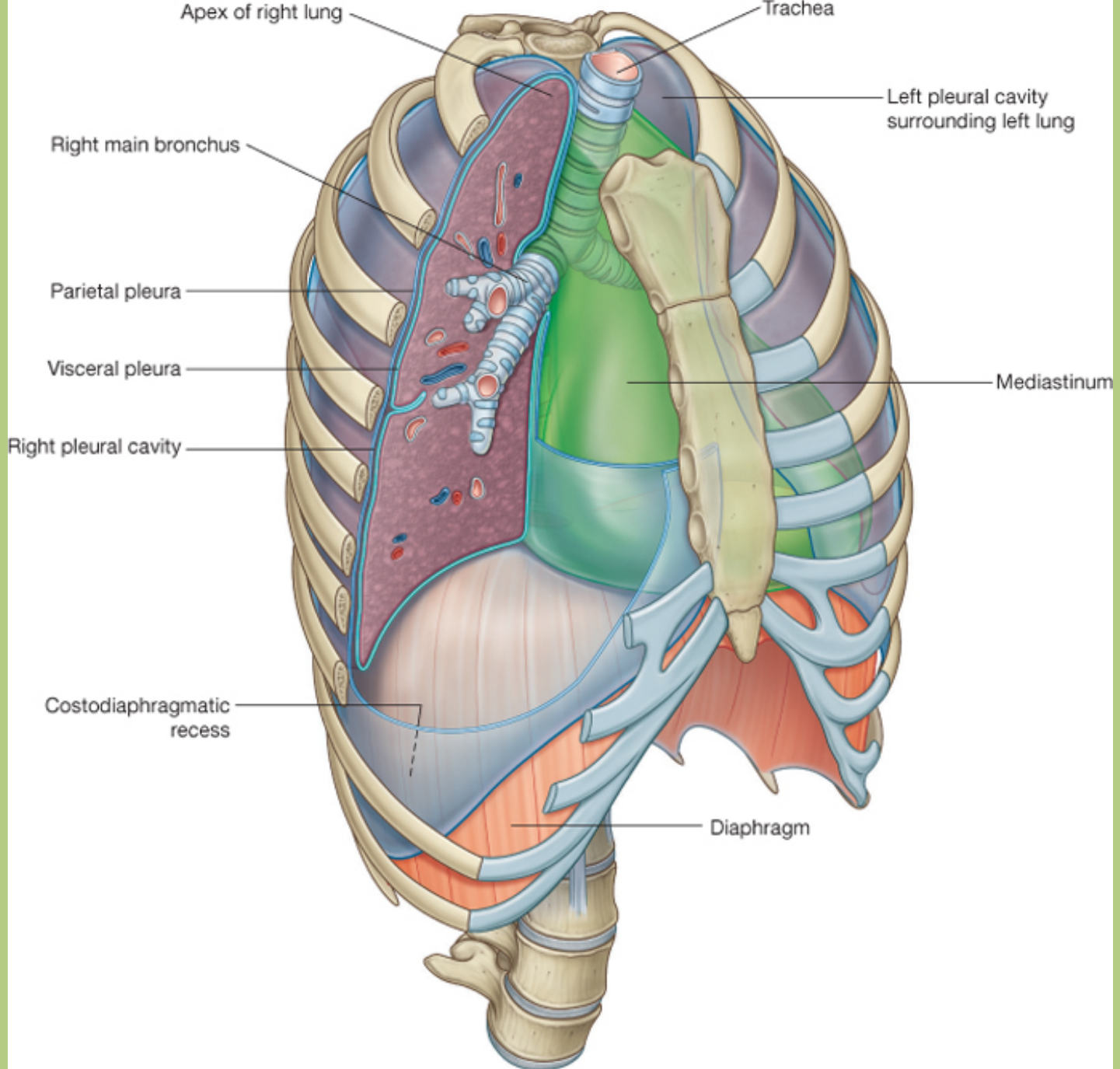


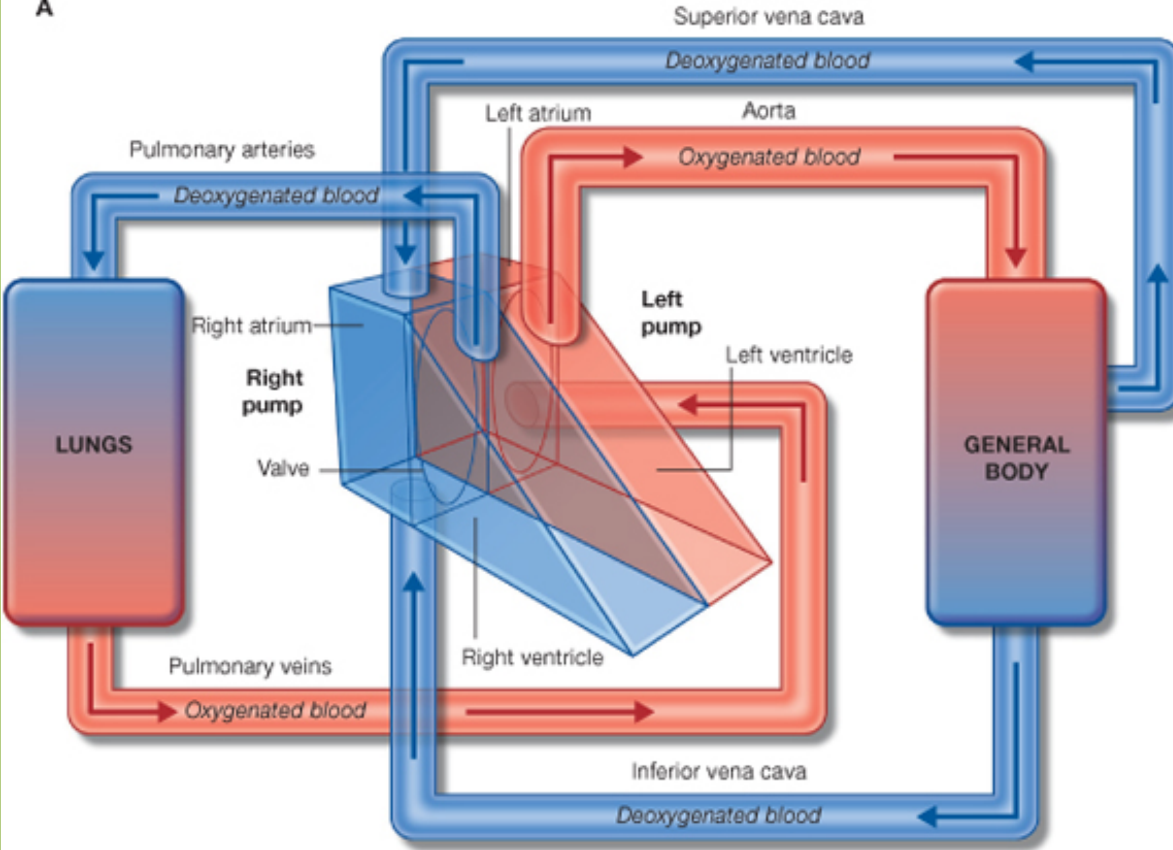


Clinical anatomy of the chest cavity

Sándor Katz MD, Ph.D.

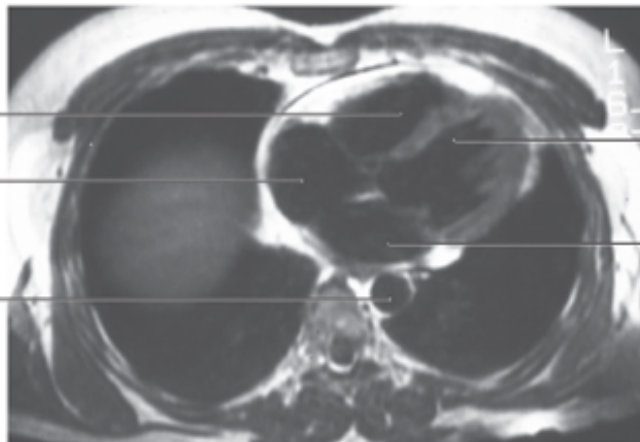


Heart



- The heart pumps blood through the blood vessels, keeping up the **systemic and pulmonary circulations.**

B



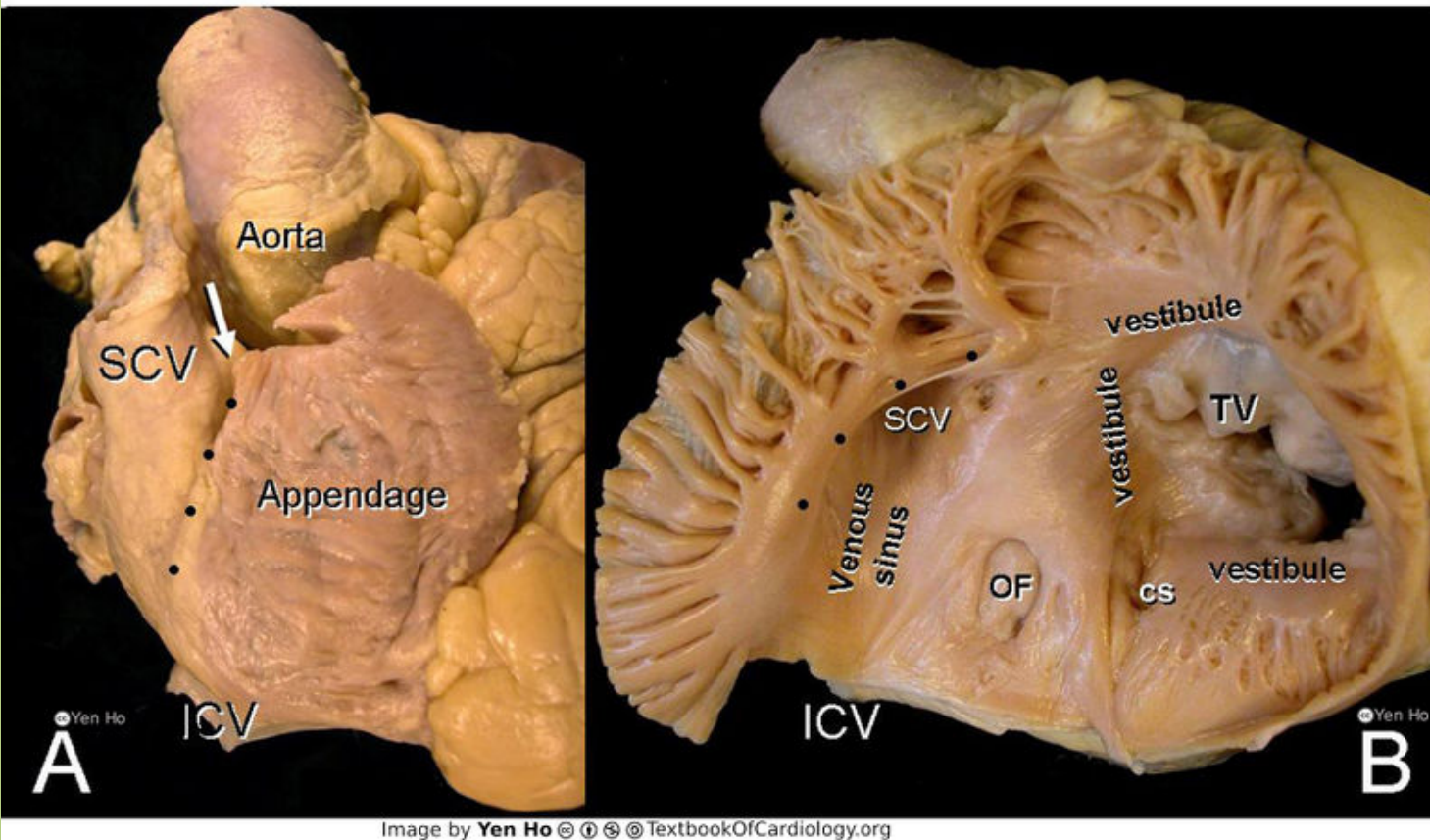
Right ventricle ————— Left ventricle
Right atrium ————— Left atrium
Thoracic aorta —————

Right atrium

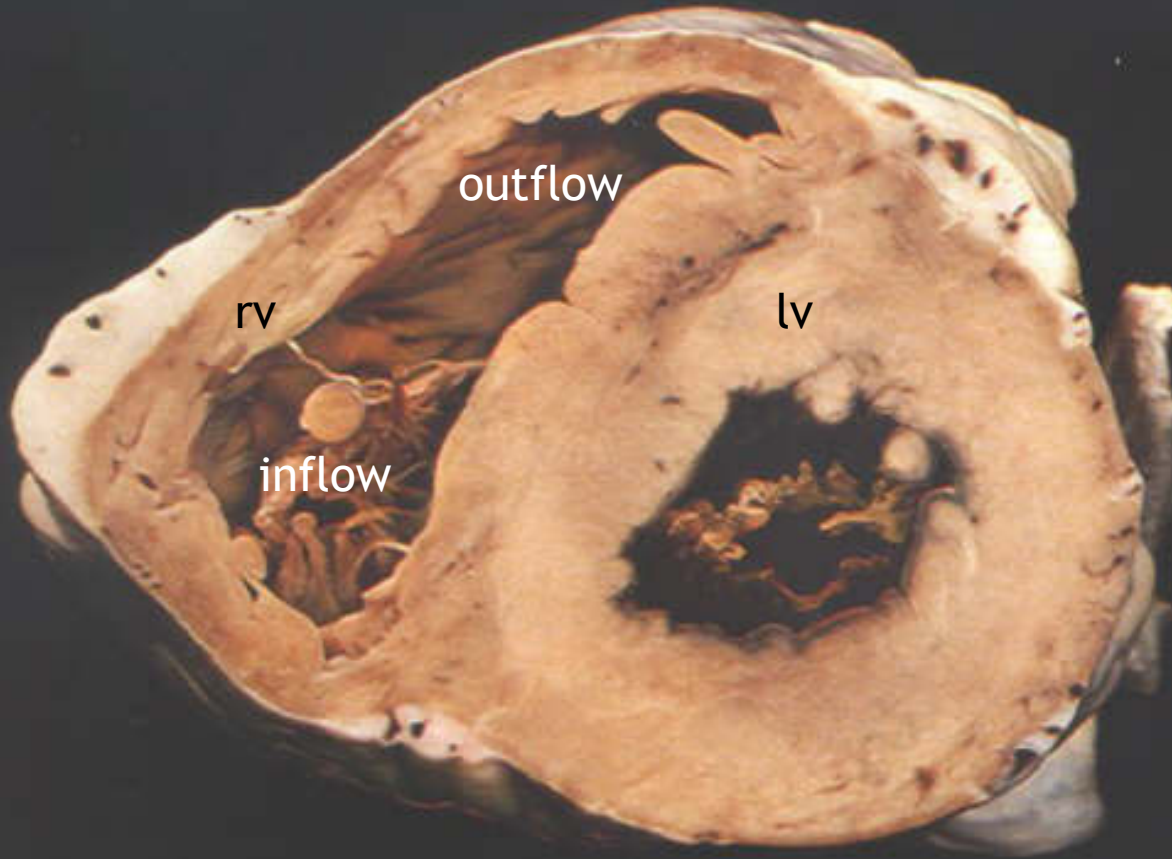
- It consists of the smooth-walled **sinus venarum** and pectinate muscles lined **proper right atrium**.

Parts:

- **Openings of the superior vena cava (SCV), inferior vena cava (IVC), coronary sinus (CS);**
- **Terminal crest (dots),**
- **Oval fossa (OF),**
- **Right auricle.**



Right ventricle

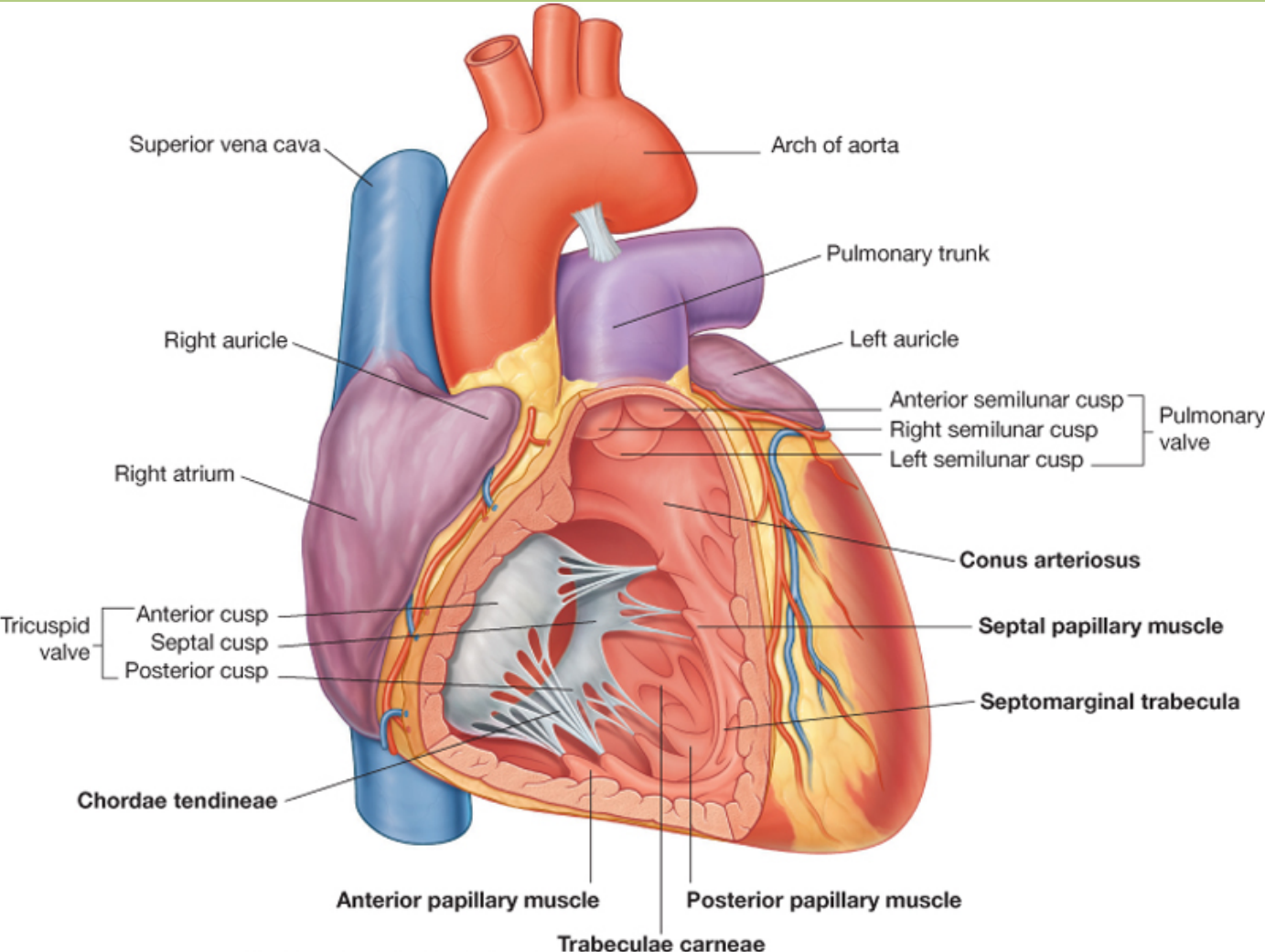


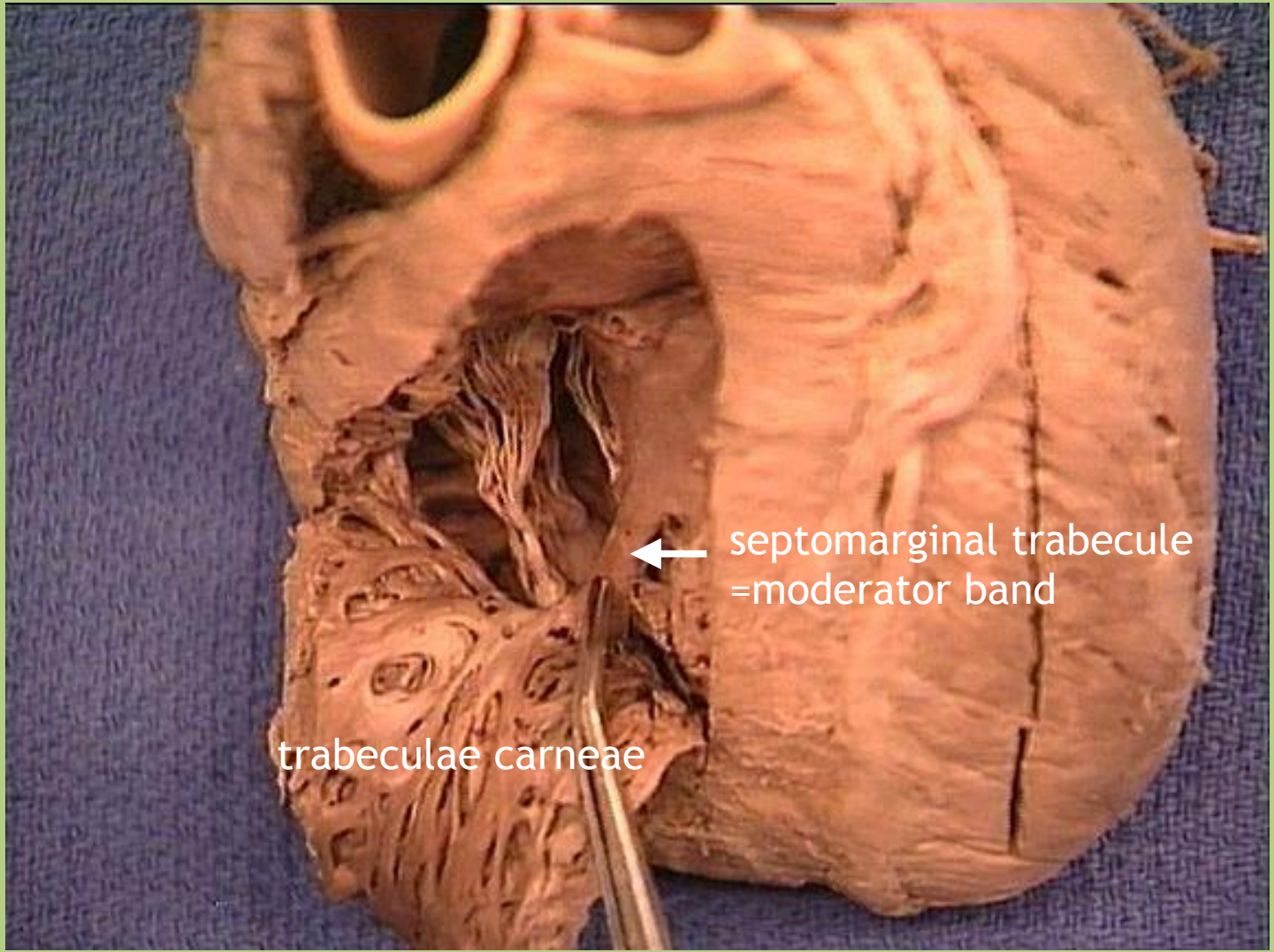
- The right ventricle is **semilunar shaped**, comparing with the left ventricle.
- It is divided into two segments: the **inflow tract** posteroinferiorly and the **outflow tract** anterosuperiorly.

Right ventricle

Parts:

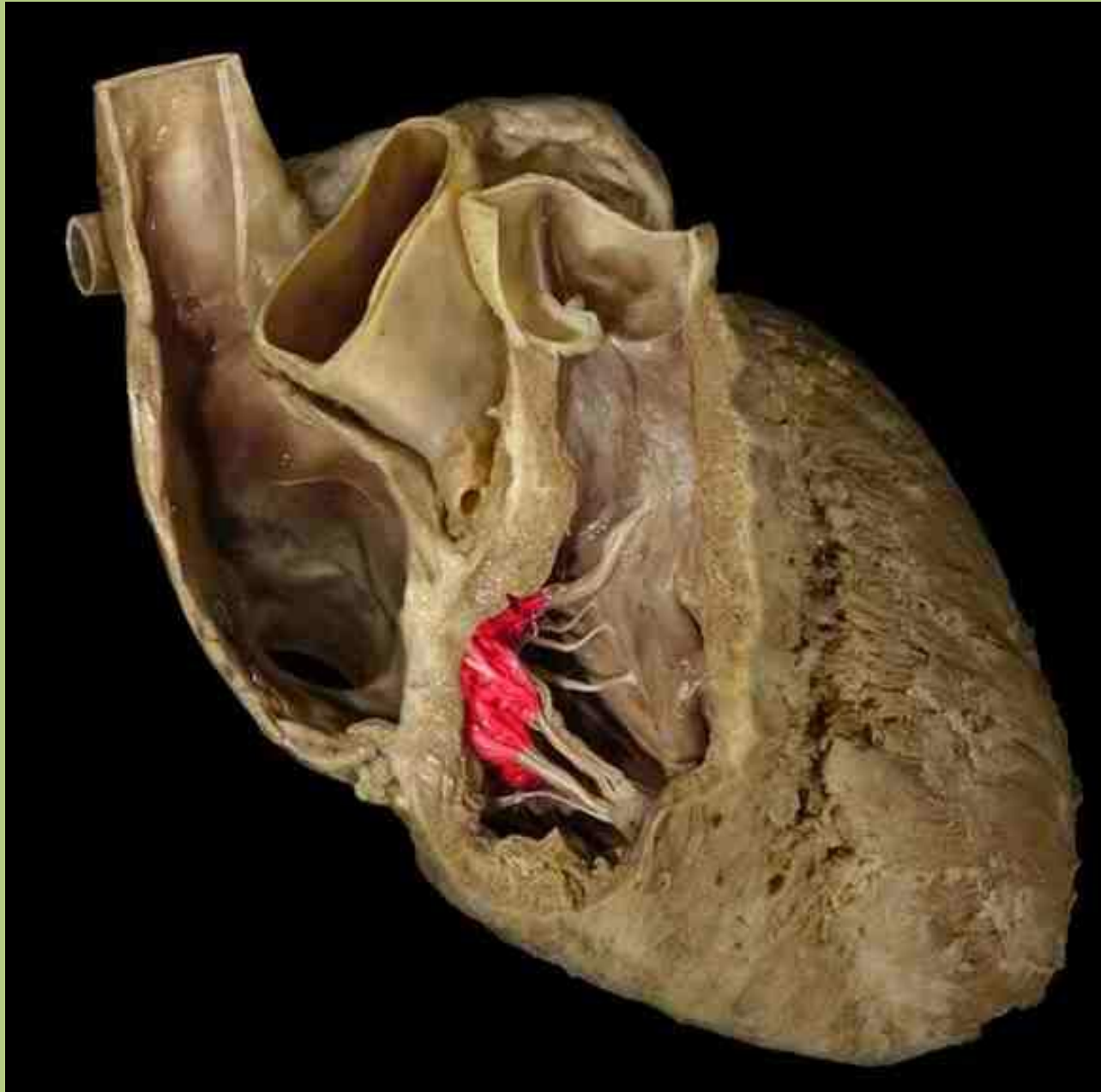
- **Septomarginal trabecule** (moderator band),
- **Trabeculae carnae**,
- **Right atrioventricular valve=tricuspid valve** (papillary muscles, chordae tendinae, cusps)
- **Conus arteriosus**
- **Orifice of the pulmonary trunk** - guarded by the pulmonary valve.





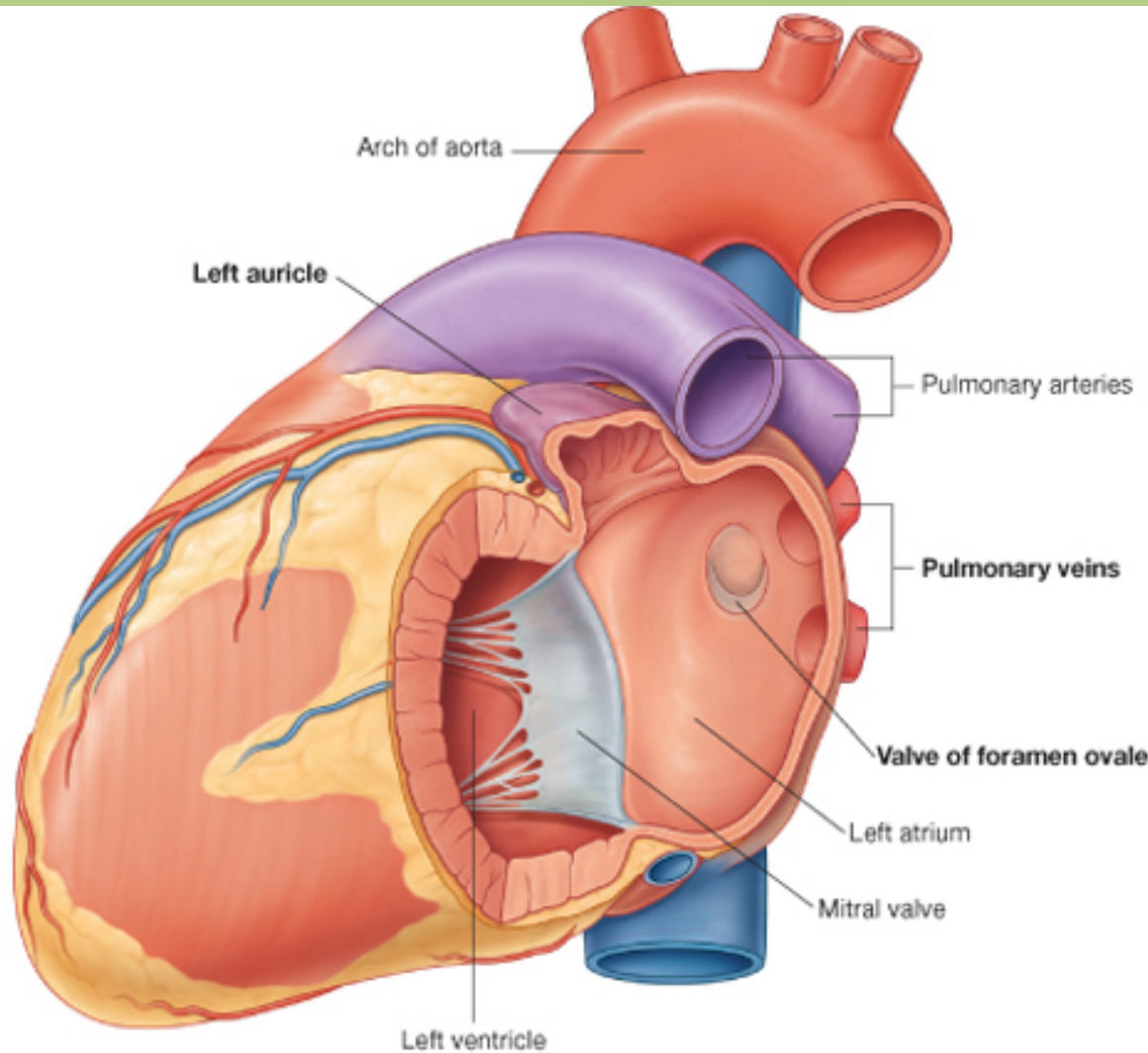
septomarginal trabecule
= moderator band

trabeculae carneae



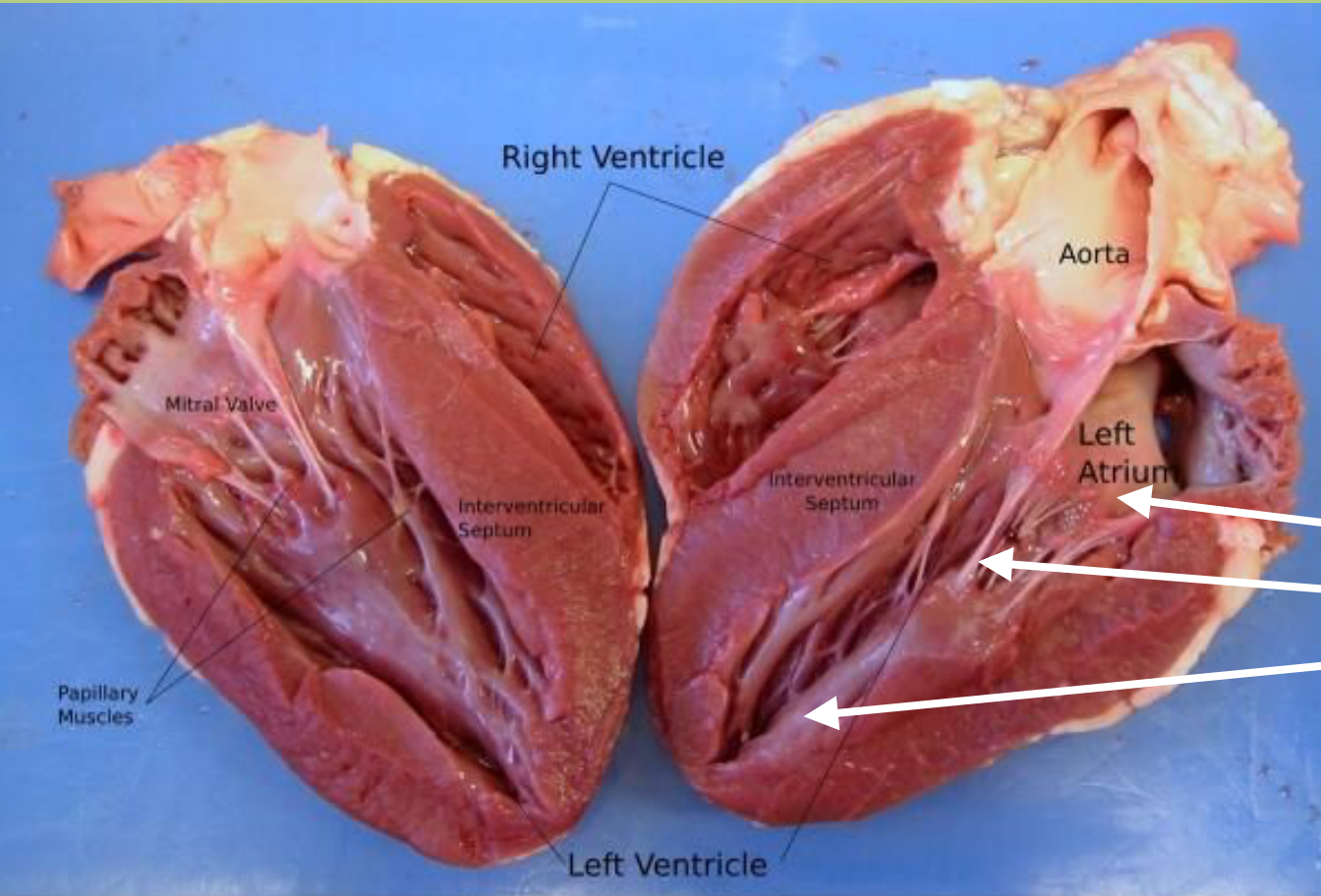
tricuspid valve

Left atrium



- Smooth wall, except in the **left auricle**
- **Four openings of the pulmonary veins**

Left ventricle



Parts:

- **Trabeculae carneae,**
- Left atrioventricular valve=**bicuspid valve=mitral valve** (cusps, chordae tendinae, papillary muscles,)
- **Orifice of the aorta** - guarded by the aortic valve.

Aortic semilunar valve

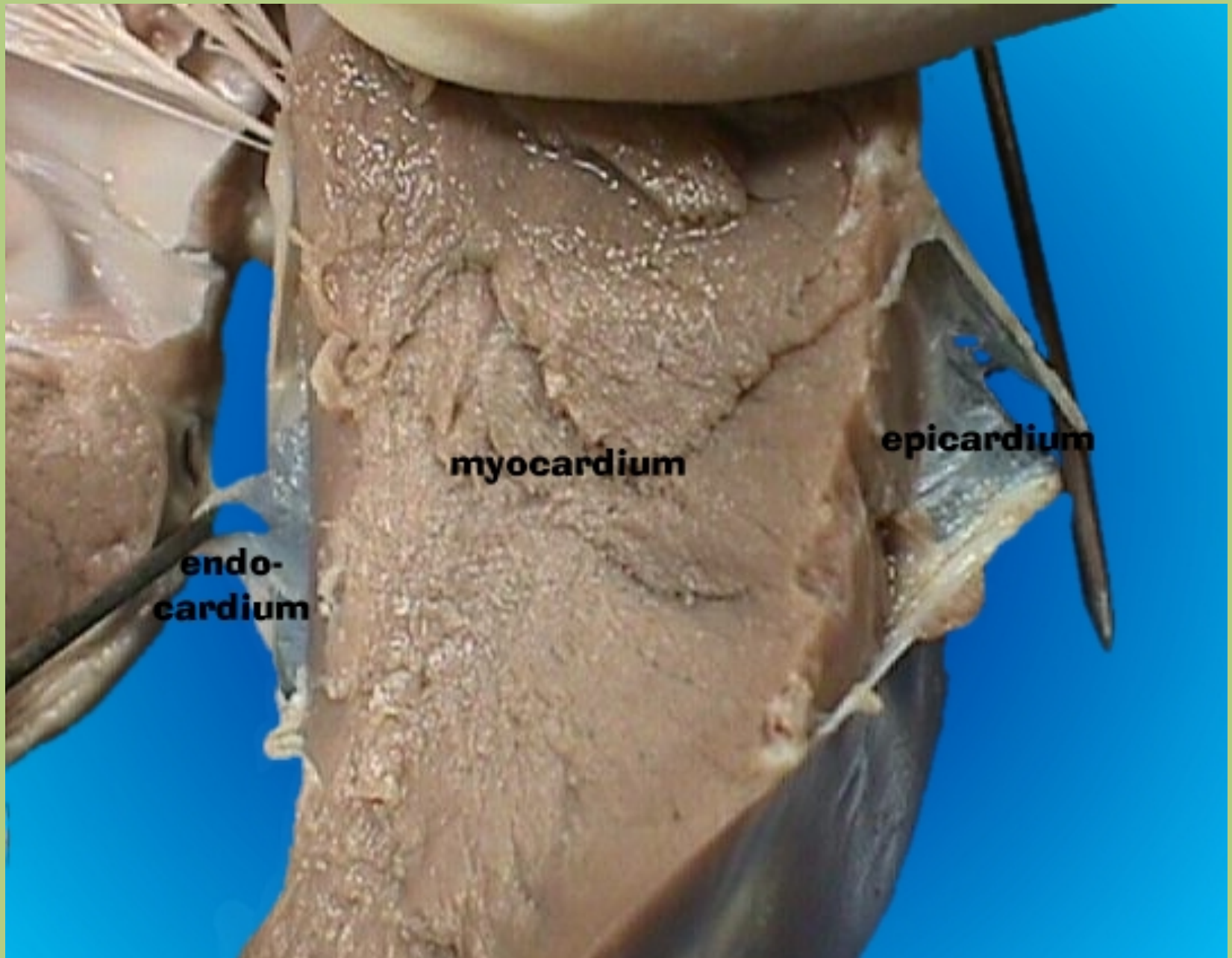


Open during contraction of left ventricle



Closed during relaxation of left ventricle

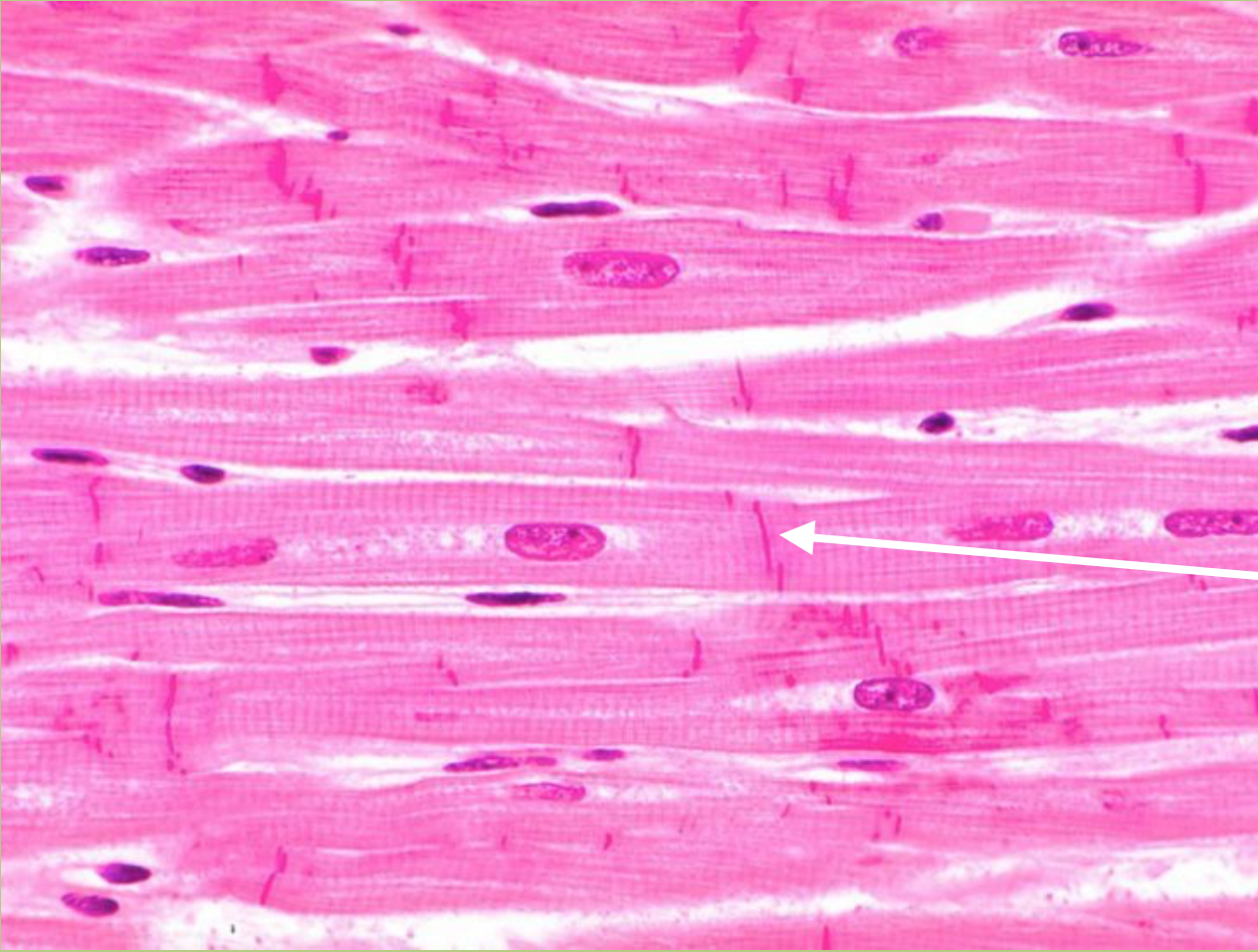
Cardiac wall



**The atrioventricular and semilunar valves
are duplications of the endocardium.**

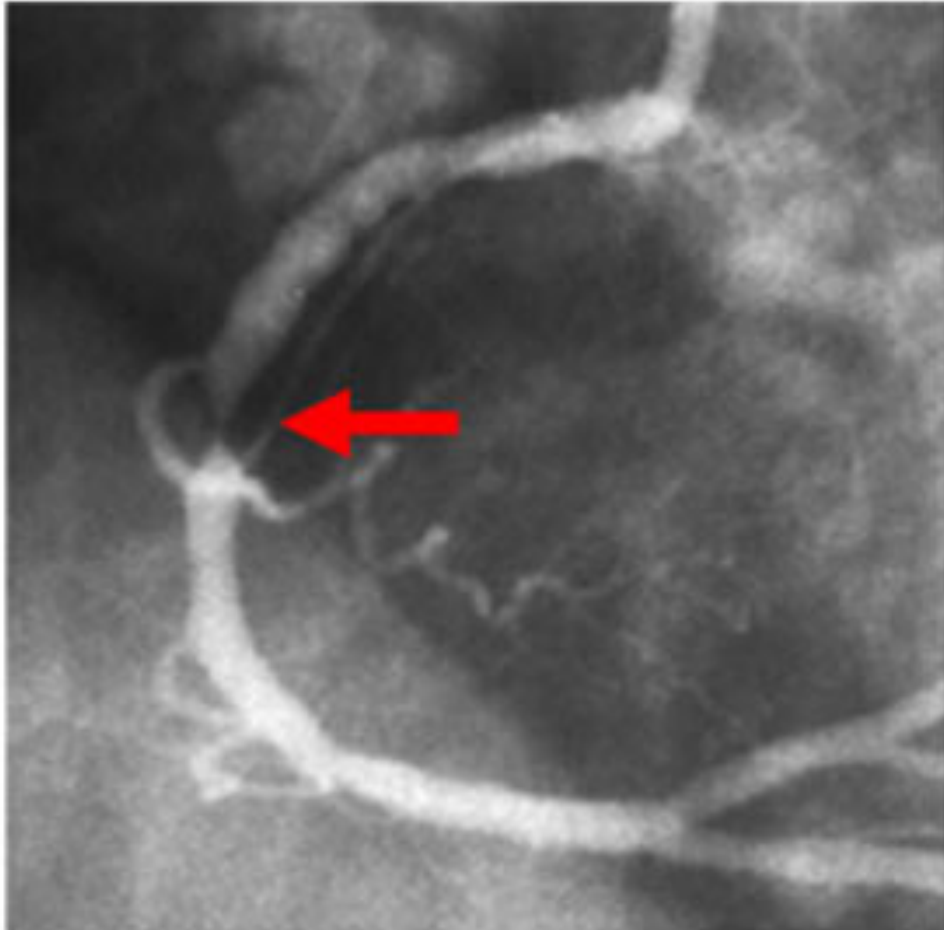
*(The microorganisms can easily infect the
valves.)*

Cardiac muscle - histology

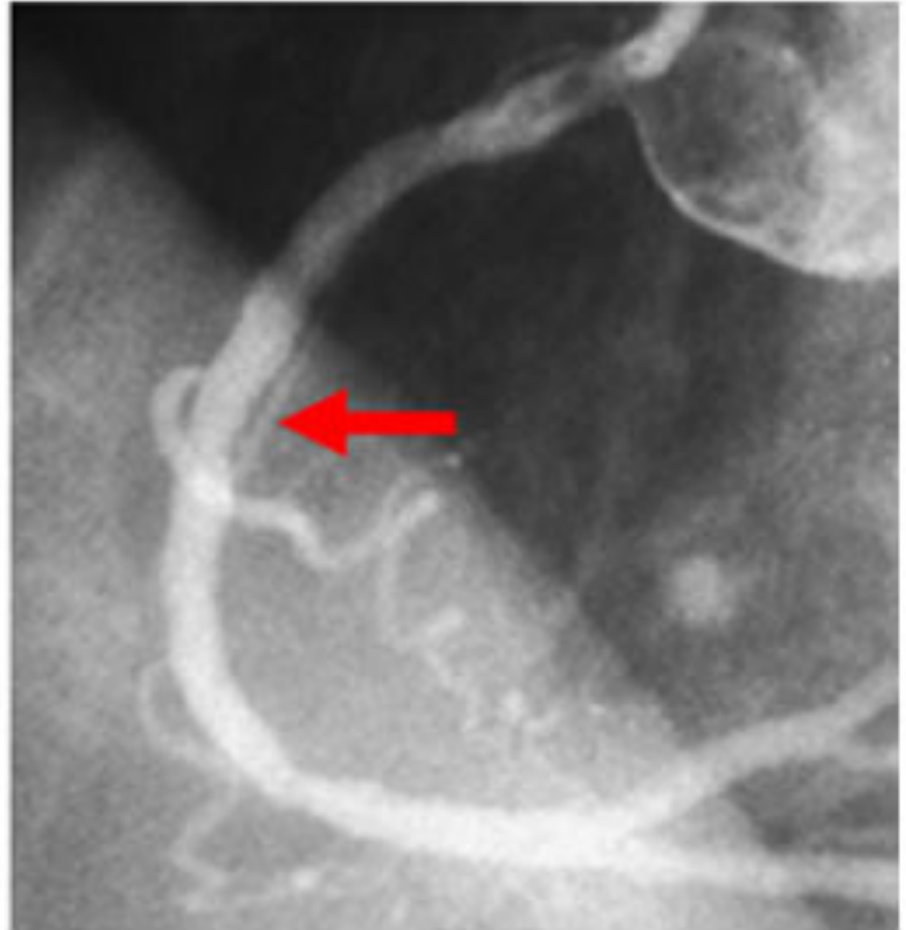


- One, centric nucleus
- Striation
- Well developed cell adhesion complex (Eberth's line) for the fast conduction.

Angioplasty

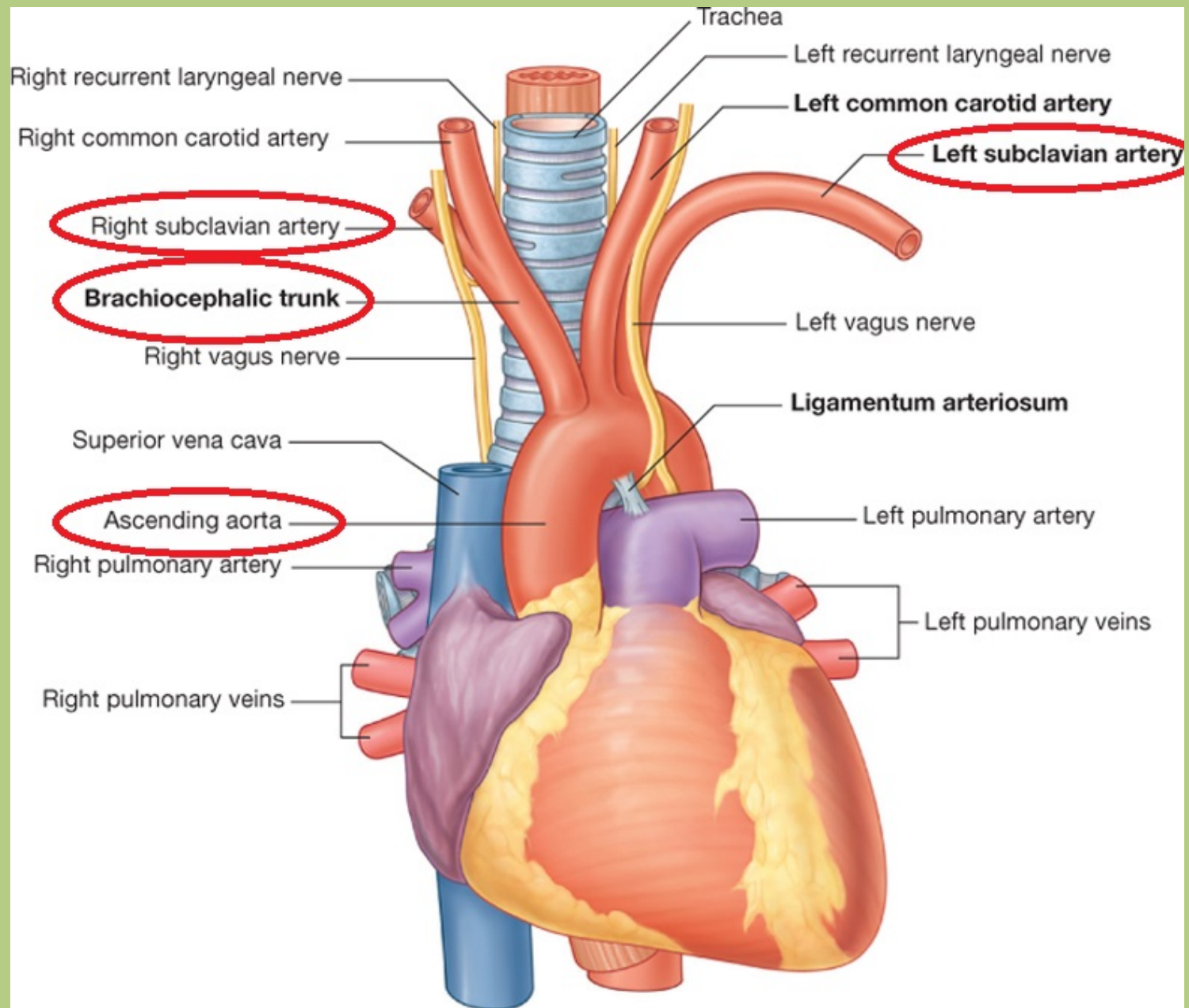


before



after

Great vessels



Intercostal muscles

External intercostal muscles:

Arise from the lower border of the ribs and *insert on the upper border of the ribs below.*

Function:

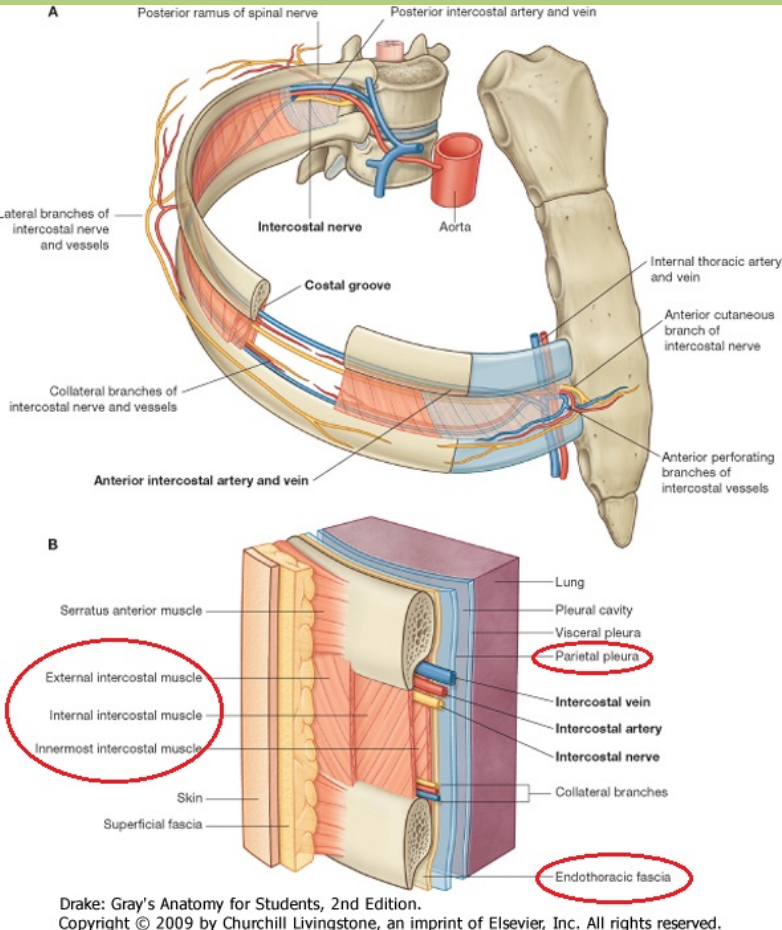
Elevation of the ribs, they reinforce the intercostal space during the deep inspiration.

Internal intercostal muscles:

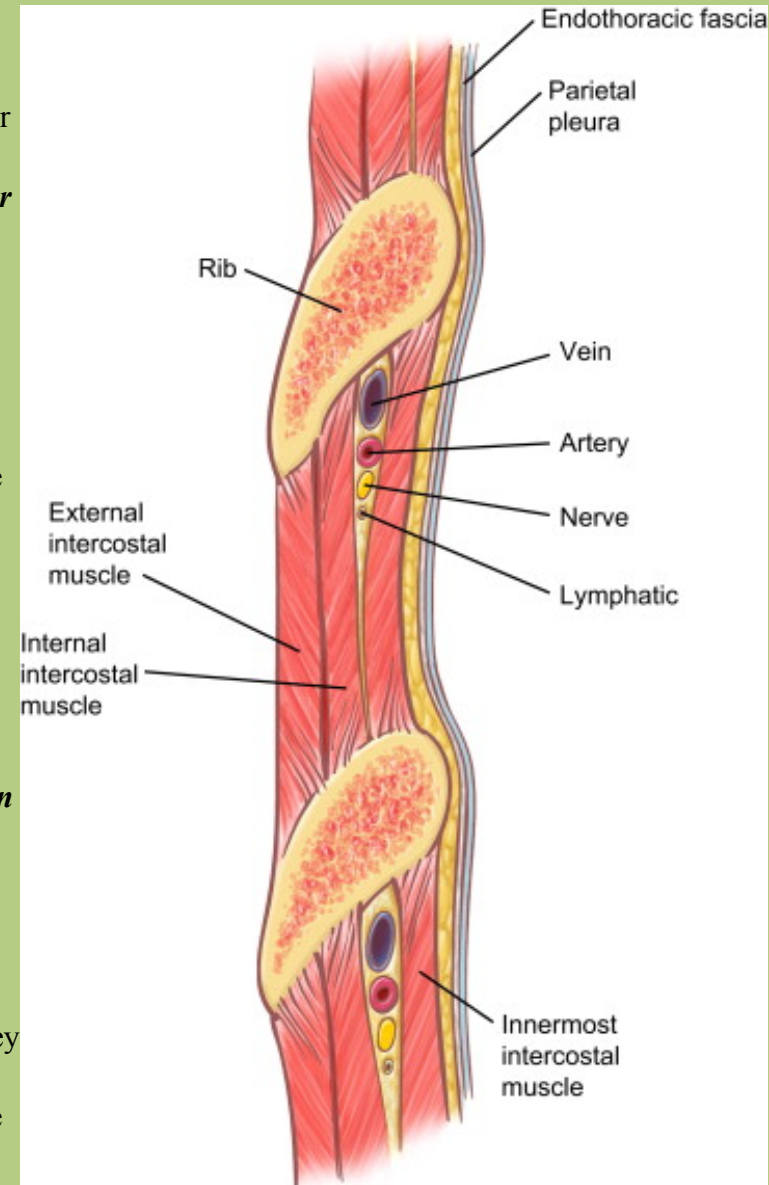
Arise from the ridge of the inner surface of ribs and *insert on the inferior border of the ribs above.*

Function:

Depression of the ribs, they reinforce the intercostal space during the deep expiration.



Drake: Gray's Anatomy for Students, 2nd Edition.
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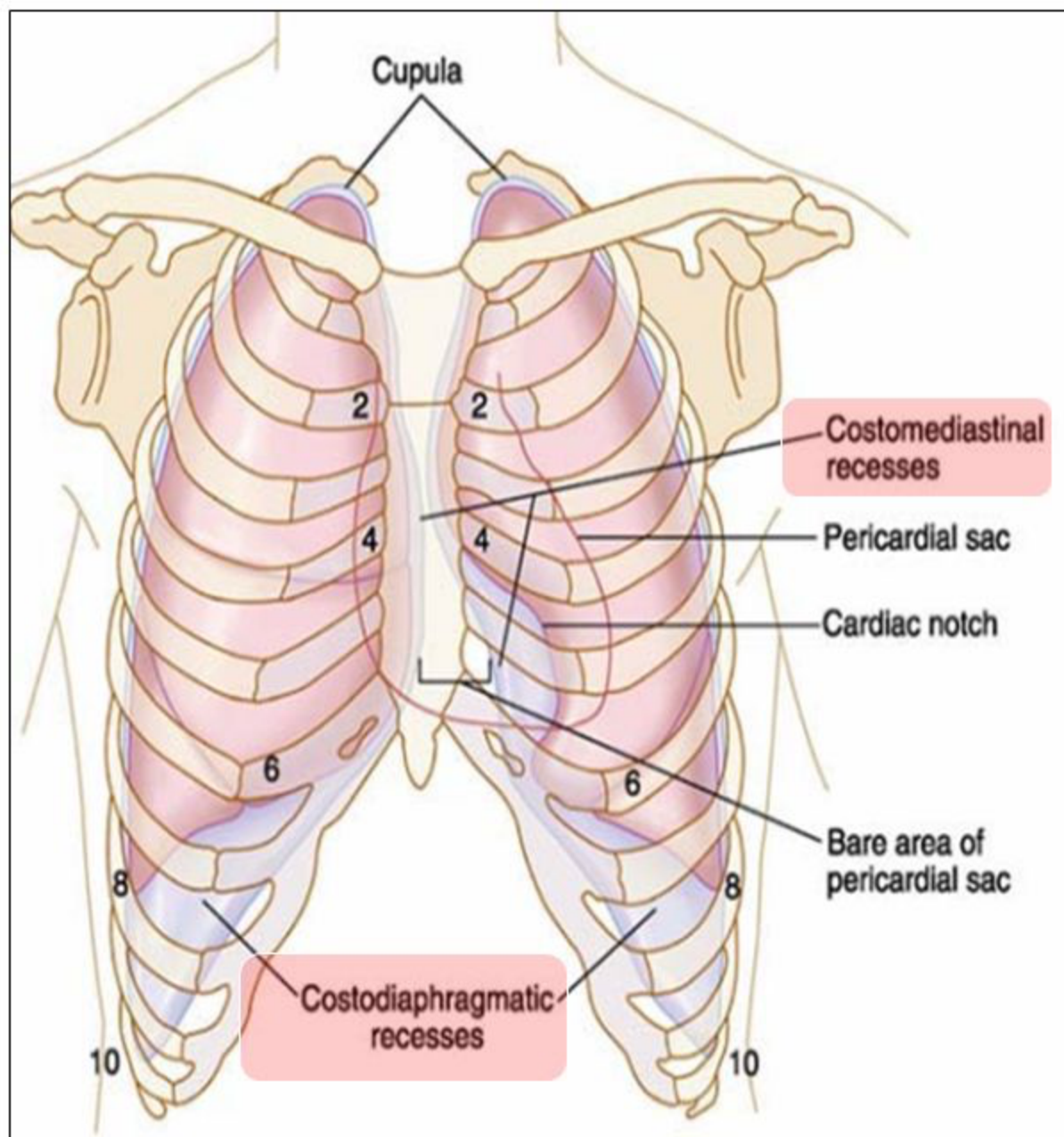
Pleural Recesses

Costodiaphragmatic:

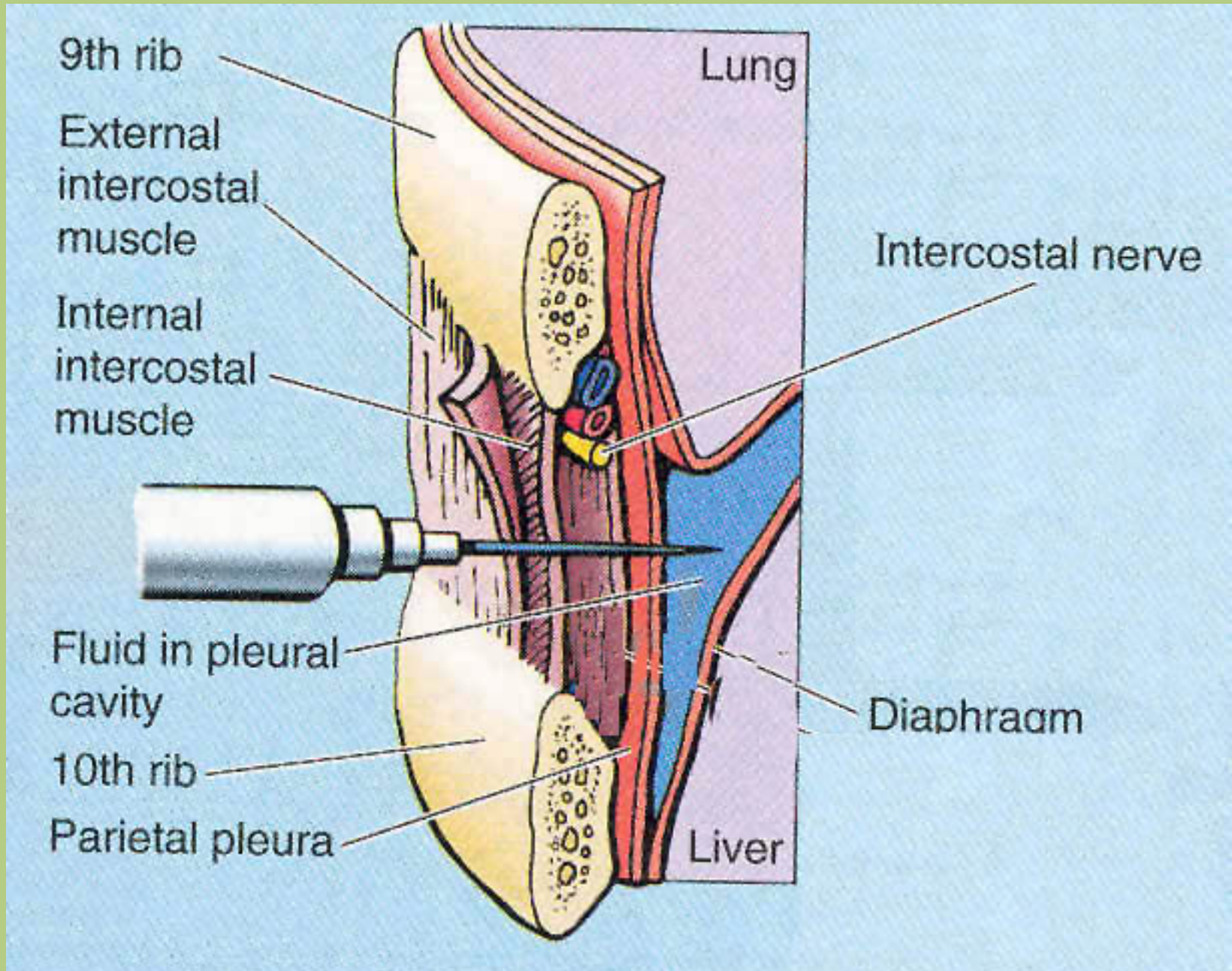
- Slit like space between costal and diaphragmatic pleurae, along the **inferior border** of the lung which enters through it in deep inspiration.

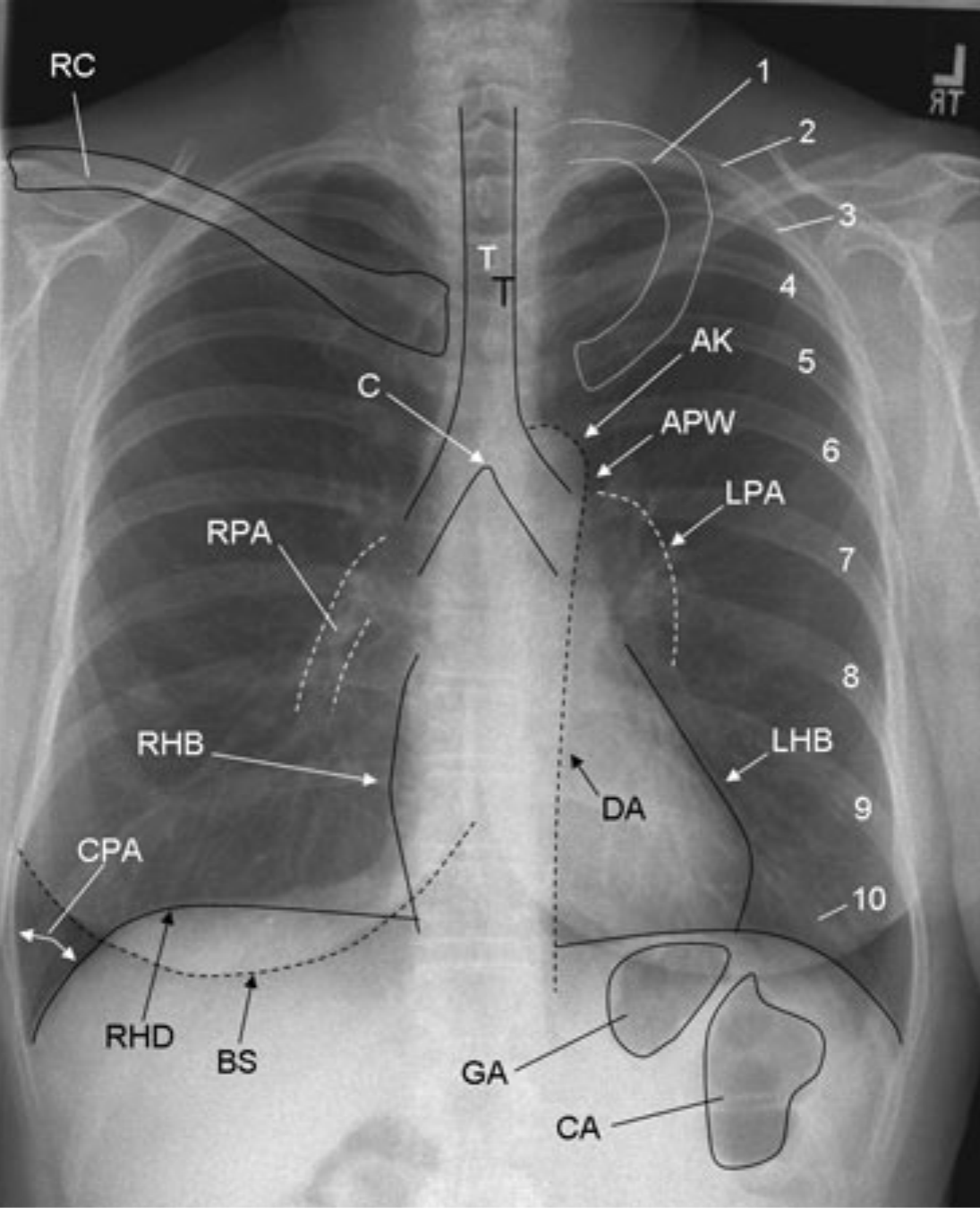
Costomediastinal:

- Slit like space between costal and mediastinal pleurae, along the **anterior border** of the lung which enters into it in deep inspiration.



Thoracocentesis: at the upper edge of ribs





Normal Chest X-ray picture

AK: aortic knob

APW: aortopulmonary window

BS: breast shadow

C: carina

CA: colic air

CPA: costophrenic angle

DA: descending aorta

GA: gastric air

LHB: left heart border

LPA: left pulmonary artery

RHD: right hemi diaphragm



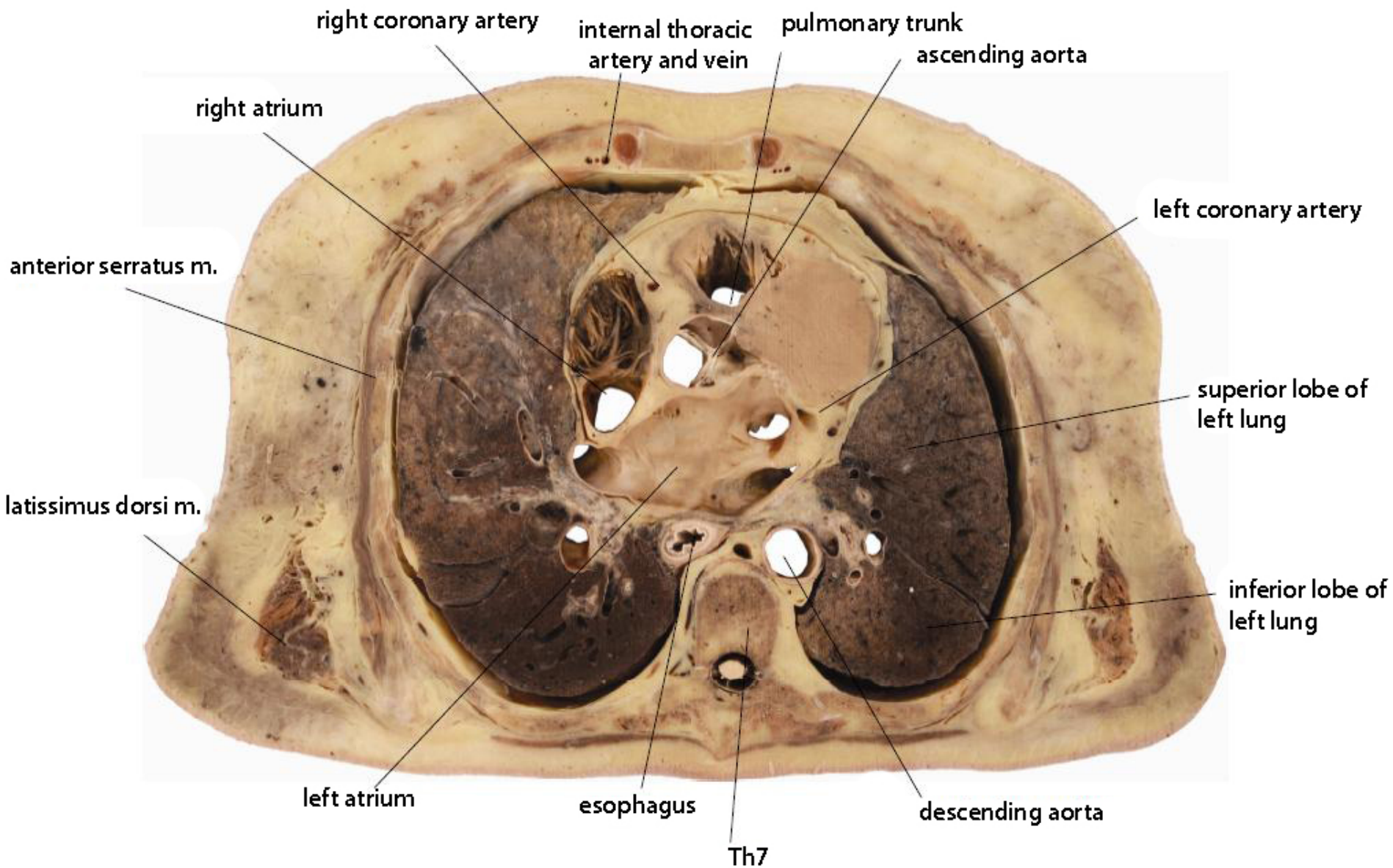
PA (*postero-anterior*)

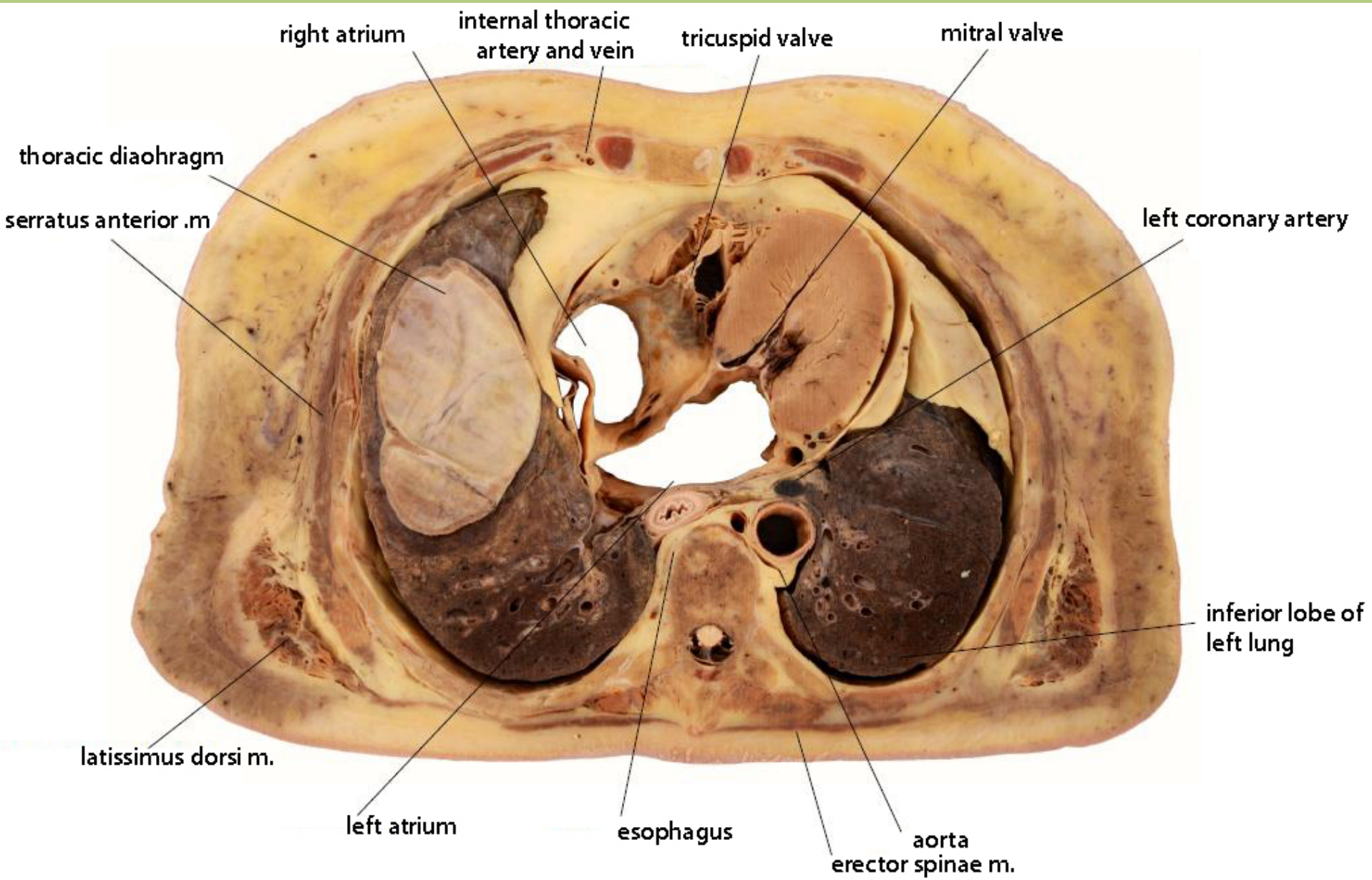
AP (*antero-posterior*)

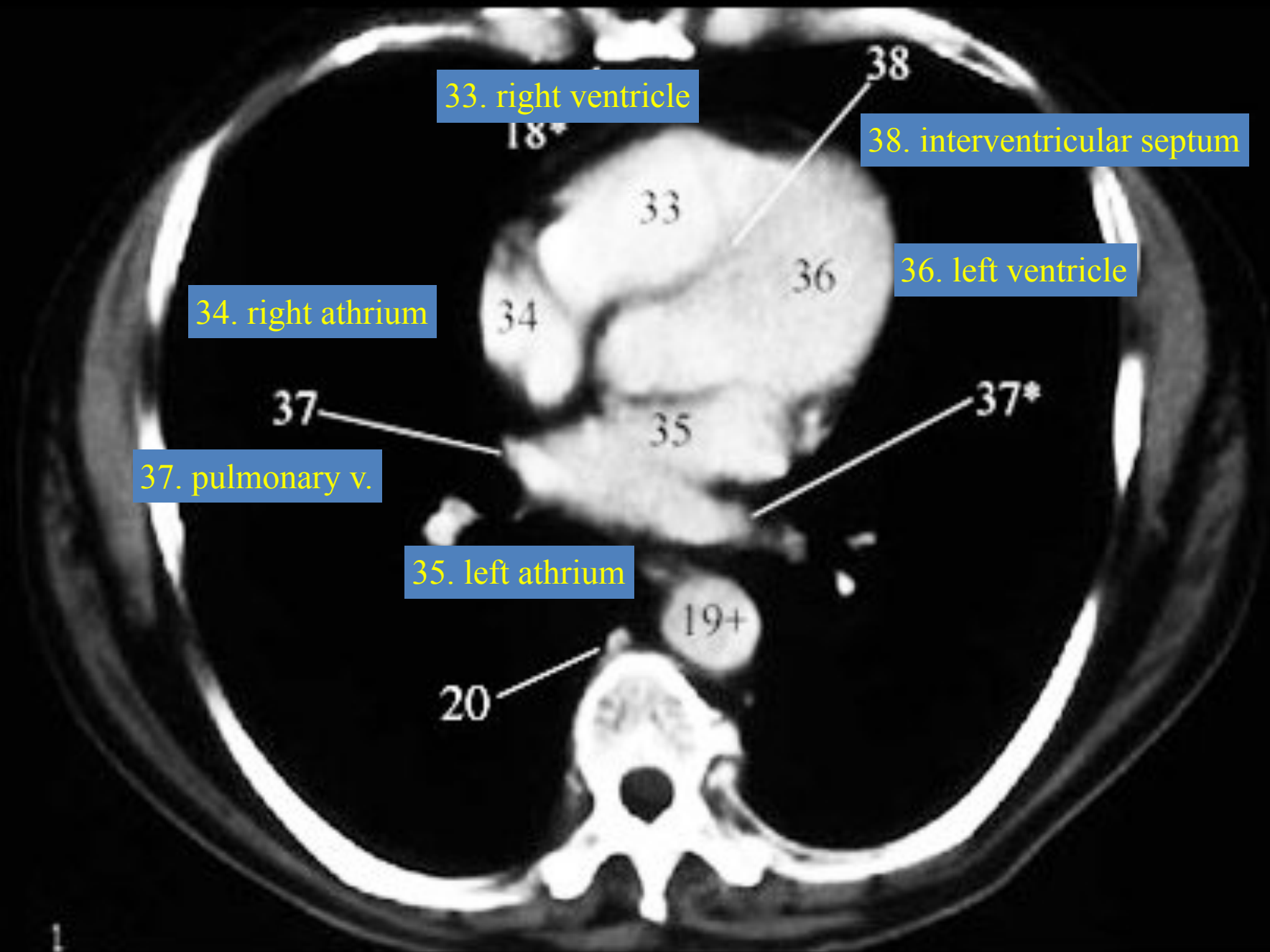


PA vs. AP









33. right ventricle

38. interventricular septum

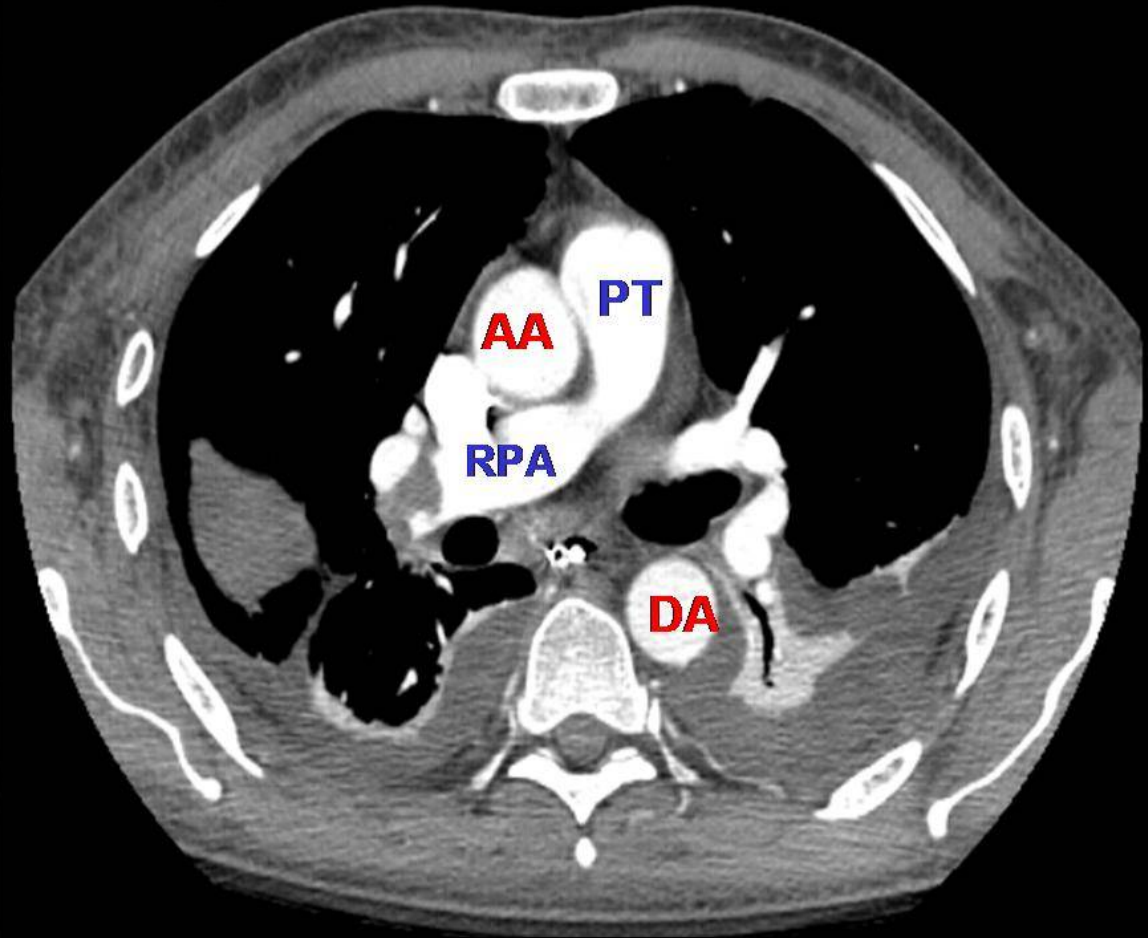
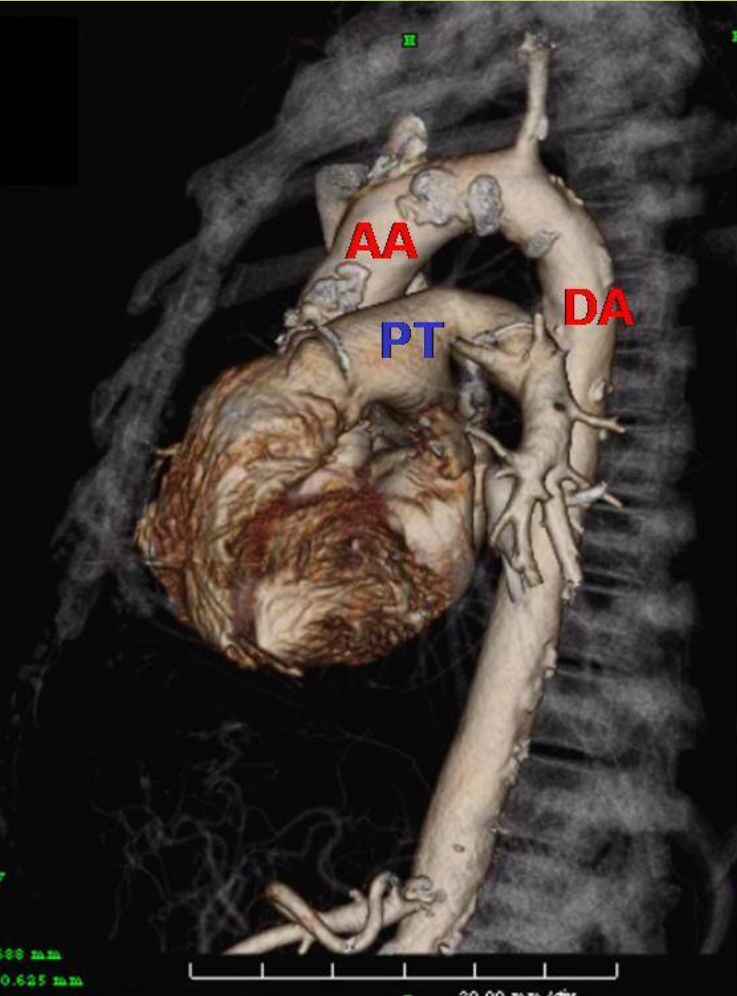
36. left ventricle

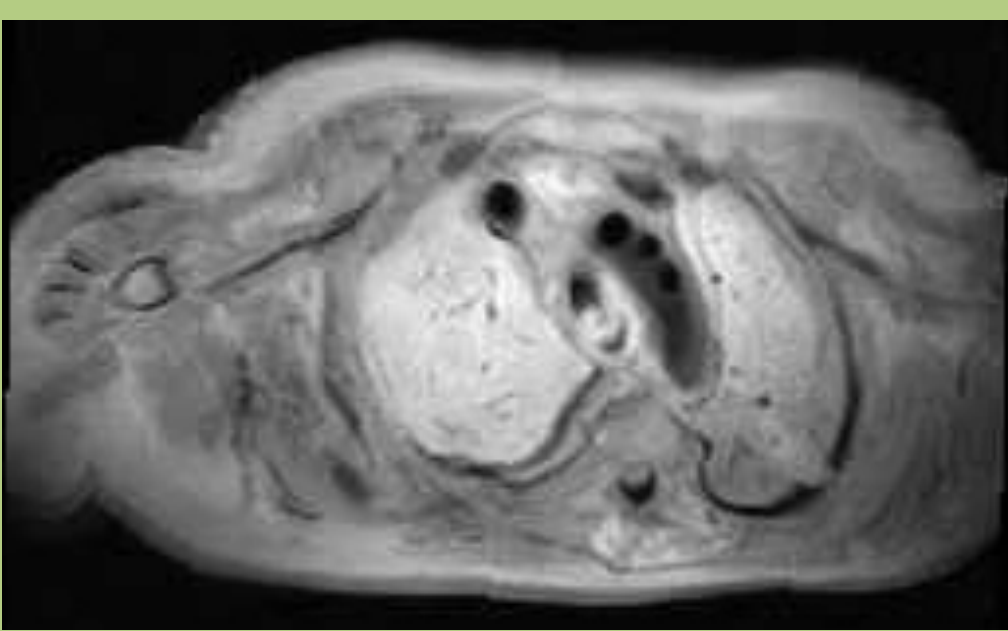
34. right atrium

37. pulmonary v.

35. left atrium

3-D volume rendered CT image

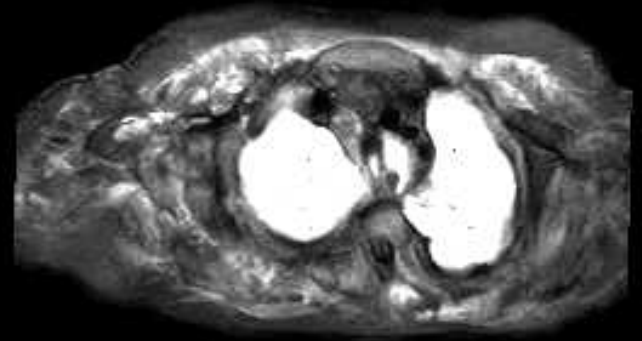


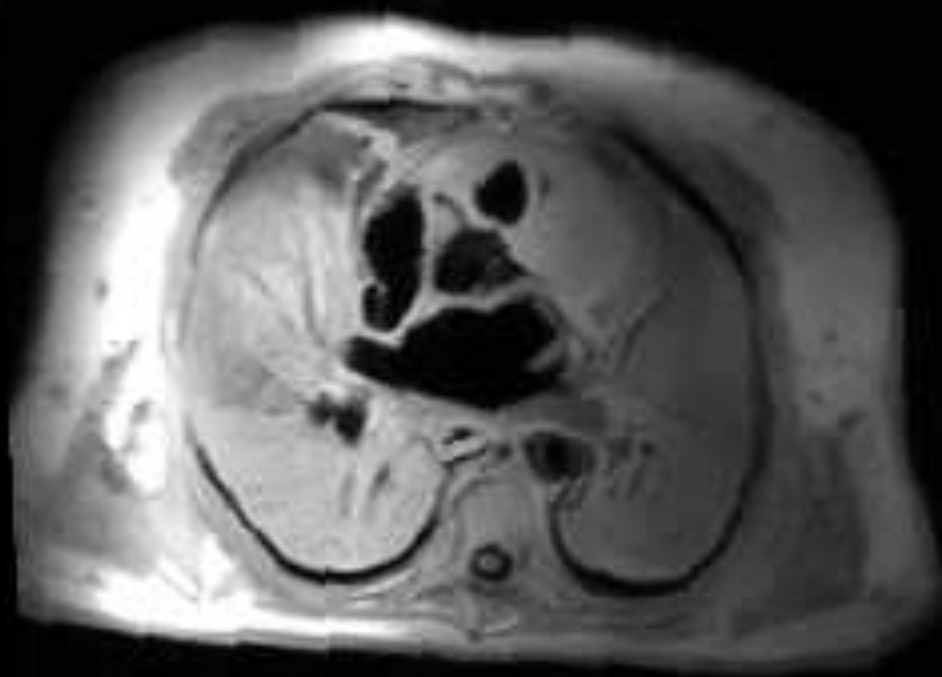


MRI

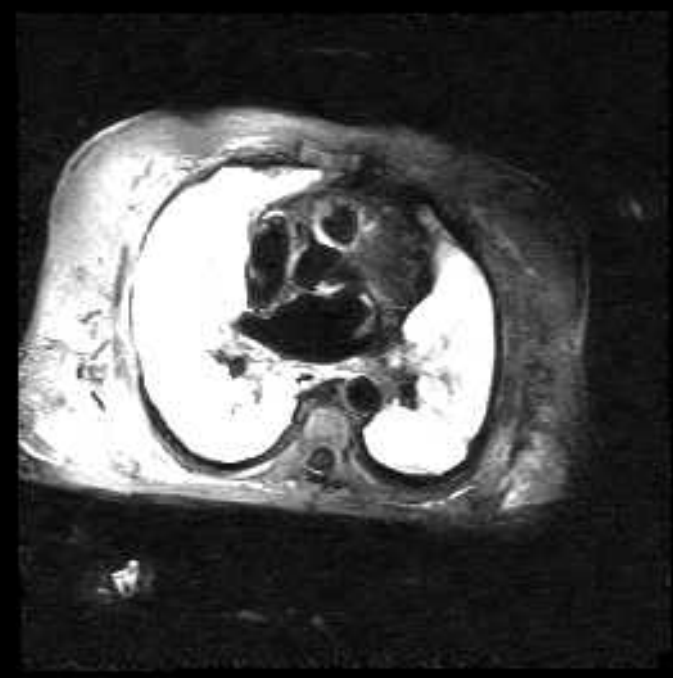
T1- weighted
(dark: water, calcification;
bright: fat, necrosis)

T2-weighted
(dark: fat;
bright: water)





T1- weighted



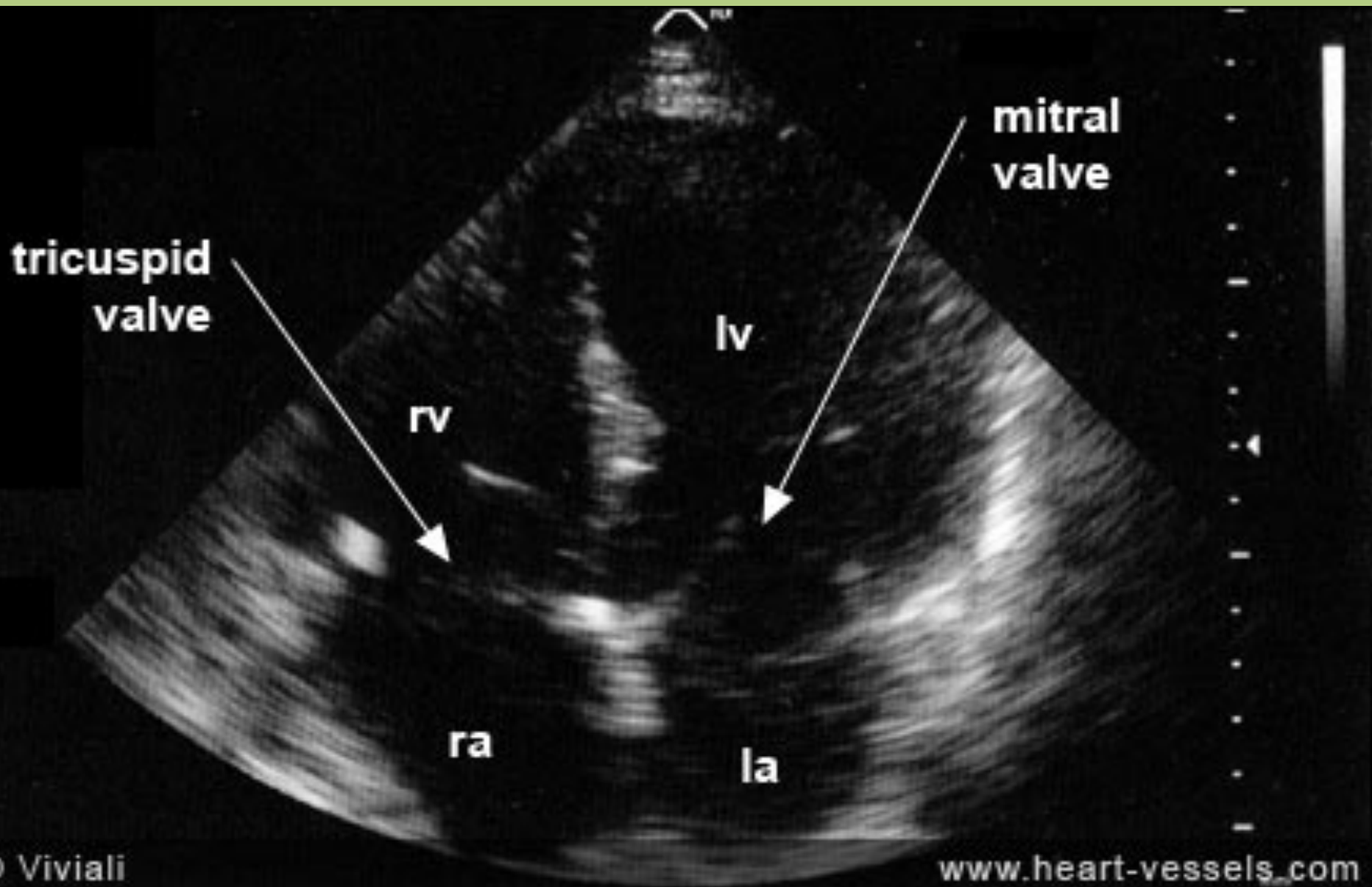
T2-weighted



Angiography

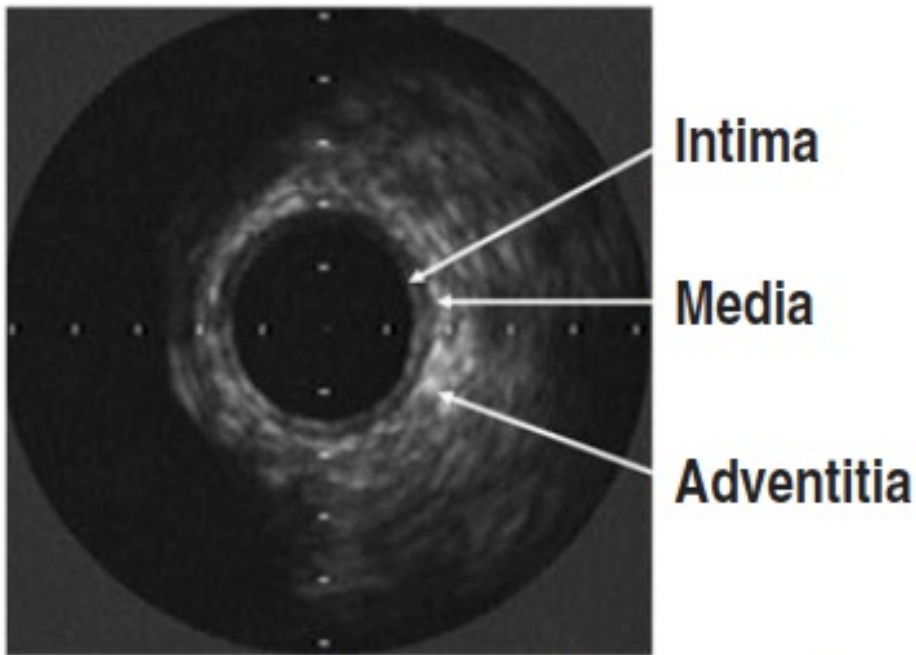


Ultrasound



Intravascular Ultrasound-IVUS

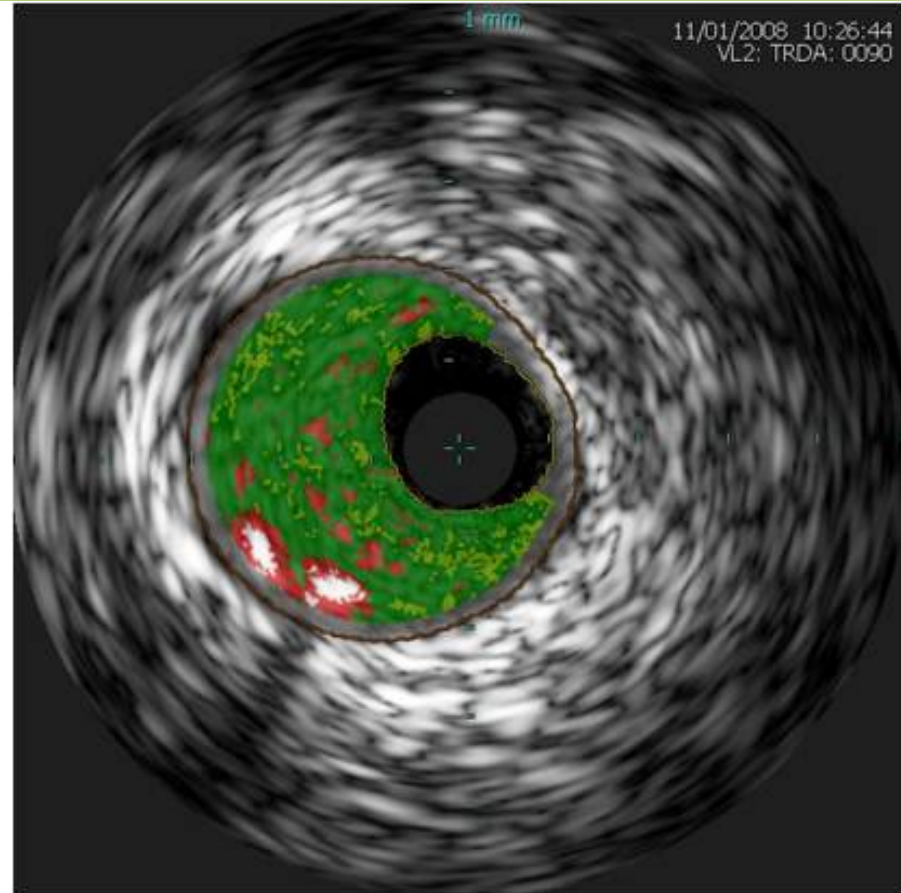
Normal Vessel



Intima

Media

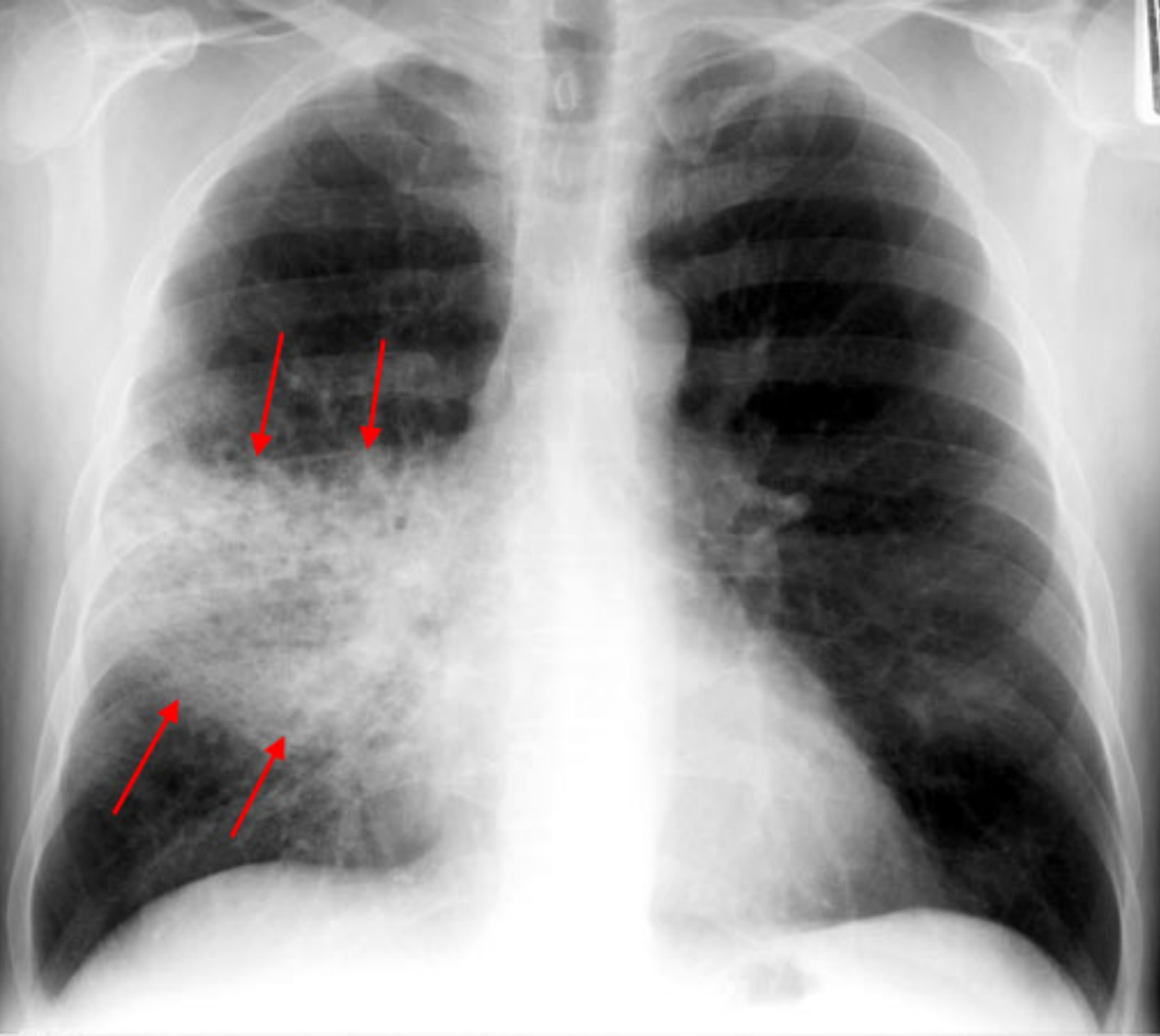
Adventitia



Atherosclerosis

Figure 2. Intravascular ultrasound image of normal vessel showing the intima, media and adventitia.

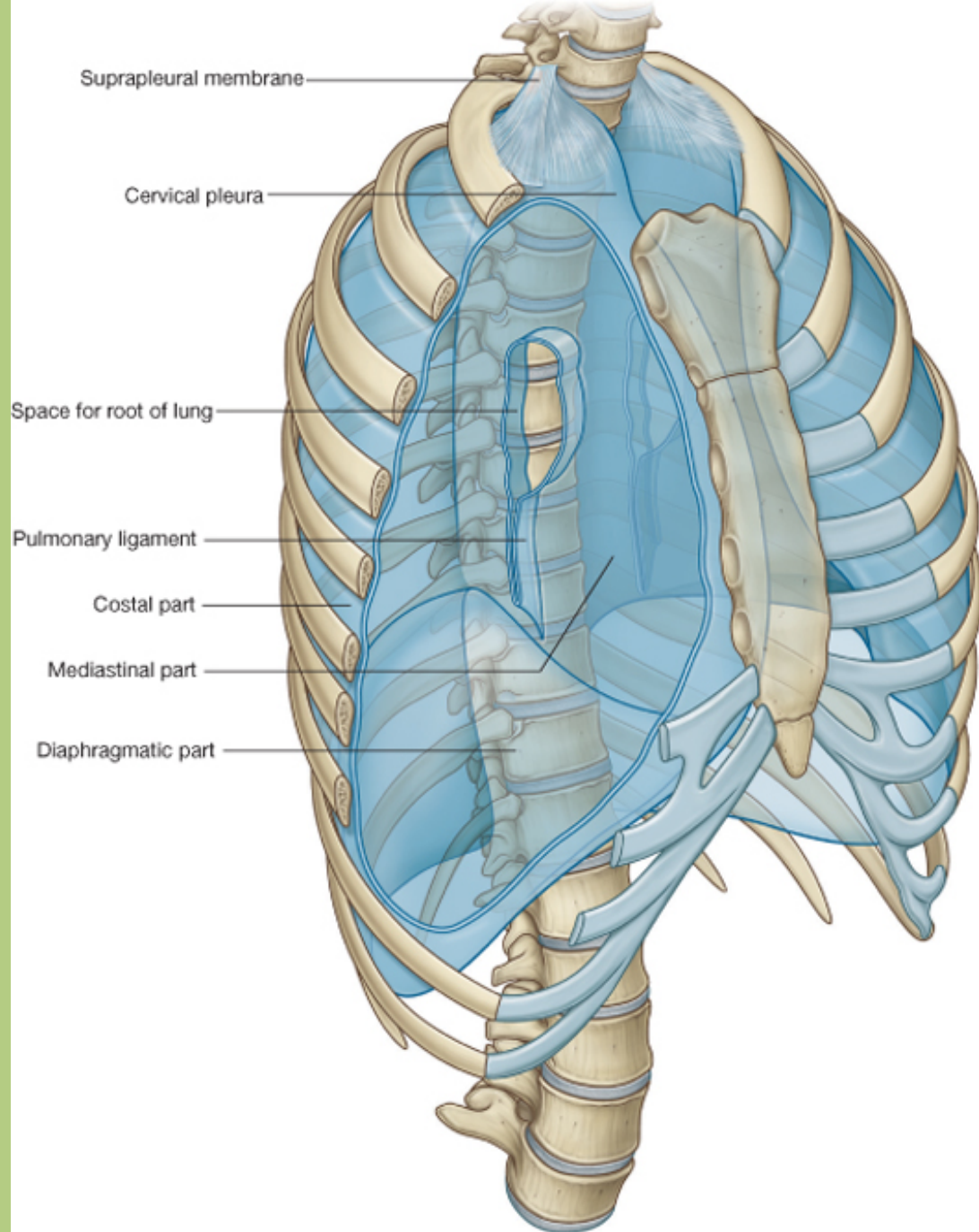
Pneumonia

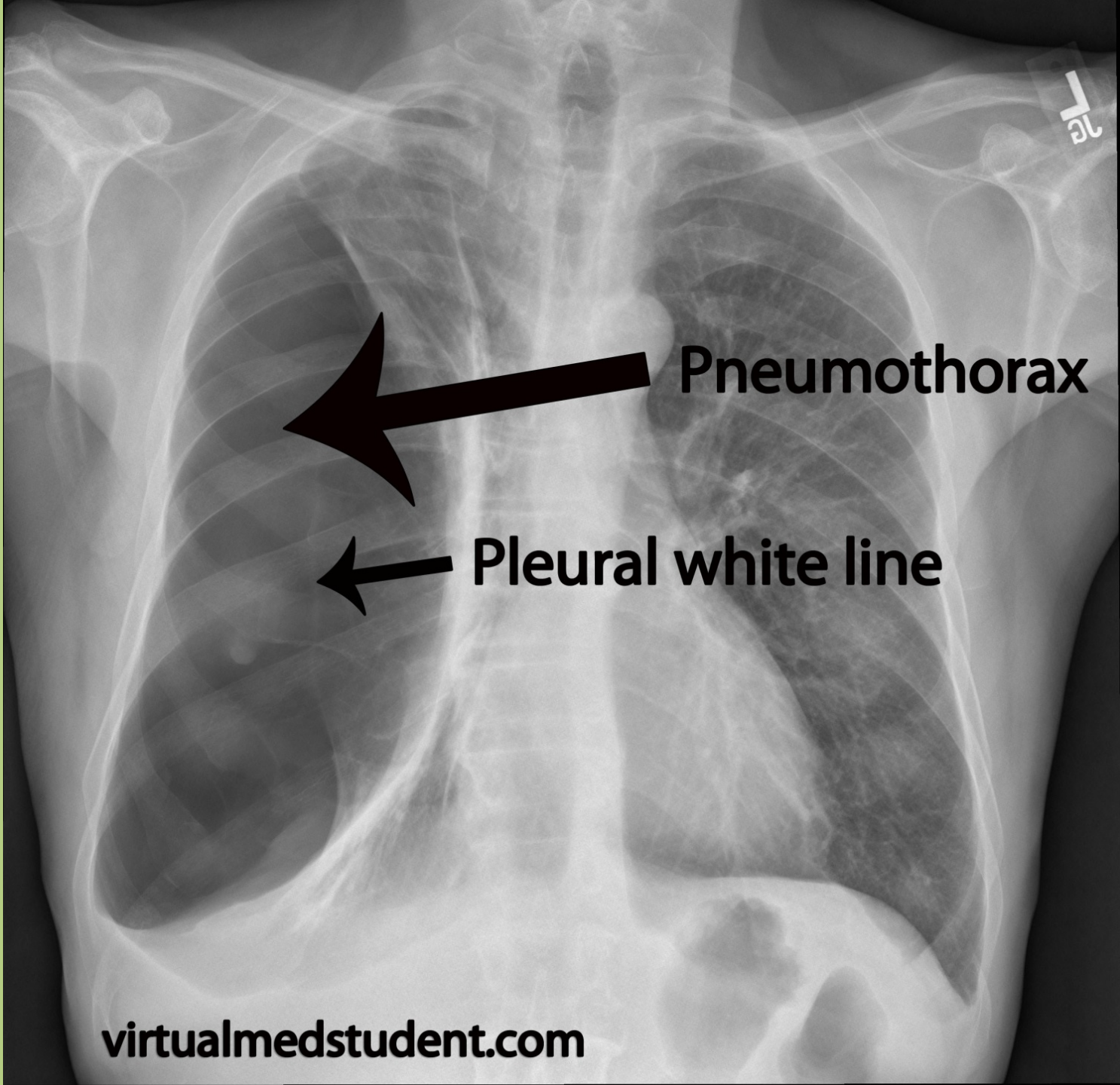


CHEST PA AND LATERAL



Pneumocystis
jirovecii
pneumonia
(in immunocompromised
patient)





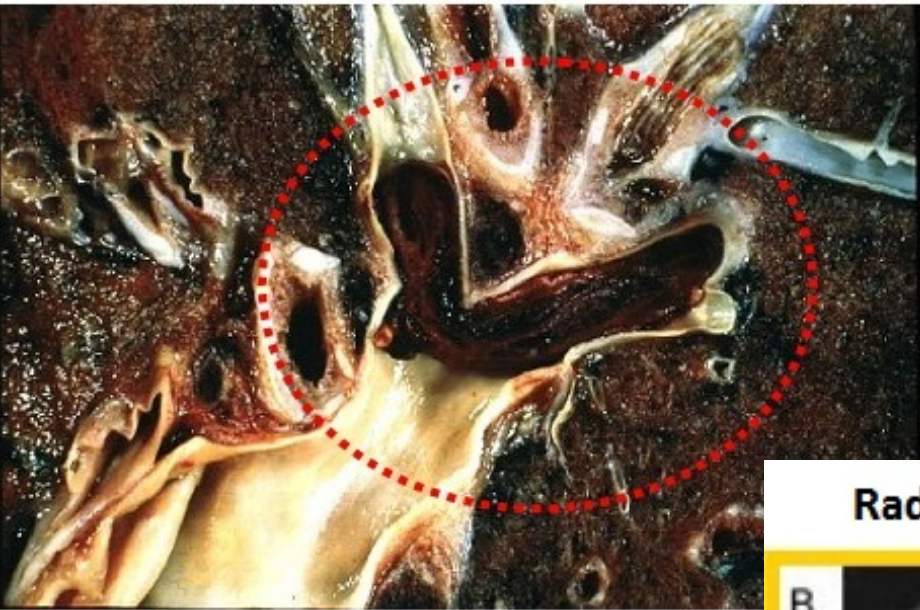
Pneumothorax

Pleural white line



Pneumothorax
(absence of
vascular markings
on the left side)

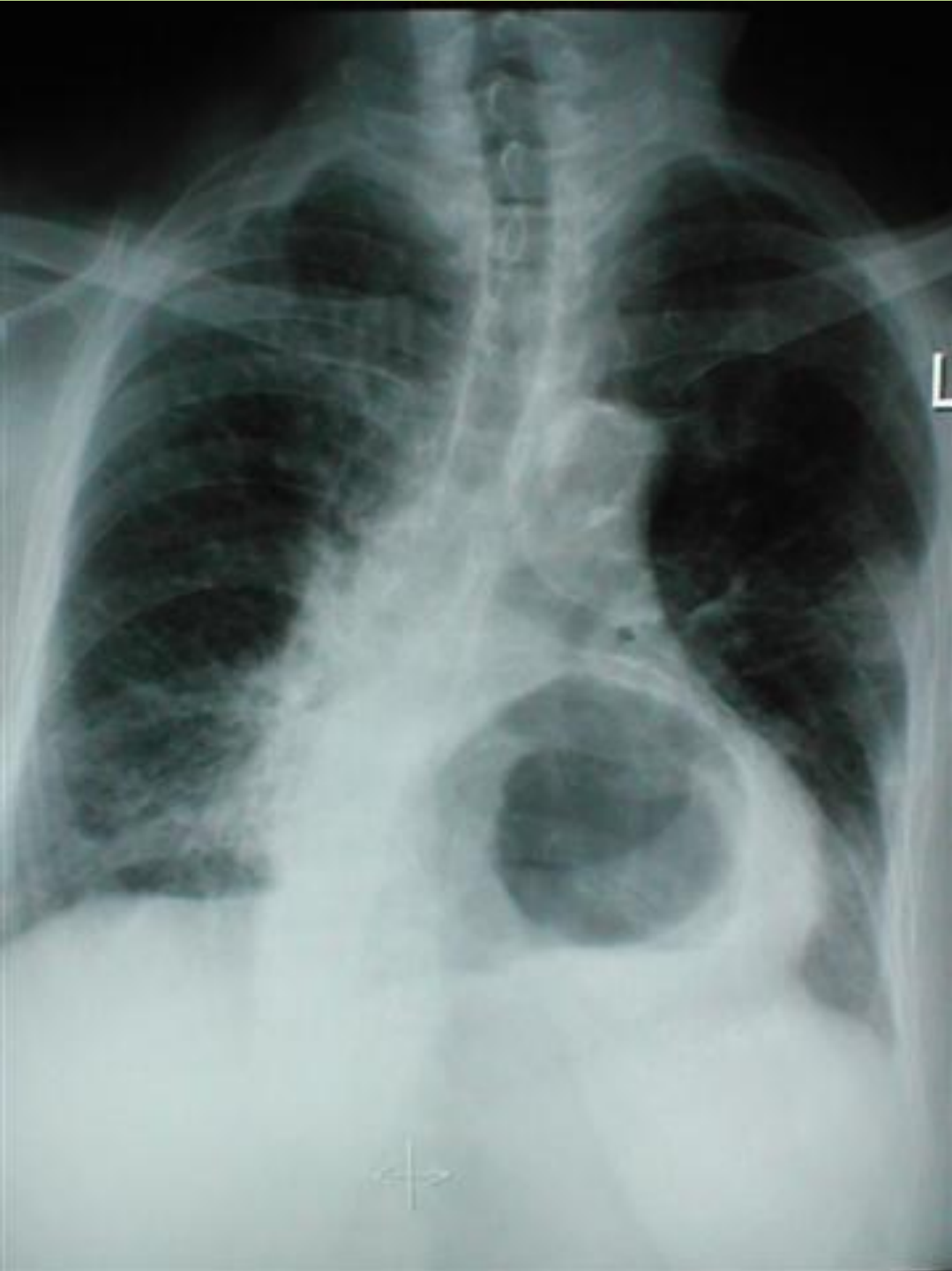
A photo of a dead suffered a pulmonary embolism



Pulmonary embolism

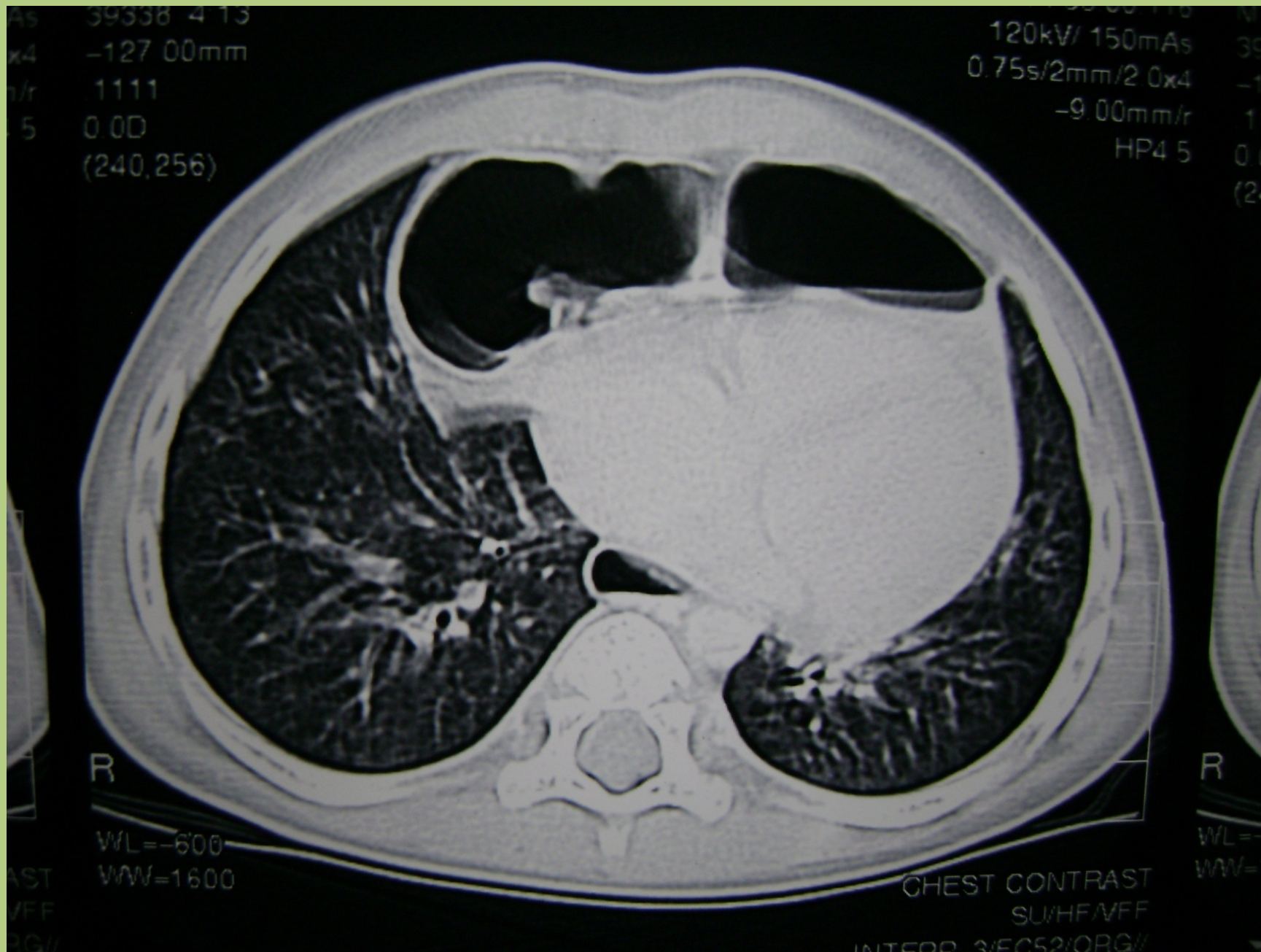
Radiation digital class in a patient with stroke





What is weird on
this X-ray picture?

Hiatus hernia



Thank you for your attention.

References:

Institutional image collection

Drake: Gray's Anatomy for Students

radiopaedia.org

Virtualmedstudent.com