



Aortic Triumph or Tragedy
Most surprising case and how it changed my
Approach

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Disclosure

- I have the following potential conflicts of interest to report:
- x Consulting: PQ Bypass, Intact Vascular, Philips, Medtronic, Boston Scientific, Endologix, Shockwave, VIVA Physicians Board Member



Case

- 25 year old White male
- hx chronic type B AD s/p MVA age 16



Pre Op Echo

- The left ventricle is mildly dilated
- Left ventricular systolic function is normal. EF = $62 \pm 5\%$ (2D biplane)
- Normal left ventricular diastolic function
- The right ventricle is dilated, right ventricular systolic function is normal
- The left atrial cavity is mildly dilated, the right atrial cavity is dilated
- 1-2+ TR. 1-2+ AI
- The visualized aorta is dilated. Sinus 4.5 cm. Sinotubular junction 3.2 cm, Mid ascending aorta 4.0 cm. Distal ascending aorta 3.7 cm. Mid arch 2.4 cm. Proximal descending isthmus 4.5 cm. There is a dissection in the proximal descending isthmus.



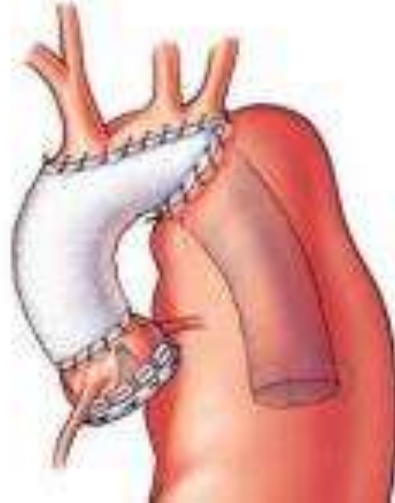
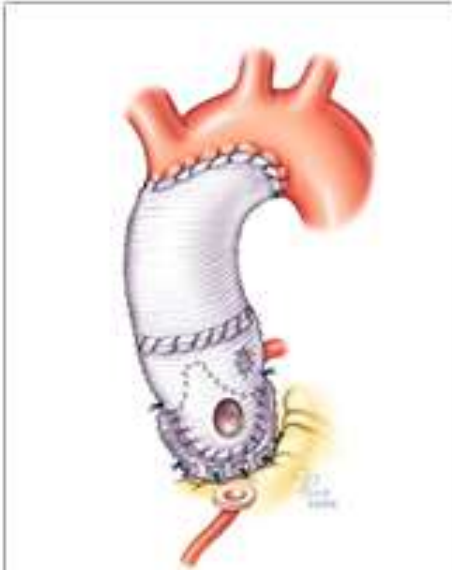


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Operation

- 12/11/17 s/p valve sparing root replacement, ascending and aortic arch replacement and stage I elephant trunk



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Consult

- Immediately post op he was hypotensive and coagulopathic and suffered PEA arrest.
- Since then he has had 3 PEA arrests and 3 episodes near arrest where he has require significant pressor support. During these episodes per nursing associated with stimulation such as cleaning, family interaction, or weaning of sedation. Progressive ST depressions noted on telemetry prior to event. Yesterday was last PEA arrest subsequently he was profoundly hypotensive and requiring large pressor boluses and therefore started on ECMO.
- Coronary imaging noted patent coronaries. TEE yesterday noted severe biventricular failure with EF 15%. No evidence of mesenteric or visceral ischemia. Cr stable with good UOP on lasix gtt. Currently on norepi4, vaso 0.02, epi 4.



Post Op Echo

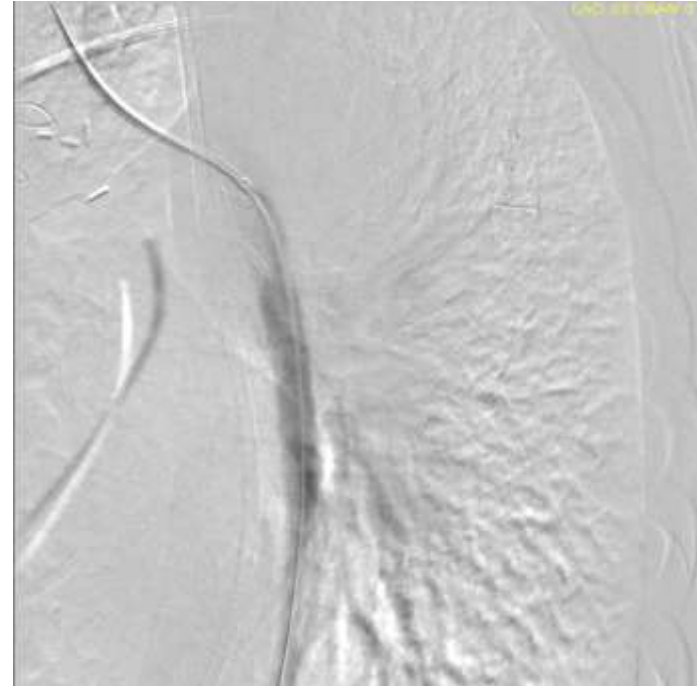
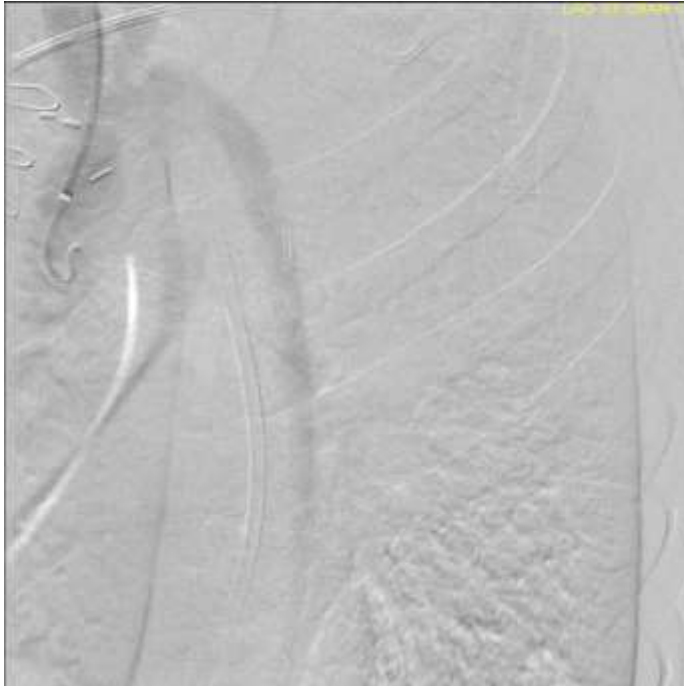
- The left ventricle is normal in size. Left ventricular systolic function is severely decreased. **EF = 15 ± 5%**. The right ventricle is normal in size. Right ventricular systolic function is moderately to severely decreased.
- The left and right ventricles appears grossly thickened suspect this is related to underfilling. Tricuspid aortic valve. S/P aortic valve resuspension. There is no aortic valve regurgitation. There is no aortic valve stenosis. There is a small ASD located in the secundum.
- The proximal left main and left circumflex within the AV groove are widely patent with flow detected by color Doppler.
- Moderate sized pericardial effusion near the right atrium and ventricle without gross echo evidence of tamponade. Small atrial septal defect with left to right flow as detected by color Doppler.
- **Known Type B aortic dissection in the** descending thoracic aorta - smaller true lumen (~1.0 cm diameter).



Plan Emergent Completion Elephant Trunk

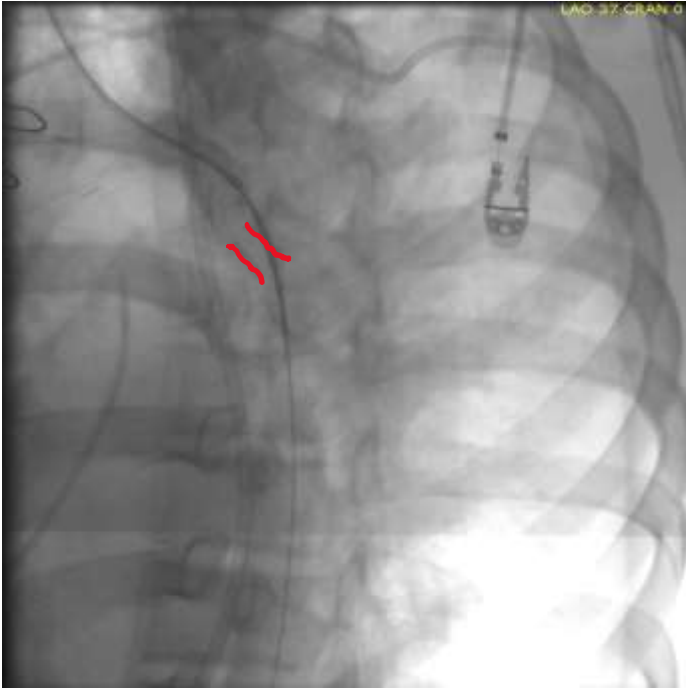
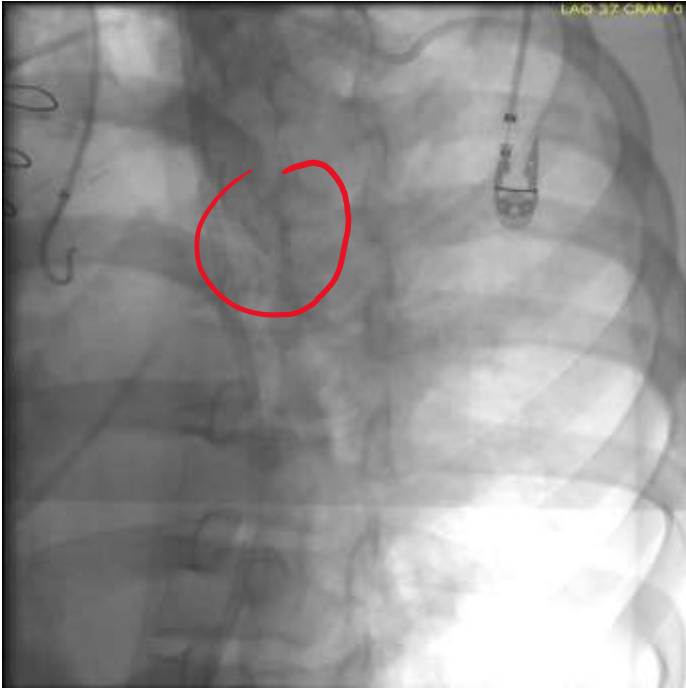


Arm to Thru and Thru Access



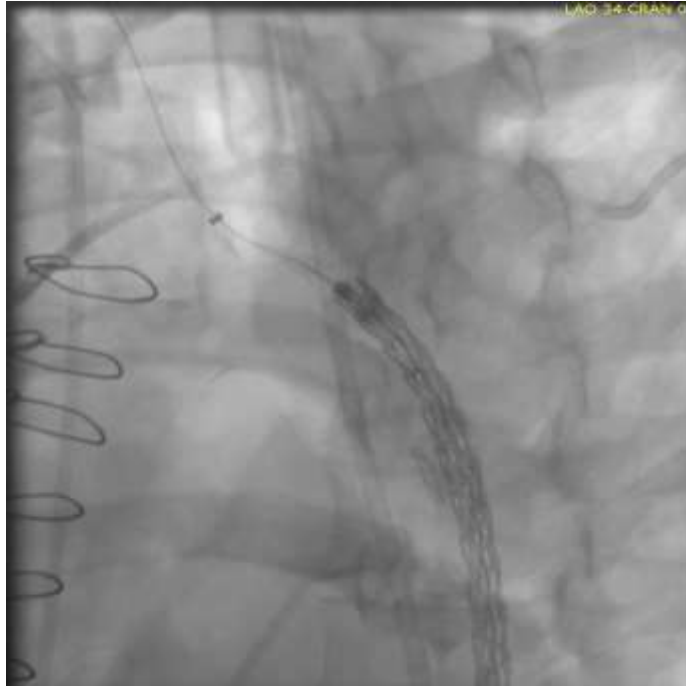
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Large Clips on the ET



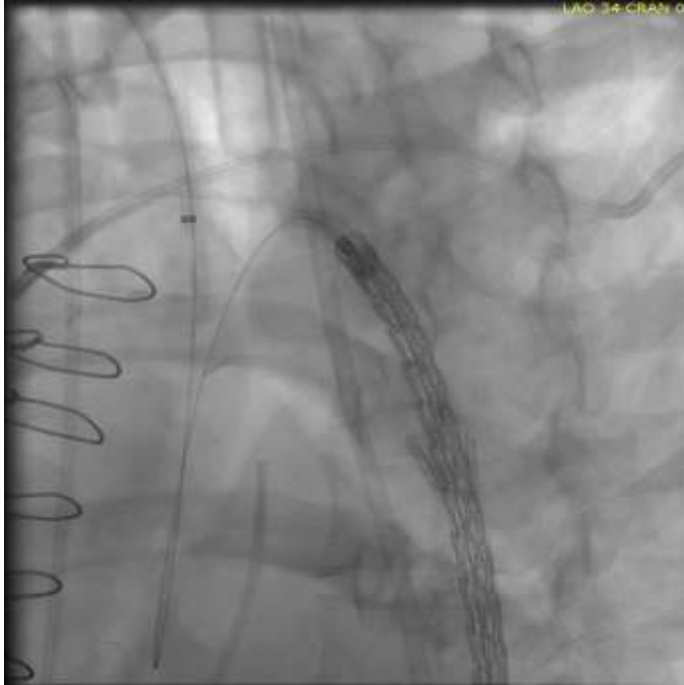
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Pulling thru the ET



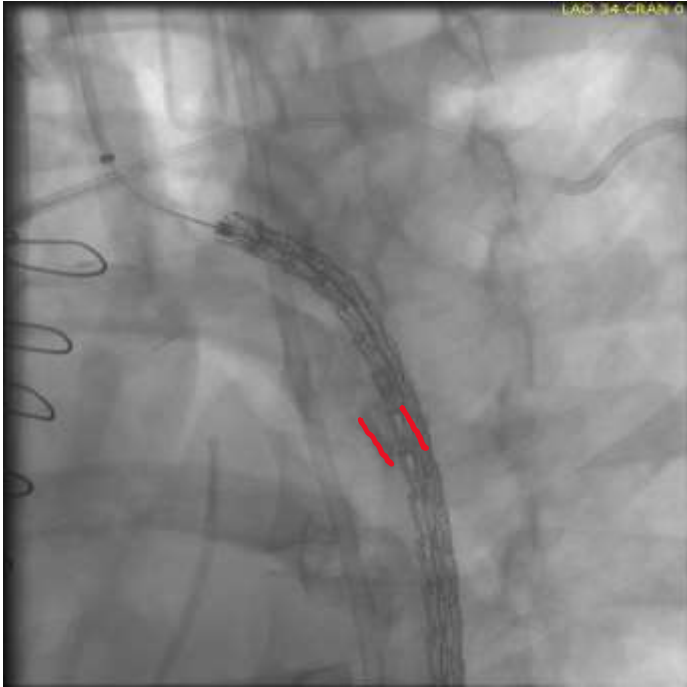
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Alpha Loop Trying to Advance into Arch



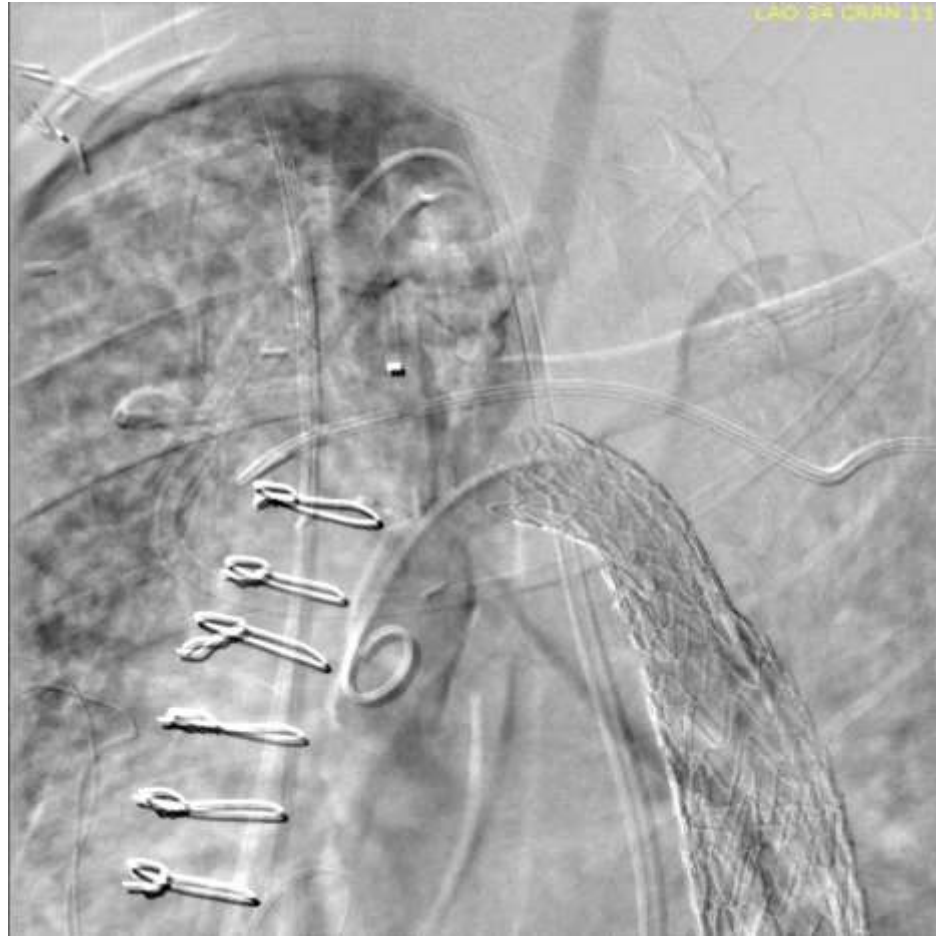
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Nose Cone into the Inomminate



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True Lumen Expanded



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POD 1 Echo

- The left ventricle is normal in size. Left ventricular systolic function is moderately decreased. **EF = 41 ± 5%** (2D biplane) Left ventricular diastolic function was not evaluated due to Limited assessment.
- - The right ventricle is normal in size. Right ventricular systolic function is normal.
- -There is a moderate circumferential pericardial effusion. Difficult to assess respiration variations within the inflows due to ventilation. Dilated IVC (3.0 cm). However, there is no evidence of diastolic chamber collapse. Recommend follow-up echocardiogram to assess for interval change in size of the pericardial effusion.
- Significant improvement in LV/RV function with interval increase in size of the pericardial effusion.

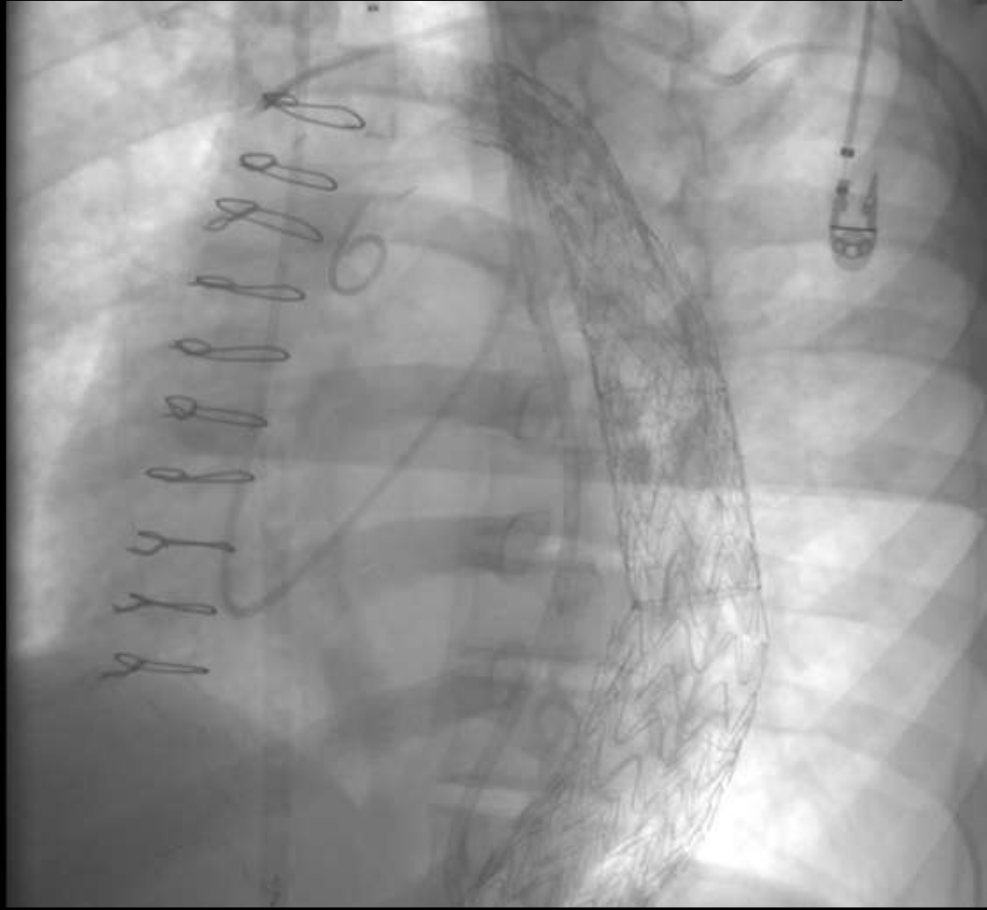




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28 x 15 C-TAG device, 34 x 15 C-TAG device, 34 x 10 C-TAG device

LAO 34 CRAN 0



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Heart Recovers

- Wean off ecmo
- Decanulated
- Weaned off vent
- Still anemic with hemolysis
- Sent to rehab

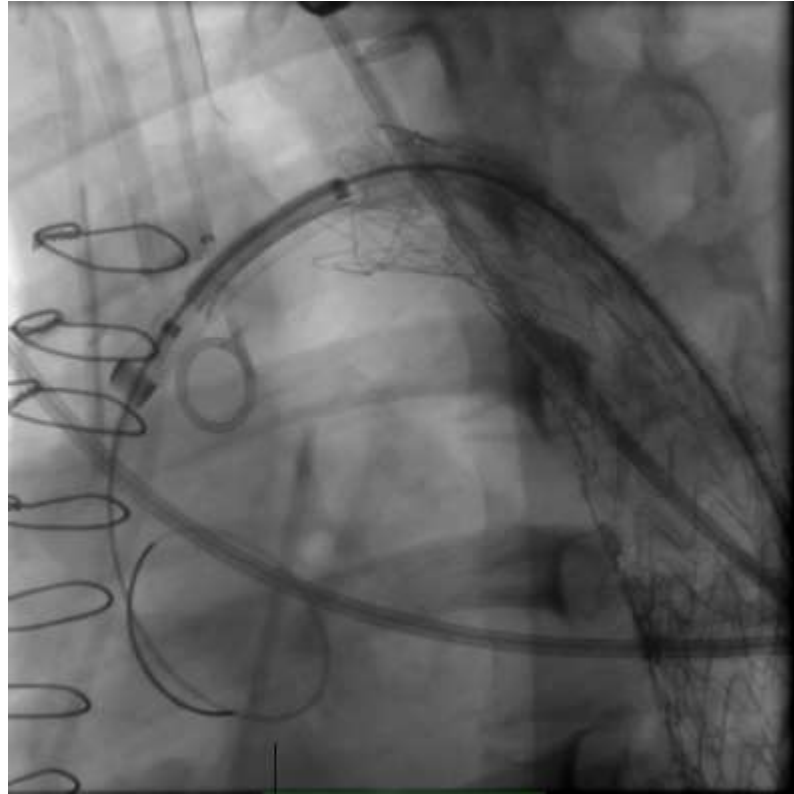


Seen in follow up

- Ongoing hemolysis
- Requiring blood every 7-10 days
- Worry high shear forces to blame
- Decide to Stent arch and do CS transposition



18-French 85 cm long Cook sheath all the way to the ascending aorta R arm sheath and access

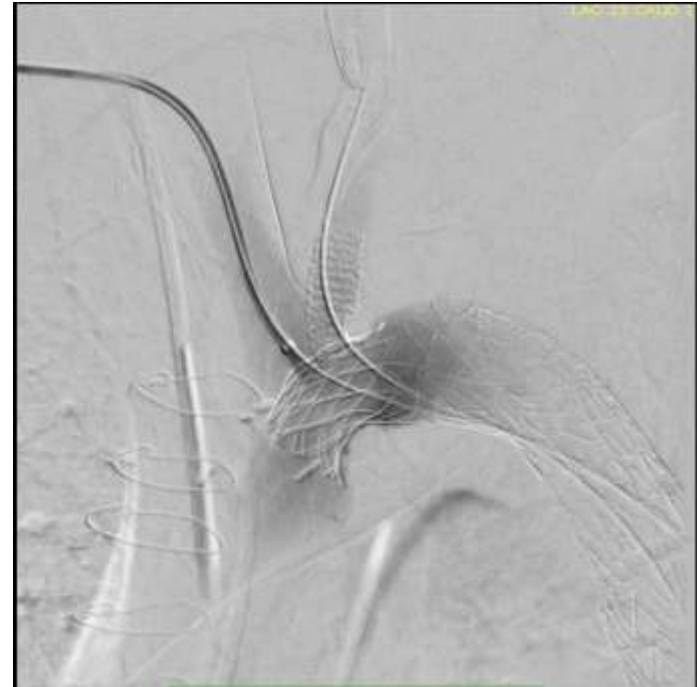
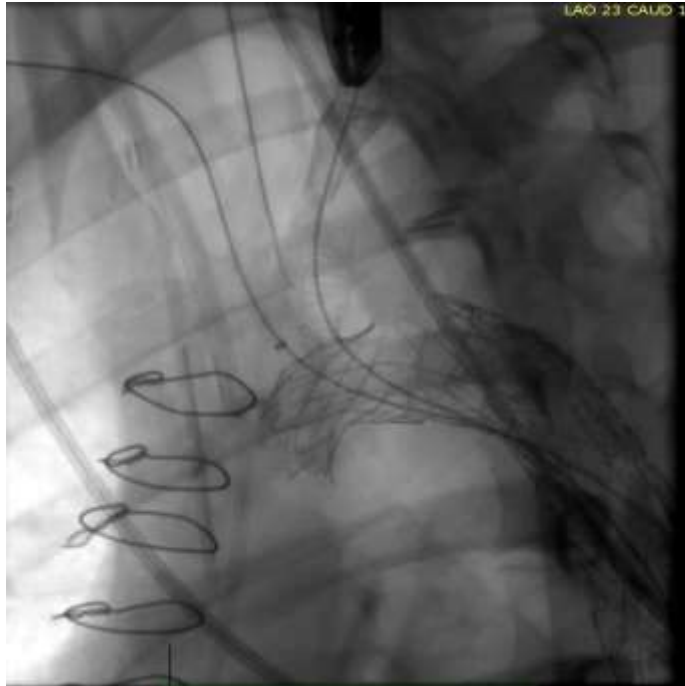


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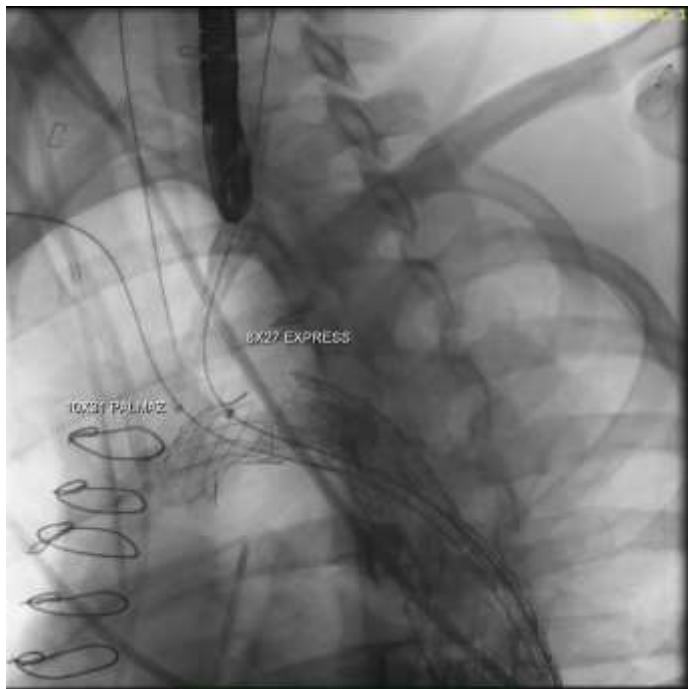
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First try 5110 Palmaz but kinks sheath Delivery 3110 Palmaz on Coda

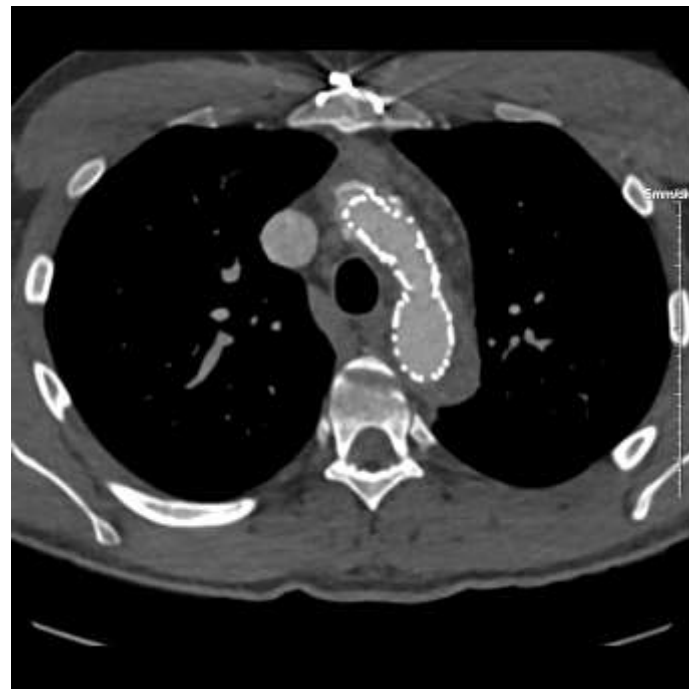
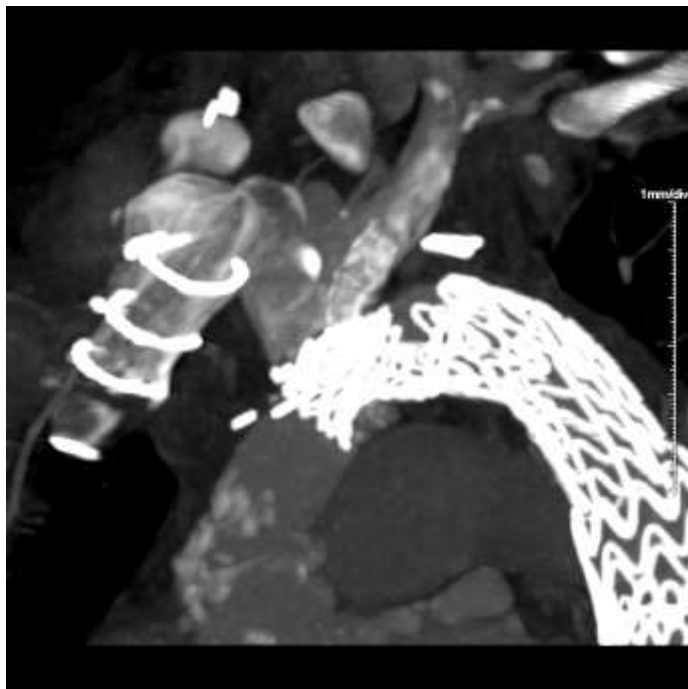
Left subclavian to carotid transposition, Aortic giant 3110 Palmaz, 8mm x 27mm Express LD stent into LCCA



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Lessons Learned

- Early identification of acute heart failure should suspect in wrong lumen or kinked ET or other event
- Completion ET can fix hemodynamics
- Small arch lumen with acute angulation can create shear forces and lead to ongoing hemolysis





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