

Aortic Arch Anatomy

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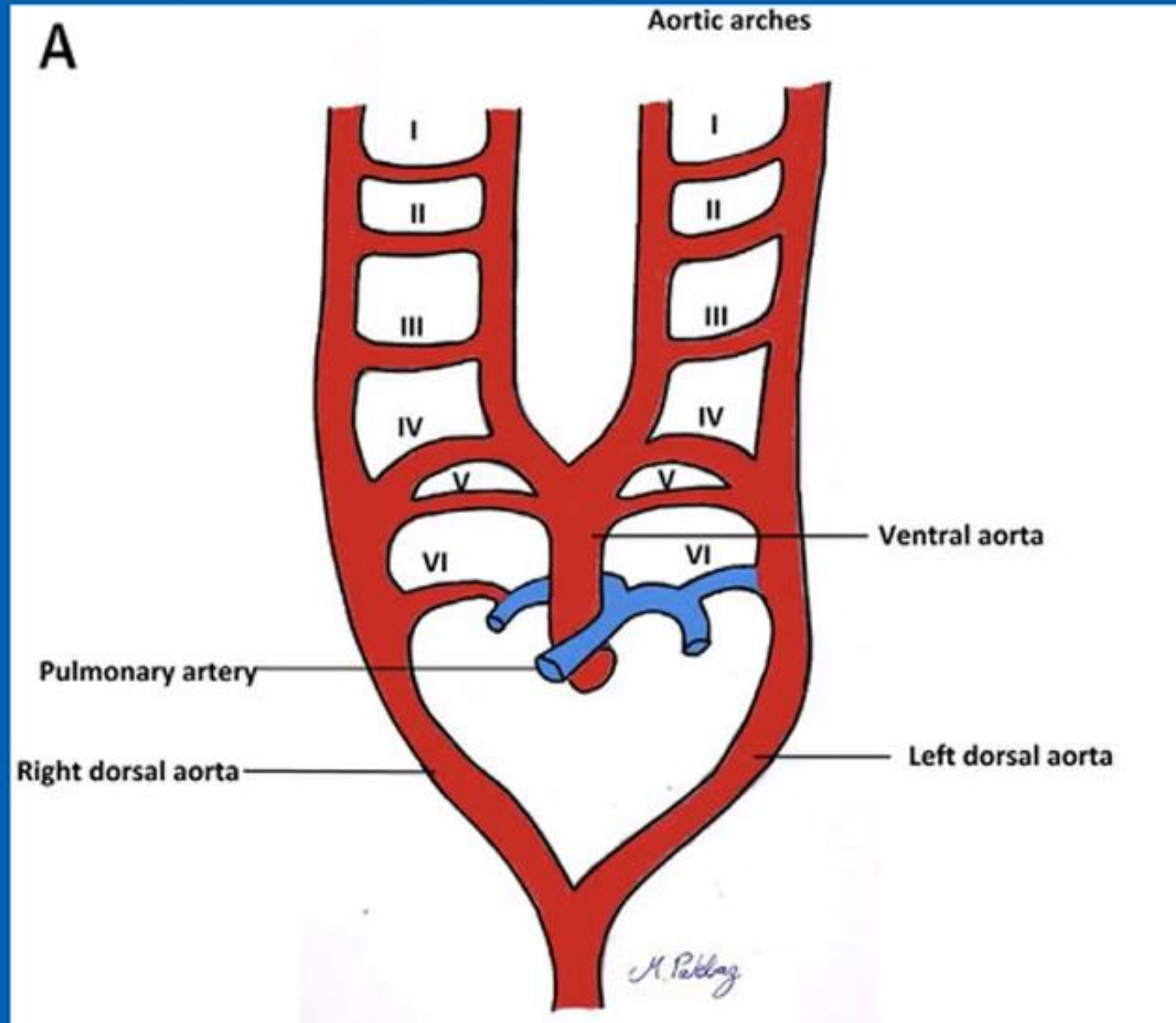


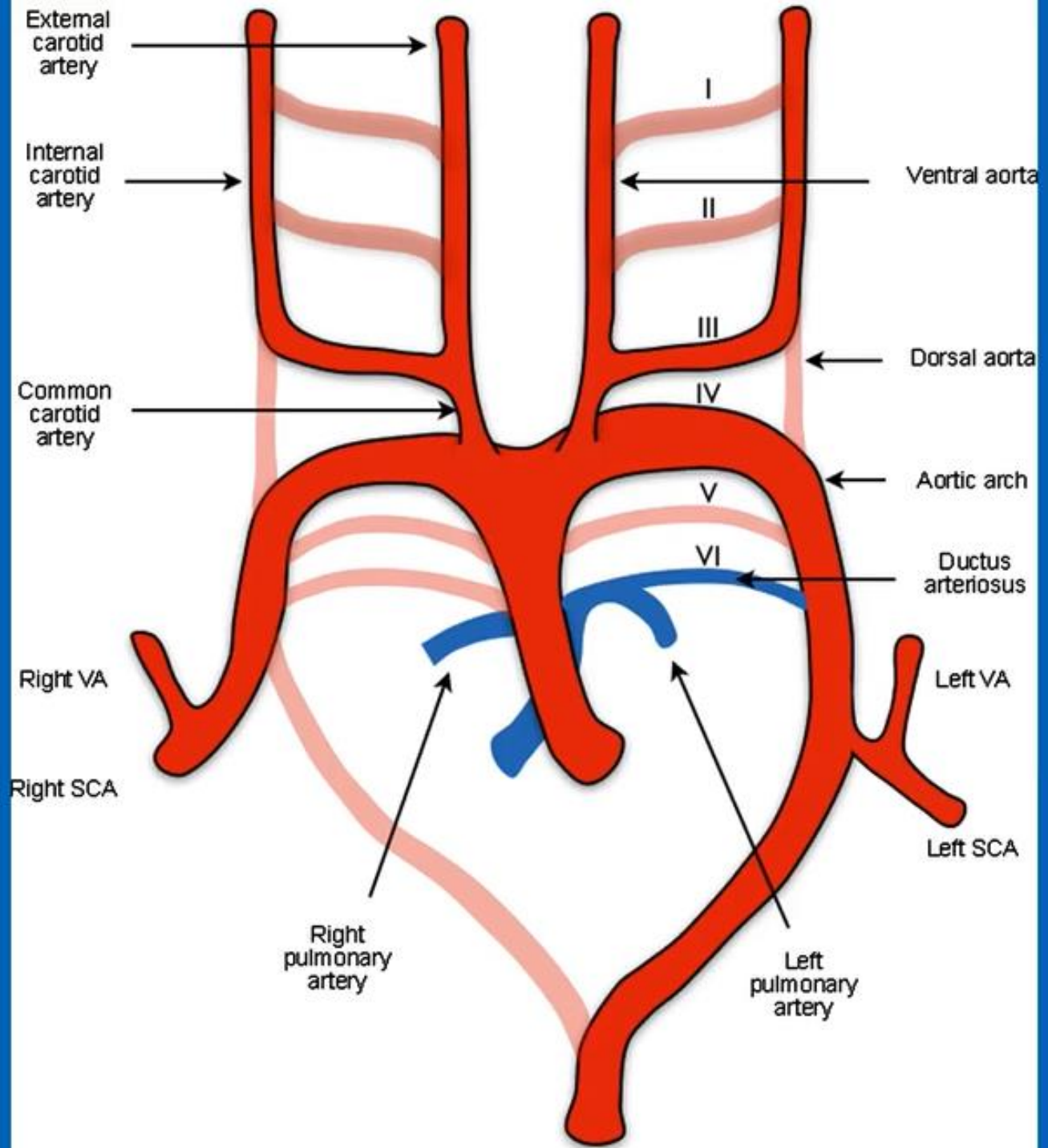
Agenda

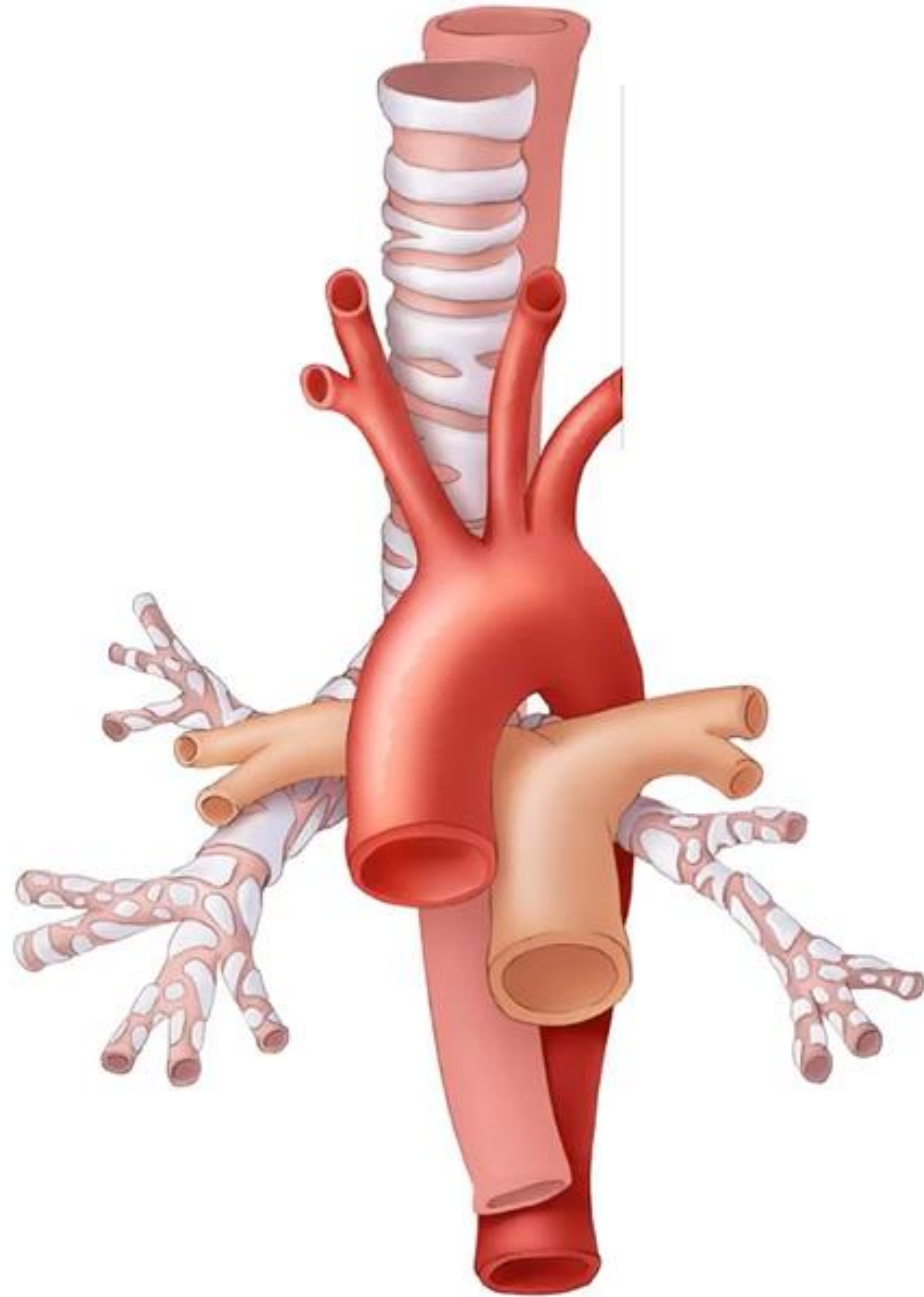
- Normal aortic arch anatomy
- Common Variants:
 - Left arch with a common brachiocephalic trunk
 - Left arch with aberrant right subclavian
 - Right aortic arch with mirror image branching
- Abnormalities:
 - Coarctation
 - Interrupted aortic arch
 - Vascular Rings



Aortic arch development



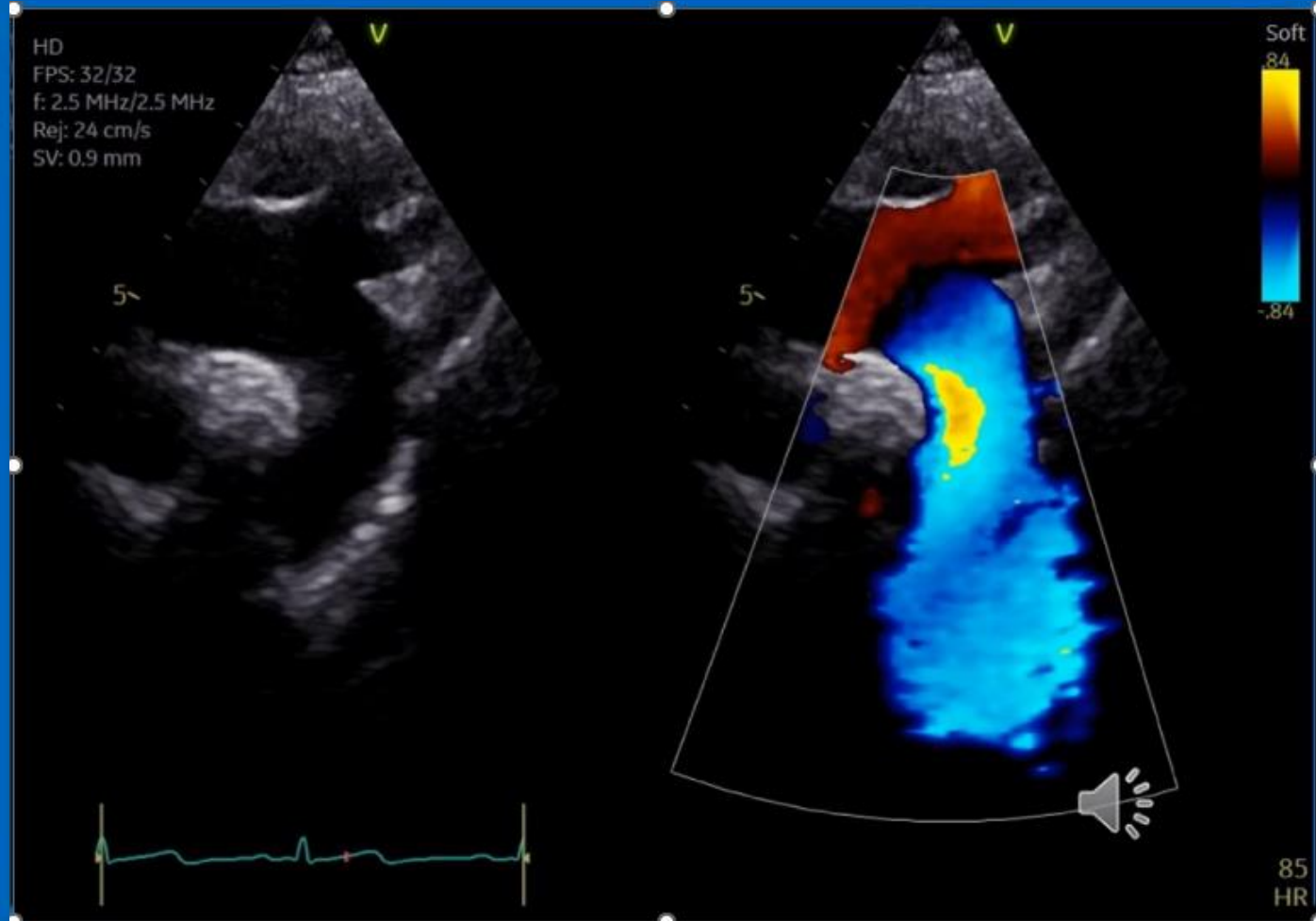




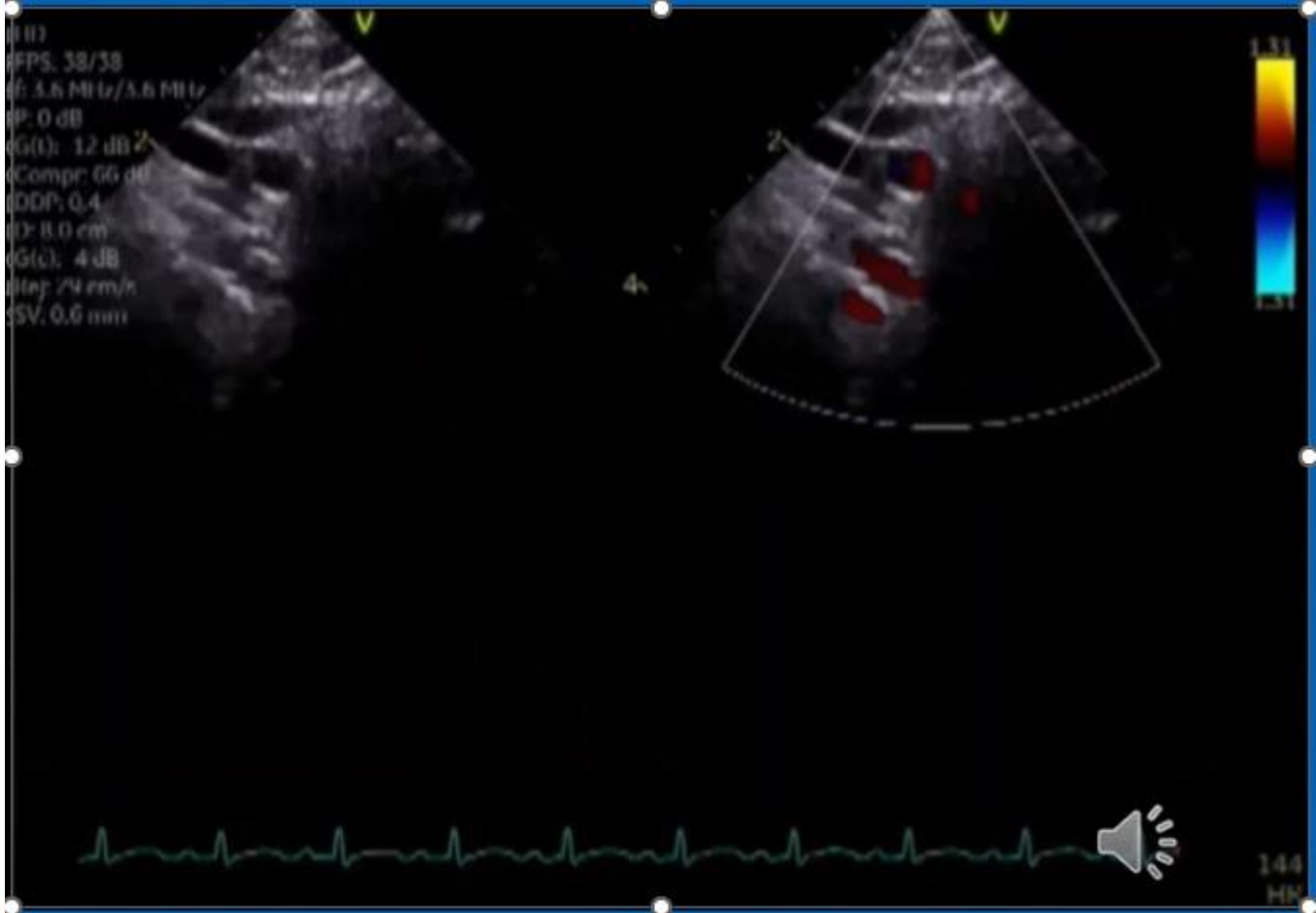
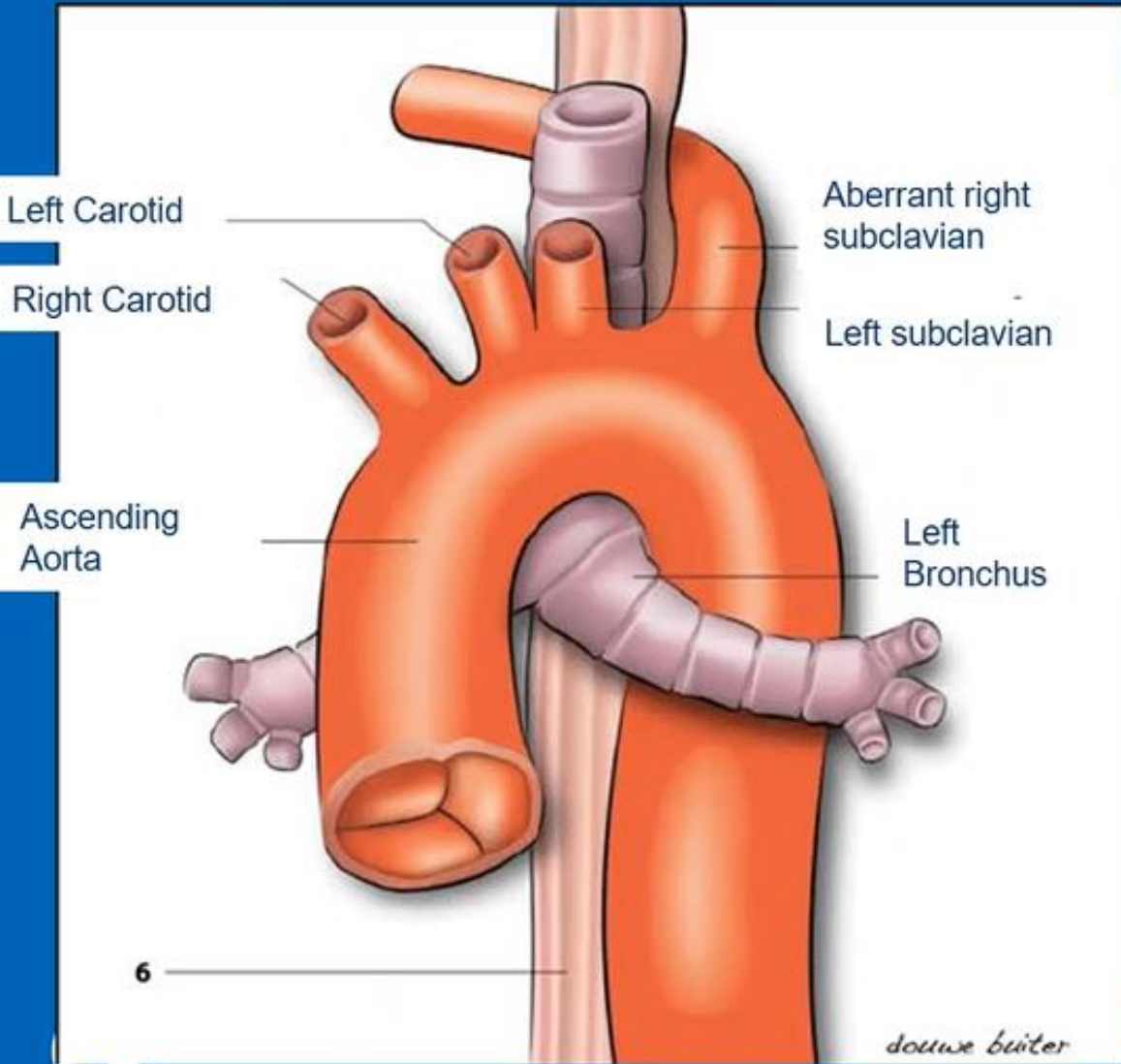
Common Variants



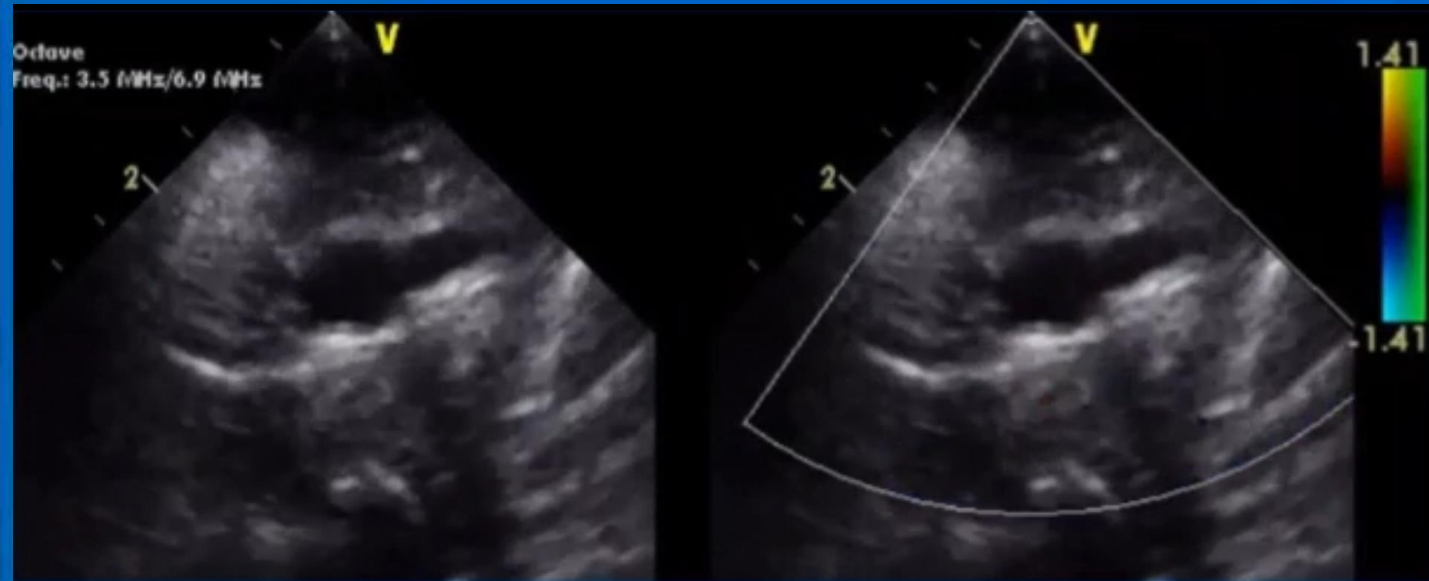
Left arch with common brachiocephalic trunk



Left aortic arch aberrant right subclavian



Right aortic arch with mirror image branching



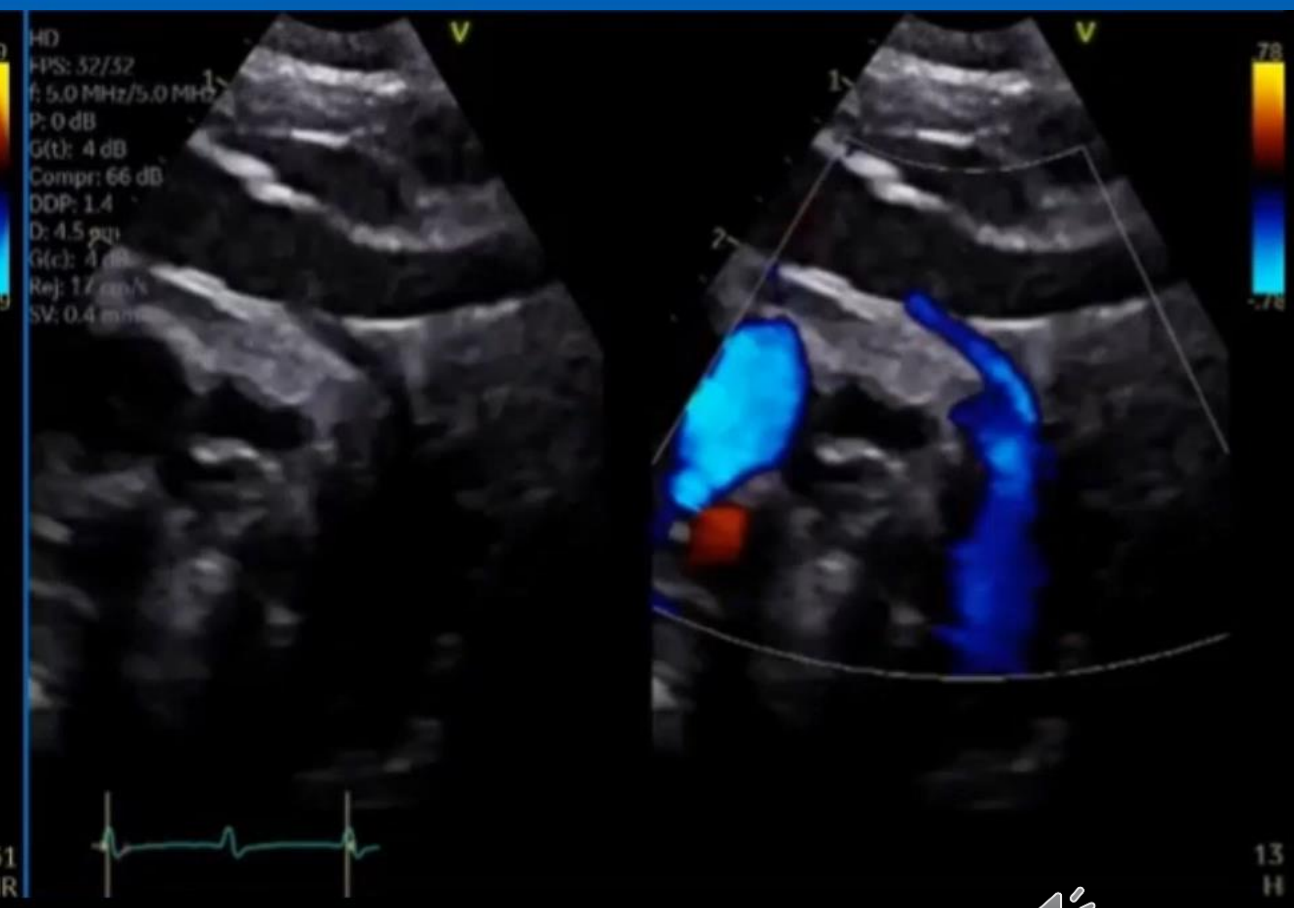
Arch abnormalities



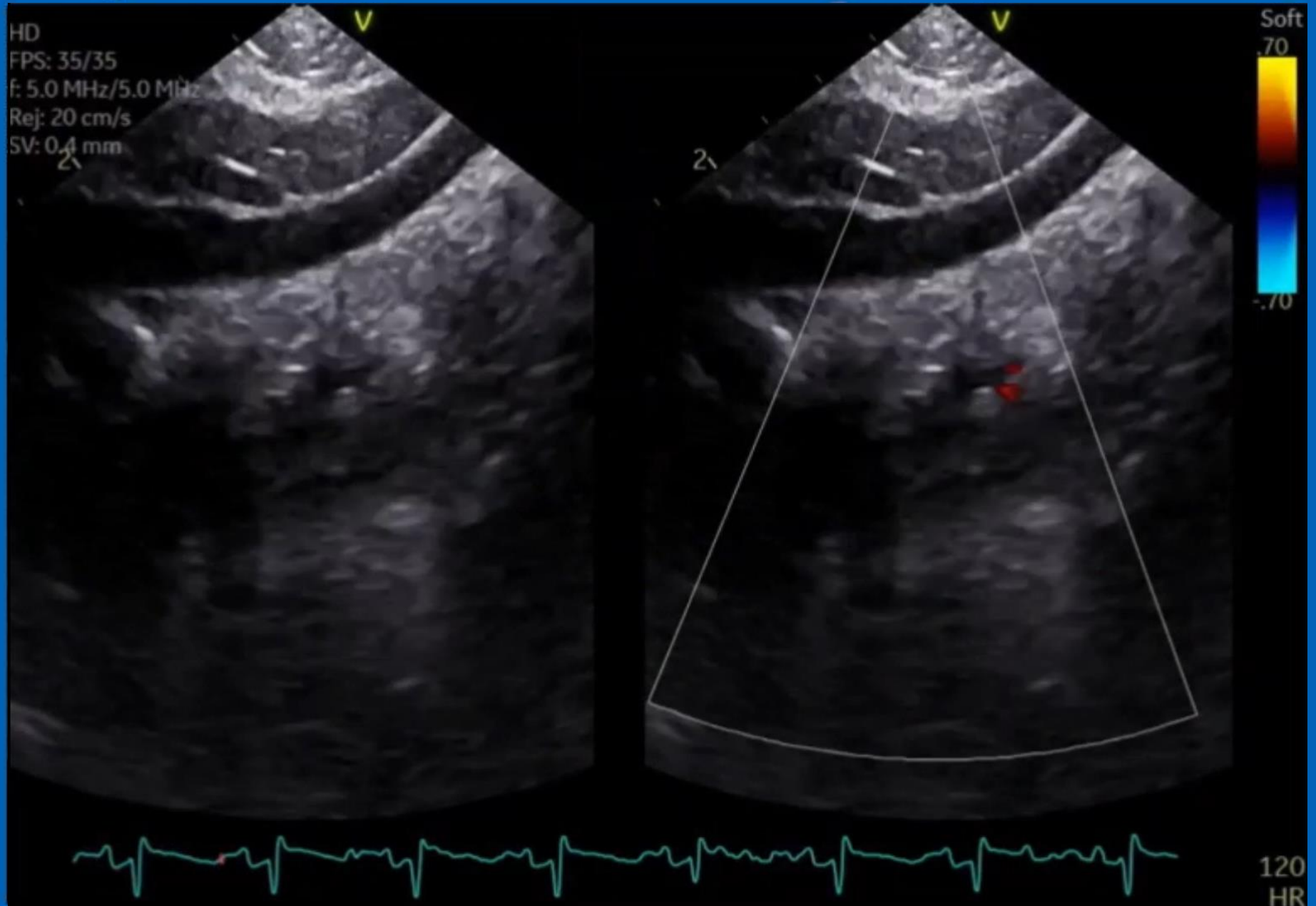
Coarctation of the aorta

- Coarctation of the aorta is a narrowing usually distal to the left subclavian artery.
- Anatomic variations exist ranging from discrete narrowing, to long segment hypoplasia of the transverse aortic arch and interrupted aortic arch.
- Coarctation accounts for approximately 4-8% of all congenital heart defects





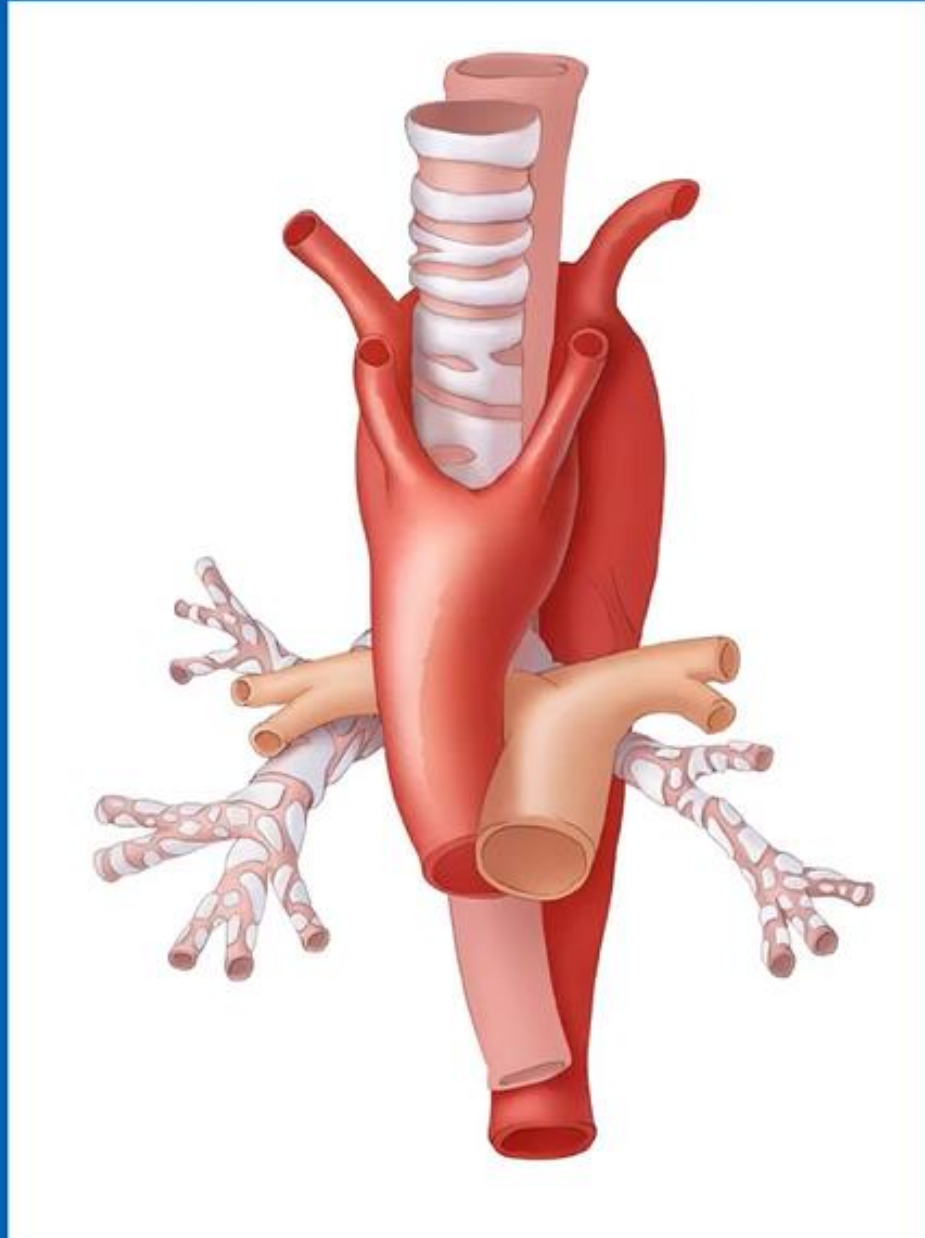
Interrupted Aortic Arch



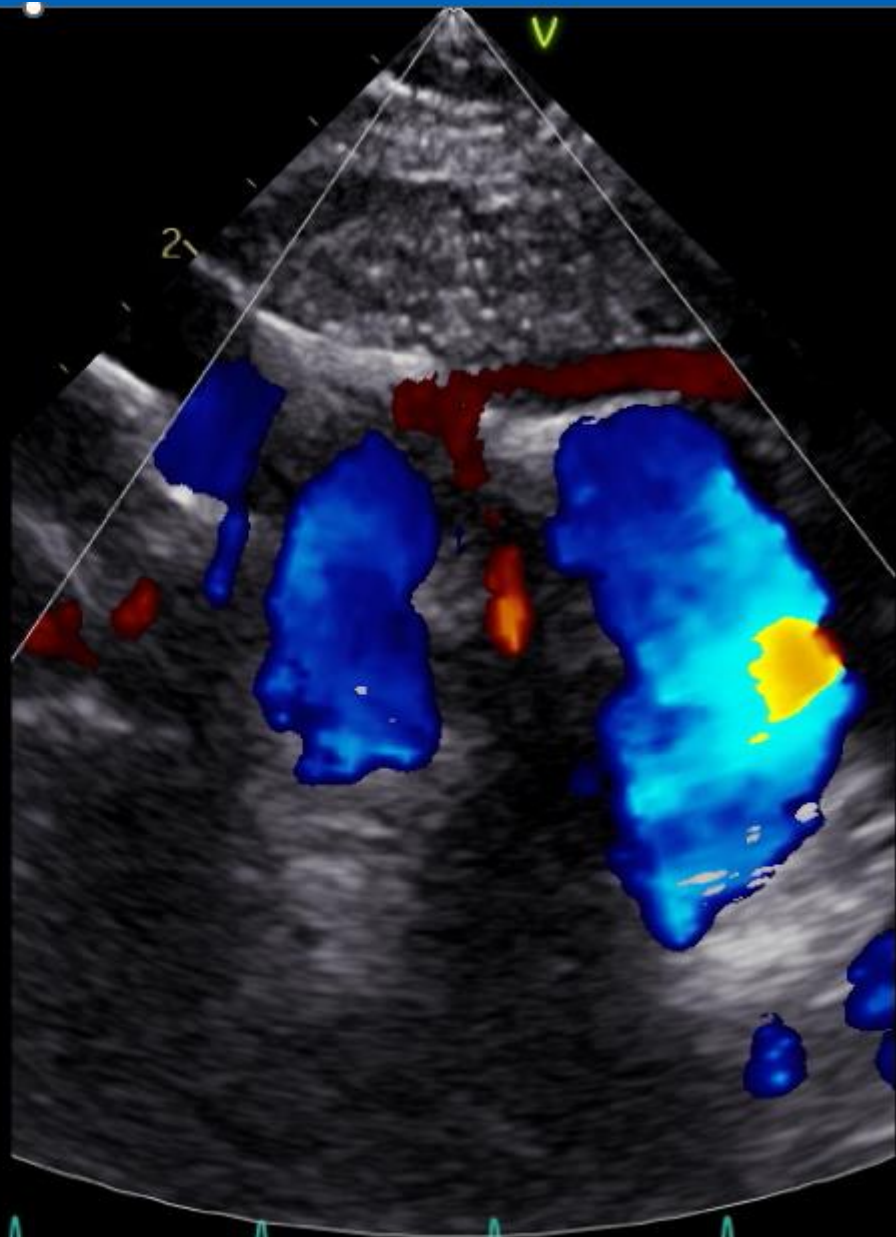
Vascular Rings



Double aortic arch



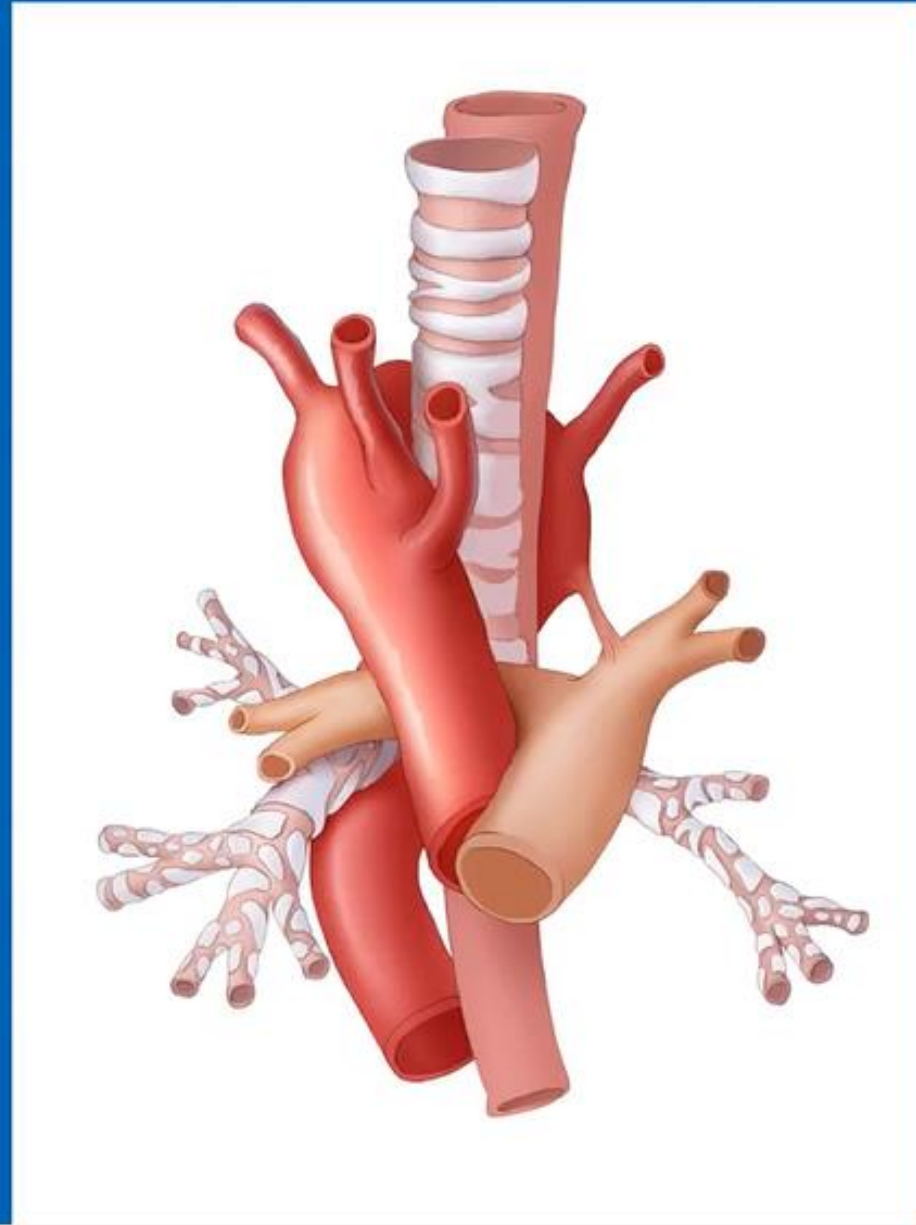
HD
FPS: 25/25
f: 3.3 MHz/3.3 MHz
G(c): -4 dB
Rej: 27 cm/s
SV: 0.9 mm



102
HR



Right arch aberrant left subclavian



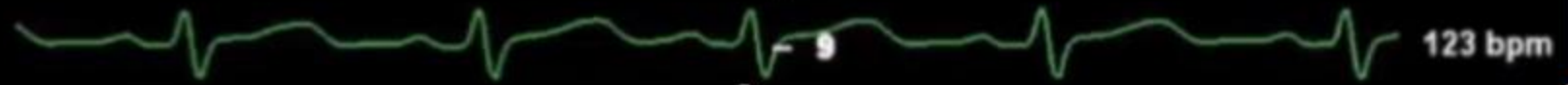
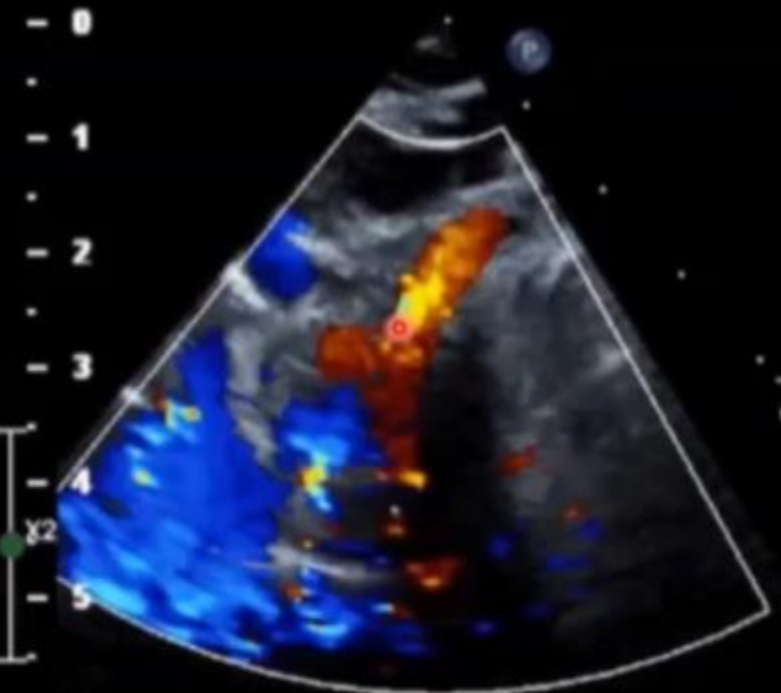
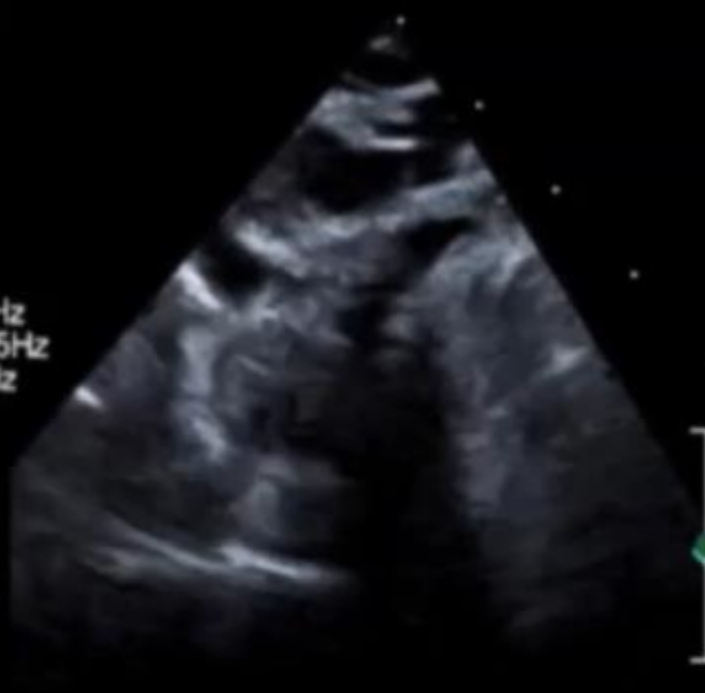
CHCO PED

TIS1.8 MI 1.2

S9-2
15Hz
9.0cm

2D
81%
C 52
P Off
HGen

CF
40%
5940Hz
WF 475Hz
3.3MHz



123 bpm



References

1. Allen, HD (2017). Moss and Adams' Heart Disease in Infants, Children, and Adolescents (9th Edition). Wolters Kluwer.
2. Keane, JF (2006). Nadas' Pediatric Cardiology (2nd Edition). Elsevier
3. https://www.researchgate.net/figure/Aortic-Arch-Embryology_fig2_337002991
4. [https://www.clinicalradiologyonline.net/article/S0009-9260\(10\)00078-4/fulltext](https://www.clinicalradiologyonline.net/article/S0009-9260(10)00078-4/fulltext)
5. https://www.researchgate.net/figure/Anatomy-of-an-aberrant-right-subclavian-artery-Right-common-carotid-artery-1-left_fig2_5676682



Thank you



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