AORTIC DILATATION AND ANEURYSM

ACC/AHA CLINICAL PRACTICE GUIDELINE

Circulation Nov 2022

2022 ACC/AHA Guideline for the Diagnosis and Management of Aortic Disease: A Report of the American Heart Association/American College of Cardiology Joint Committee on Clinical Practice Guidelines

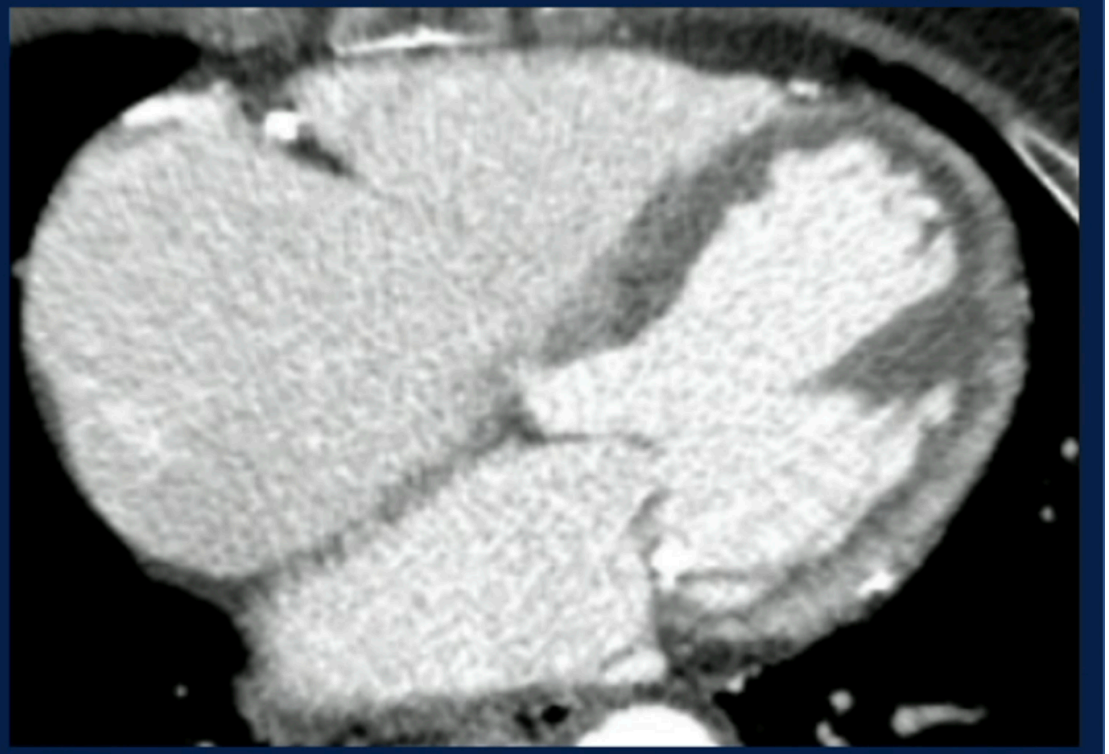
Definition for ascending thoracic

- "Aneurysm" – diameter > 4.5 cm
- "Dilated" – 4.0 cm to 4.4 cm
- Growth: ≥0.5 cm in 1 year or ≥ 0.3 cm per year in 2 consecutive years

Acute Myocardial Infarct

Appearance

- Subendocardial low attenuation
- Normal Myocardium: 70-120 HU
- Infarcted Myocardium: -10-70 HU



Konstantin et al, 2004

Higashigaito et al, 2018

Nieman et al, 2006

Structured Reporting Format

A. Non-Vascular findings

- *Lung parenchymal findings*

GGO, fibrosis, cavity, bronchiectasis, consolidation, nodules

- Central airways

Clots, mass

- Peripheral Airways
- Pleura

Effusion, thickening, collaterals

- Mediastinum
- Cardiac findings
- Visualised abdomen/neck

B. Vascular findings

- Abnormal bronchial arteries

Number, origin(orthotopic/ectopic) and course

- Abnormal non-bronchial systemic arteries (NBSC)

Number, origin and course

- Systemic-pulmonary arterial shunts

Number and site

- Pseudoaneuryms

PA or BA origin

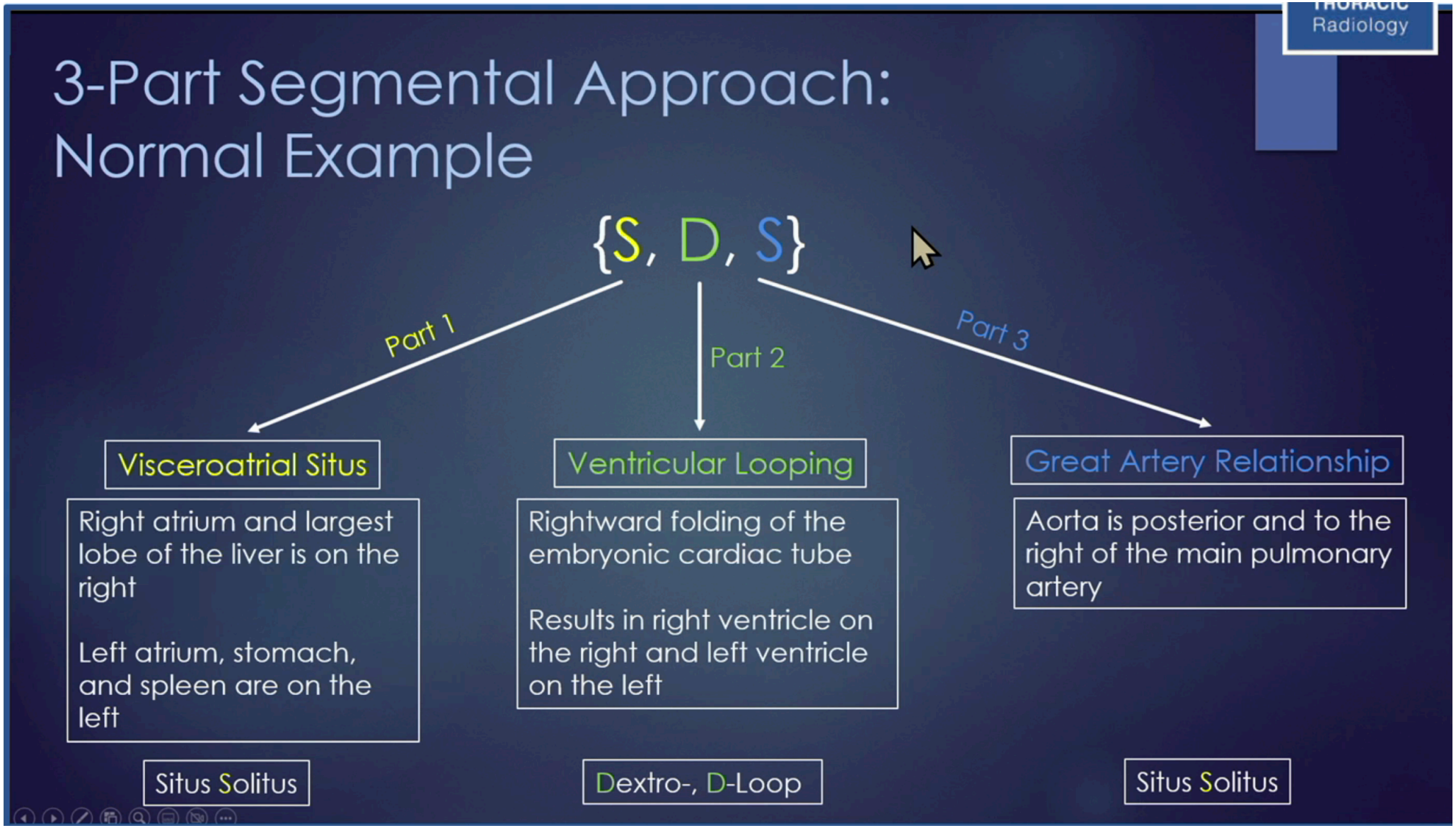
- Pulmonary artery/veins

Normal/abnormal

PANNUS VS THROMBOSIS

	Pannus	Thrombosis
Evolution in time	>12 months	Any time
Type of valve	Mechanical=bioprosthetic	Mechanical>Bioprosthetic
Localization	Around suture lines sub-valvular	Supra or sub-valvular
INR correlation	No effect	Low INR y low cardiac output
Symptoms	Insidious	Rapidly progressive
Attenuation (HU)	Usually <90 HU	Usually >145HU

3-Part Segmental Approach: Normal Example



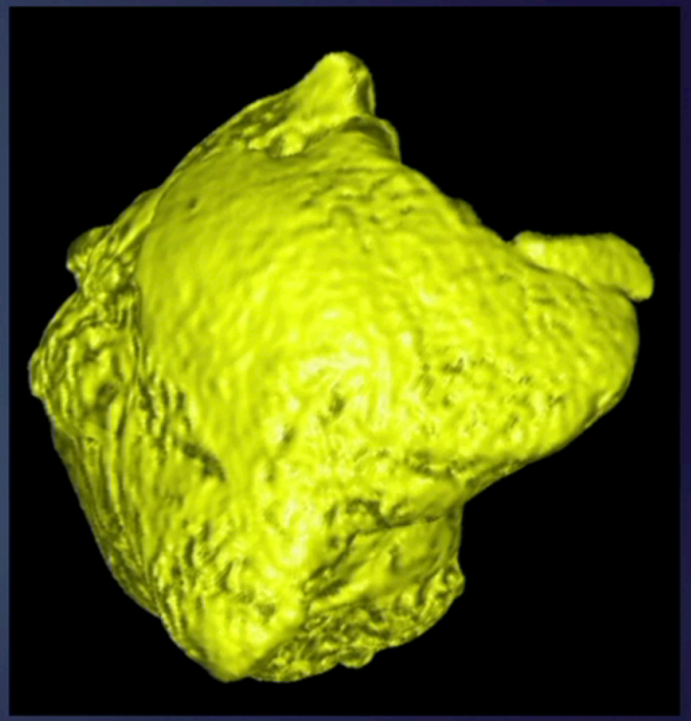
Our Standard Congenital Template: Normal Anatomical Anatomy

- Situs and Venous Connections*:
  - [Abdominal and atrial situs solitus], [atrial-ventricular concordance], [D-looped ventricles], [levocardia], [ventricular-arterial concordance], [normally related great vessels]
  - Pulmonary Veins: Normal pulmonary venous return
  - Systemic Veins: Normal systemic venous return

*From Dr. Lorna Browne from Children's Hospital Colorado

Atrial Situs

- Start by identifying the location of the right atrium
- The most reliable features of the right atrium are:
  - 1) Ostium of IVC
  - 2) Ostium of coronary sinus
  - 3) Superior limbic band of the septum secundum (more of an anatomic finding, hard to see on imaging)
  - 4) Large broad triangular right atrial appendage and pectinate muscles



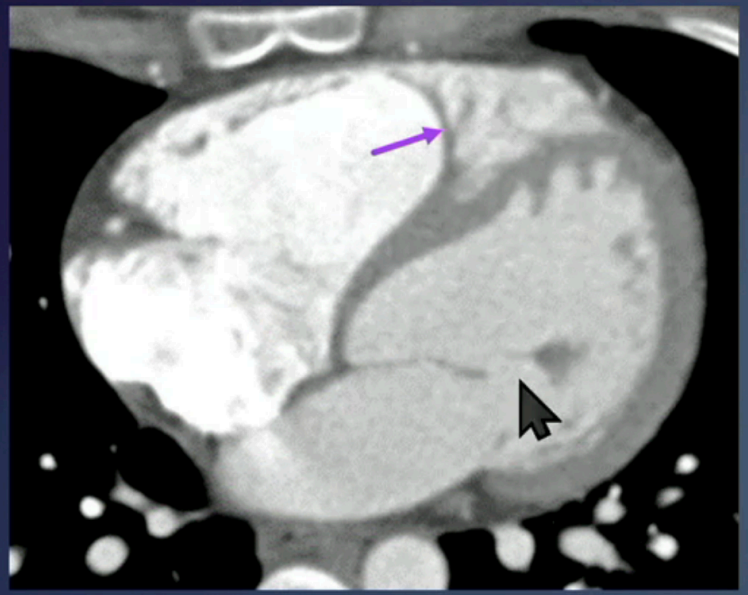
Ventricular Looping

- Should describe:
  - Interrelationship of the ventricles:
    - Loop orientation
  - Constituent Parts:
    - Atrioventricular junction
      - Concordant/Discordant/Ambiguus
    - Ventriculoarterial junction
      - Concordant/Discordant/Ambiguus
    - Position of the Ventricle Mass
    - Position of the Apex

Ventricular Looping

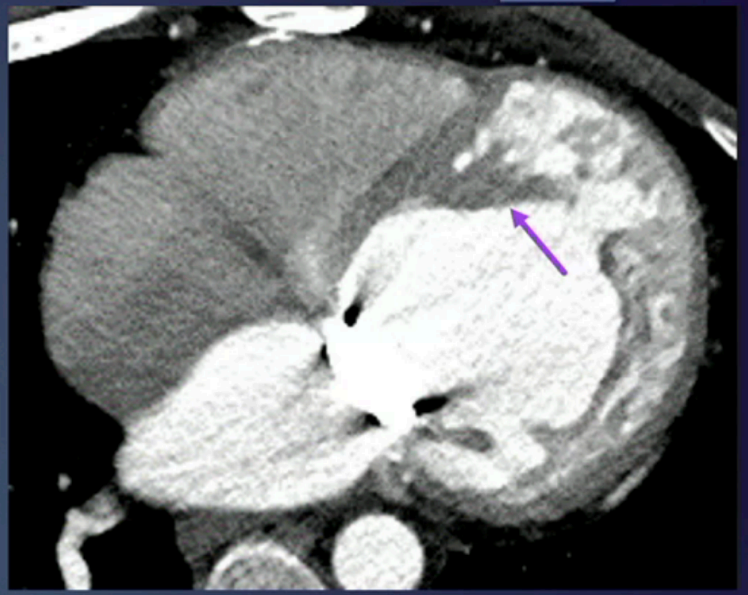
Radiology

Dextro-Position



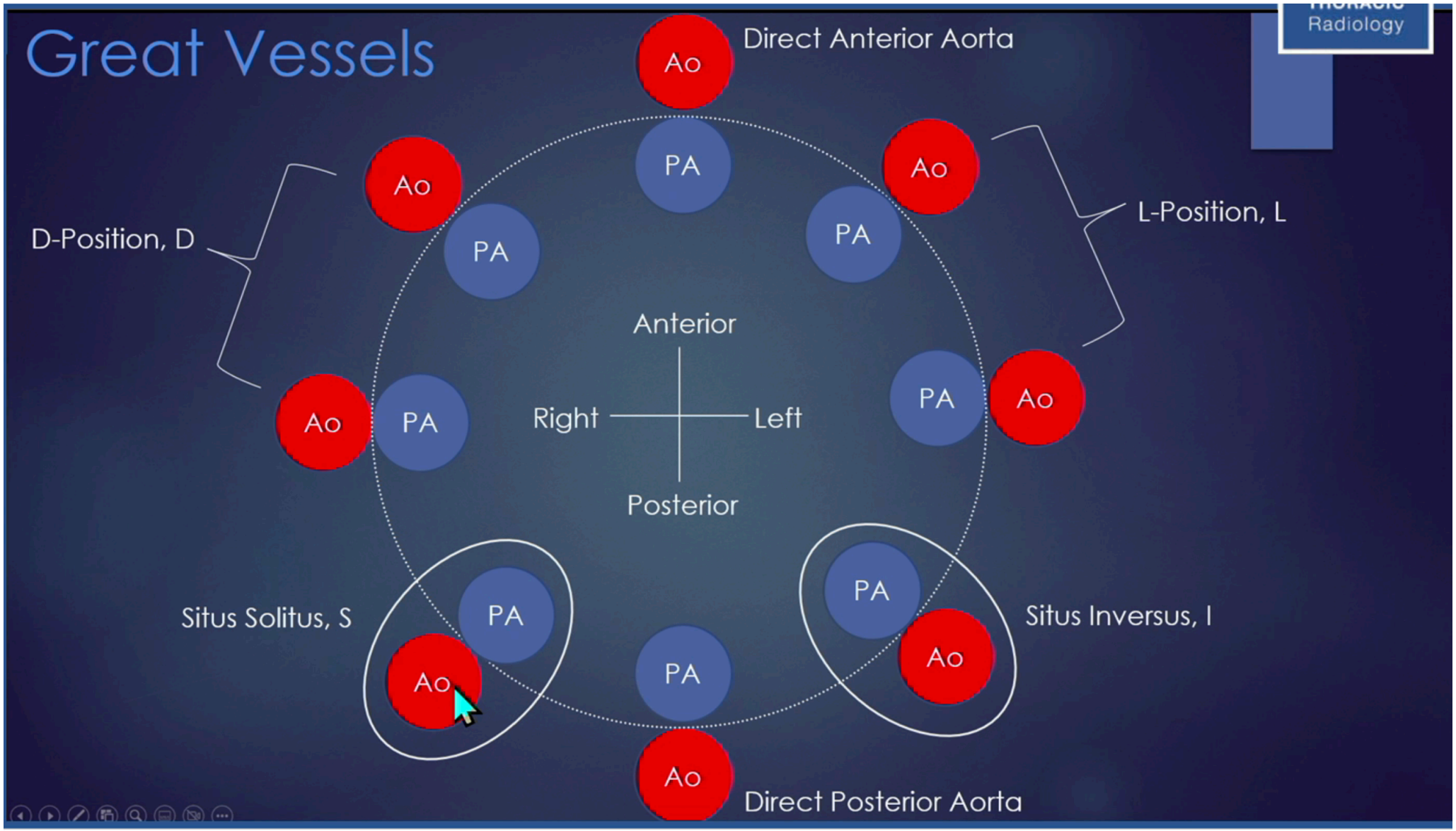
- **D**extro-Position: Right ventricle on right
- **L**evo-Position: Right ventricle on left
- **X**: If does not fit either position

Levo-Position



Right ventricle

- Moderator band (→) helps to identify RV
- Coarse trabeculae
- Papillary muscle attachments to both free wall and interventricular septum
- Tricuspid AV valve
- Septal and parietal bands


Great Vessels
Radiology
Ao
Direct Anterior Aorta
PA
Ao
PA
D-Position, D
Ao
PA
L-Position, L
Anterior
Right
Left
Posterior
Ao
PA
PA
Ao
Situs Solitus, S
PA
Ao
PA
PA
Ao
Situs Inversus, I
Ao
Direct Posterior Aorta

Summary

- Congenital heart imaging can be an intimidating, but exciting challenge to learn
- Using a systematic approach to every congenital heart case can help organize your thoughts and standardize your reporting
  - Using the 3-part Van Praagh notation or sequential segmental Anderson approach can help with this
- When in doubt, describe what you see, modifying each part of your standard template as needed

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