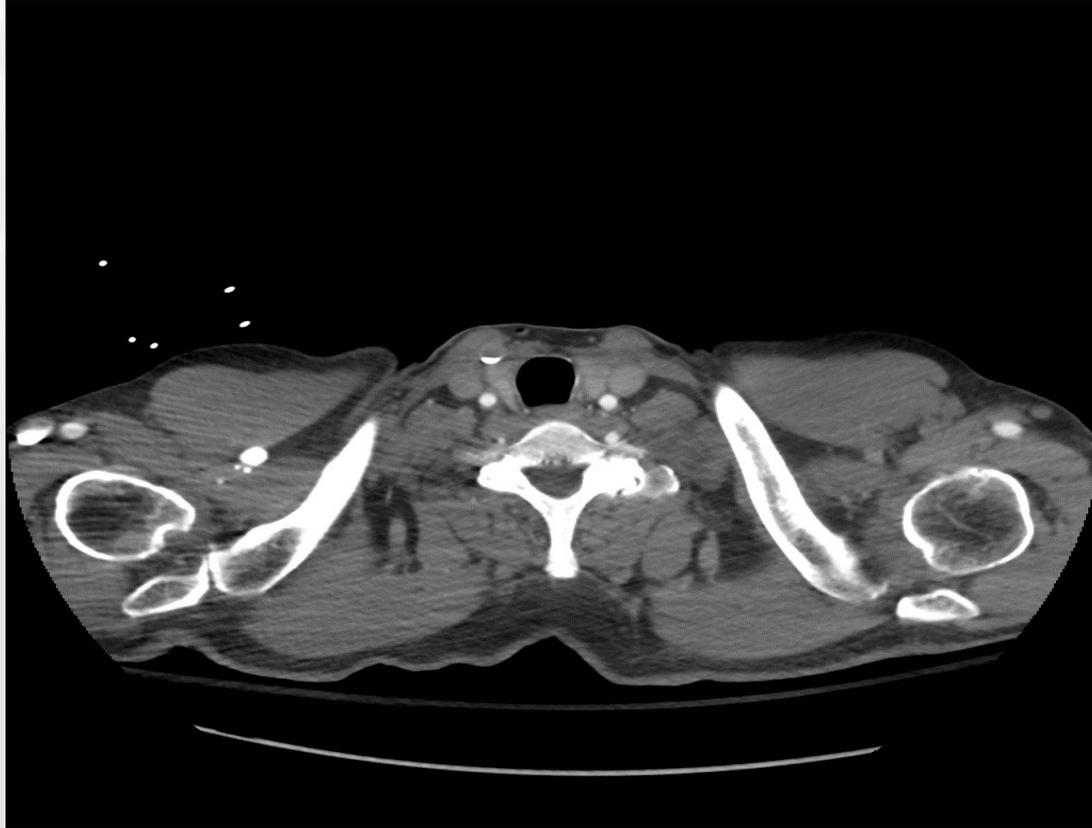


Case 2: Dissection

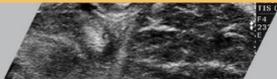
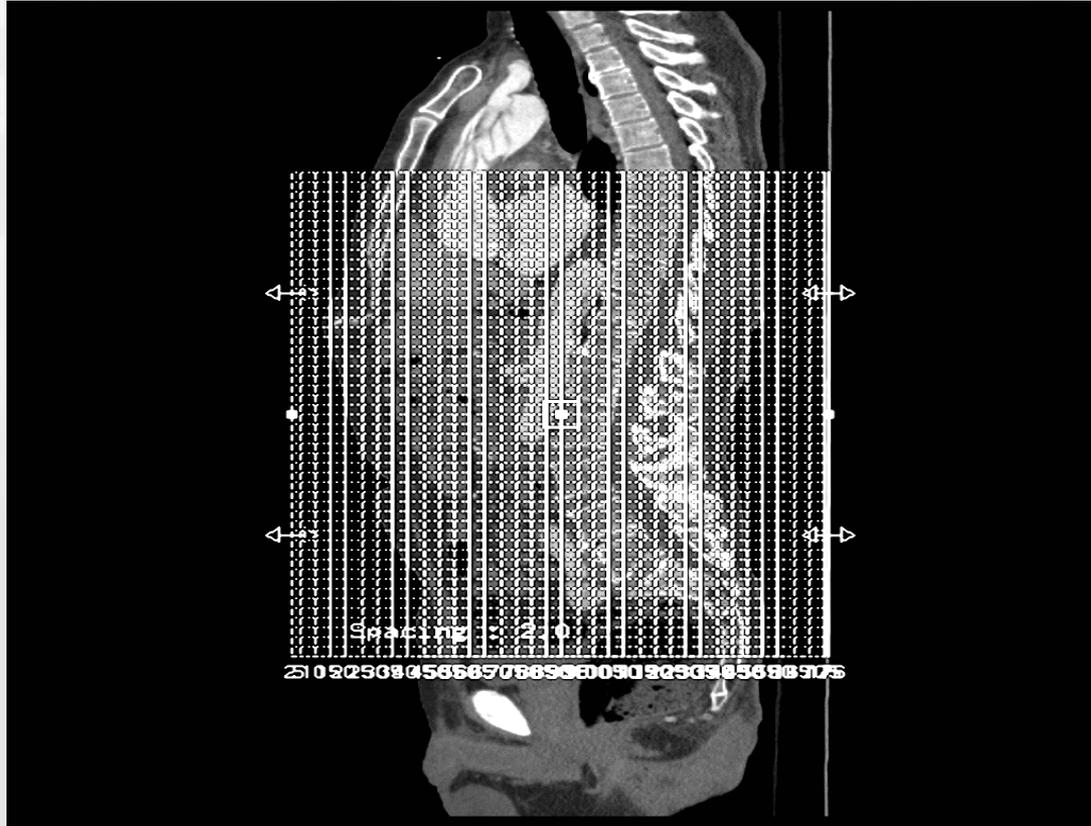
- Intraoperative findings
 - Tear starting in root at level of coronaries
 - Separate tear in lesser curve/underside of the arch
 - Ulcerated distal arch



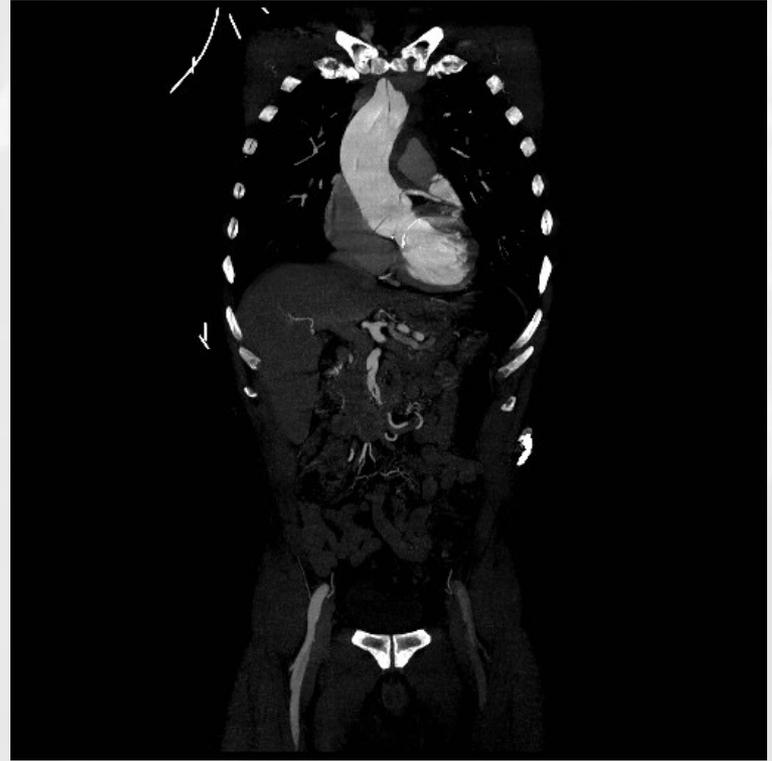
Case 2: Dissection



Case 2: Dissection



Case 2: Dissection



Case 2: Dissection



Case 2: Dissection

- Total Arch Replacement with debranching, FET
 - 27mm bioprosthetic AVR root conduit
 - 28mm graft for arch reconstruction
 - Debranching
 - Direct reimplant of the innominate
 - 10mm bifurcated graft for LCCA, SCA
 - 31mm x 15cm thoracic stent graft for FET

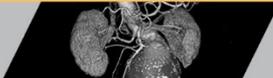
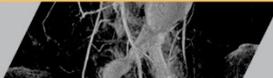
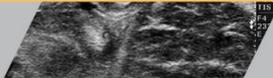
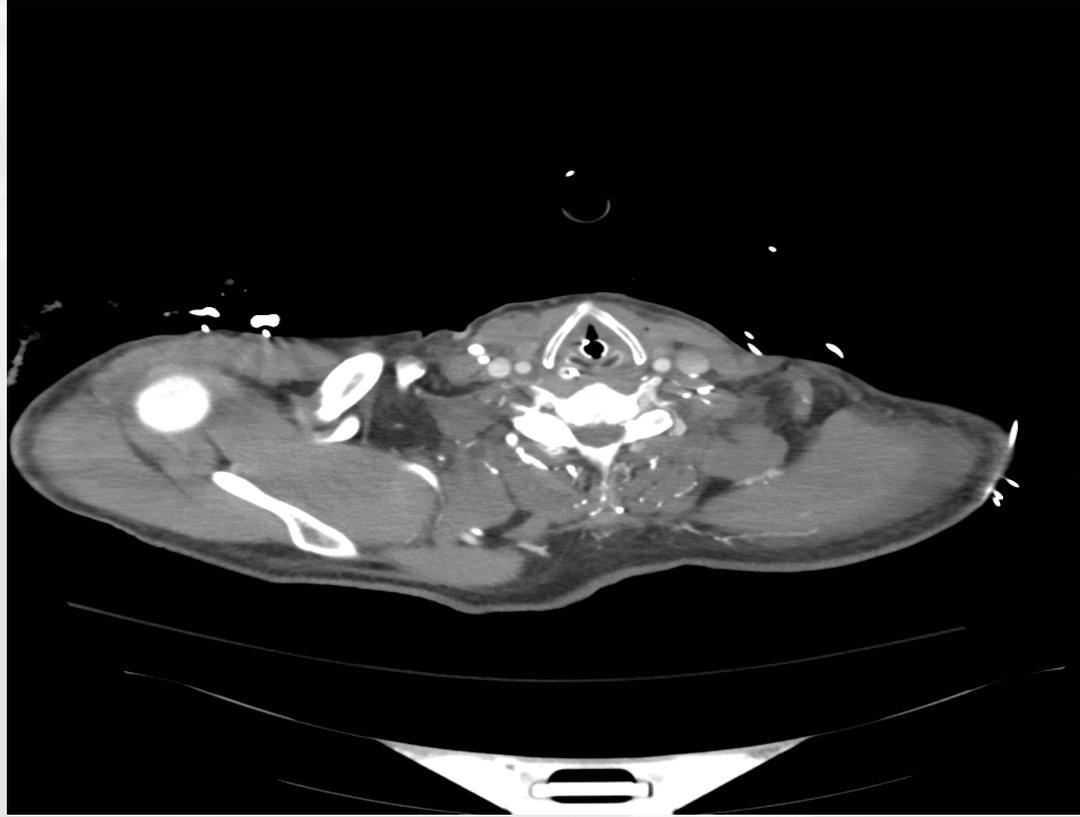


Case 2: Dissection

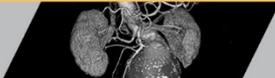
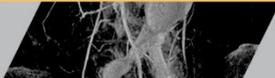
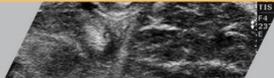
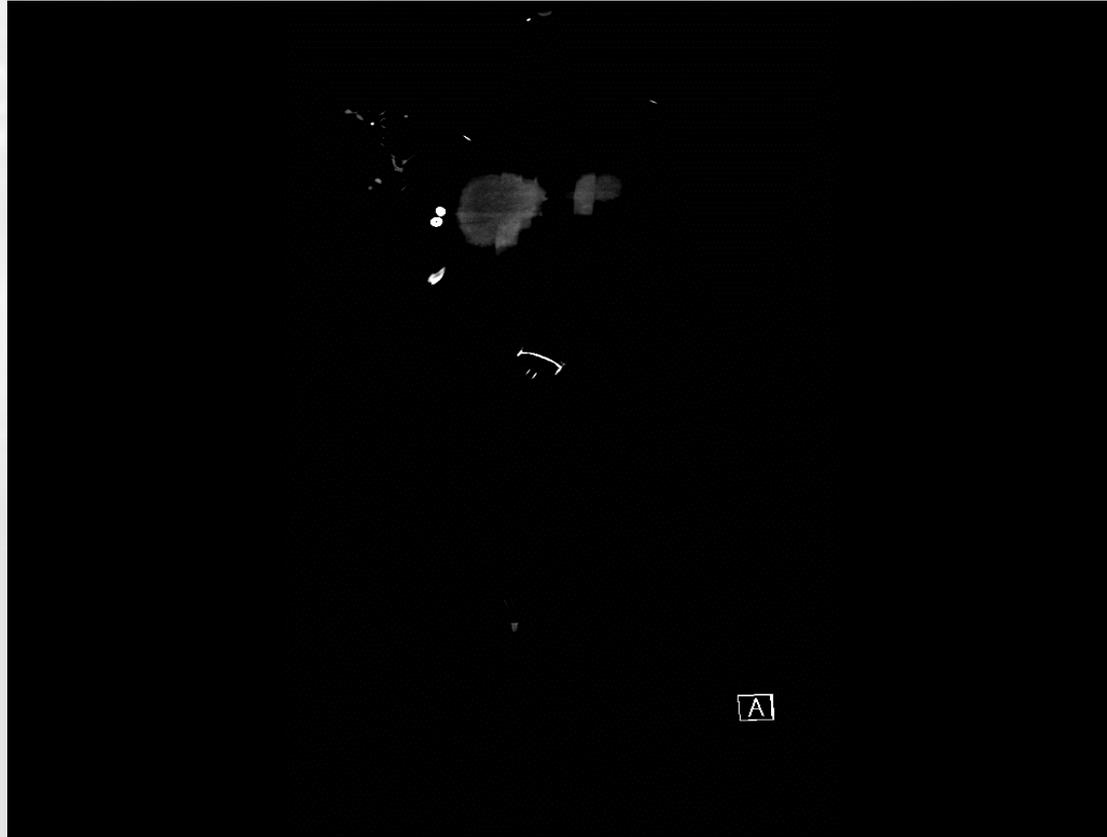
- Total Arch Replacement with debranching, FET
 - CPB 357m
 - XC 244m
 - DHCA @ 18C with ACP 48m
- Open, 5RBC, 12FFP, 4 plts, cryo, Factor 7
- Closed POD2, Discharged POD 21



Case 2: Dissection



Case 2: Dissection



Case 2: Dissection

- Plan for followup
 - Surveillance imaging
 - Potential for extending TEVAR if necessary

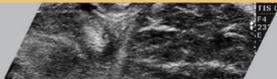
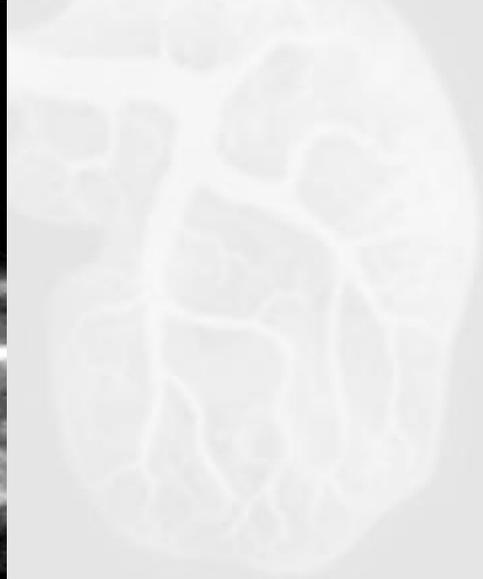


Case 3: Persistent Dissection/Aneurysm

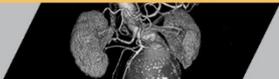
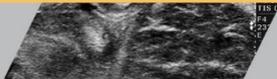
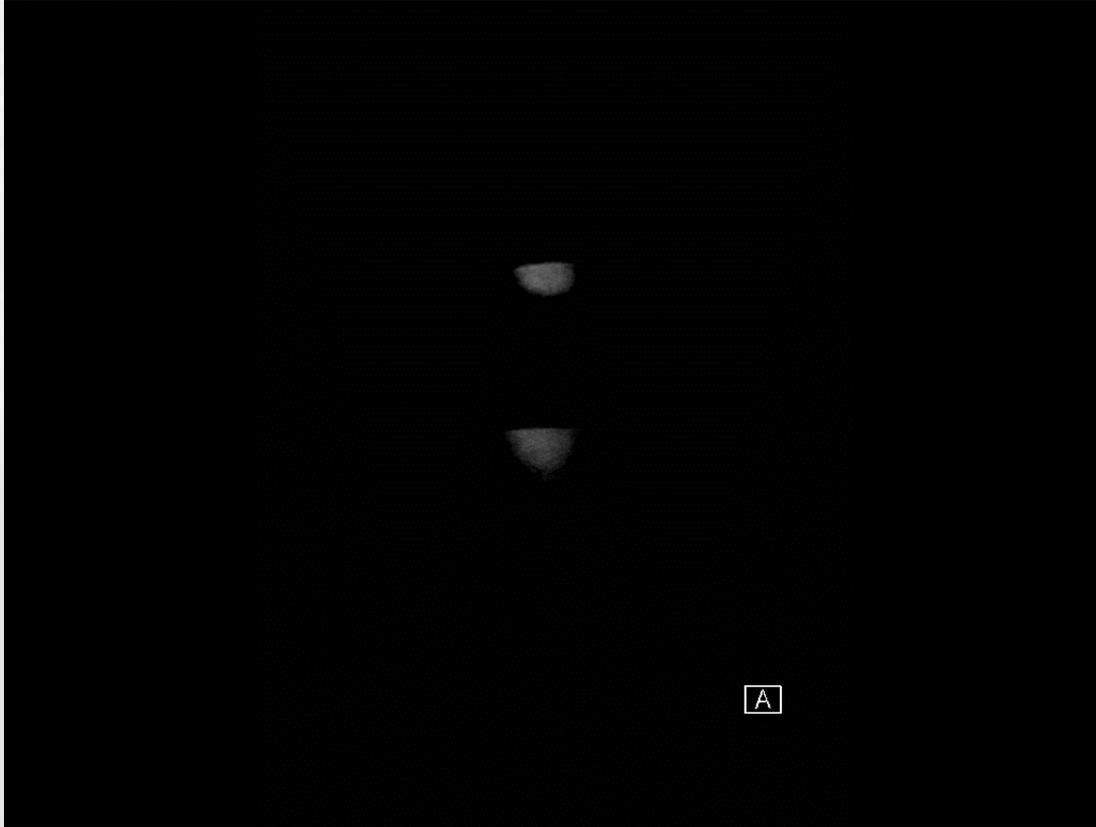
- 26M s/p Type A repair (root/ascending/hemiarch)
 - Routine 5mo CTA with persistent dissection
 - New tear in mid descending aorta
 - Enlarging 6.3cm distal arch/prox descending aneurysm
 - Admitted from CT scan for workup and urgent repair



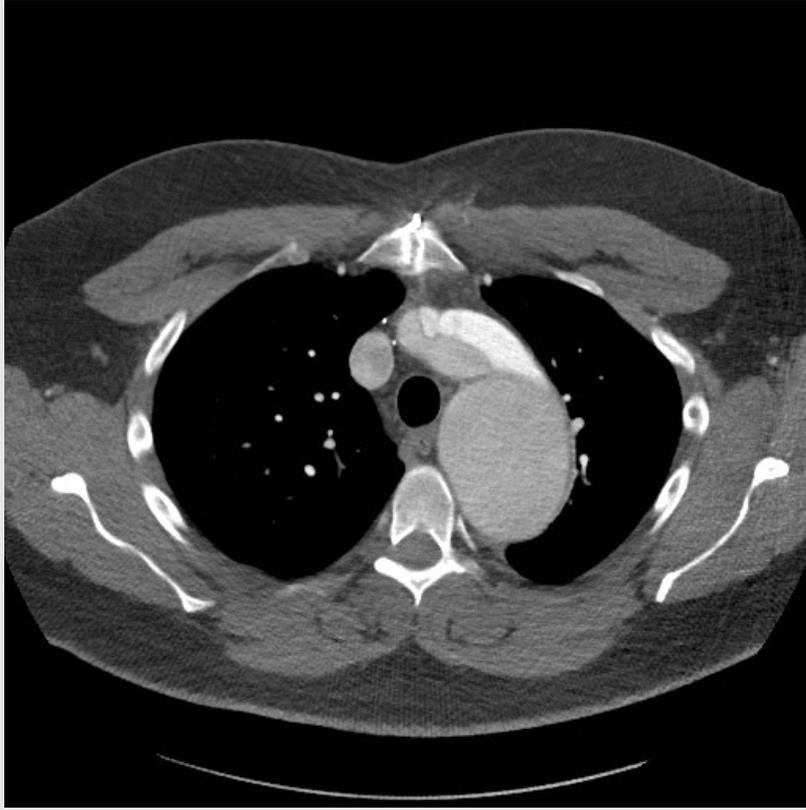
Case 3: Persistent Dissection/Aneurysm



Case 3: Persistent Dissection/Aneurysm



Case 3: Persistent Dissection/Aneurysm



Case 3: Persistent Dissection/Aneurysm

- Intraoperative findings
 - Intact hemiarch anastomosis, no arch tear
 - Small, compressed true lumen



Case 3: Persistent Dissection/Aneurysm

- Total Arch Replacement with debranching, FET
 - 26mm graft for arch reconstruction
 - Debranching
 - Trifurcated 12mm graft with 8mm for LCCA, SCA
 - Direct reimplantation of innominate to 12mm graft
 - 28mm x 15cm thoracic stent graft for FET

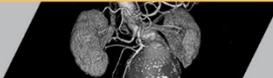
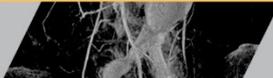
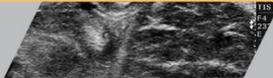
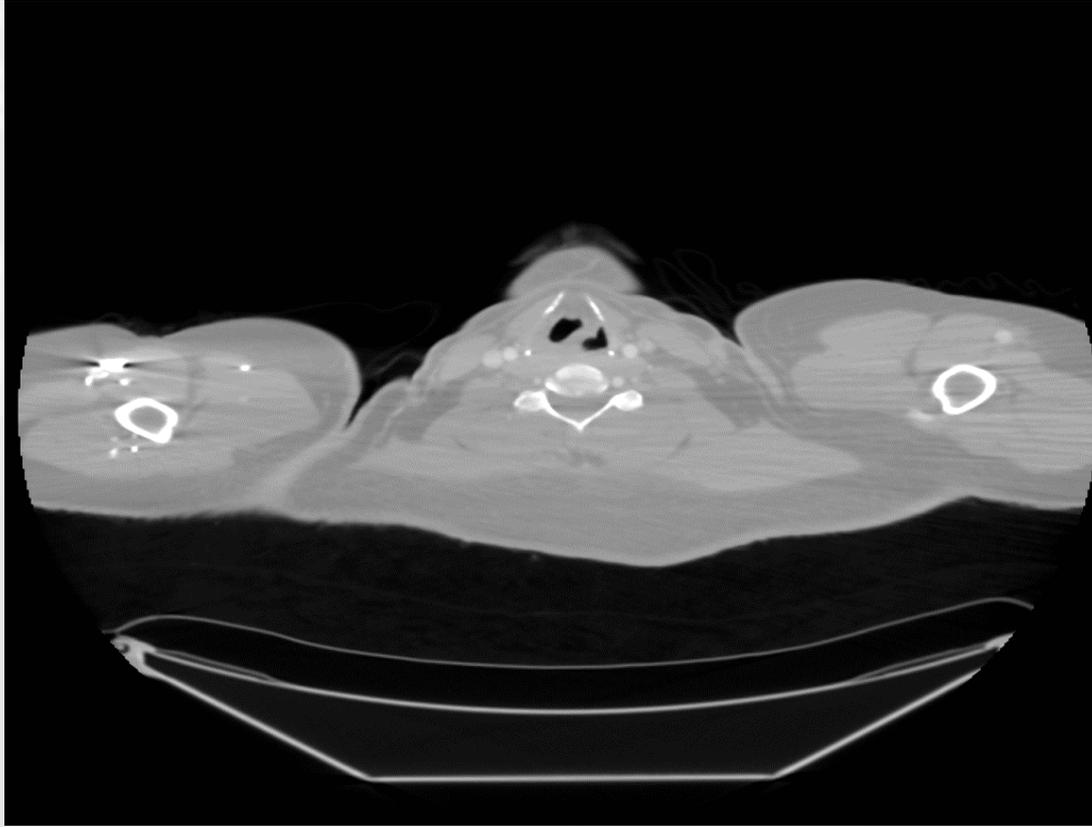


Case 3: Persistent Dissection/Aneurysm

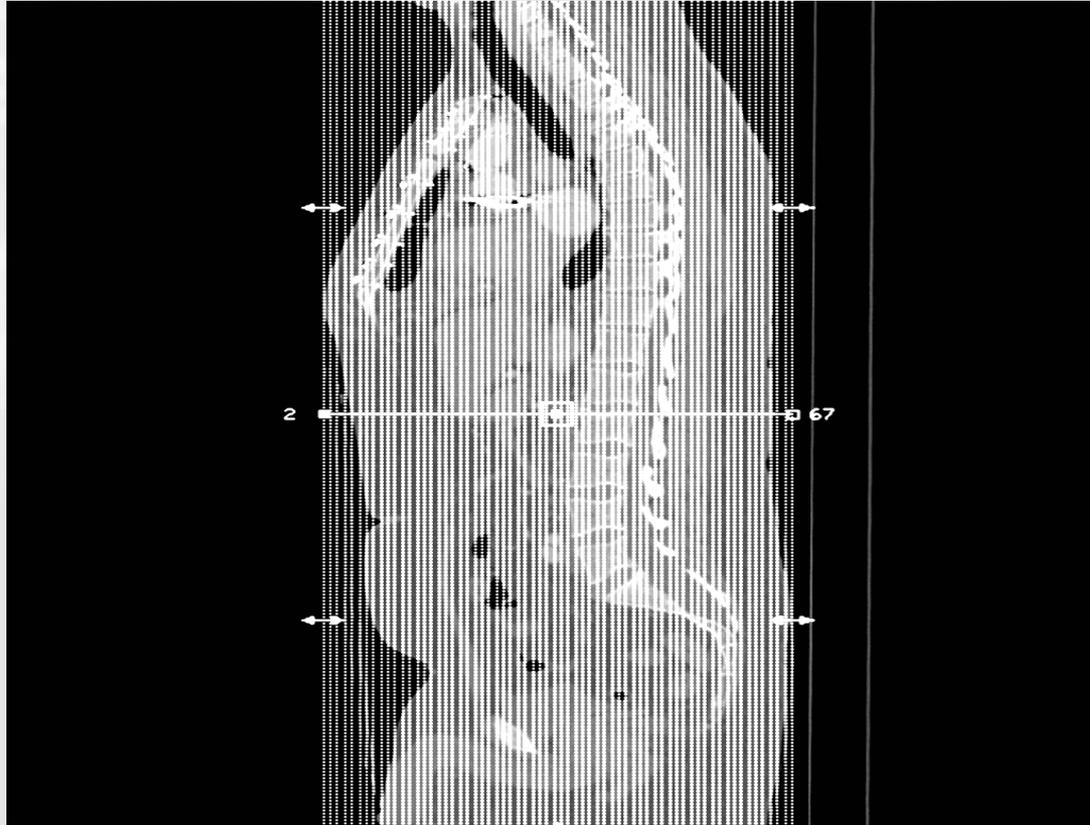
- Total Arch Replacement with debranching, FET
 - CPB 282m
 - XC 150m
 - DHCA @ 18C with ACP 88m
- Closed, 7FFP, 4 plts, cryo
- Discharged POD 11



Case 3: Persistent Dissection/Aneurysm



Case 3: Persistent Dissection/Aneurysm



Case 3: Persistent Dissection/Aneurysm

- Plan for Followup
 - Planned TEVAR extension



Summary

- Open Arch Reconstruction for aneurysm/dissection
- FET is largely replacing conventional elephant trunk
- FET is a procedure that can be learned
- FET is a good option for downstream procedures



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