

Post-operative Adult Congenital Heart Disease

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Disclosures/Learning Objectives

- Identify important lesions post-op ACHD patients
 - Transposition (dTGA)
 - Tetralogy of Fallot
 - AV Septal Defect Spectrum
 - Single Ventricle/Fontan

Disclosures:

- Off-label uses of devices



Temporal PC-MRA Mean

The Tidal Wave



Cardiopulmonary Bypass



Tetralogy of Fallot Repair



Norwood/Glenn/Fontan
Hypoplastic Left Heart



Blalock-Taussig-Thomas Shunt



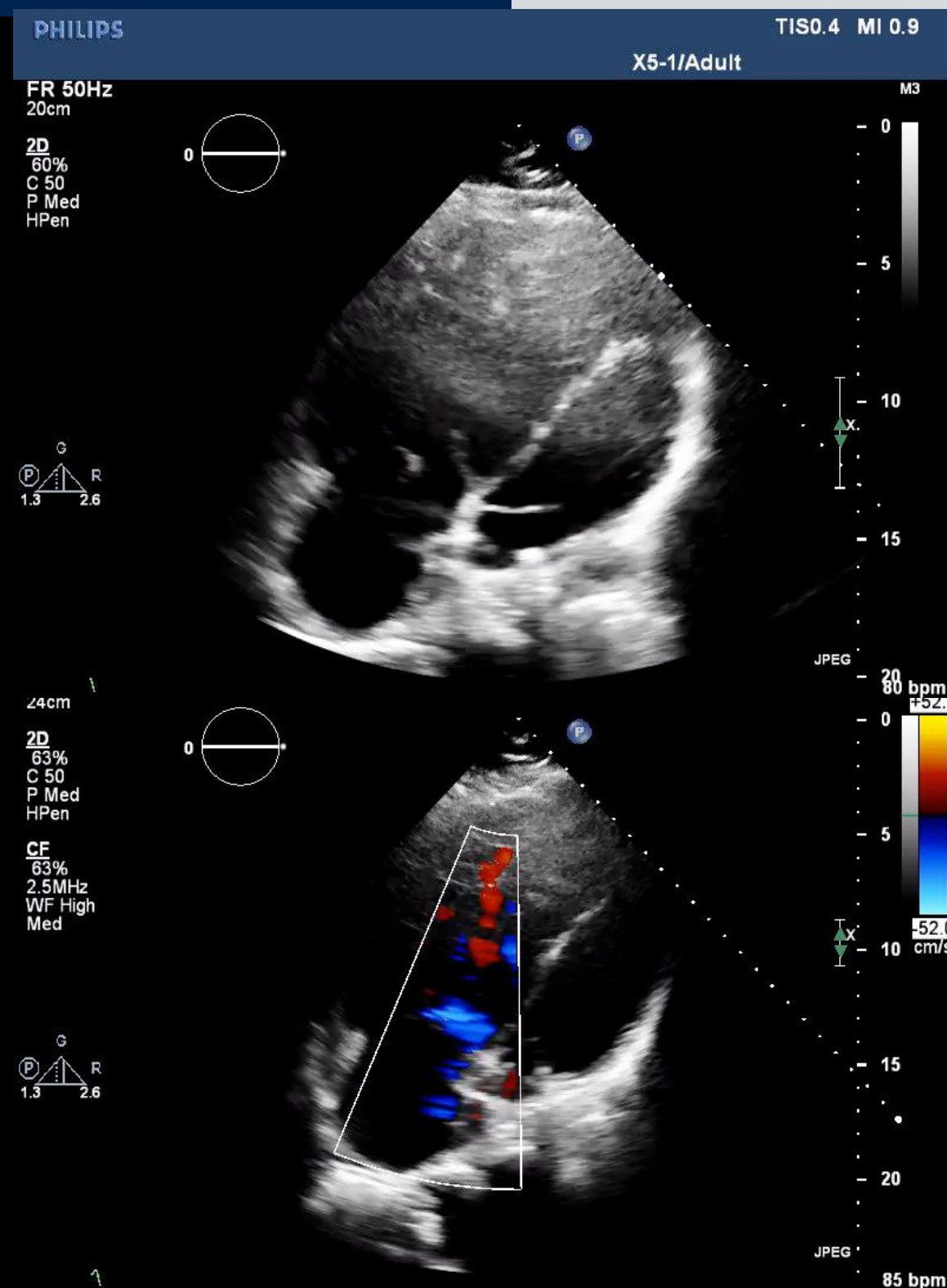
Mustard Repair of
Transposition of the Great Arteries

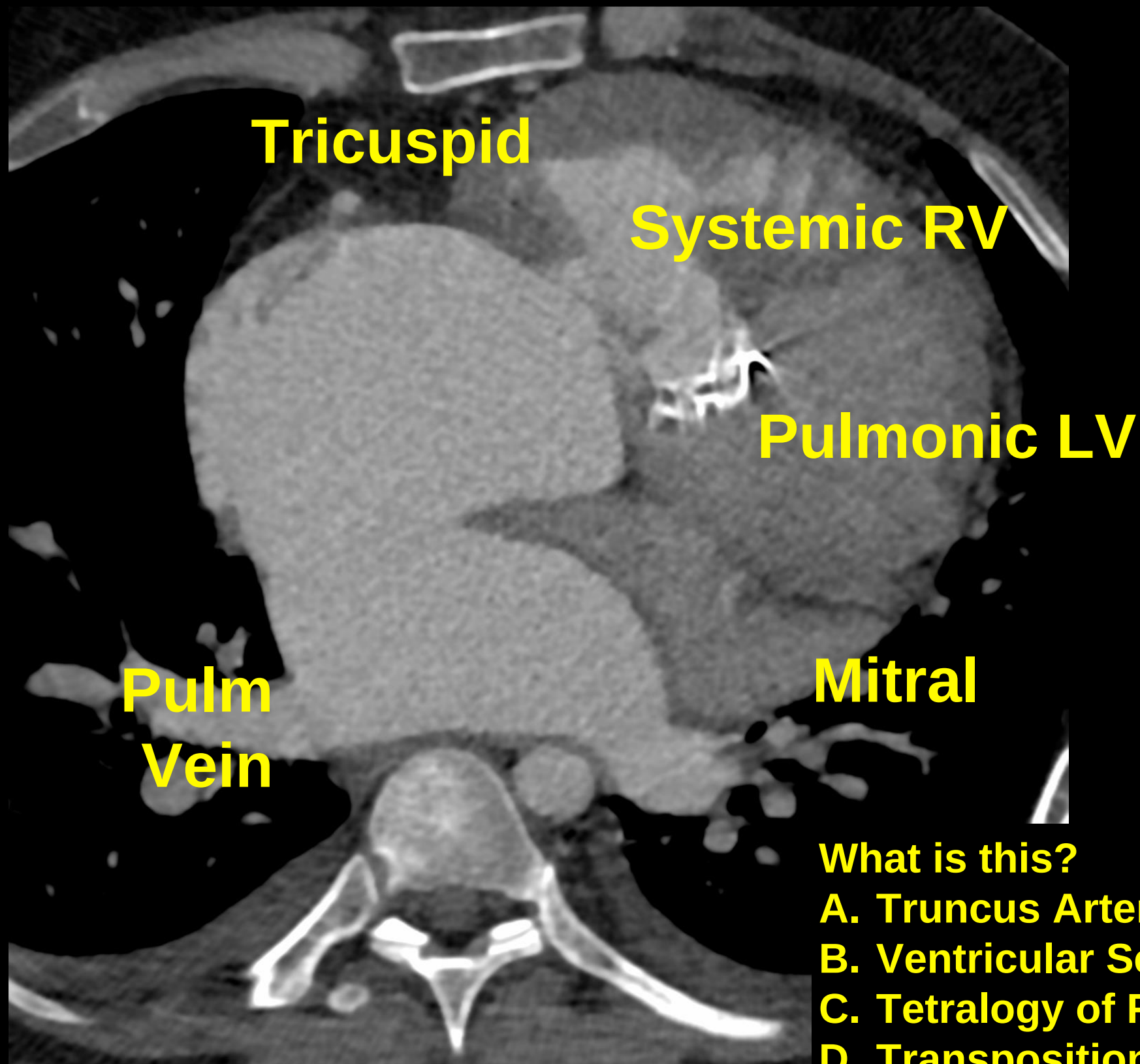


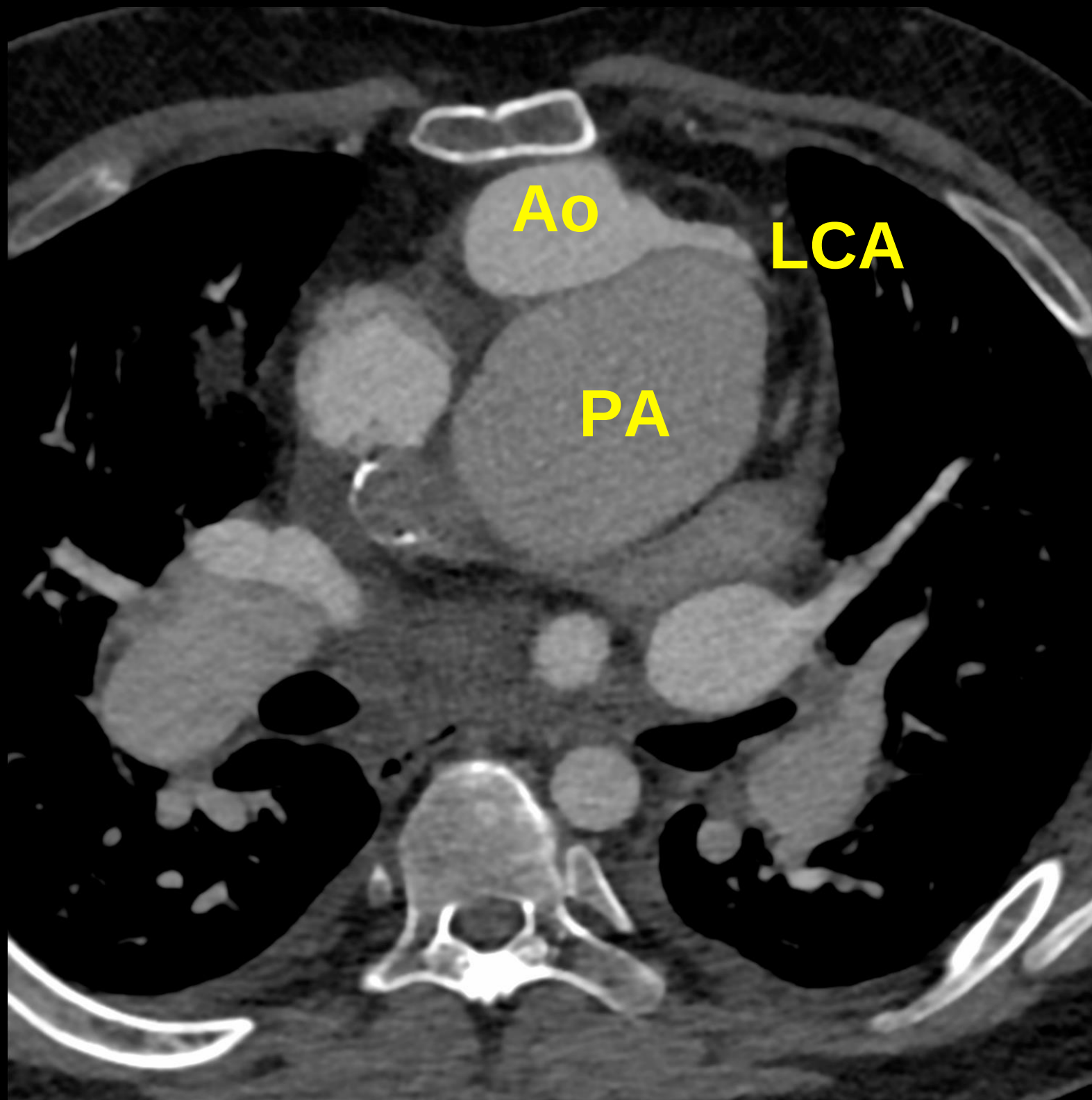
Adult Congenital

Case 1 - Echo

- 29M with severe CHF/borderline shock.
- Emergency procedure as a neonate
- Heart surgery at 3 years old.







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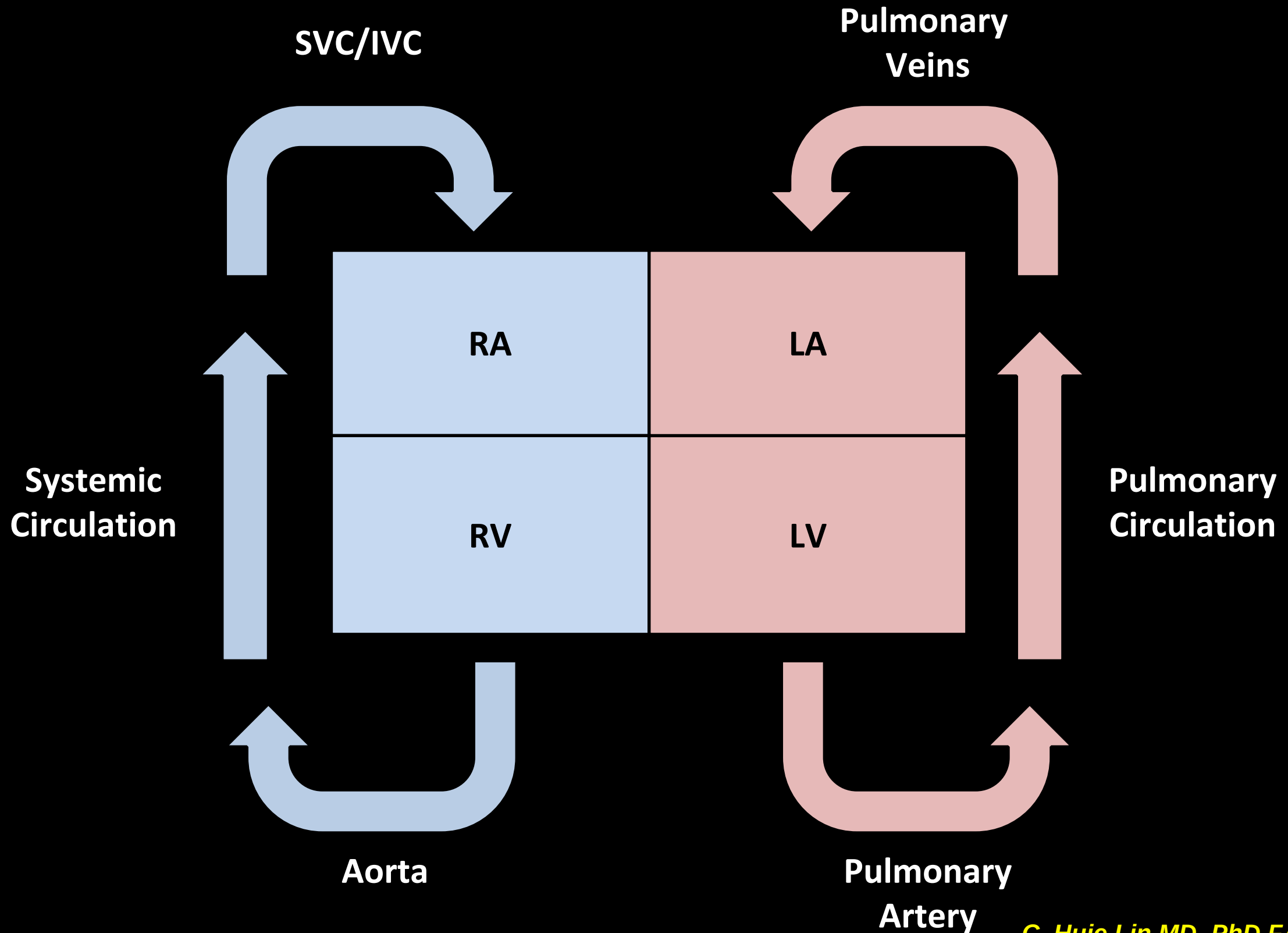
clin@houstonmethodist.org



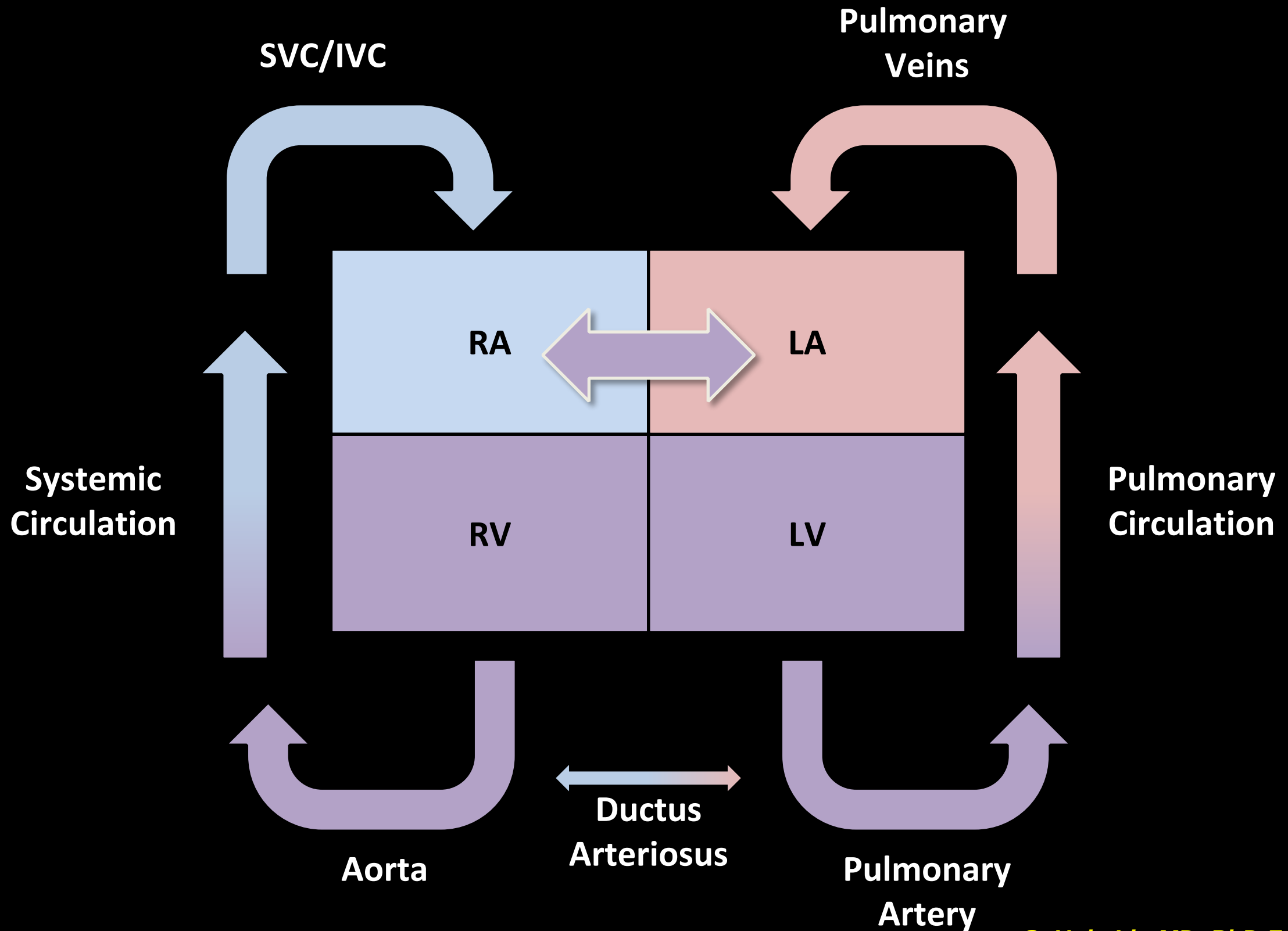
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Transposition of the Great Arteries

D-Transposition of the Great Arteries @ Birth

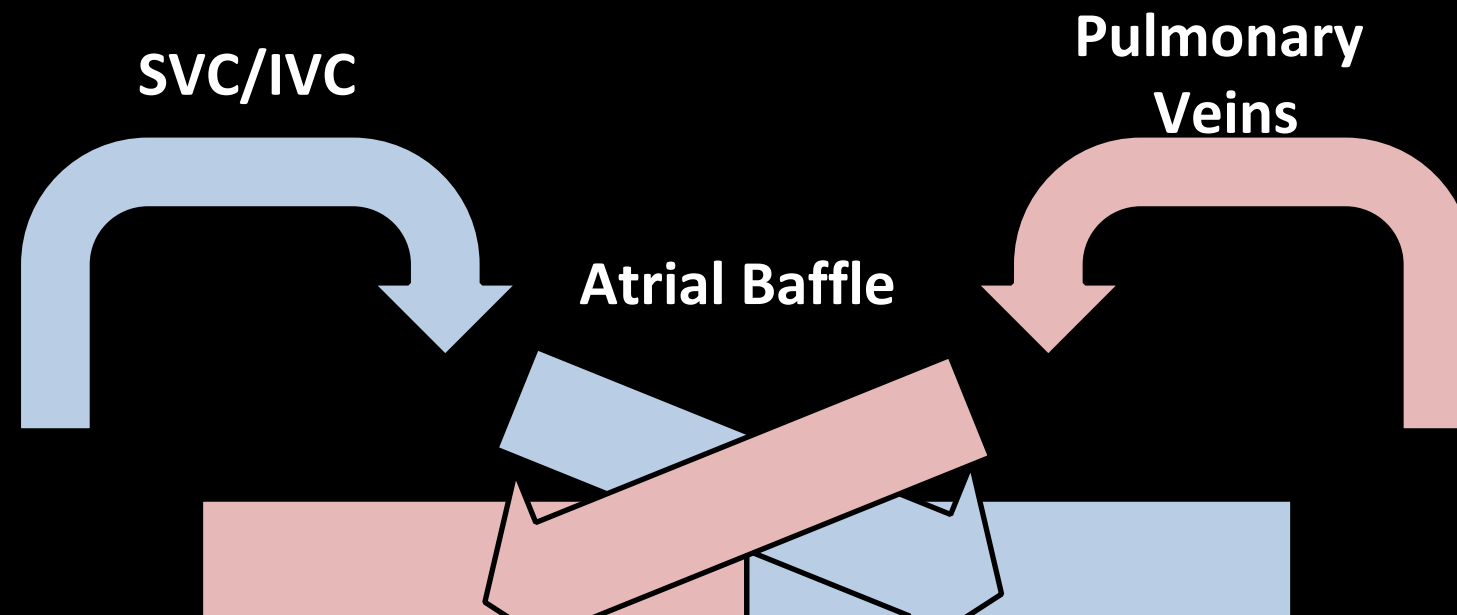


Rashkind Septostomy



Atrial Switch

(Senning or Mustard)



**Our Pt has systemic RV Pressure
and Volume Overload**

Systemic
Circulation

Beware TGA Atrial Switch:

- Heart Failure
- Tricuspid regurgitation
- Atrial Arrhythmias
- Sudden Death

Pulmonary
Circulation

Aorta

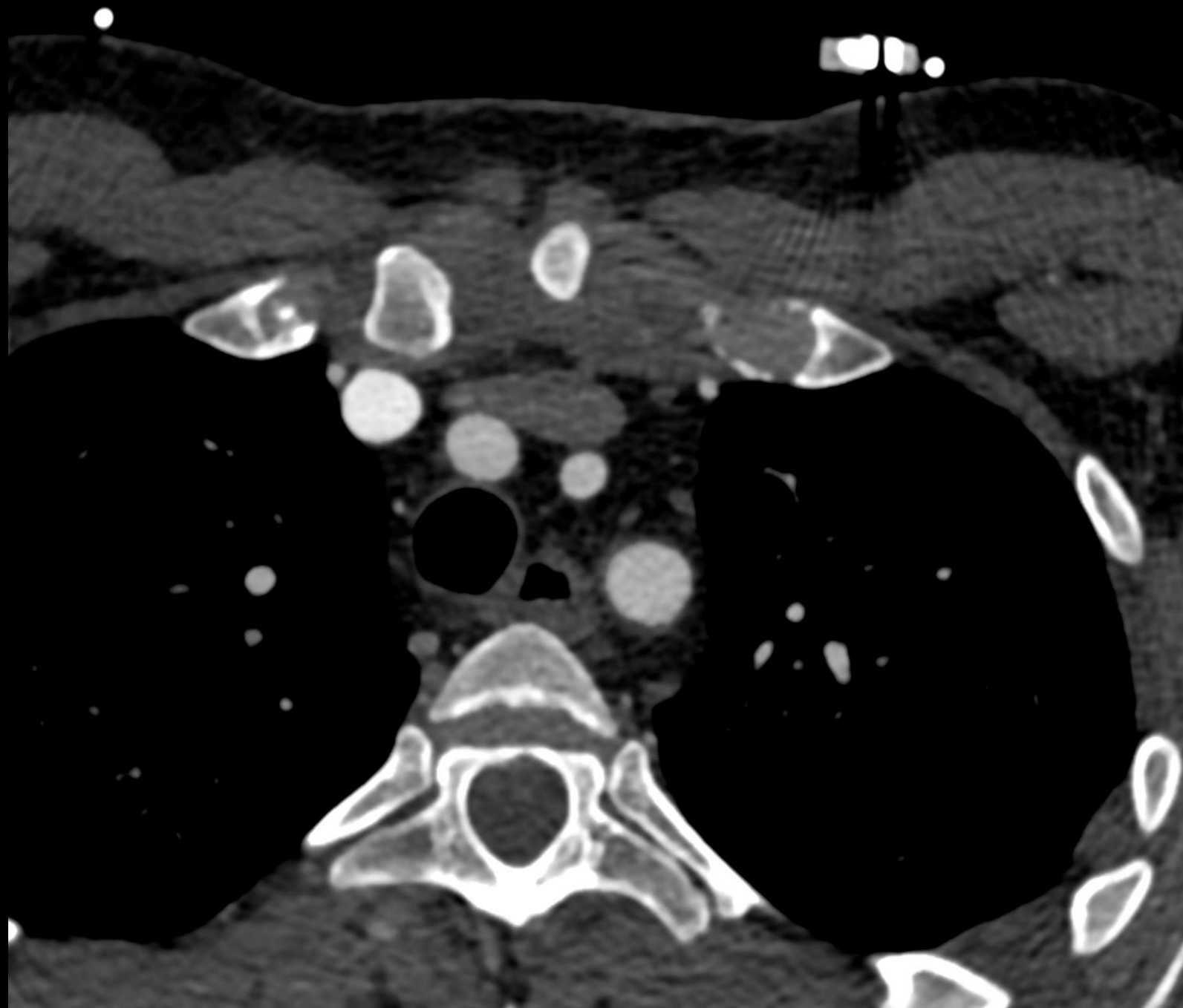
Pulmonary
Artery



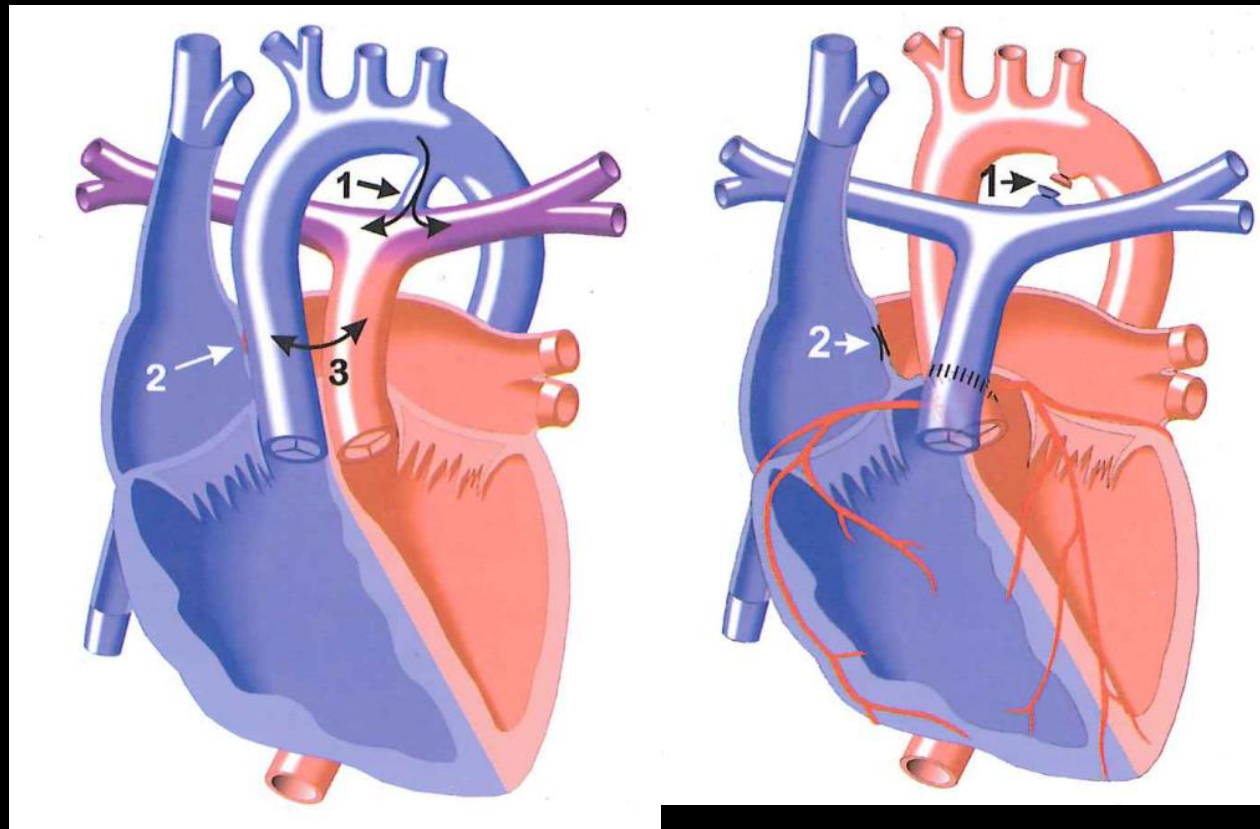
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Case 2: What's this?



Mid 1980s: D-TGA – Arterial Switch (Contemporary Repair)



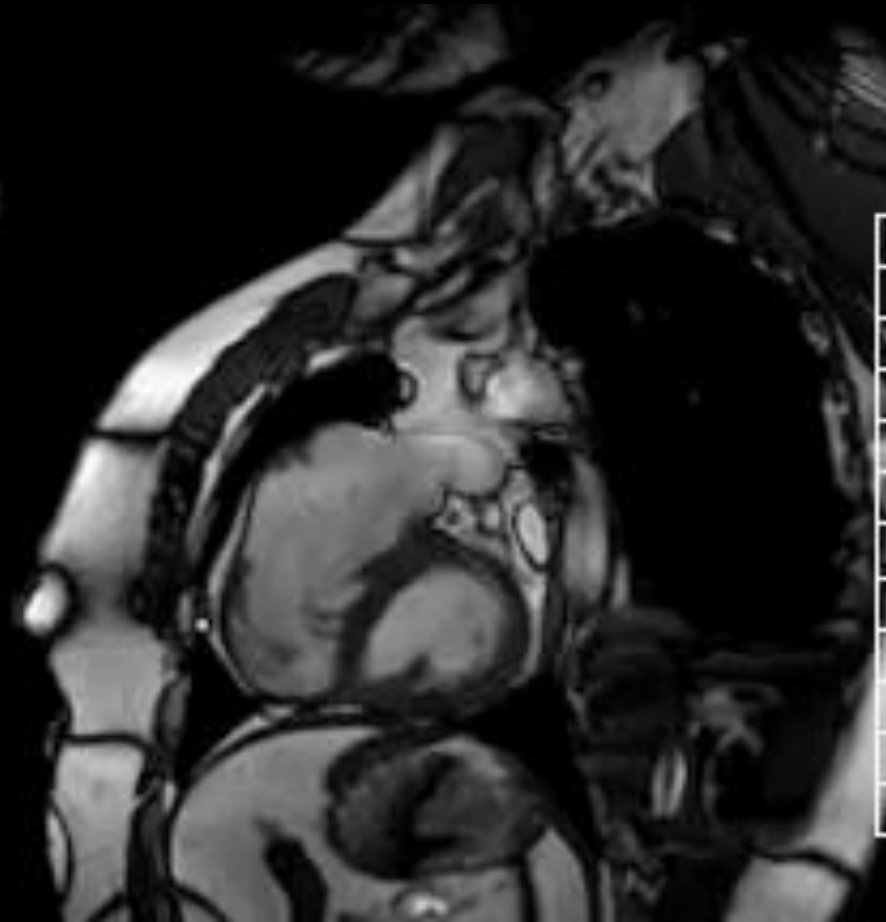
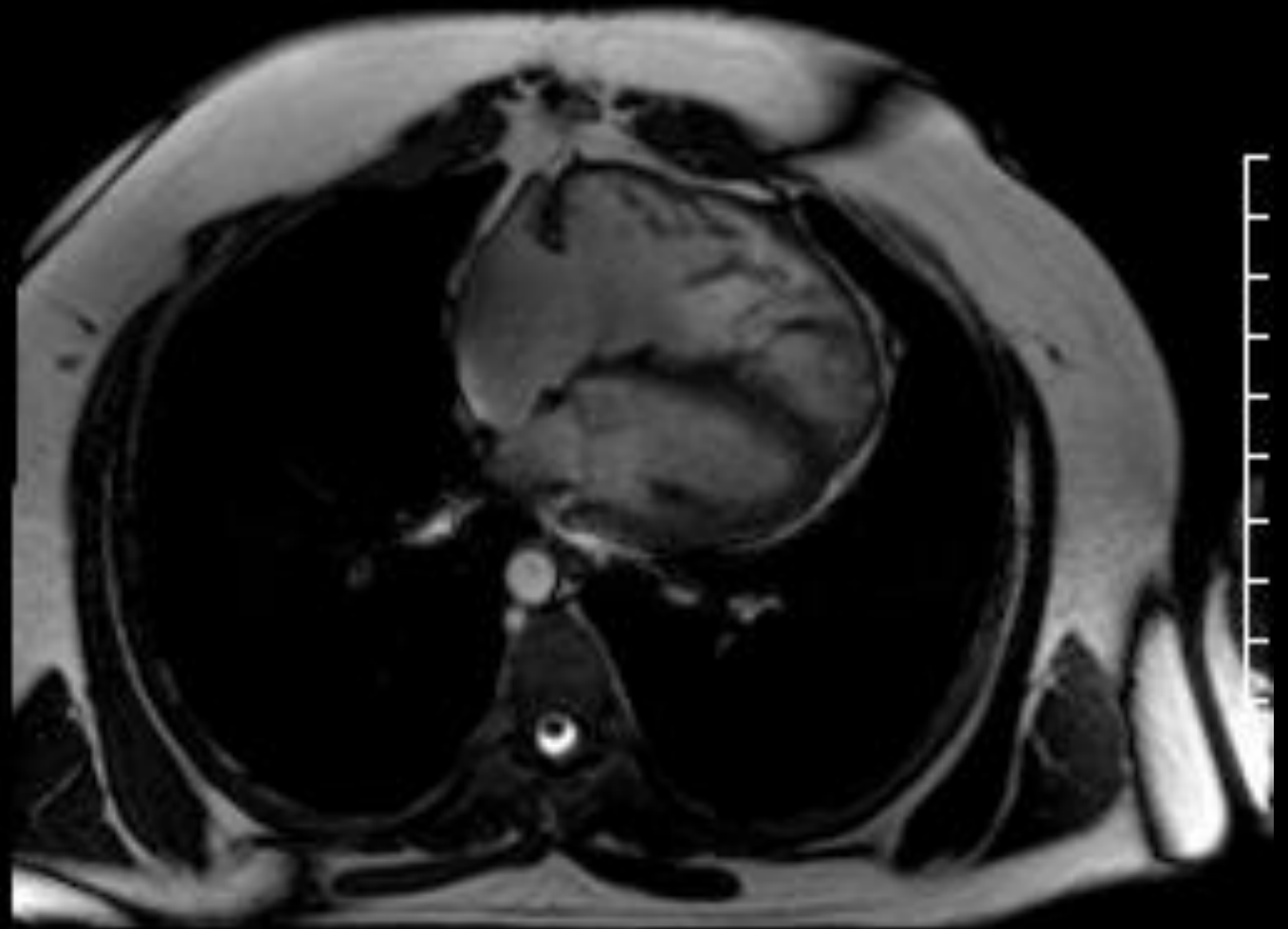
- **Coronary arterial kinking/lesions**
- **Pulmonary arterial stenoses**



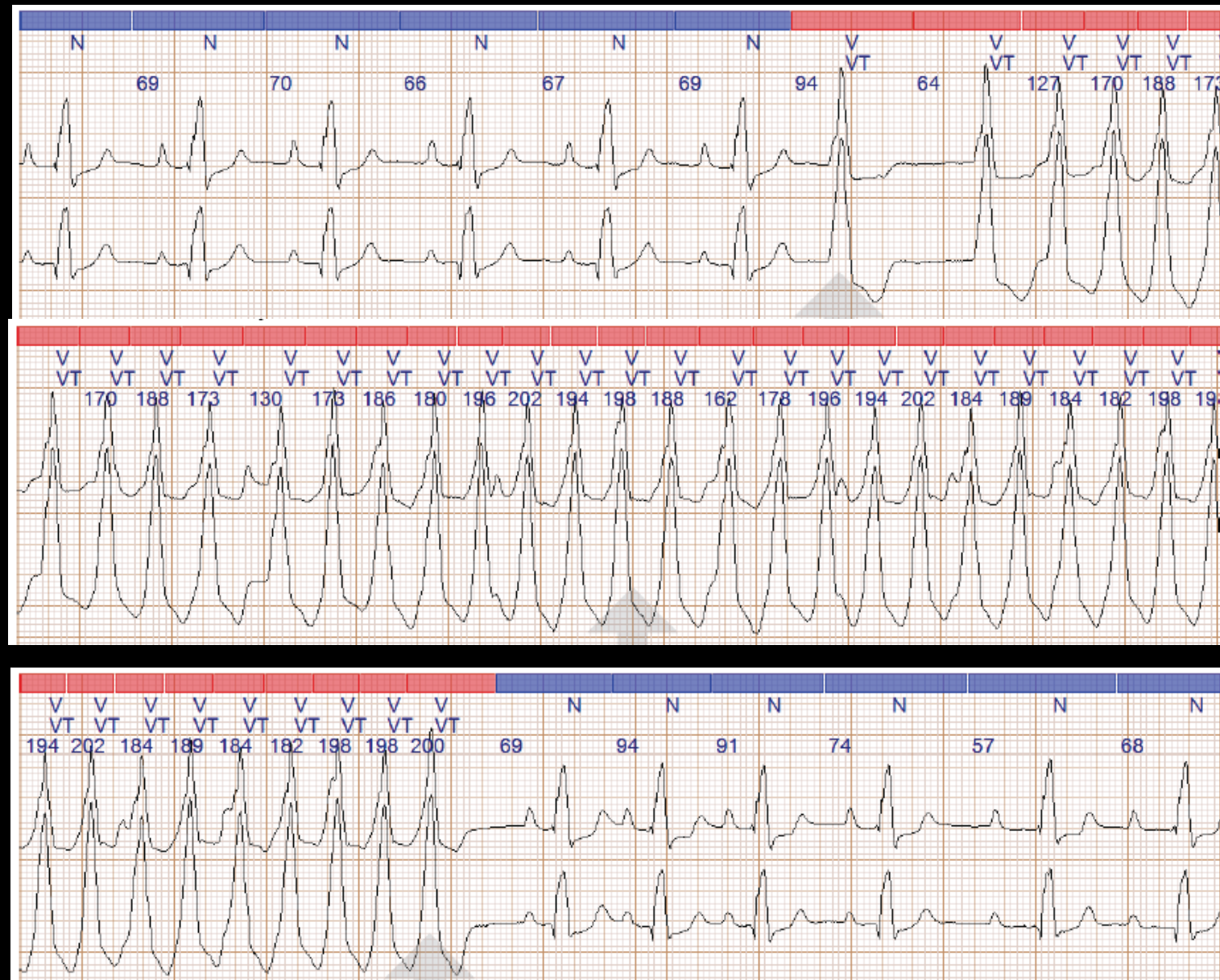
Coming soon to an ER near you!

Case 3

- 36M with CHD
 - Repaired age 1
 - Asymptomatic
 - “Occasional Palpitations”

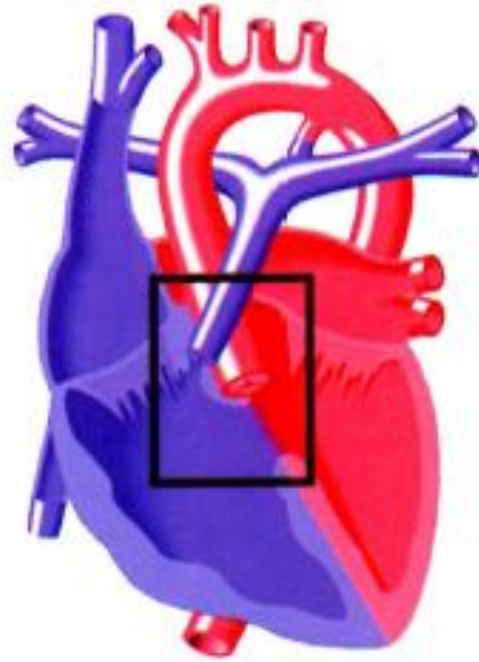


Day 2 of monitoring



Tetralogy of Fallot

Tetralogy of Fallot Repair

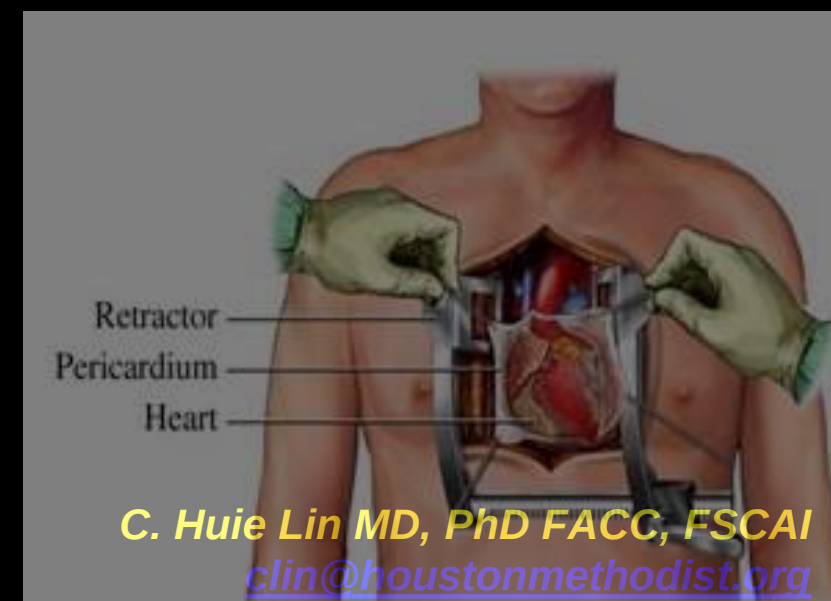


Valve
Replacement

PI is Not Benign...



- Typically undergoes bioprosthetic PVR in teens-30s
- Then what?



Case 4

- 38F referred for heart transplant
- Surgery #1: Repair early childhood
- Surgery #2: Valve Replacement #21 Perimount in 2003.

17cm

2D
52%
C 50
P Low
HPen



G
P 1.3 R 2.6



0
5
10
15
JPEG
55 bpm

FR 19Hz
18cm

2D
47%
C 50
P Low
HPen



G
P 1.3 R 2.6



0
5
10
15
JPEG

2D
54%
C 50
P Low
HPen

CF
63%
2.5MHz
WF High
Med



G
P 1.3 R 2.6

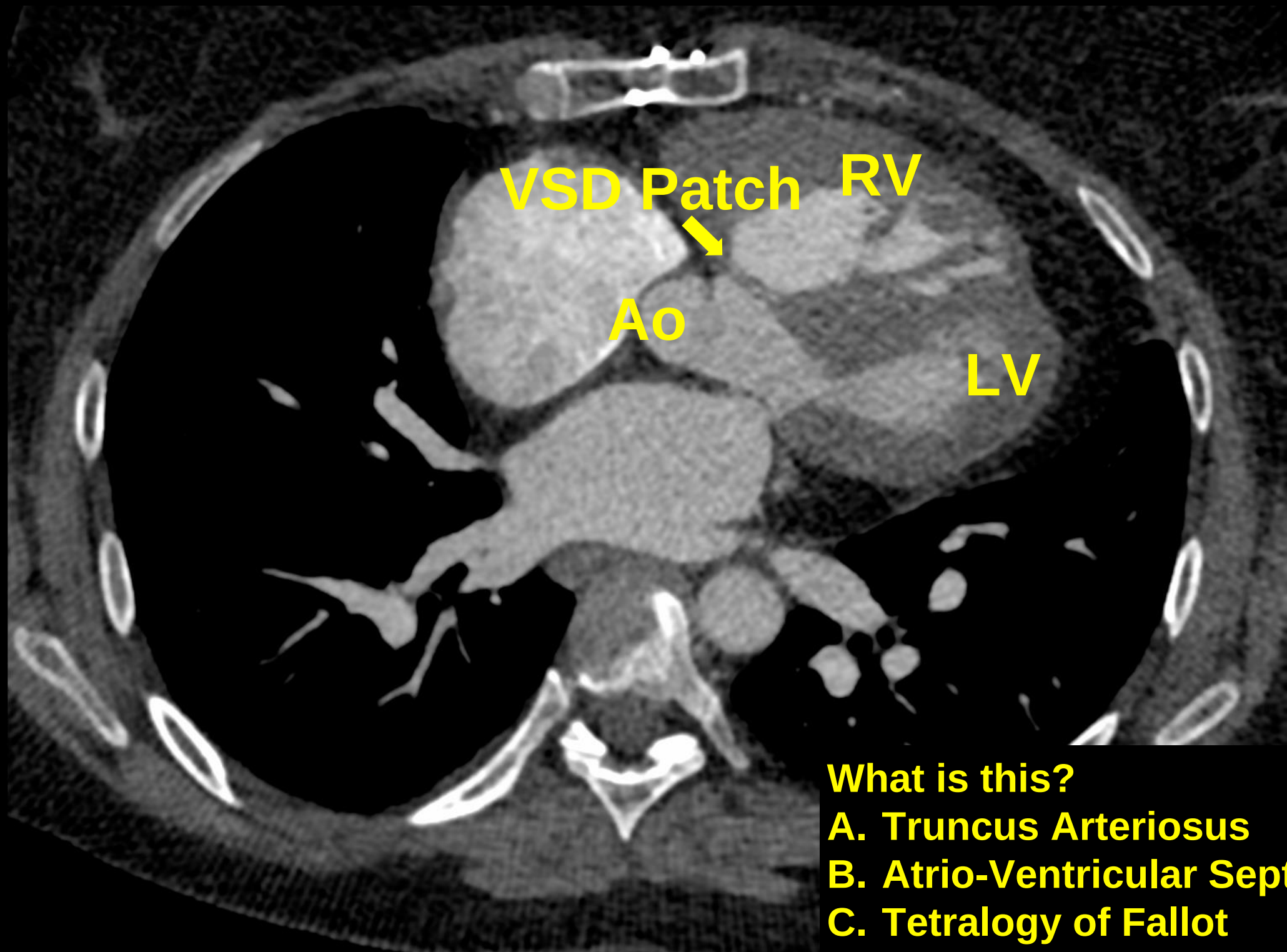


0
5
10
15



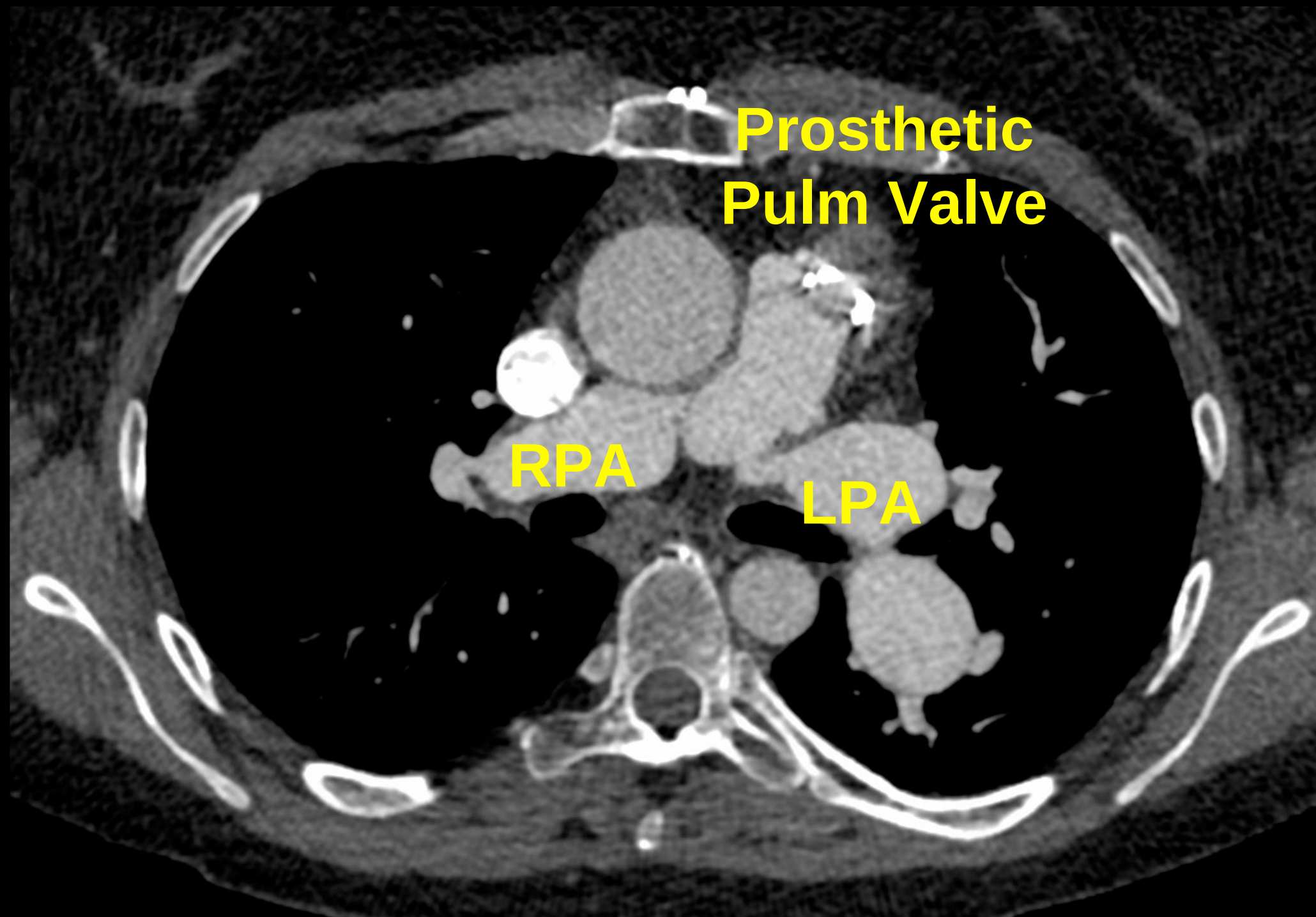
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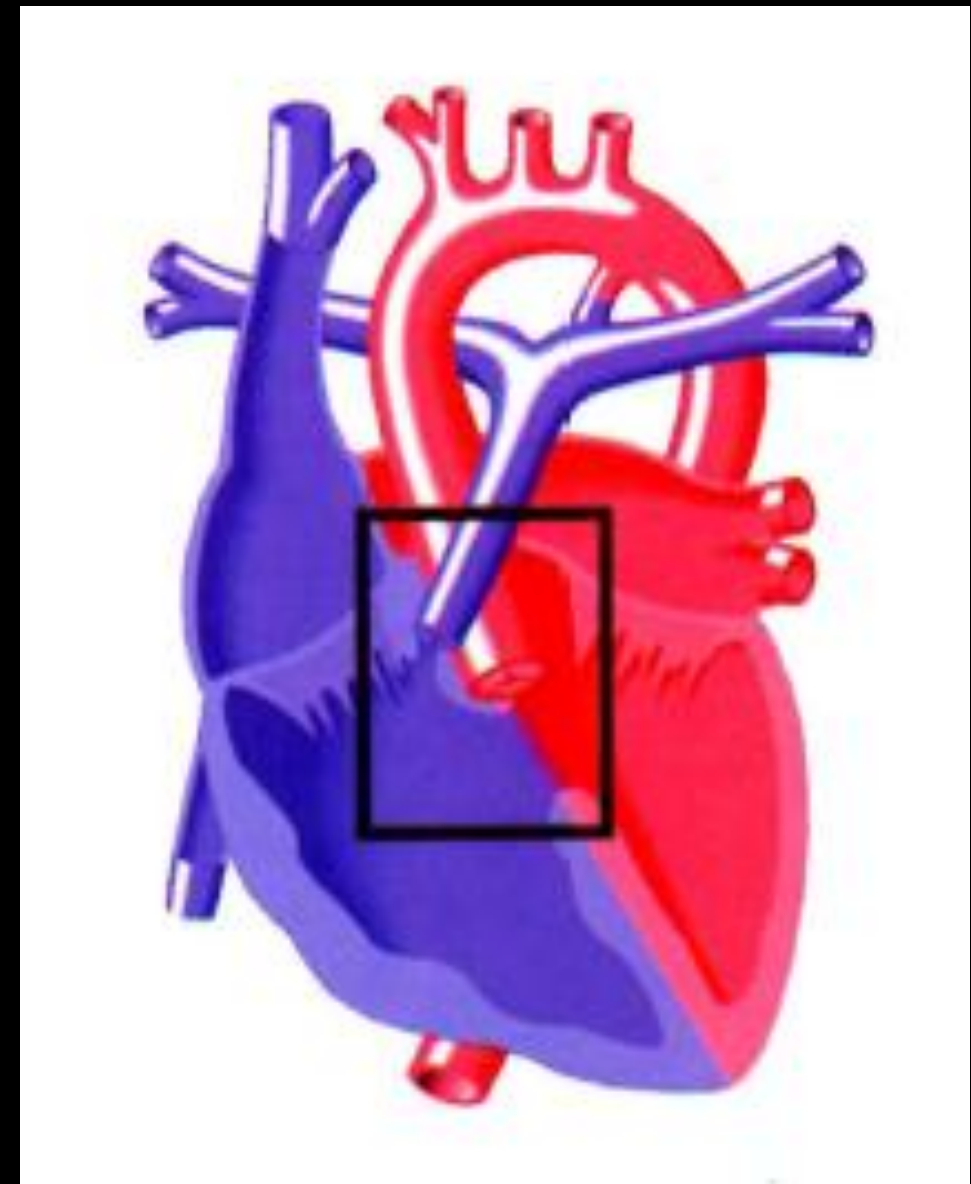
What is this?

- A. Truncus Arteriosus**
- B. Atrio-Ventricular Septal Defect**
- C. Tetralogy of Fallot**
- D. Transposition, Atrial Switch**



Typical Problem Around the World

- 38F Tetralogy of Fallot
 - Surgery #1: Initial repair early childhood
 - Surgery #2: Pulmonary Valve Replacement #21 Perimount in 2003.
 - Now supra systemic RV pressure due to tandem valvar and pulmonary arterial stenoses



Russian Doll Problem



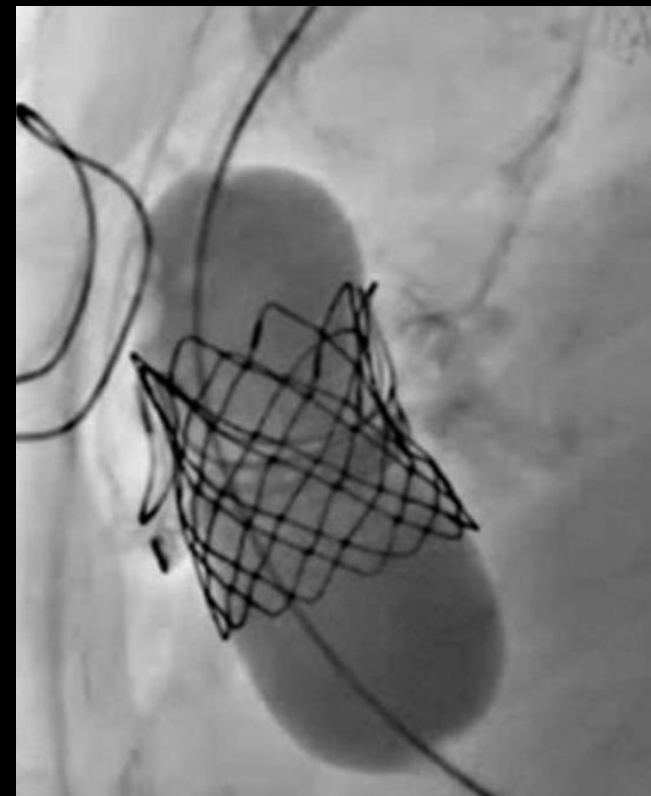
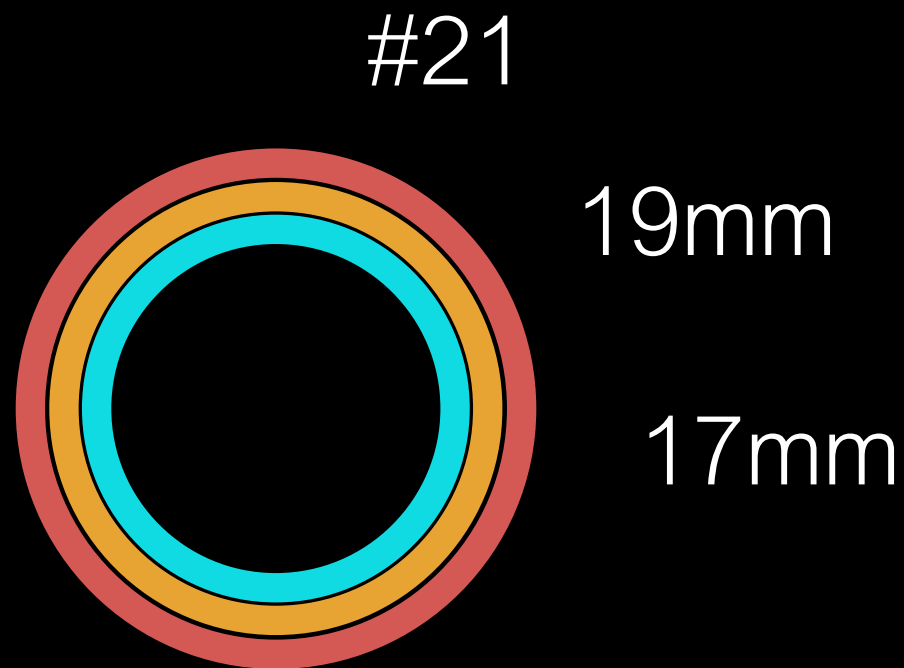
Elgiloy wireform stent



Elgiloy/polyester ring
and stent posts



Carpentier-Edwards
Perimount



Transcatheter
Valve

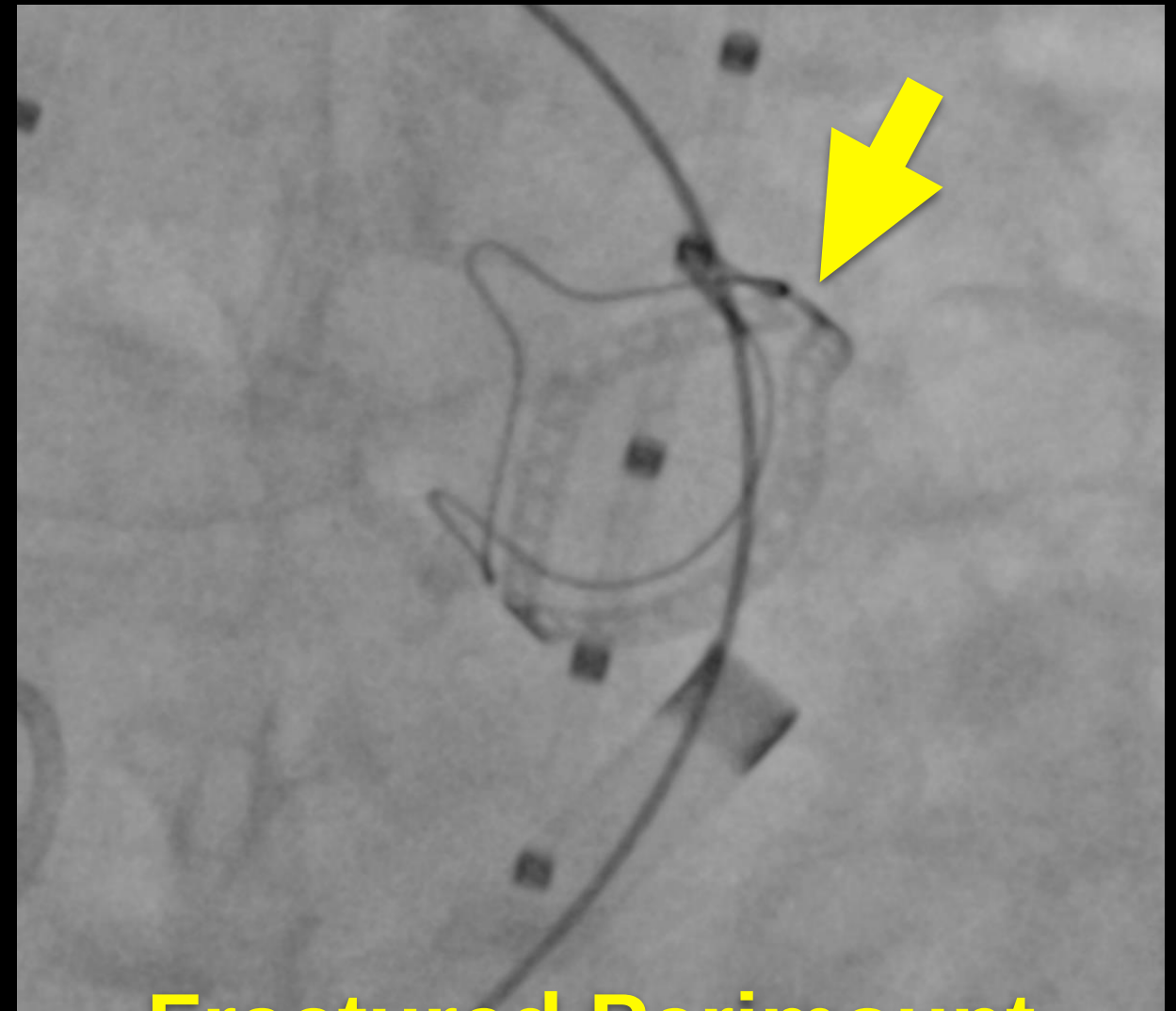
Patient-Prosthesis Mismatch



Breaking the Valve



**High Pressure Inflation
Palpable “Click”**

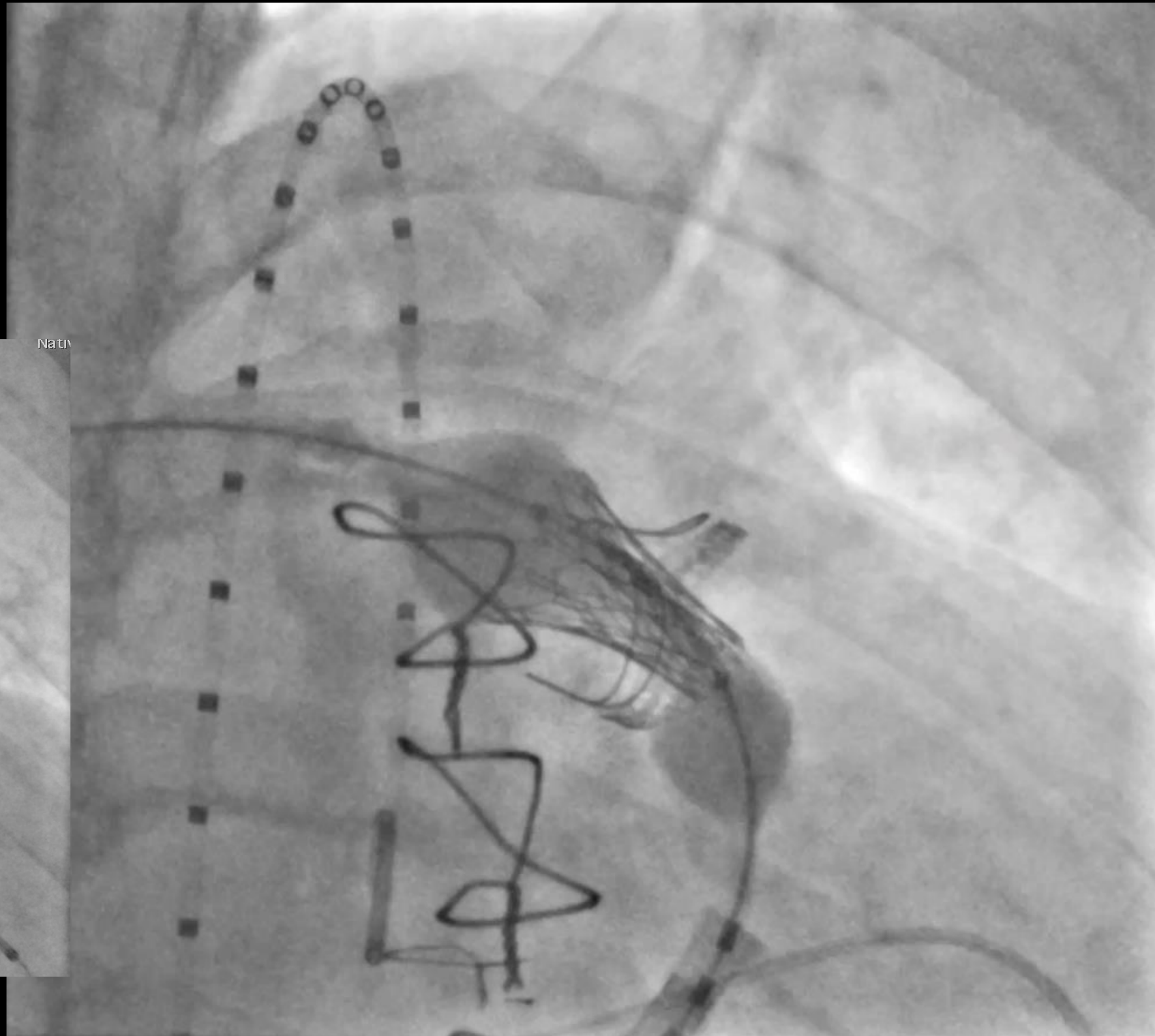
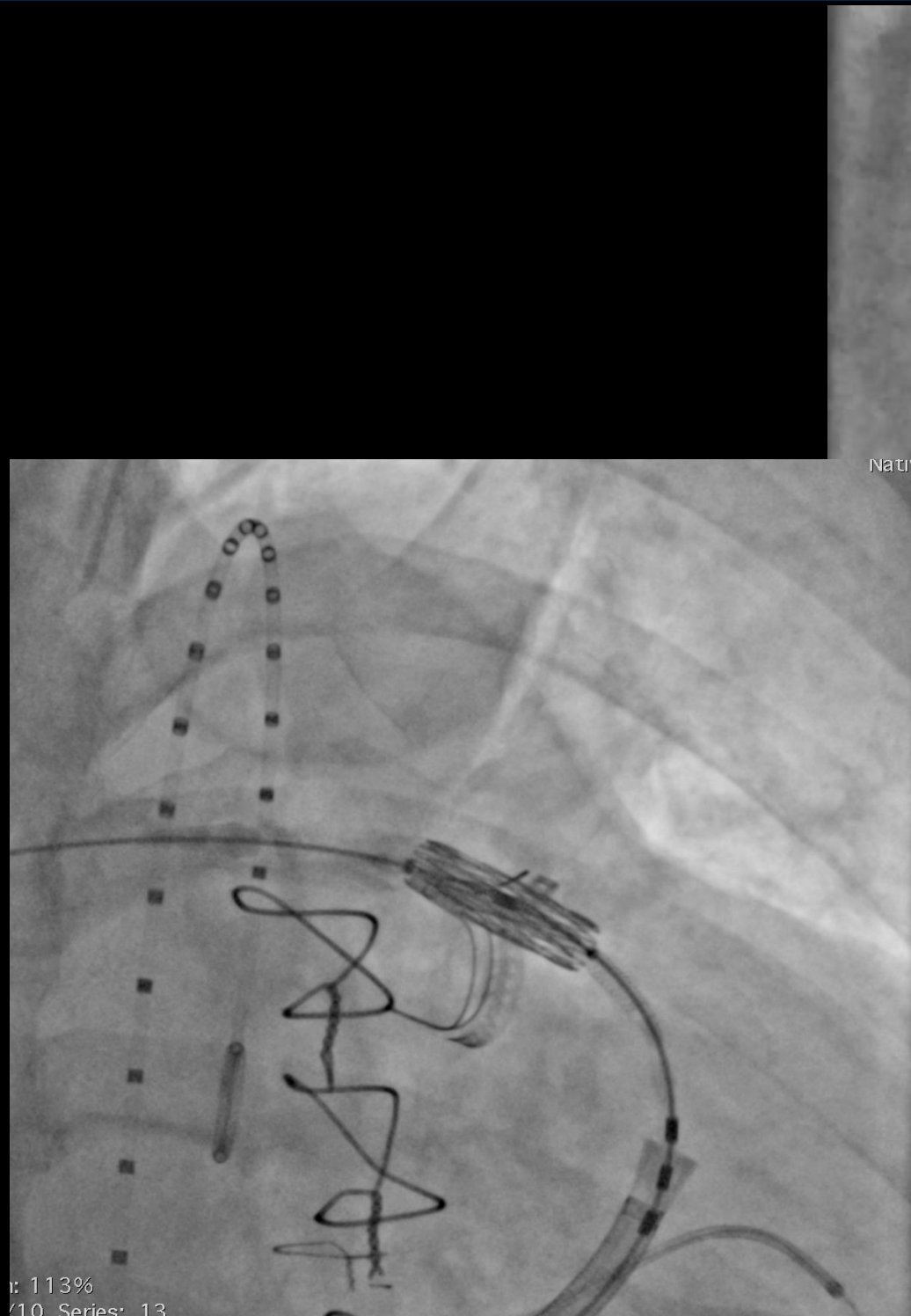


Fractured Perimount



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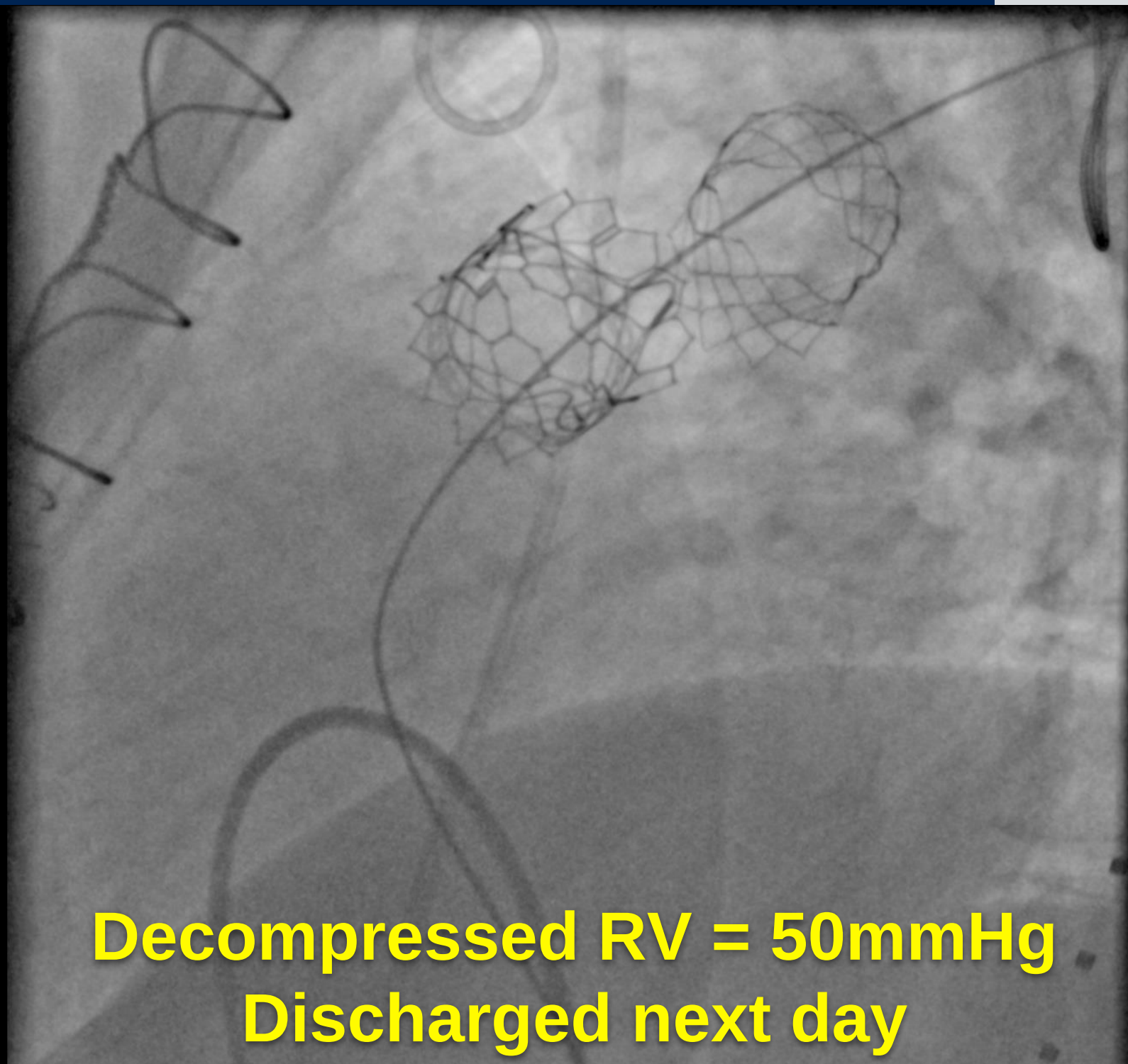
Valve Implant



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Final RV Gram



**Decompressed RV = 50mmHg
Discharged next day**

Marked improvement in RV size/function

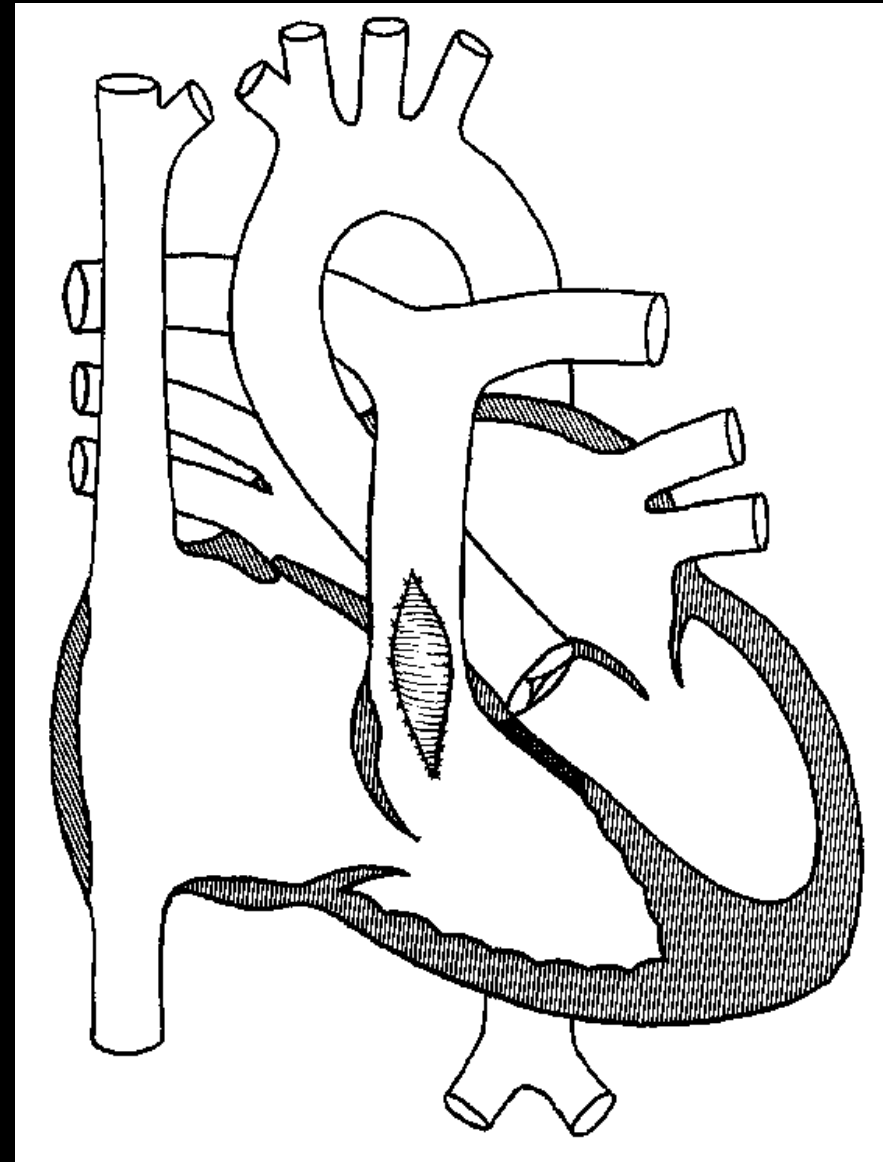


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Tetralogy of Fallot Summary

- RV Enlargement due to severe PR followed by RV failure
- Ventricular Arrhythmias
- Prosthetic PS
- LV dysfunction
- Aortic Regurgitation/Aortic Root Dilation

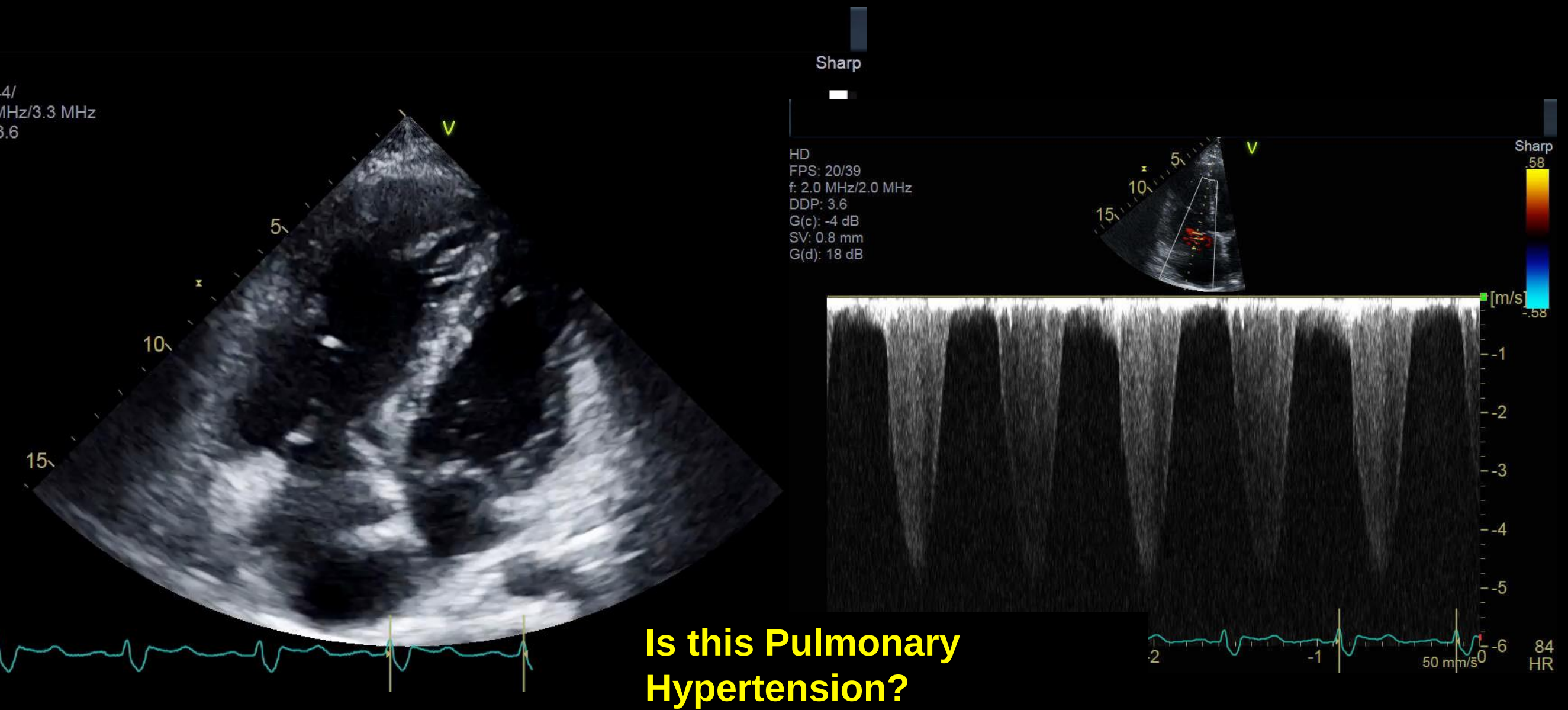


Case 5

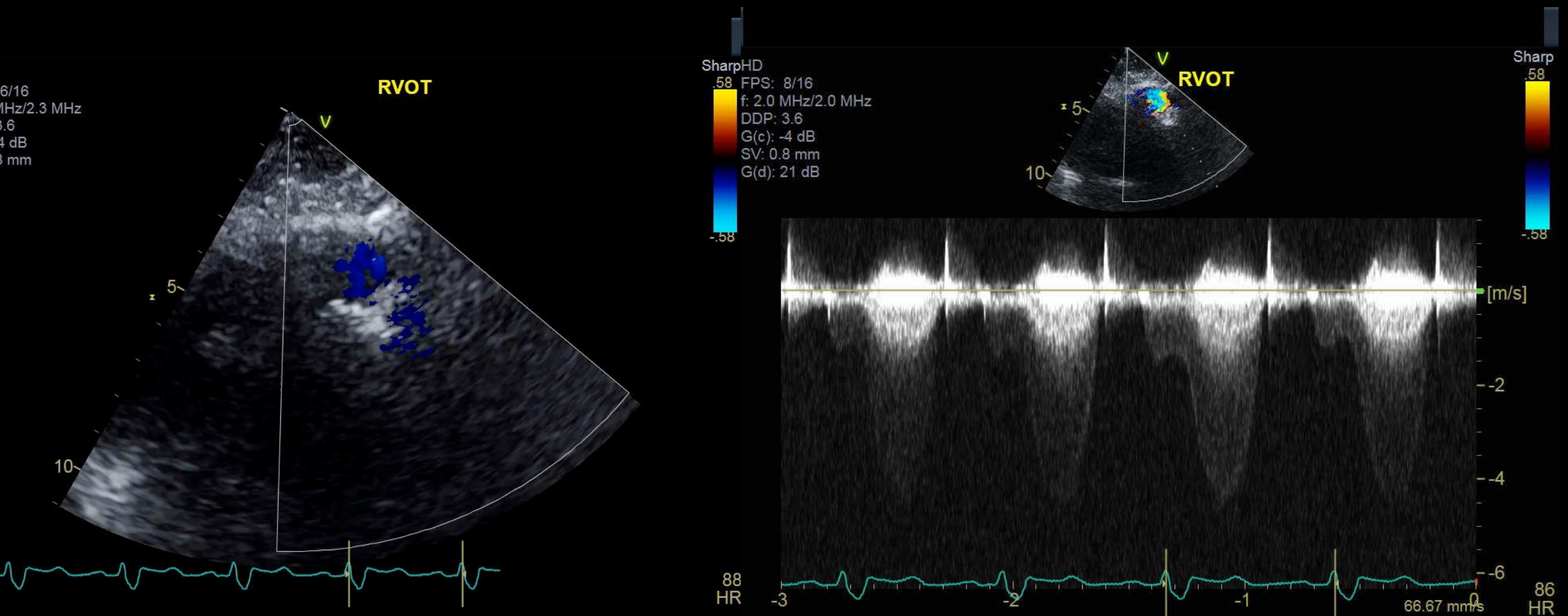
- 23F Truncus Arteriosus
 - s/p neonatal repair with arch augmentation and RV-PA homograft
 - Multiple RV-PA conduit replacements, most recently #22 Hancock Valved conduit in 2009 followed by Melody Valve 2016
 - Presents with fever and malaise, renal failure
 - Murmur now much higher pitched



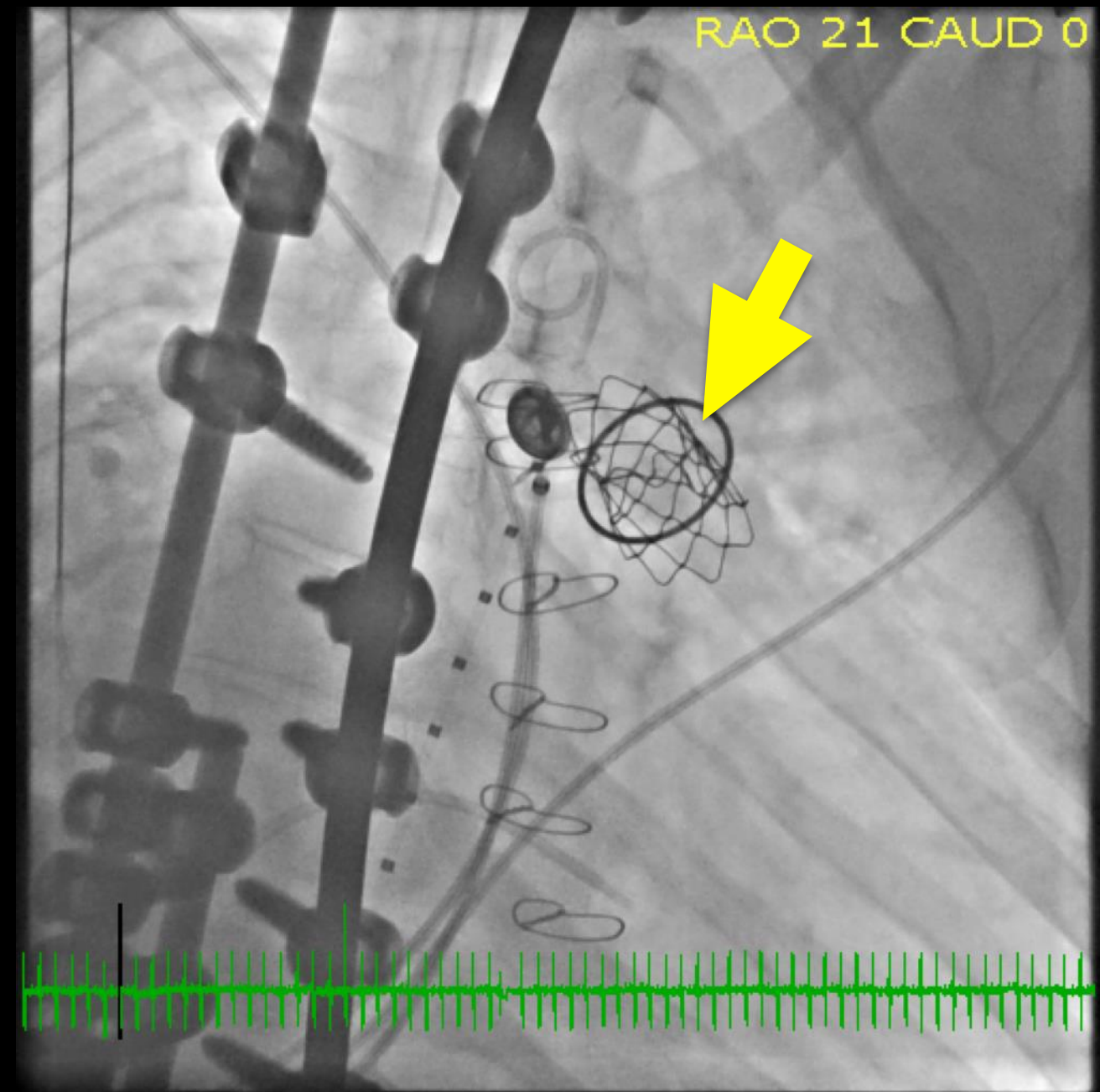
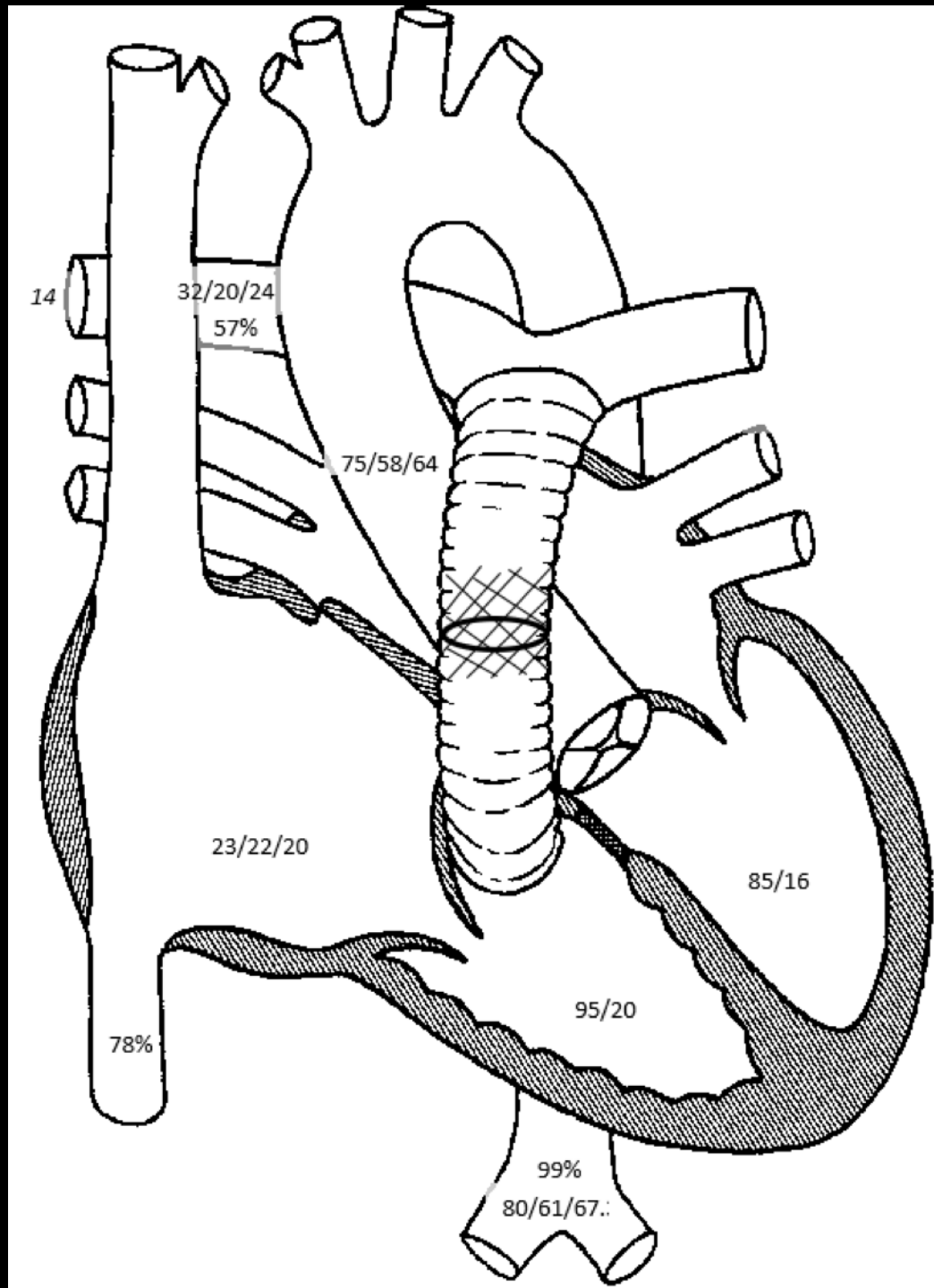
Echo



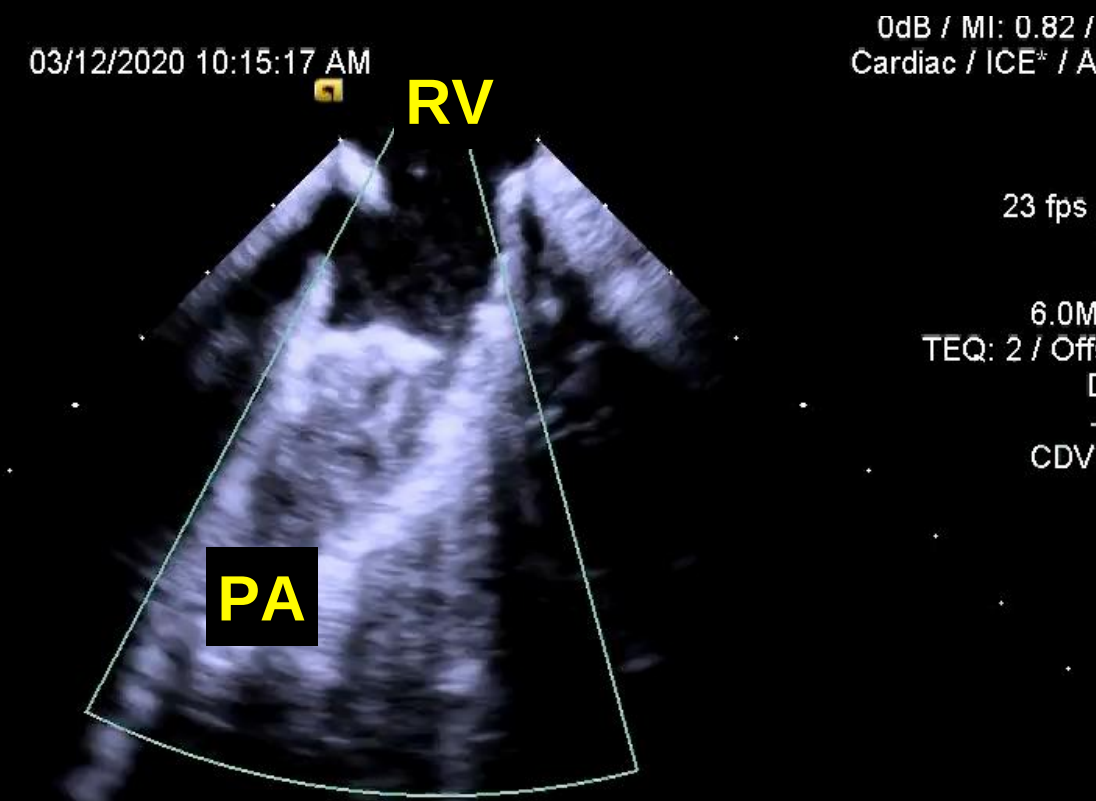
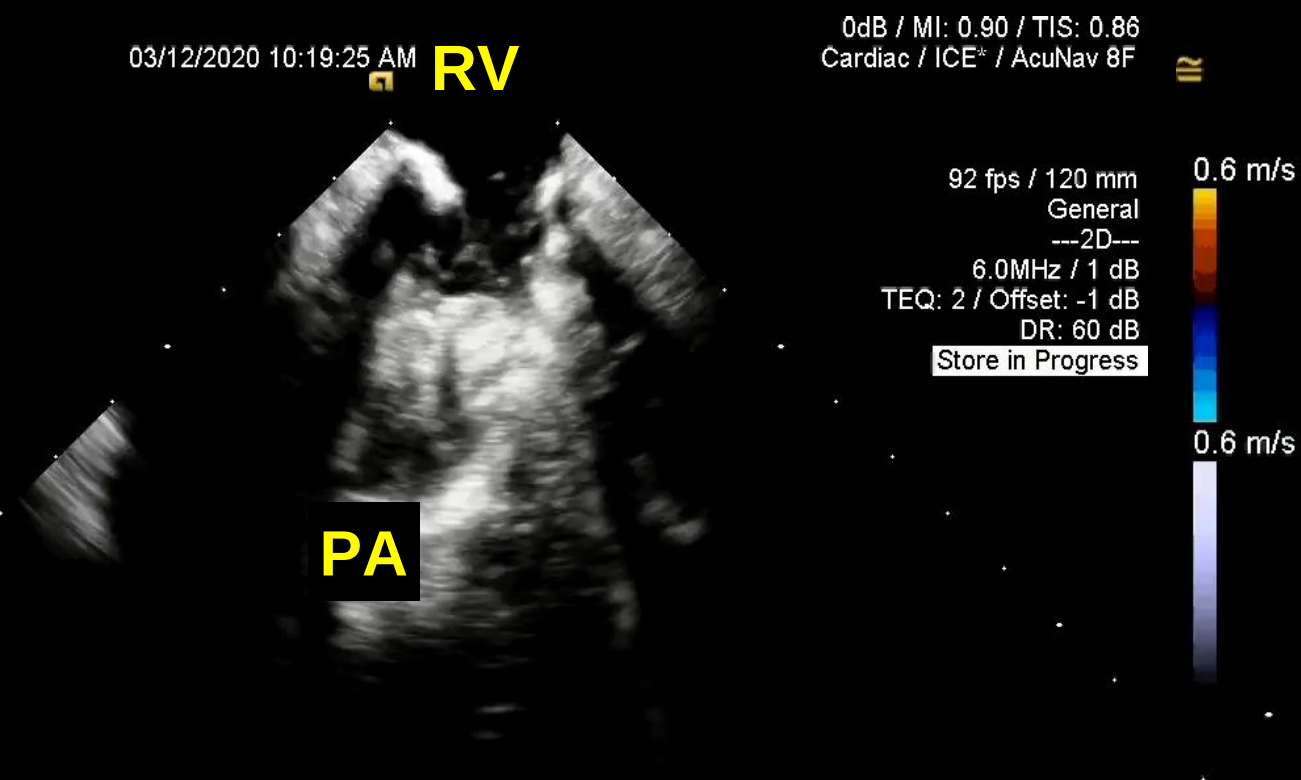
Is this PH?



Cath: What do you see?



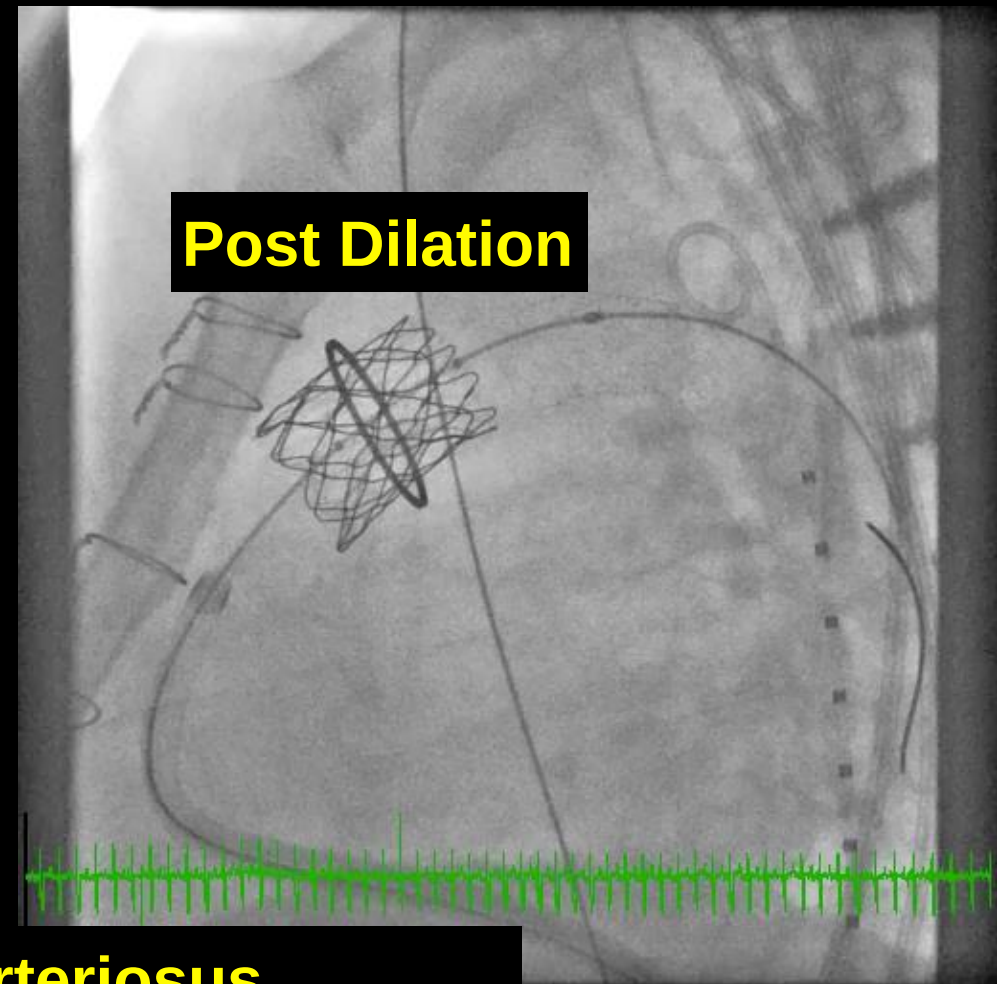
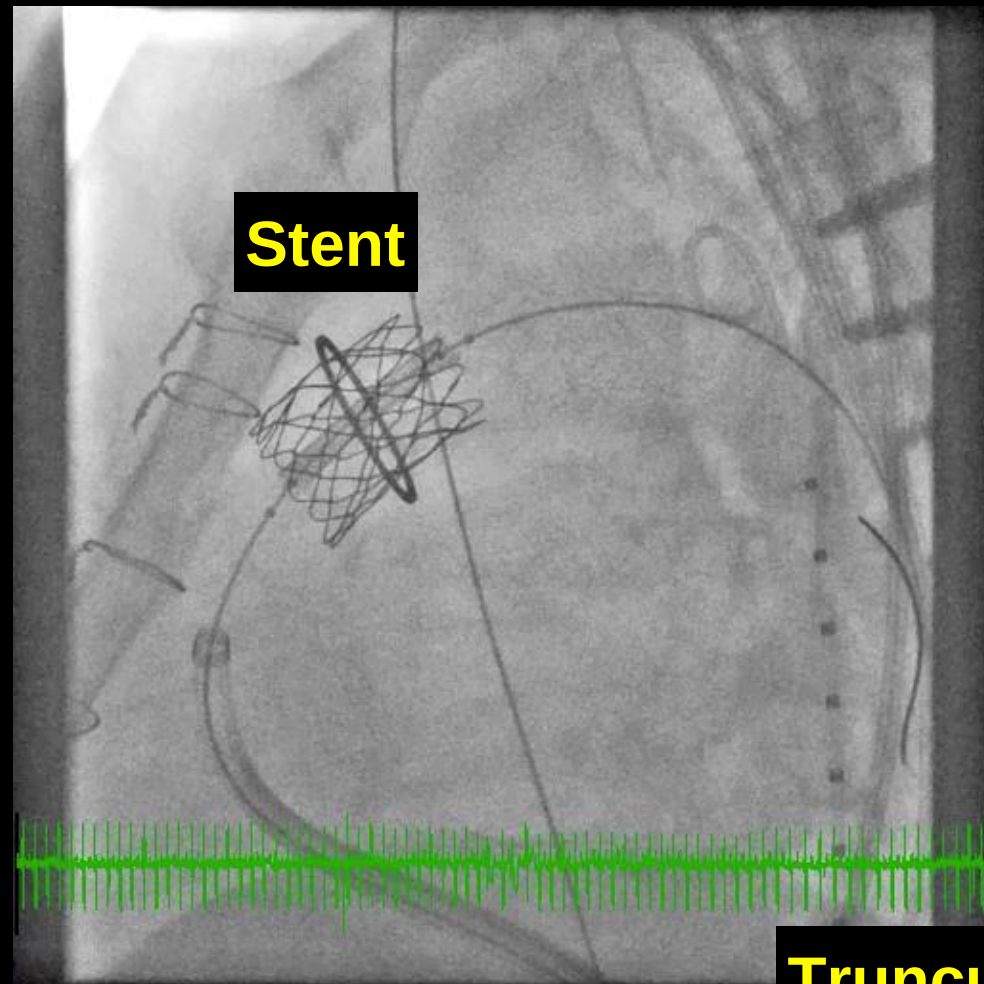
Intracardiac Echo



What is this?

- A. Prosthetic Valve Degeneration**
- B. Chronic Pulmonary Embolism**
- C. Melody Valve Endocarditis**

Palliative Intervention

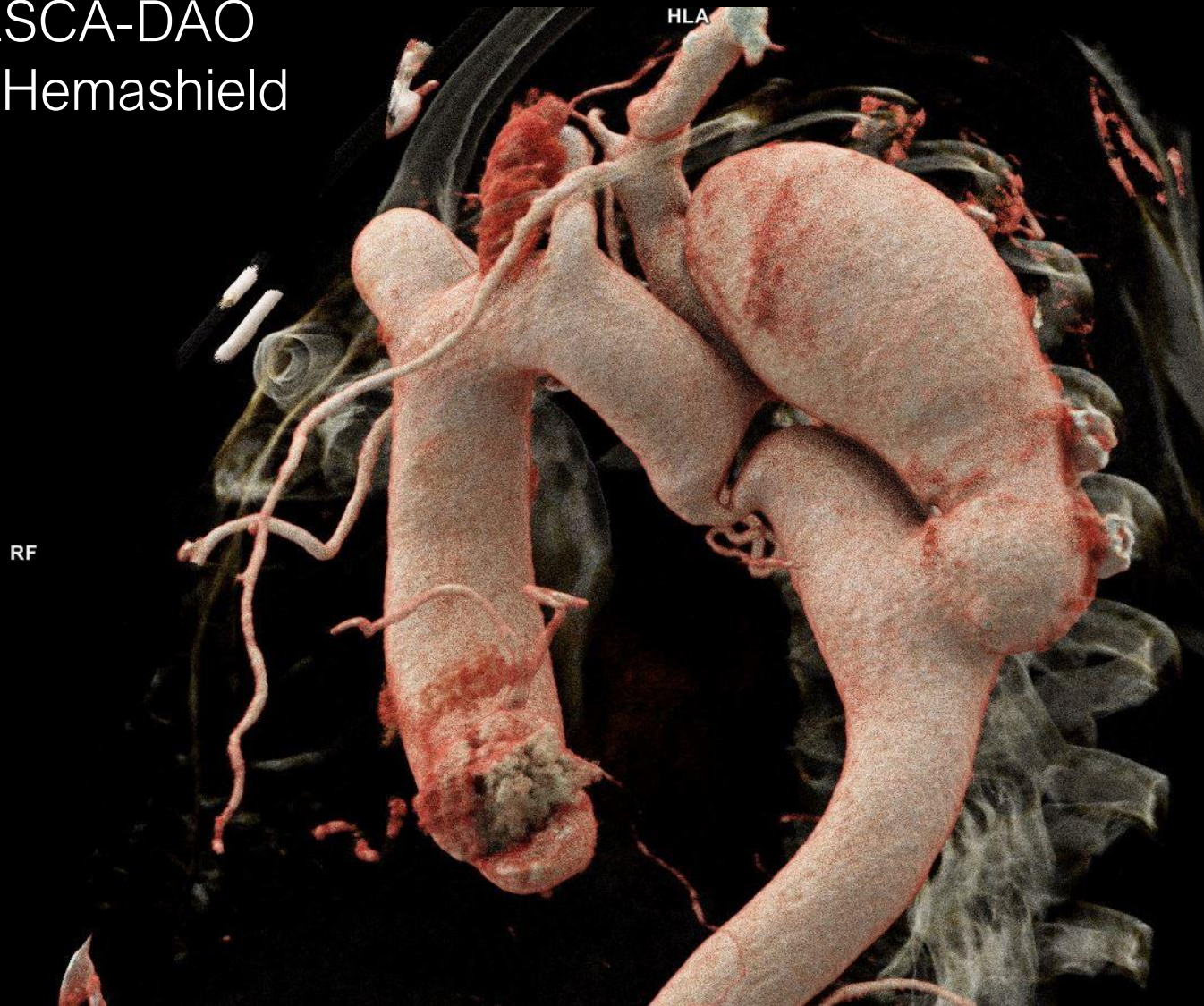


Truncus Arteriosus
- Truncal valve may become incompetent
- RV-PA conduit requires multiple re-interventions

Coarctation

Case 6 Beware the “Fixed” Coarc

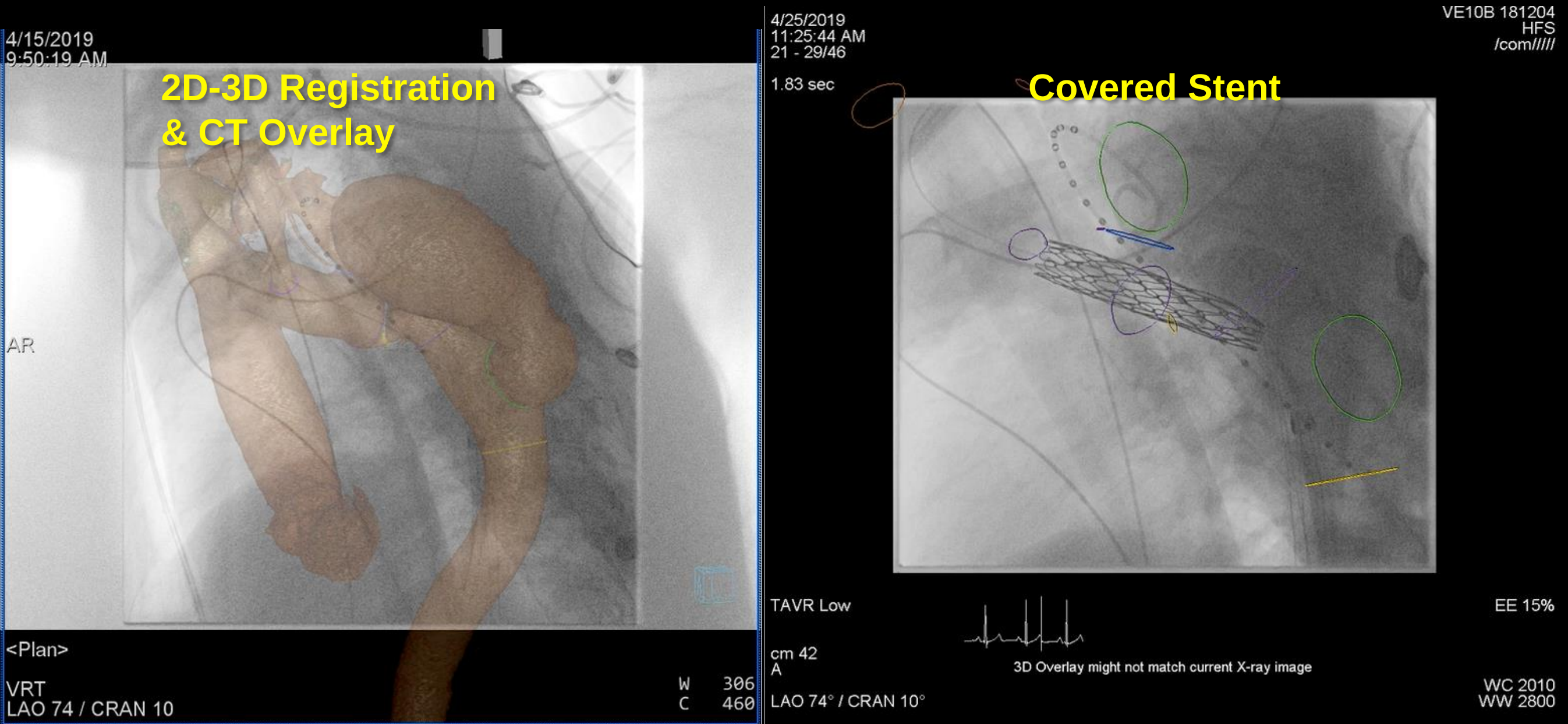
- 64F with prior LSCA-DAO bypass (18mm Hemashield graft)
- Hemoptysis
- Chest pain



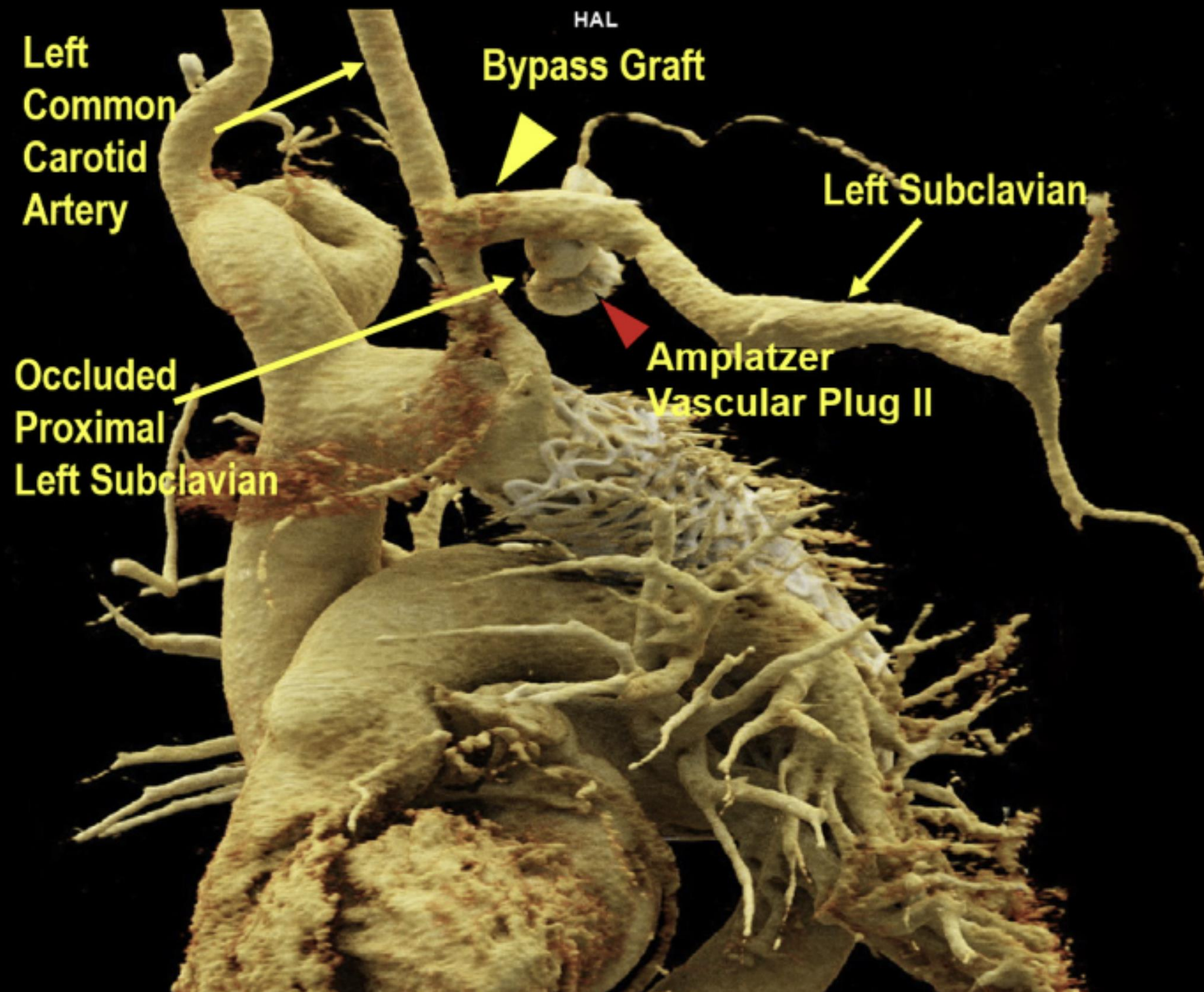
Concerns:

- Is this a pseudoaneurysm?
- Why is she bleeding?
- How extensive are collaterals, and why do they persist?
- What should we do about L posterior circulation?

Hybrid Approach



Post Op CT



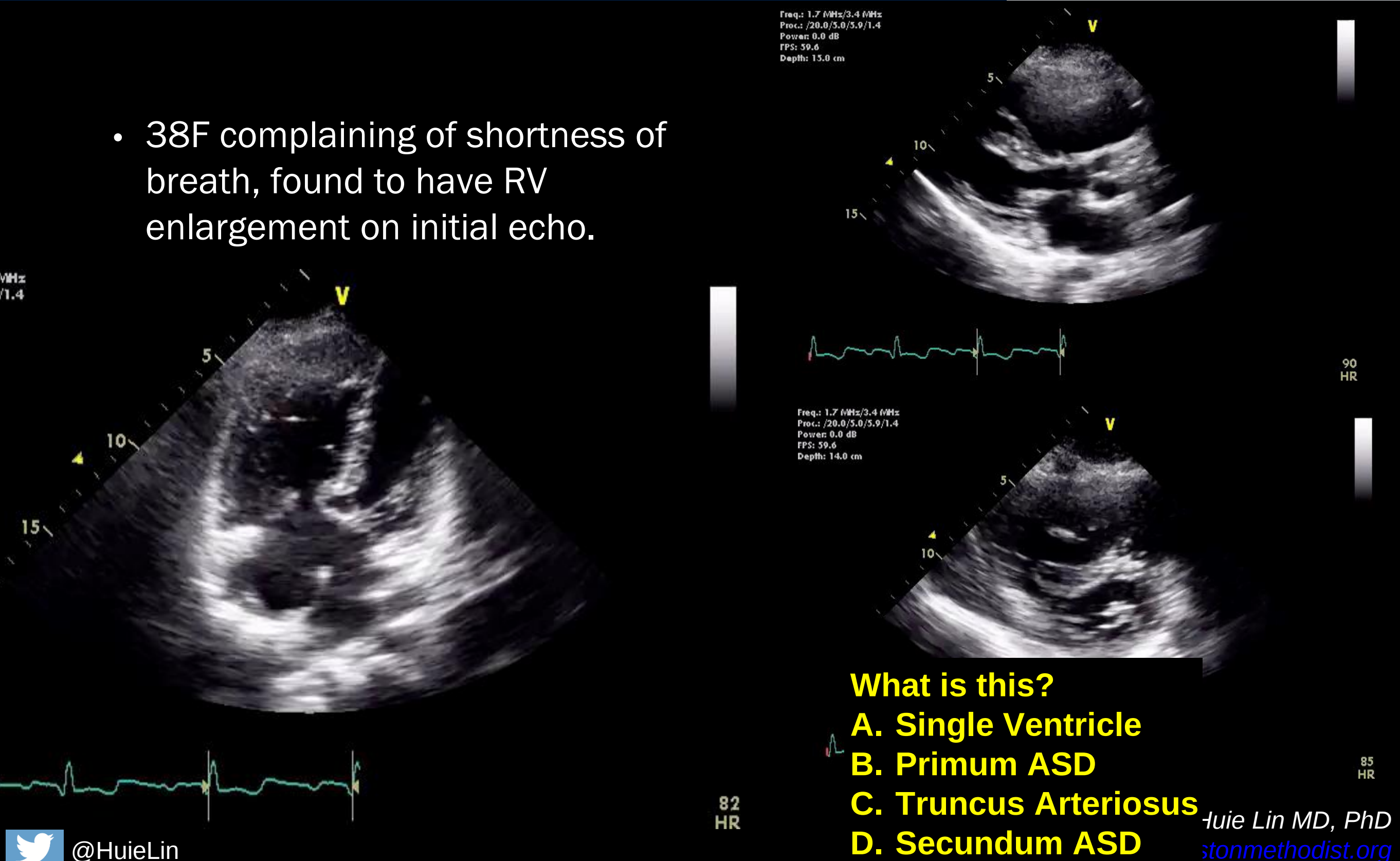
Other Coarc Complications

- Can be associated with cerebral aneurysm- one time brain imaging (CTA or MRA)
- Thoracic aortic aneurysm- Serial CT or MR imaging
- Monitor bicuspid aortic valve if present



Case 7

- 38F complaining of shortness of breath, found to have RV enlargement on initial echo.

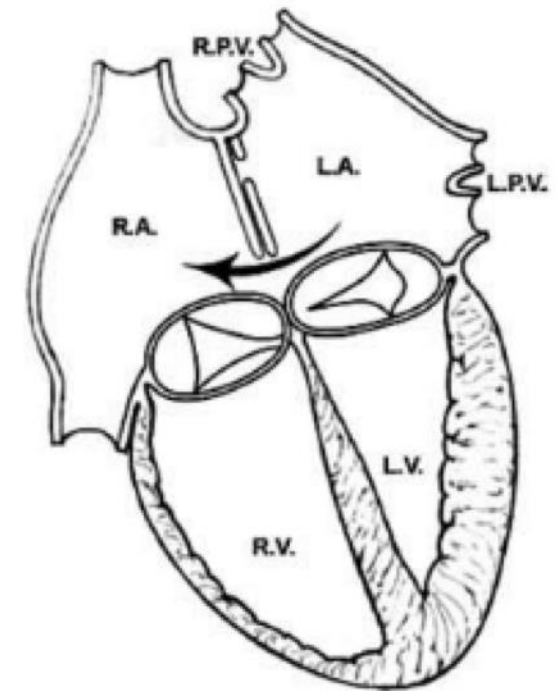


AV Septal Defect Continuum

Similar physiology – VSD & ASD



Similar physiology – ASD



Partial

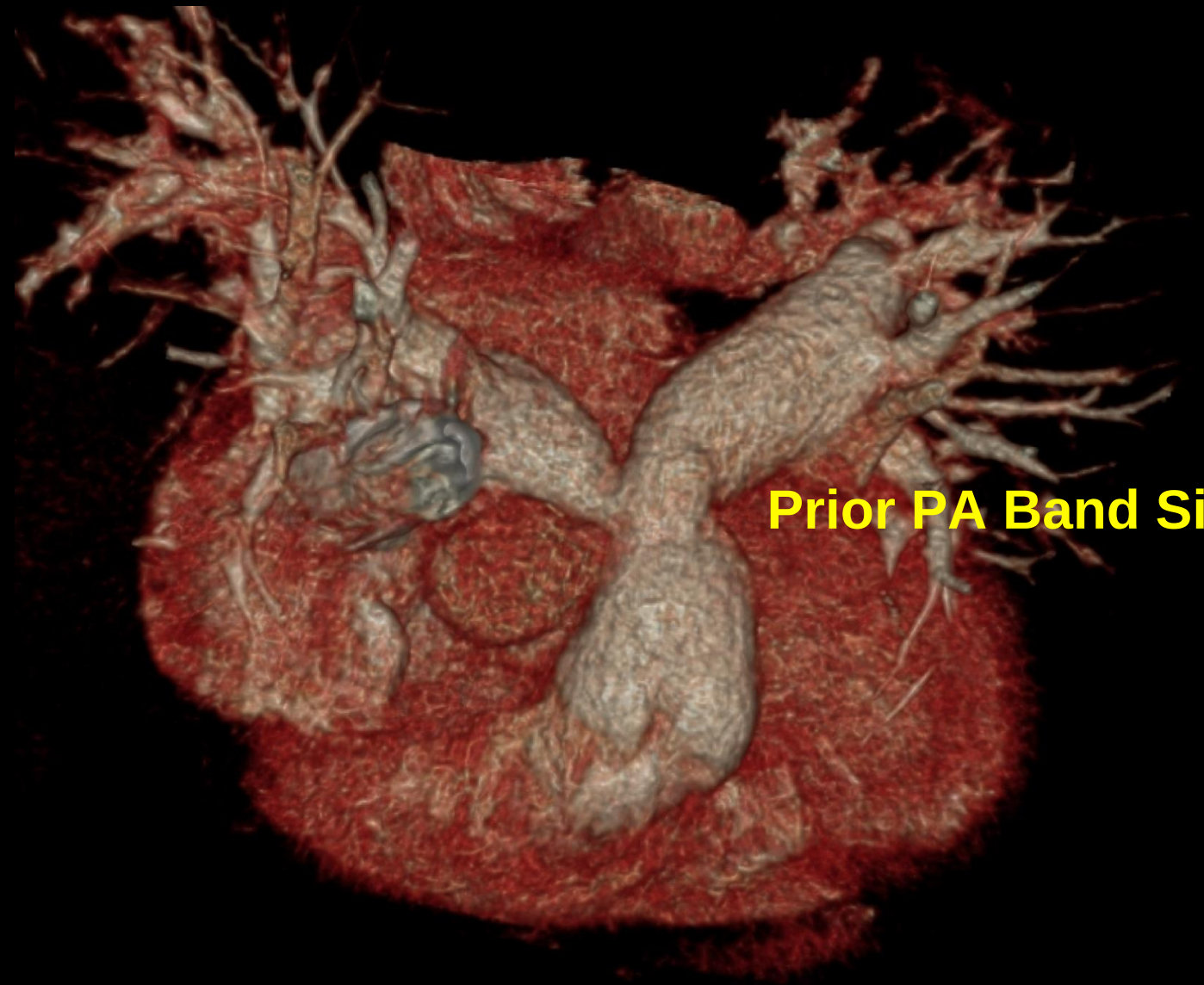


Similar AV valve anatomy:

A tongue of tissue divides the common AV valve into a right and left component by connecting the anterior and posterior “bridging” leaflets centrally

AVSD to AV Canal Spectrum

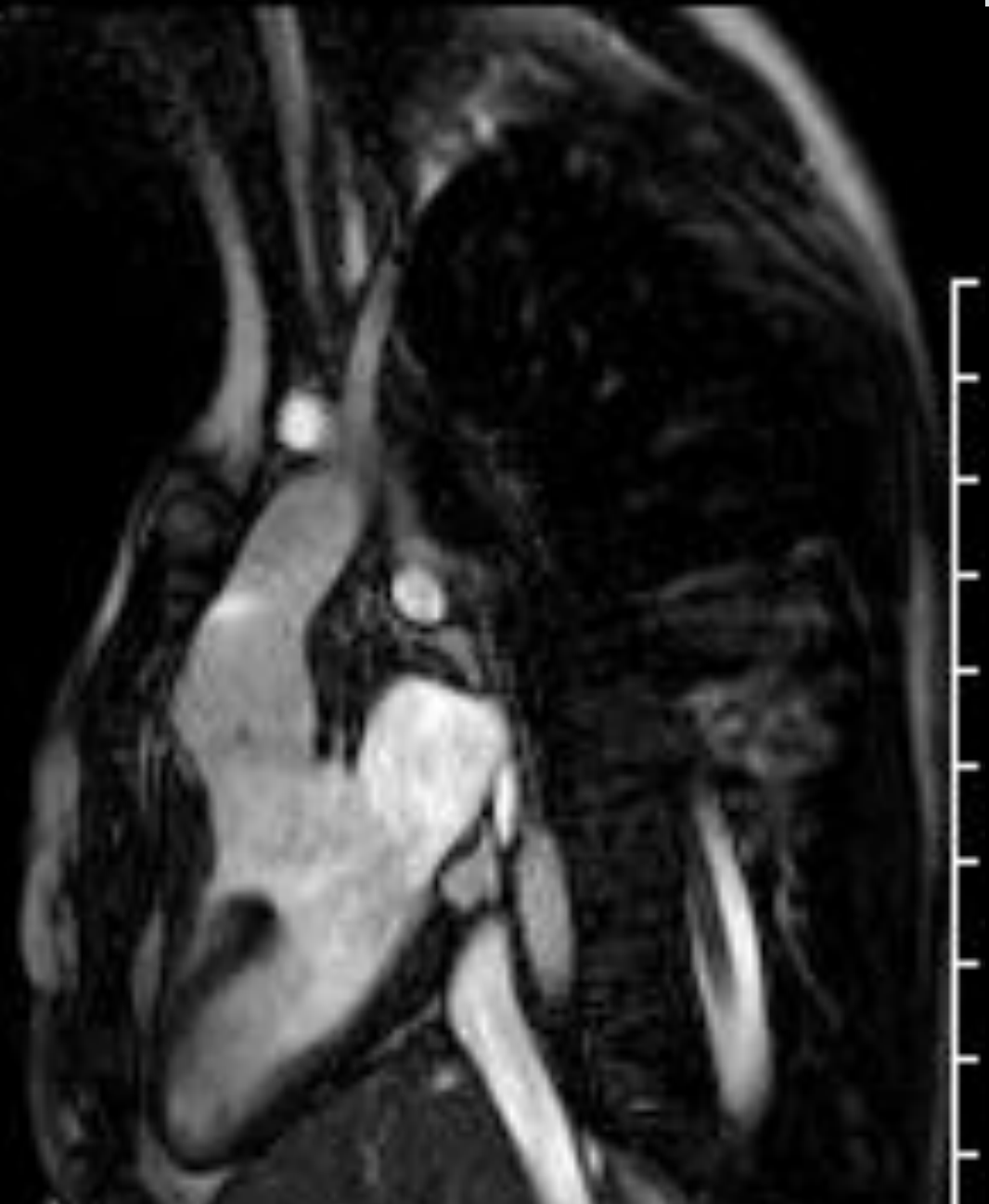
- Cleft mitral valve “too tight” = MS
- Residual Cleft = MR
- “Pulmonary hypertension” - residual PS from banding
- Residual septal defects, usually benign



Prior PA Band Site

Case 8

- 19F presents with stroke (again)
- Diagnosis: “Dextrocardia”



What is this?

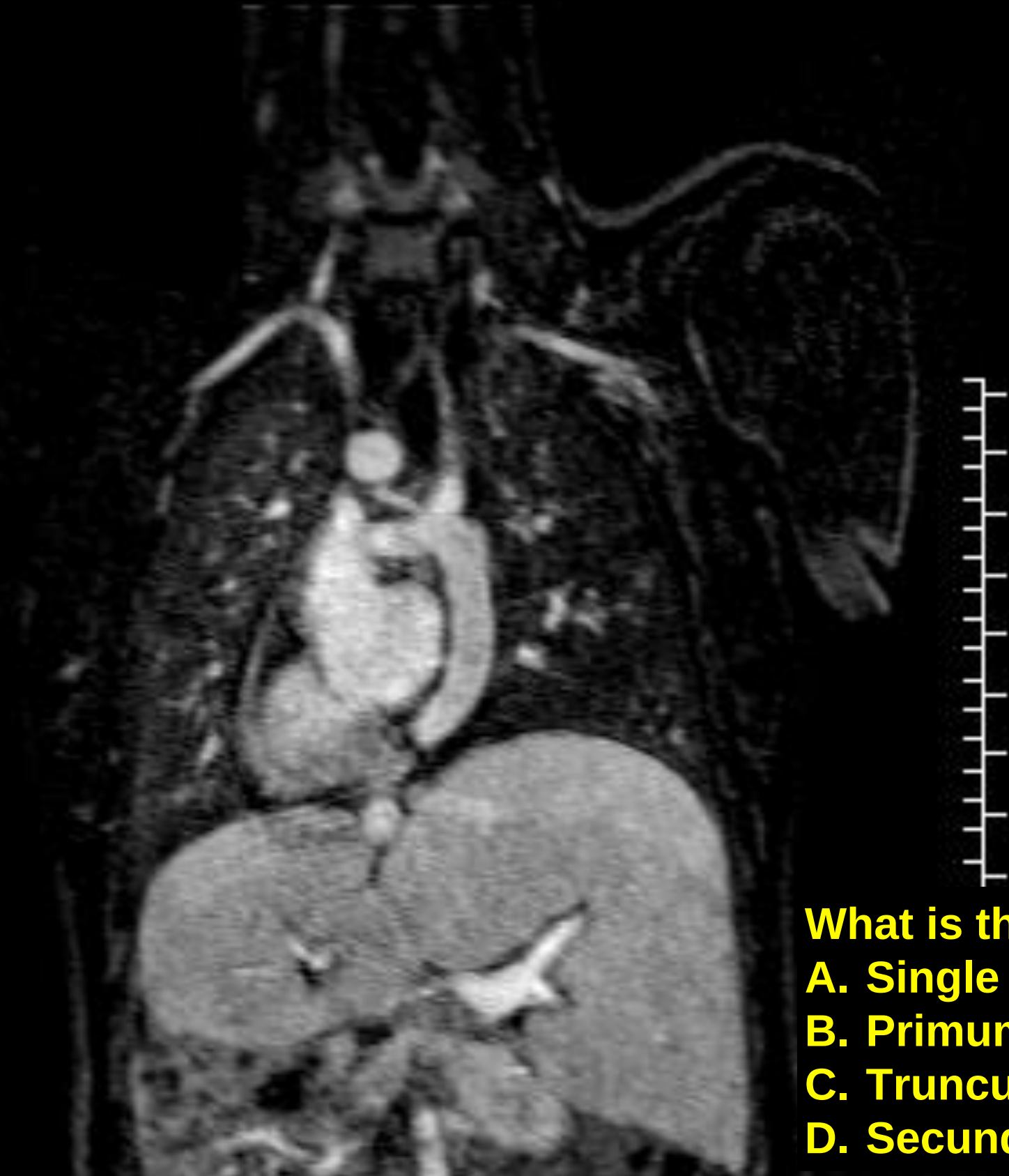
- A. Single Ventricle**
- B. Primum ASD**
- C. Truncus Arteriosus**
- D. Secundum ASD**

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Another hint



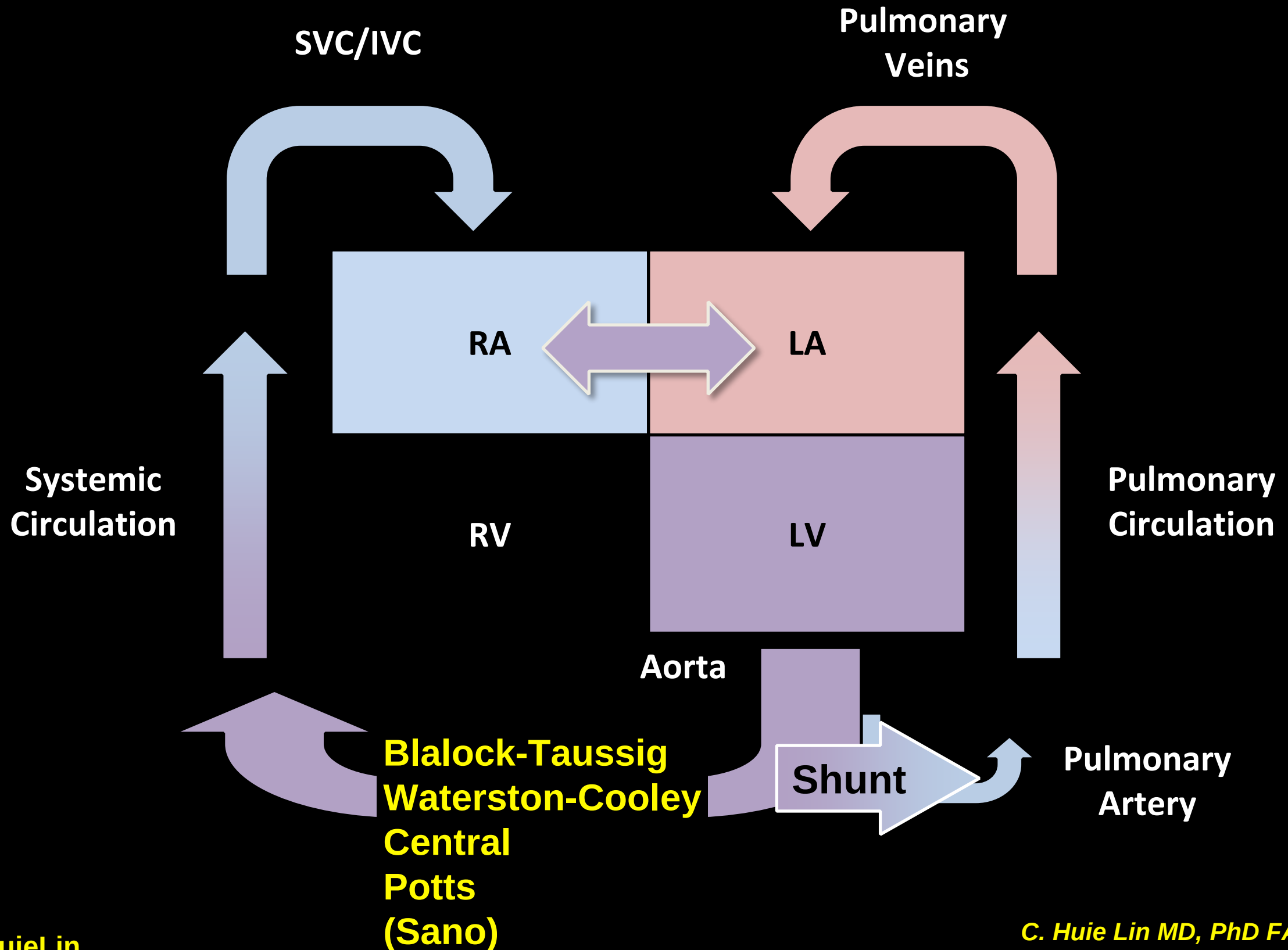
What is this?

- A. Single Ventricle**
- B. Primum ASD**
- C. Truncus Arteriosus**
- D. Secundum ASD**

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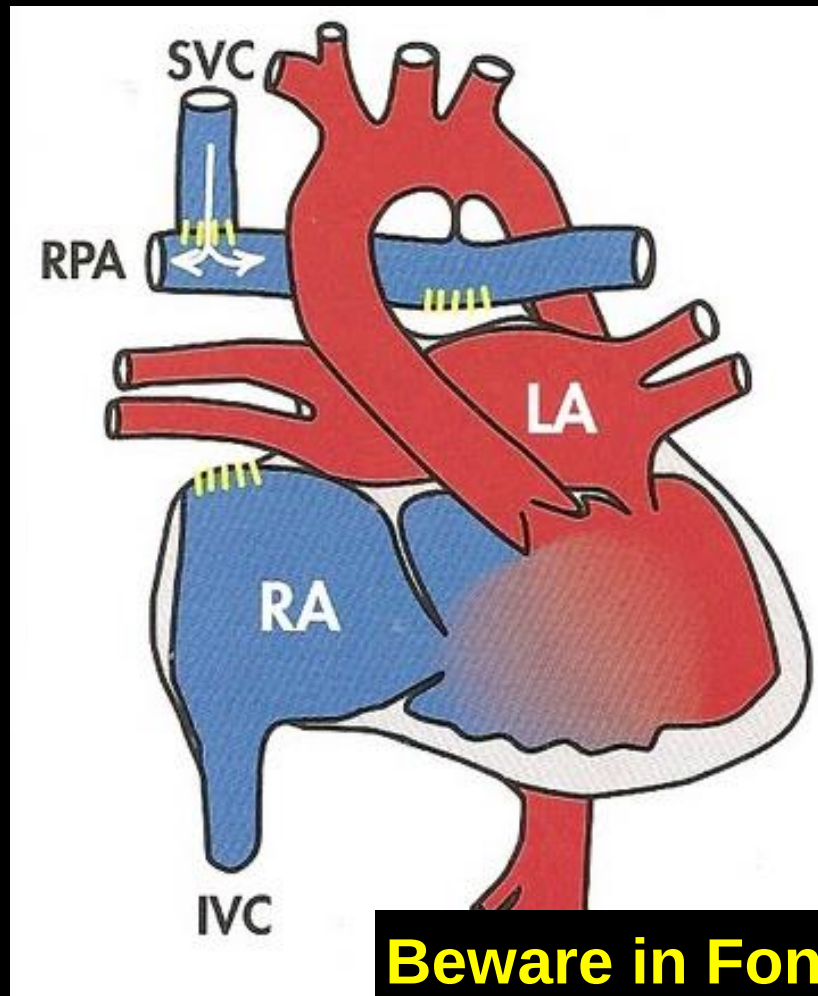
Single Ventricle/Fontan

Example Single Ventricle: Tricuspid Atresia

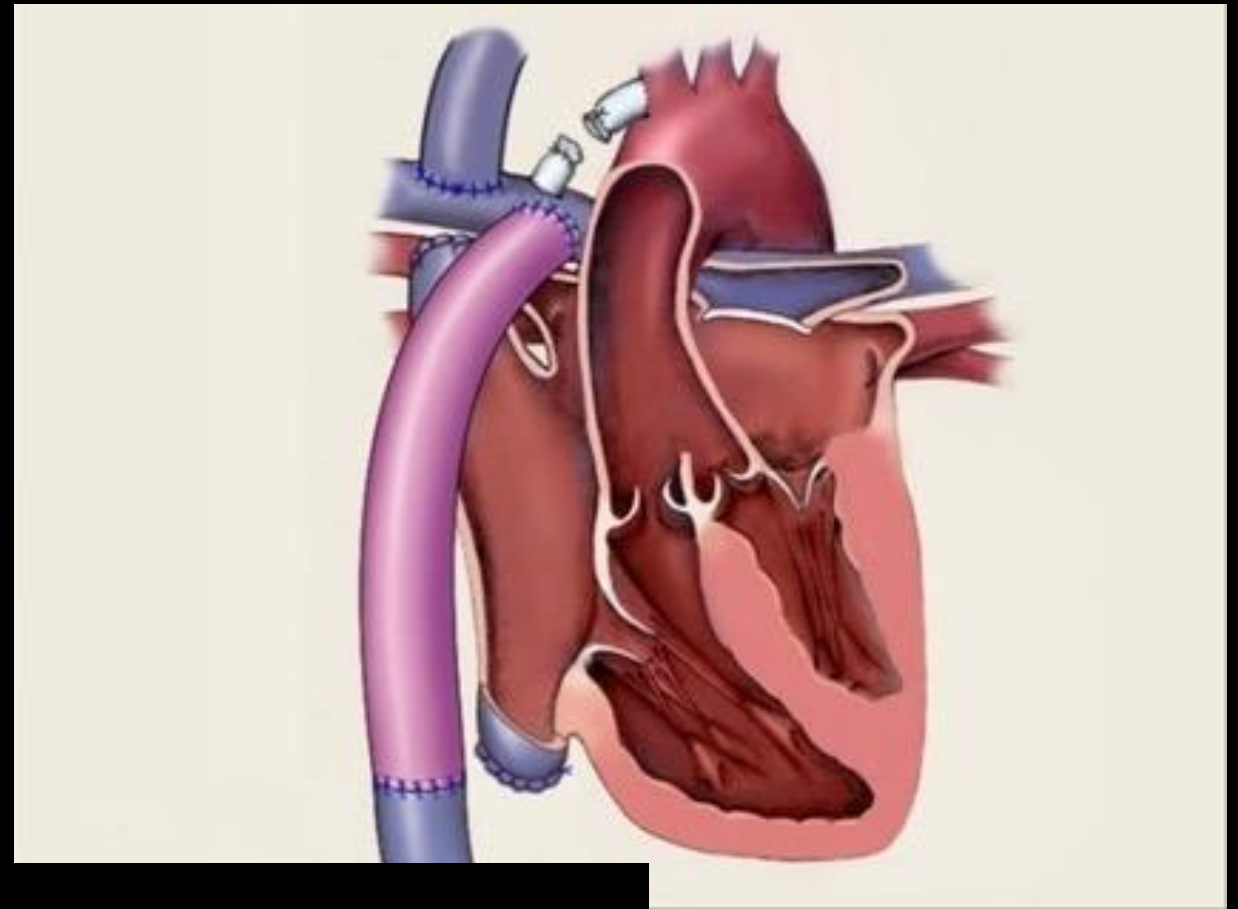


Single Ventricle Stage 2+3

Glenn Shunt



Fontan



Beware in Fontan:

- Systolic Heart Failure
- Protein Losing Enteropathy
- Liver failure, cirrhosis, ?carcinoma
- Hemoptysis
- Paradoxical Embolism



Why Stroke?

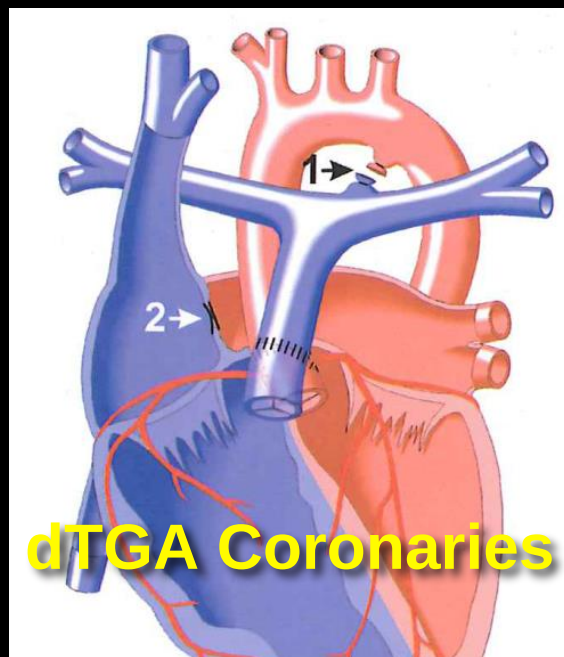
Residual Fenestration



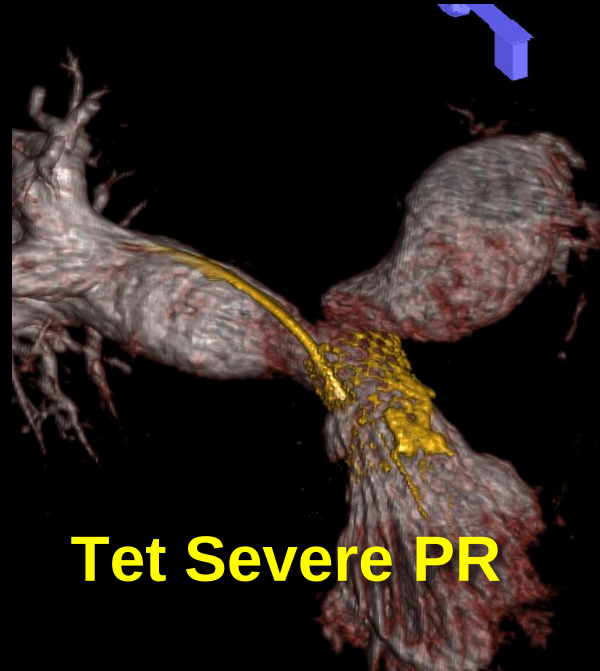
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Summary



dTGA Coronaries

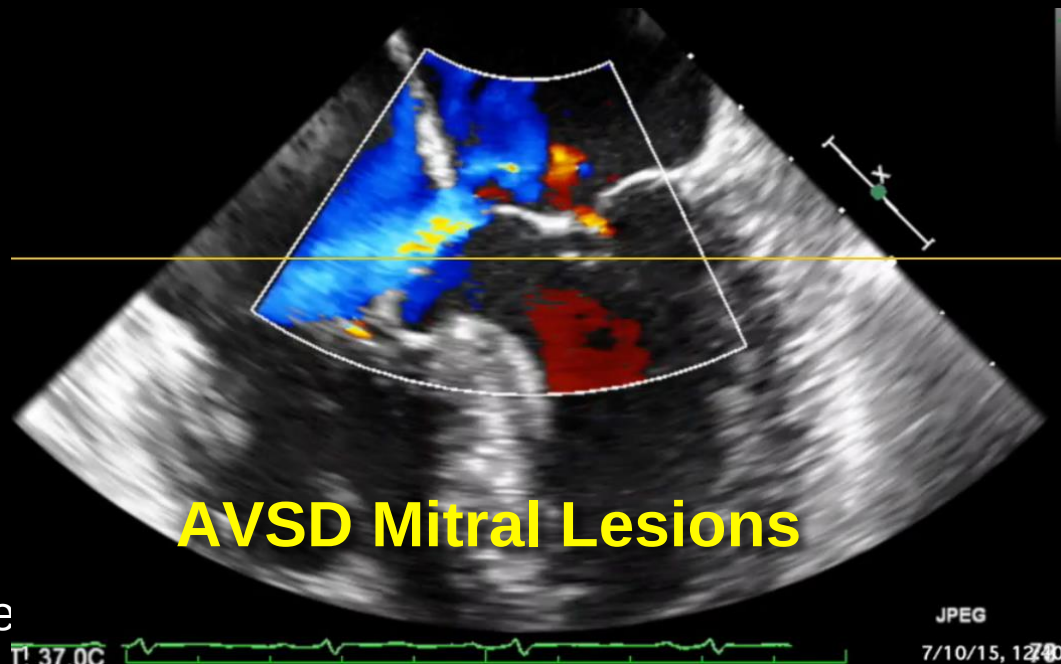


Tet Severe PR



Coarc Aneurysm

Be suspicious of “asymptomatic”



AVSD Mitral Lesions



Fontan Mechanical Issues

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JPEG

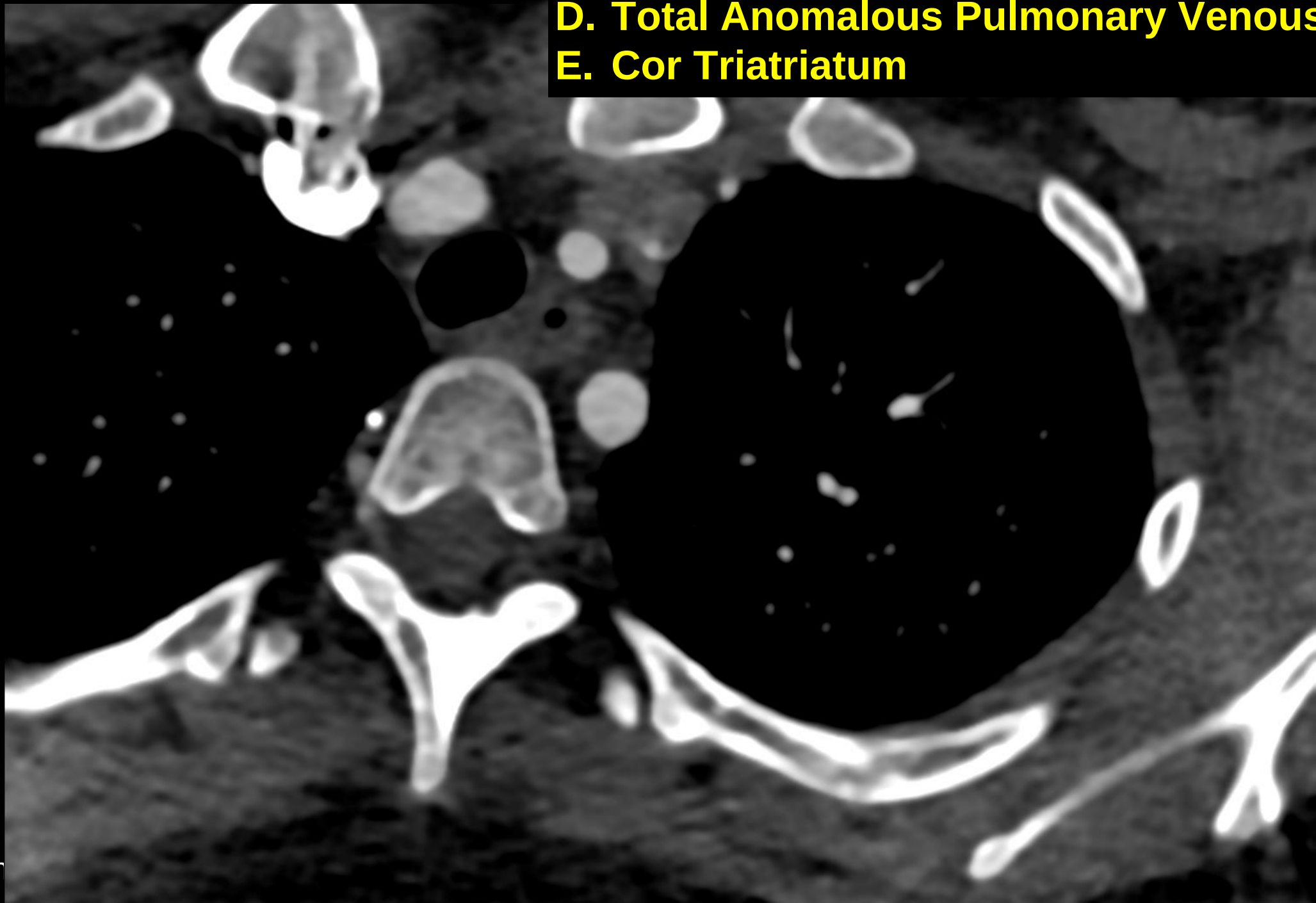
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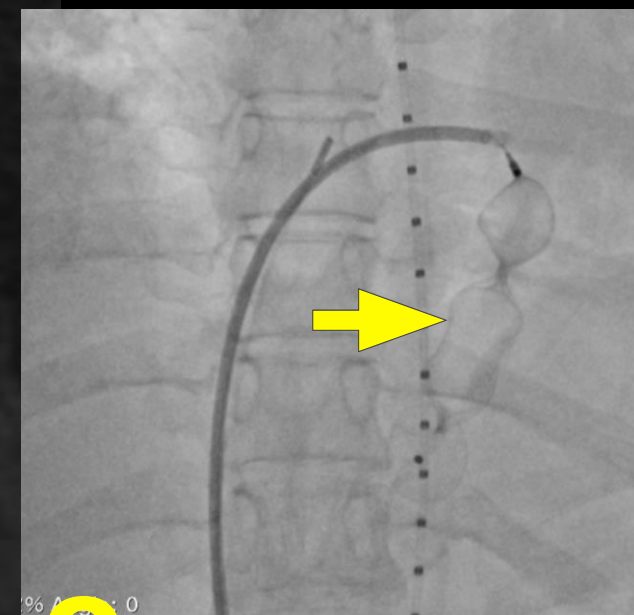
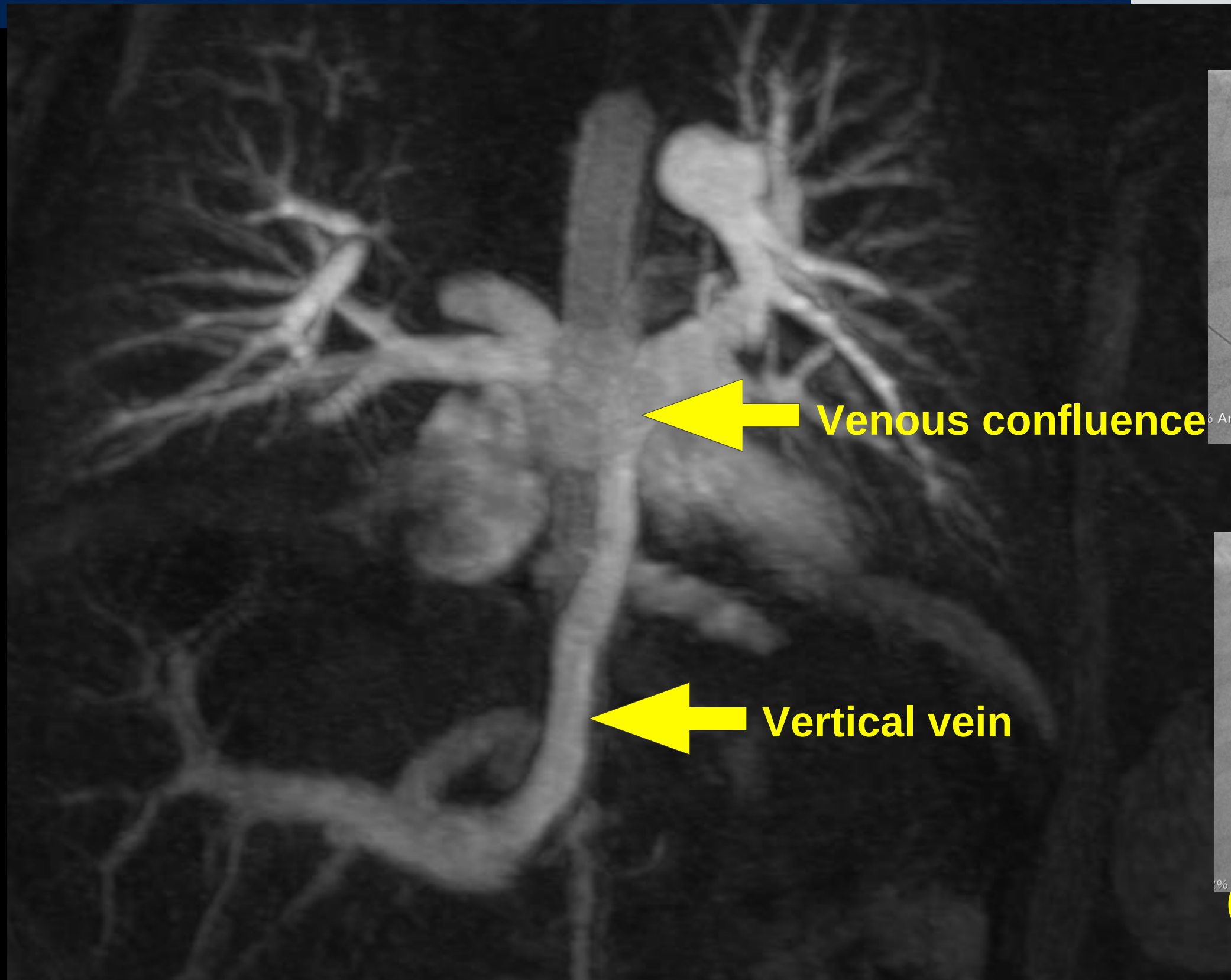
Bonus Round!

- 30F s/p repair day one of life presents with RV volume overload. Acyanotic on exam.

What is this?

- A. Tetralogy of Fallot w/ Severe PR**
- B. Repaired ASD with failed patch**
- C. PDA repair with pulm HTN**
- D. Total Anomalous Pulmonary Venous Return**
- E. Cor Triatriatum**





C

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Adult Congenital Heart Symposium



An Overview Course for Health Professionals

A DeBakey Institute for Cardiovascular Education & Training event

Houston Methodist Research Institute • John F. Bookout Auditorium, 2nd Floor
6670 Bertner Ave., Houston, TX 77030

Save The Date
February 24, 2024!

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VASCULAR CENTER



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