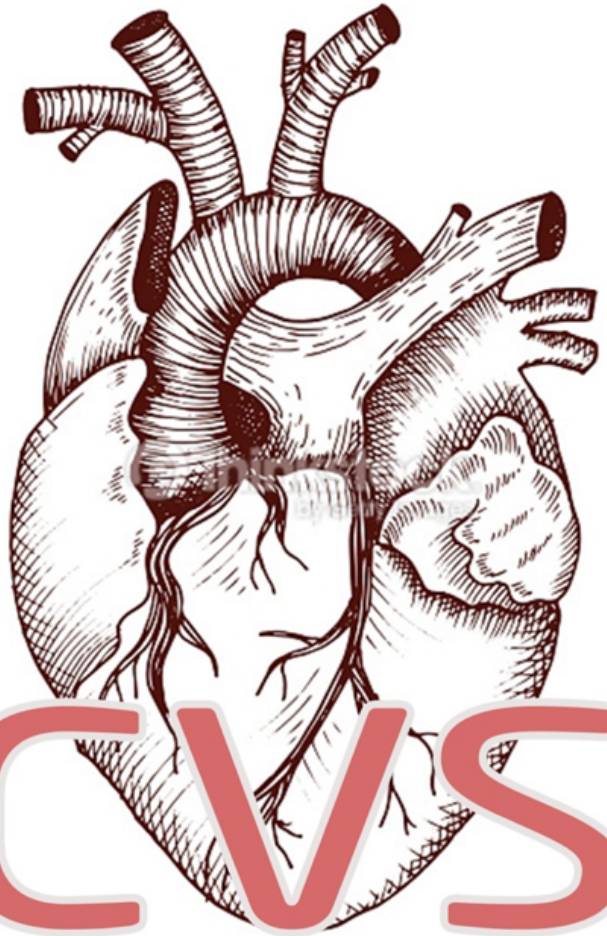

CVS

Anatomy

Slide

Sheet

CVS

2017

Dr. Amjad Shatarat
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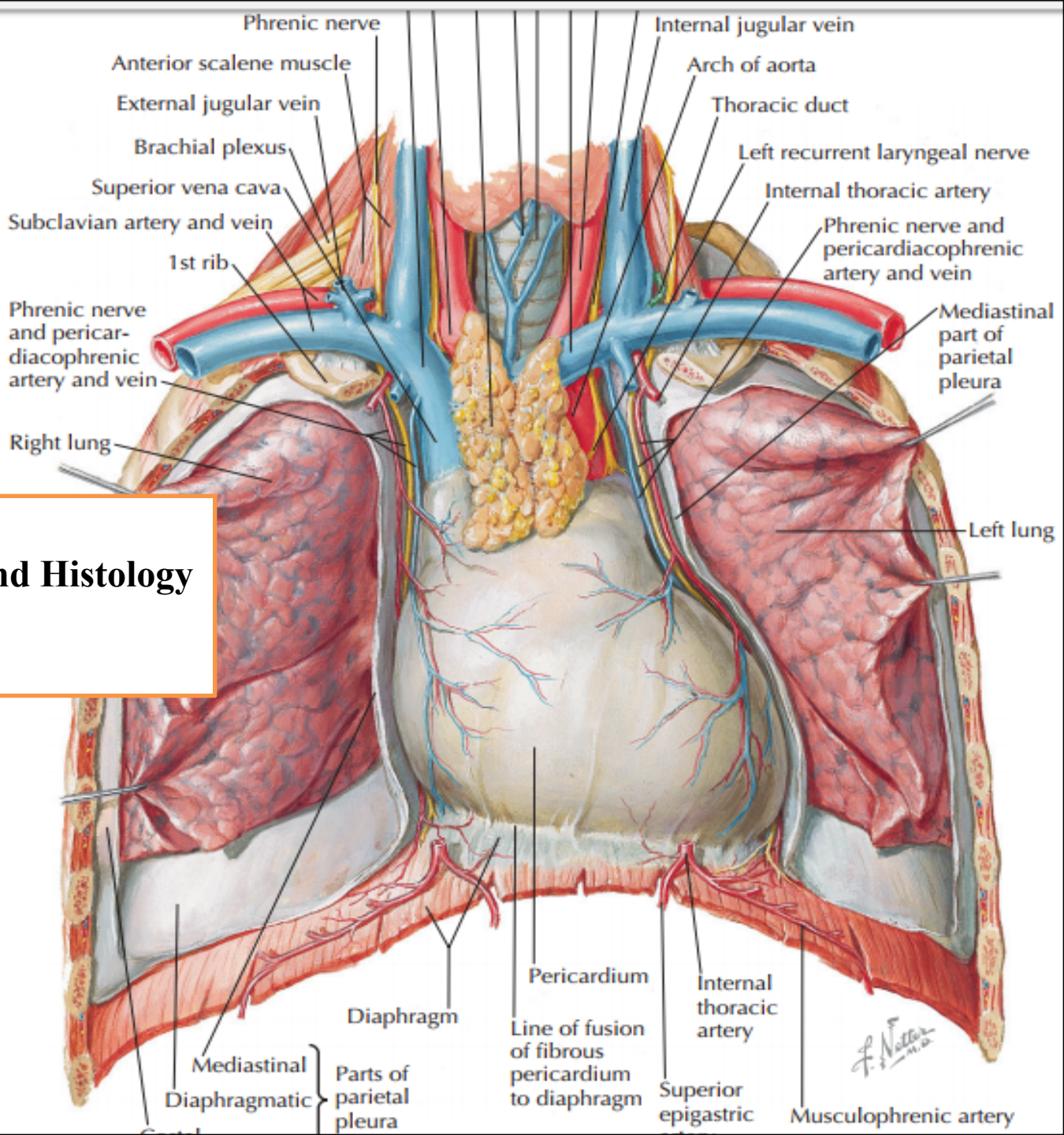
School of Medicine
The University of Jordan



Objectives

To discuss mediastinum and its boundaries

To discuss and explain the contents of the superior mediastinum

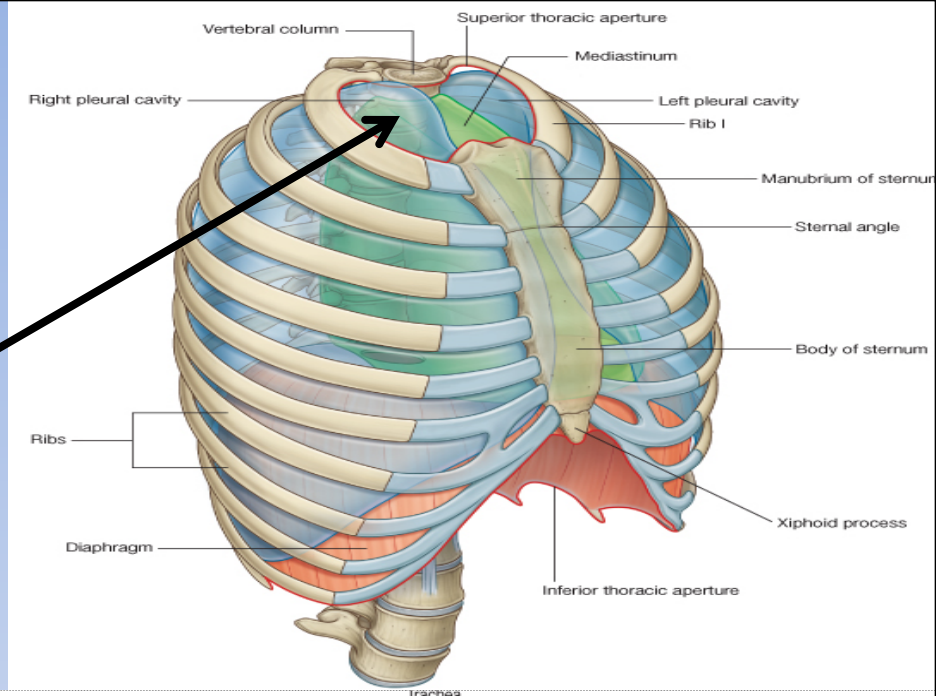
To describe the great veins of the superior mediastinum

To describe the Arch of the aorta and its branches

To know about other none vascular structures in the superior mediastinum

CHEST CAVITY

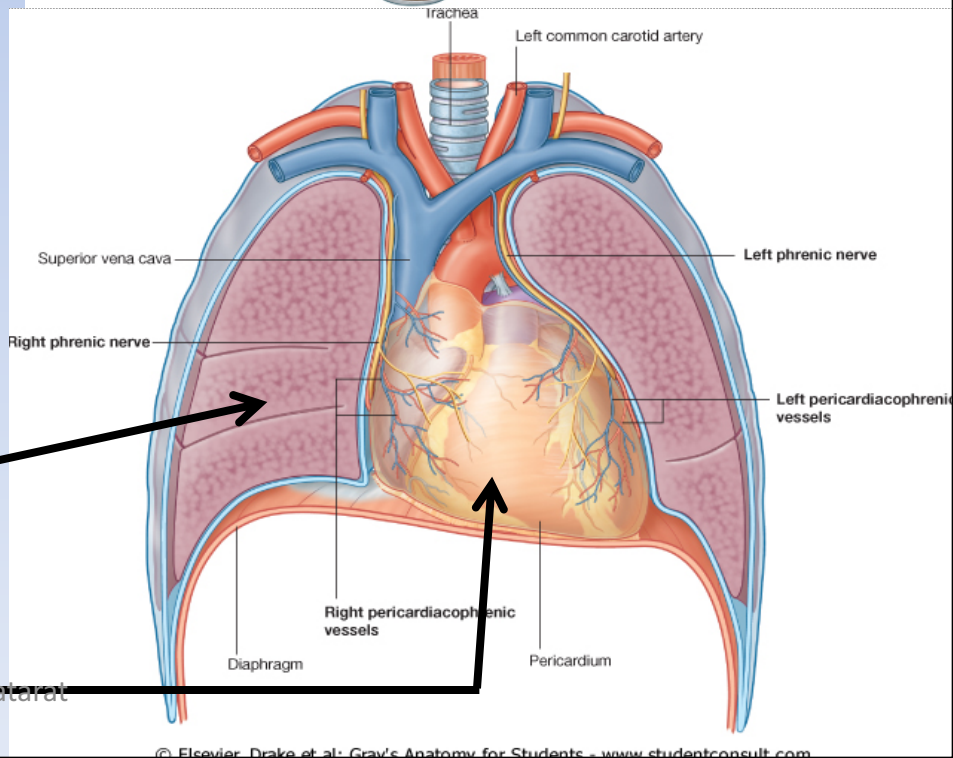
The chest cavity is bounded by the chest wall and below by the diaphragm
It extends upward into the root of the neck about one fingerbreadth
above the clavicle on each side
The diaphragm, separates the chest from the abdominal viscera



The chest cavity can be divided into

MEDIAN PARTITION CALLED THE MEDIASTINUM

LATERALLY PLACED PLEURAE AND LUNGS



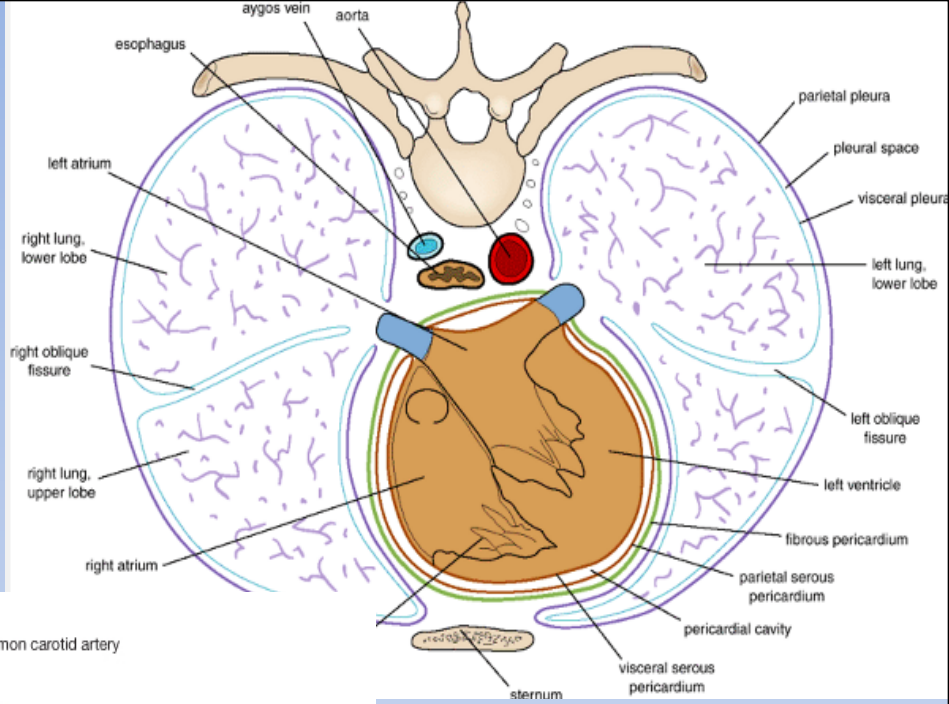
1-The Mediastinum extends

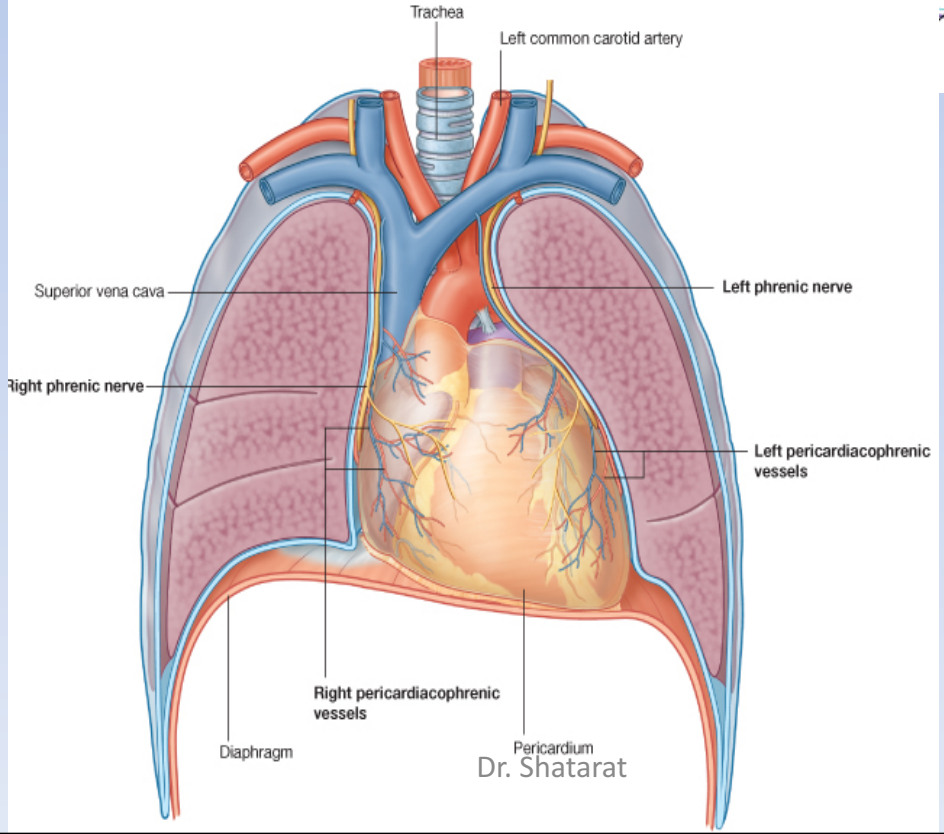
Superiorly: **to the thoracic outlet and the root of the neck**

Inferiorly: **to the diaphragm**

Anteriorly: **to the sternum**

Posteriorly: **to the vertebral column**





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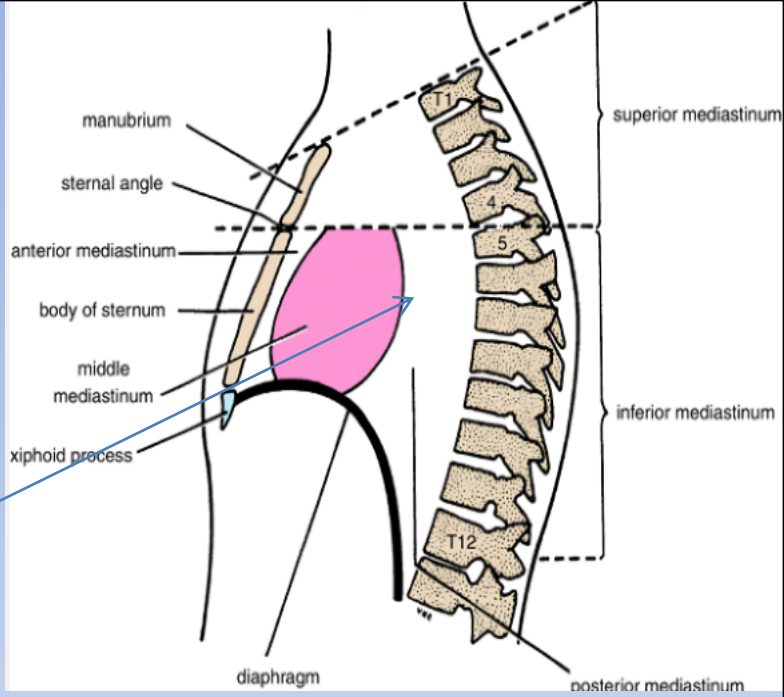
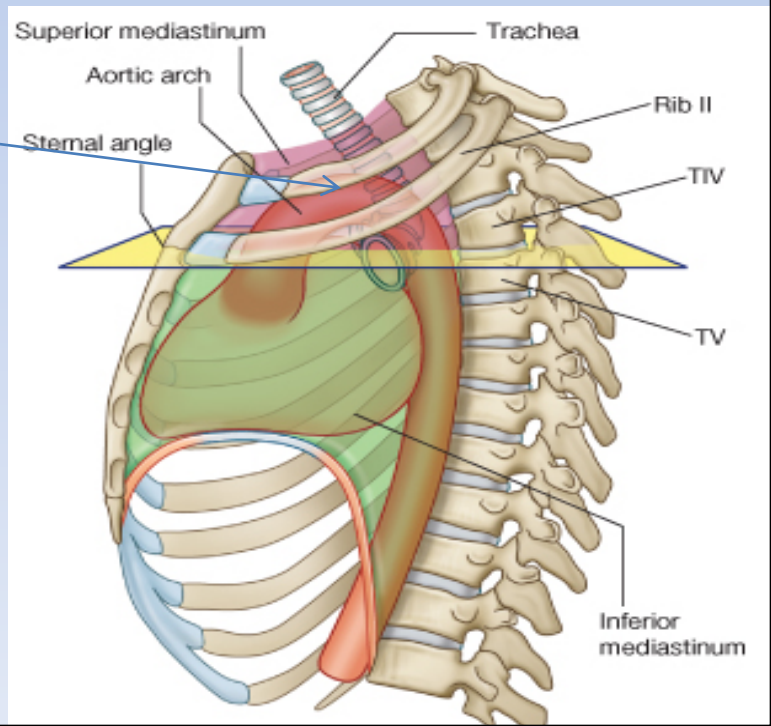
An imaginary plane passing from the sternal angle anteriorly to the lower border of the body of the fourth thoracic vertebra posteriorly divides the mediastinum into

SUPERIOR AND INFERIOR MEDIASTINA





THE INFERIOR MEDIASTINUM is further subdivided into:

1-THE MIDDLE MEDIASTINUM

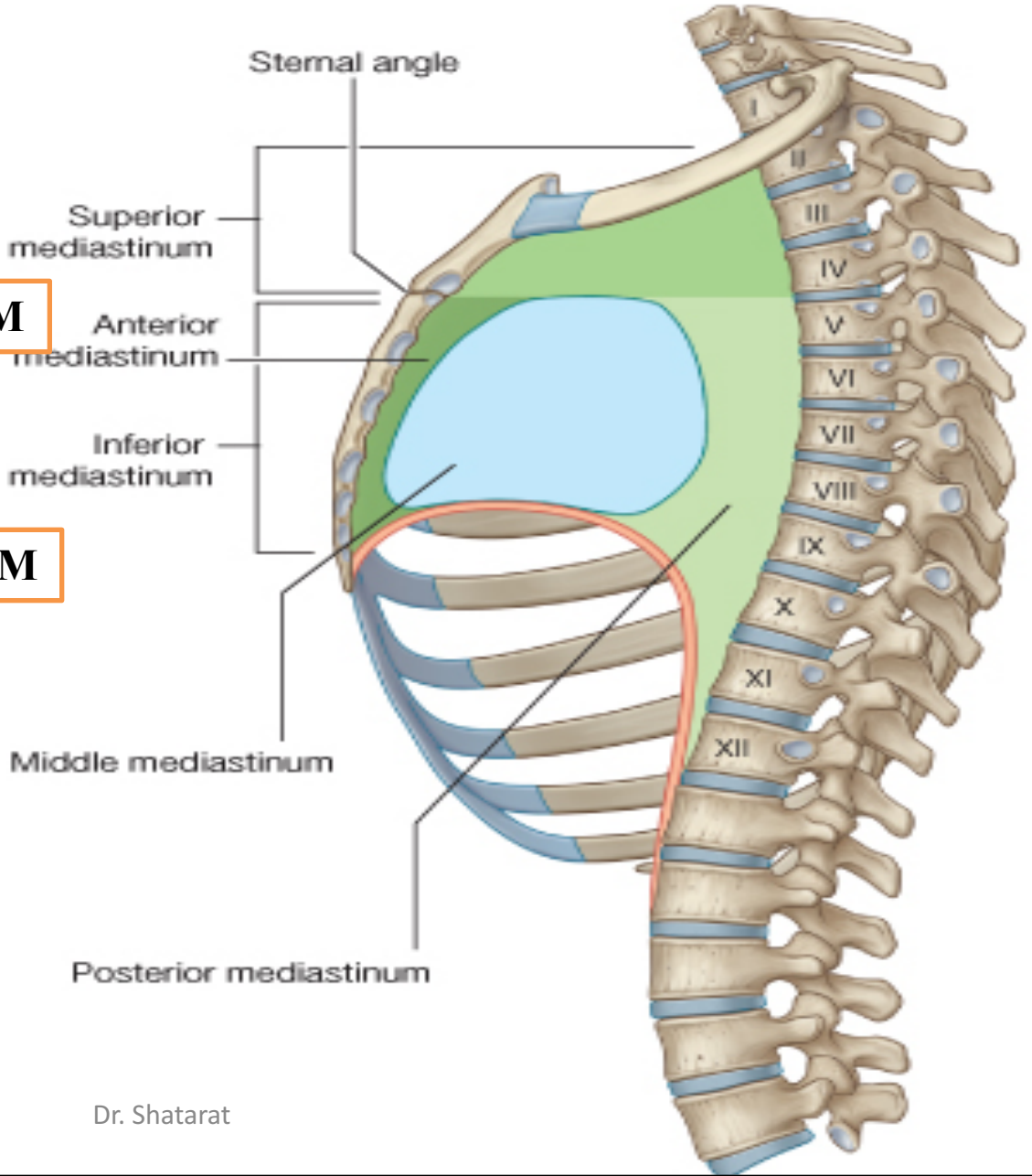
consists of
the pericardium and heart

2-THE ANTERIOR MEDIASTINUM

is a space between the
pericardium and the sternum

3-THE POSTERIOR MEDIASTINUM

lies between
THE PERICARDIUM
And
THE VERTEBRAL COLUMN

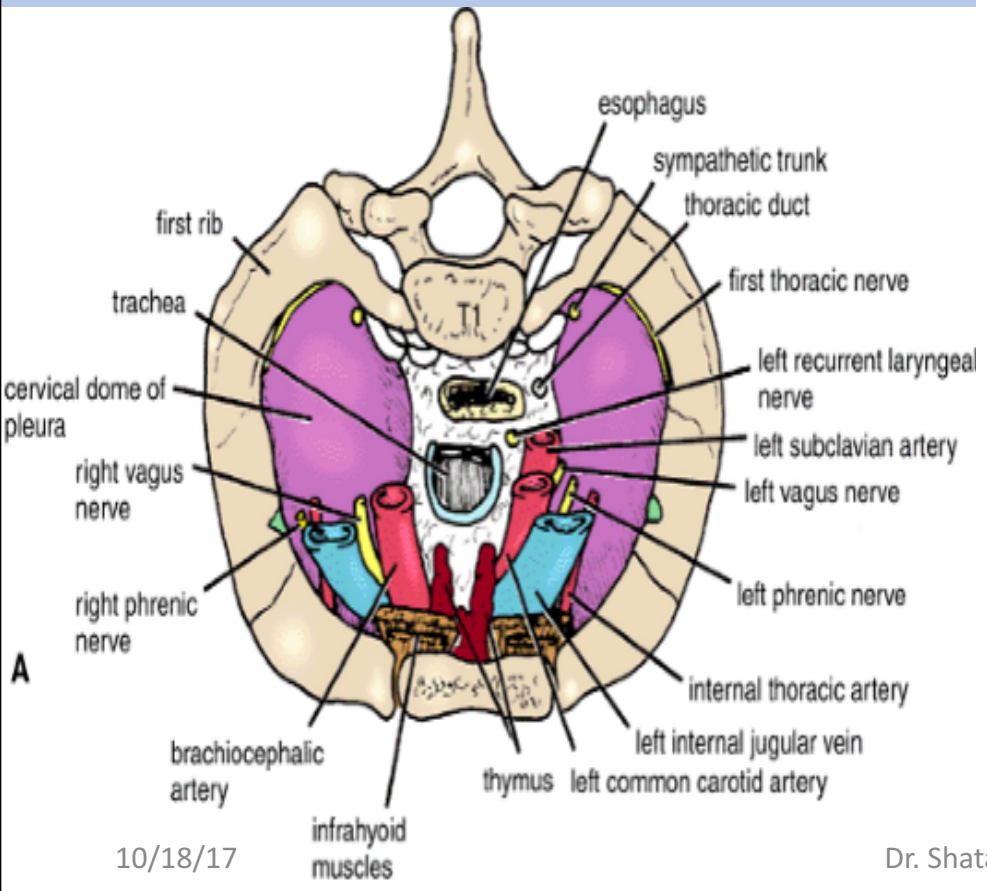


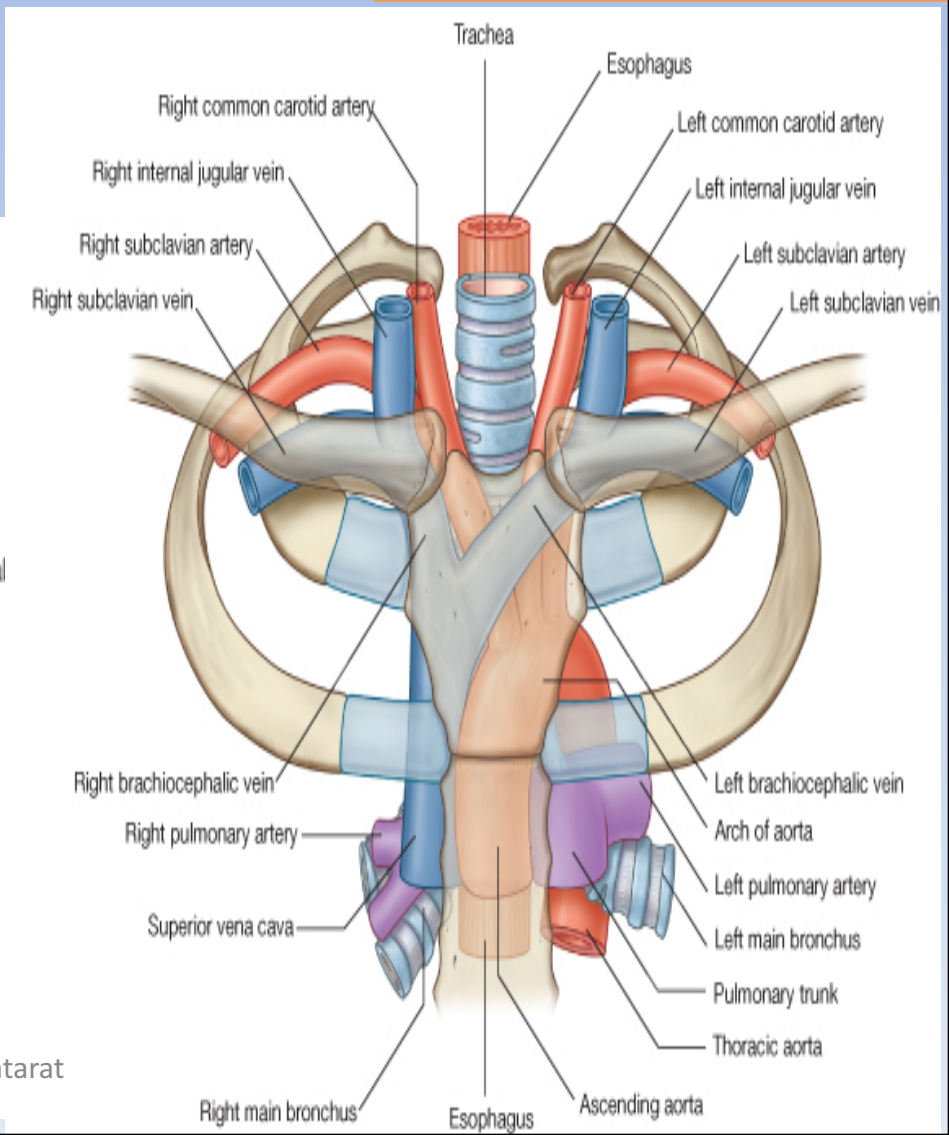
THE SUPERIOR MEDIASTINUM

(a) THYMUS
(b) LARGE VEINS
(c) LARGE ARTERIES
(d) TRACHEA
(e) ESOPHAGUS
(f) THORACIC DUCT
(g) SYMPATHETIC TRUNKS

THE SUPERIOR MEDIASTINUM

is bounded in front by the manubrium sterni and behind by the first four thoracic vertebrae





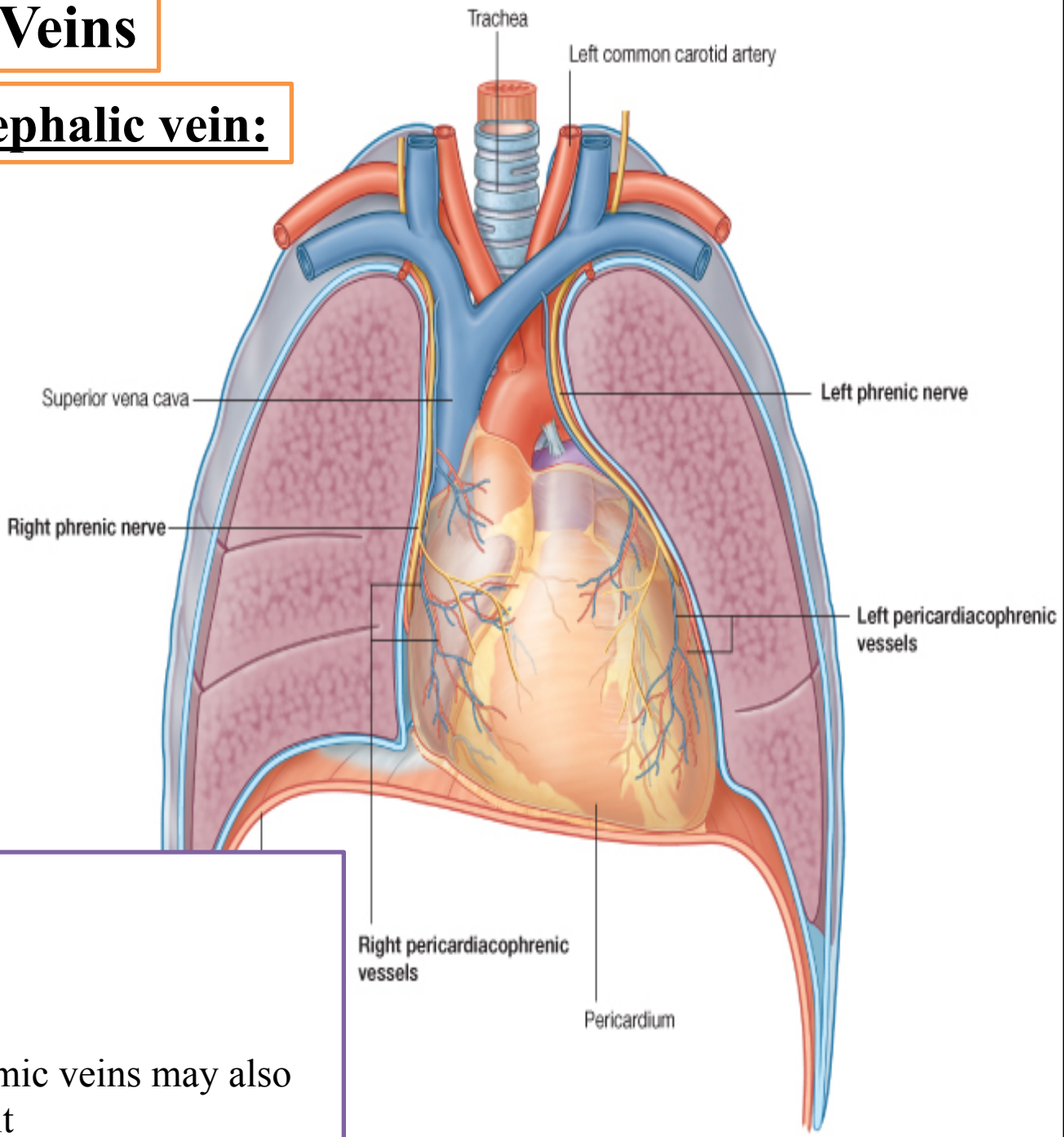
1-Brachiocephalic Veins

A-The right brachiocephalic vein:

- formed by the union of ***the right subclavian*** and ***the right internal jugular veins***
- Begins posterior **to the medial end of the right clavicle**
- ***it is shorter than the left one and more vertical)***

Venous tributaries

Include
the vertebral veins
first posterior intercostal
internal thoracic veins.
The inferior thyroid and thymic veins may also drain into it

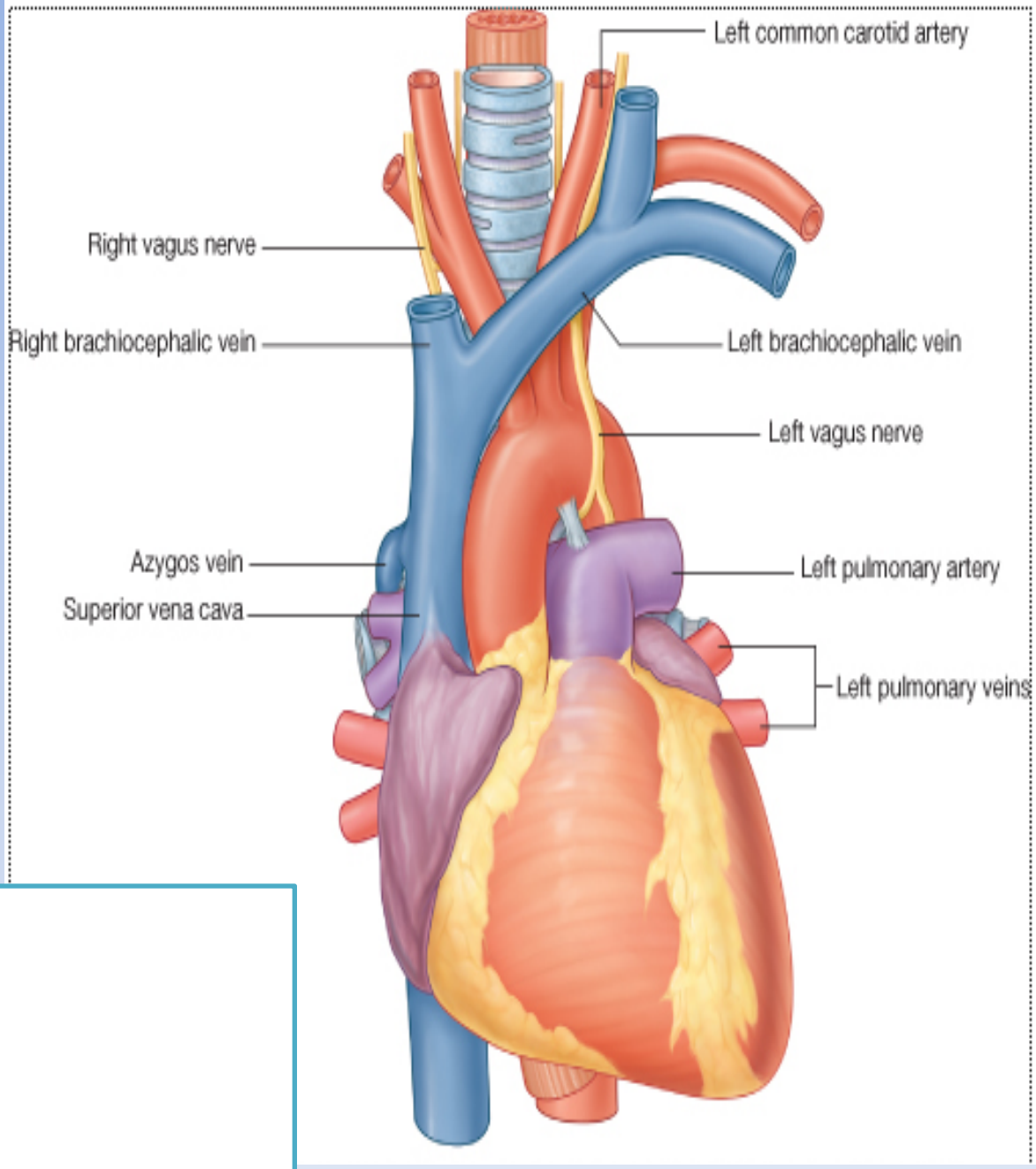


B-The left brachiocephalic vein:

Is formed by the union of ***the LEFT subclavian*** and ***the LEFT internal jugular veins***

- **Begins posterior to the medial end of the left clavicle**

- It passes obliquely and it is longer than the right one)
- It joins the right brachiocephalic vein to form **the superior vena cava**



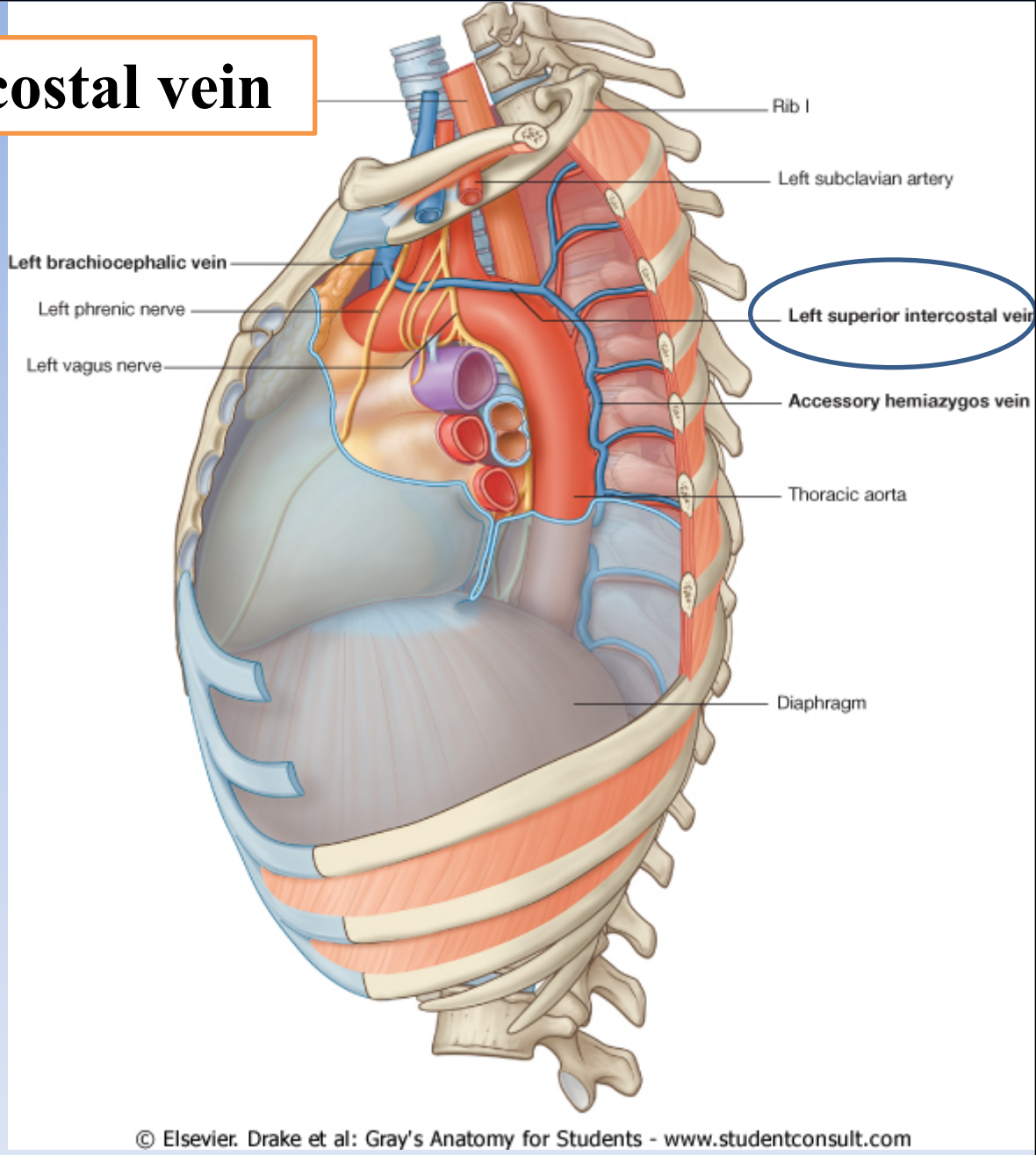
Venous tributaries

Include
the vertebral
first posterior intercostal vein
left superior intercostal vein
inferior thyroid vein
internal thoracic veins.
It may also receive thymic and pericardial veins

The left **superior intercostal vein**

It drains

- **The second, third and sometimes the fourth posterior intercostal veins**
- **Usually, it drains the left bronchial veins**
- **Sometimes the left pericardiacophrenic vein.**



2-Superior Vena Cava

Generally, it receives venous return from the upper half of the body, above the diaphragm

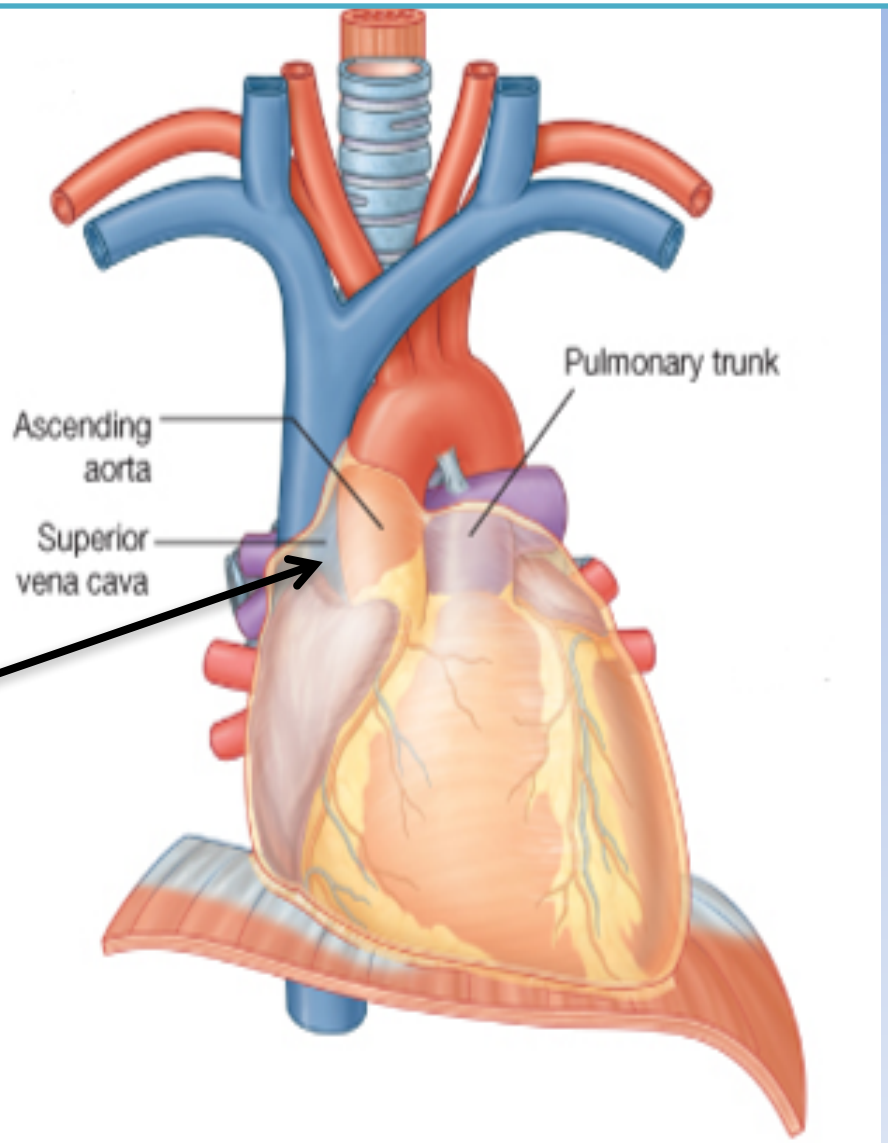
- The superior vena cava contains all the venous blood from ***the head and neck and both upper limbs***

- It is a large-diameter (24 mm), but short

- is formed by the union of *the two brachiocephalic veins* posterior to the lower edge **of the right first costal cartilage**

- Terminates at the lower edge of the right third costal cartilage, where it joins the right atrium
- The lower half of the superior vena cava is within the pericardial sac and is therefore contained in the middle mediastinum.

- The **vena azygos** joins the posterior aspect of the superior vena cava just before it enters the and may also receive pericardial and mediastinal veins



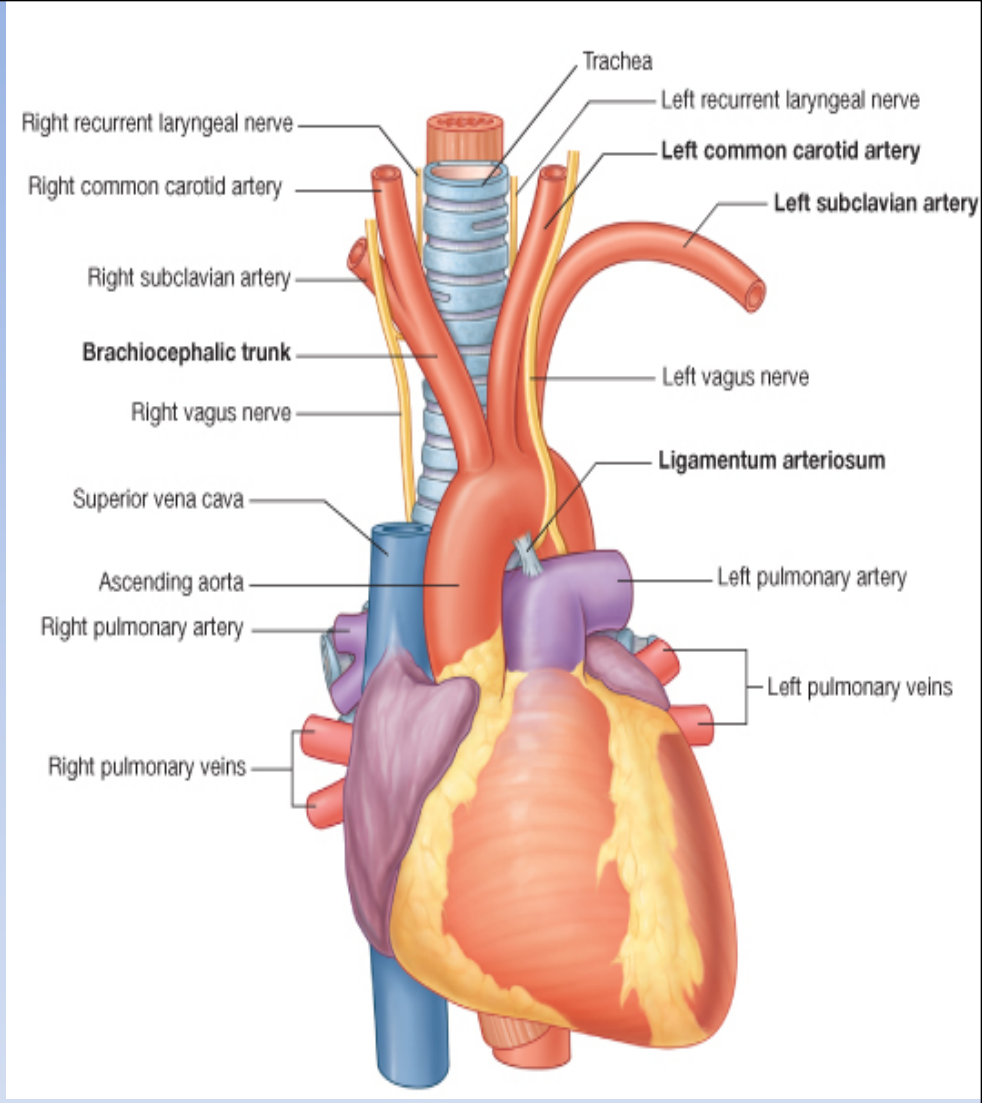
Arch of the Aorta

- is a continuation of the ascending aorta (what does this mean?)
- It lies behind the manubrium sterni **extending as high as the midlevel of the manubrium of sternum**

- **It *arches upward, backward, and to the left***
- **The arch is initially anterior and finally lateral to the trachea**

- **The arch is initially anterior and finally lateral to the trachea**

- Ends at the level of the ***sternal angle*** where it becomes continuous with the ***descending aorta.***



Branches

A-THE BRACHIOCEPHALIC ARTERY

B-The left common carotid artery

C-The left subclavian artery

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Occasionally, the brachiocephalic trunk has a small branch, the **thyroid ima artery**, which contributes to the vascular supply of the thyroid gland

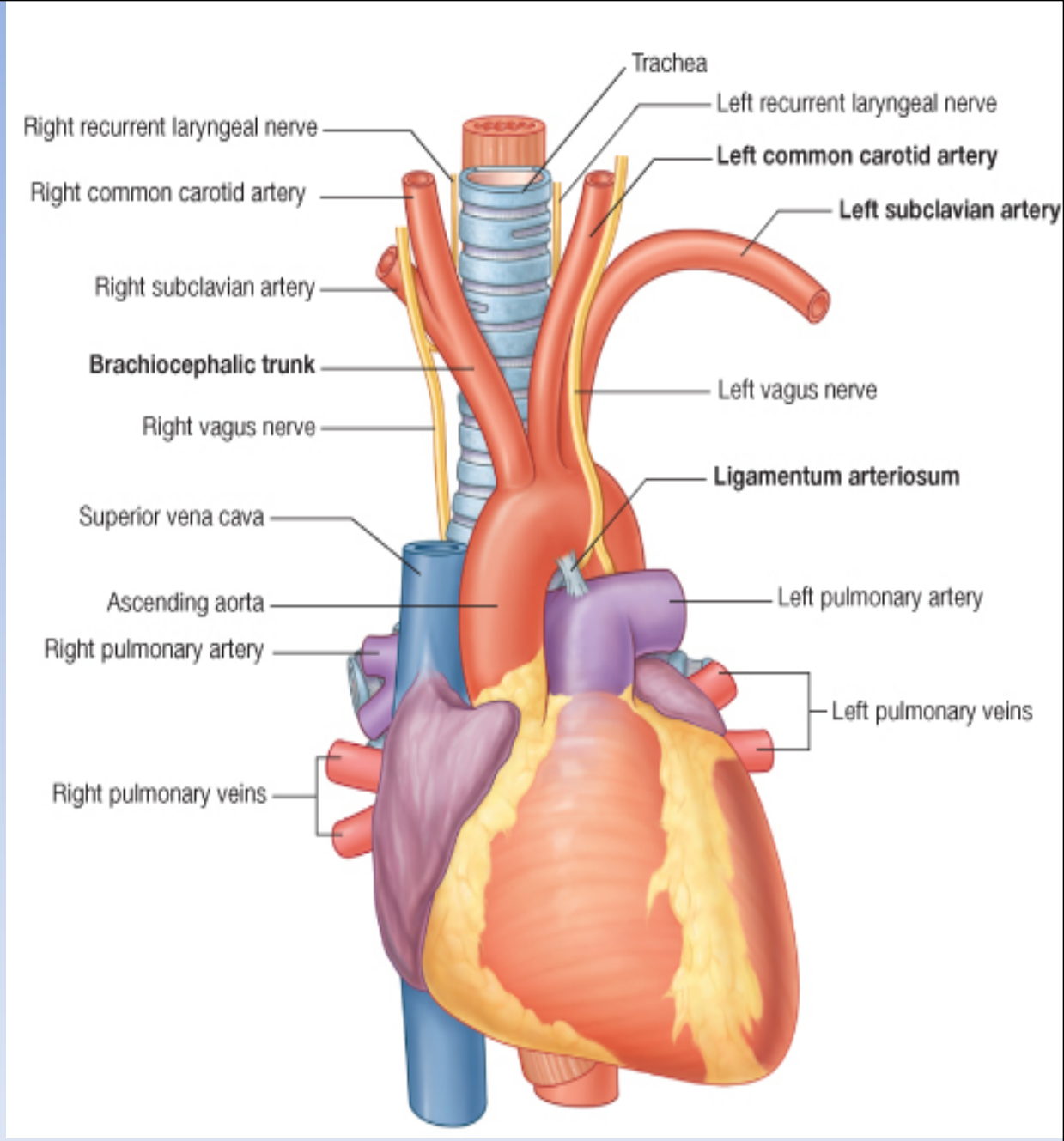
A-THE BRACHIOCEPHALIC ARTERY

- The first branch of the arch of aorta from the right side
- It is the largest of the three branches
- ***arises*** from the convex surface of the aortic arch
  - ***Behind the right sternoclavicular joint***

It divides into:

1-THE RIGHT SUBCLAVIAN ARTERY

2-RIGHT COMMON CAROTID ARTERY



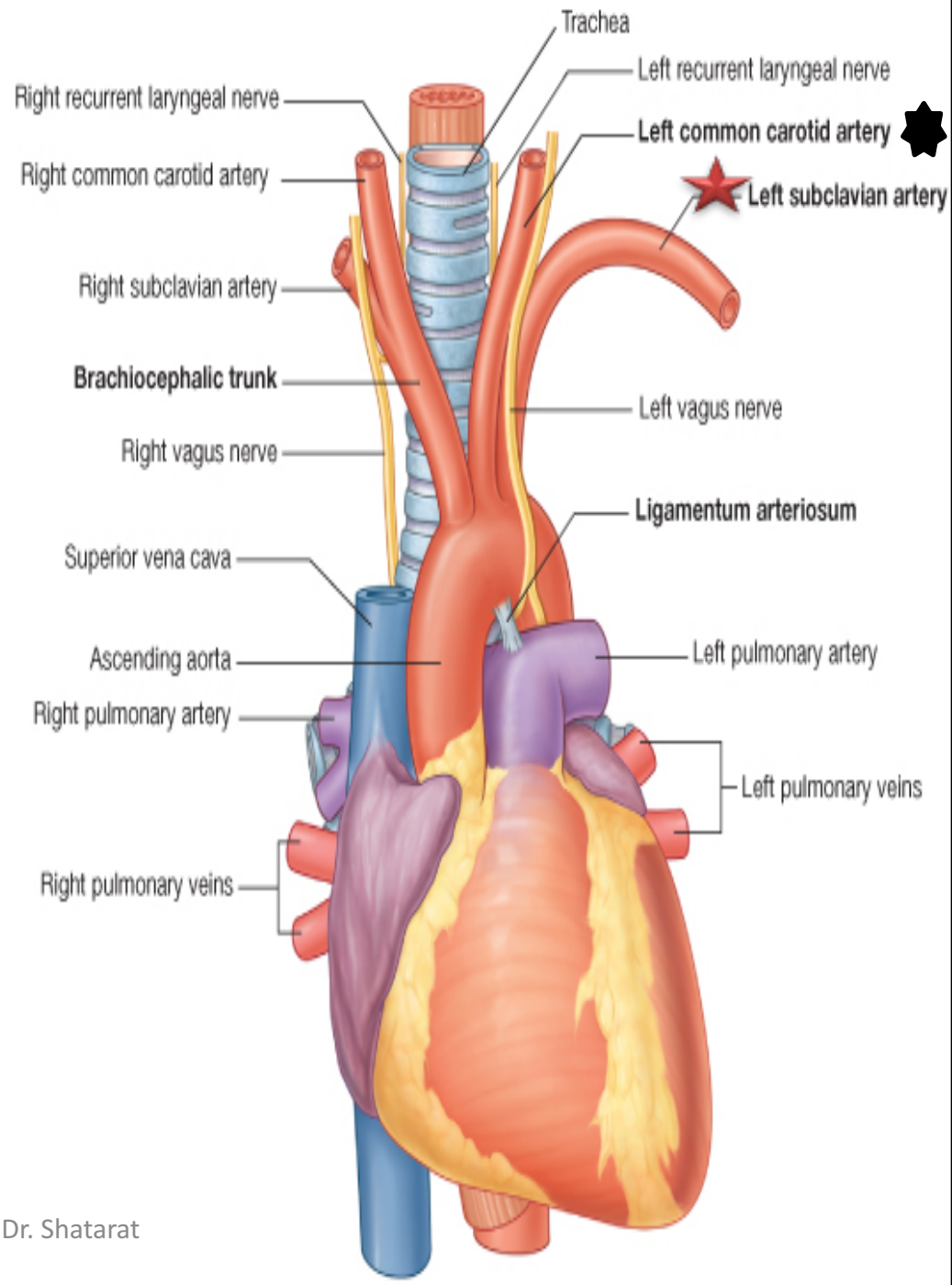
b-The left common carotid artery

- Arises from the convex surface of the aortic
- It runs upward and to the left of the trachea and enters the neck behind the left sternoclavicular joint.

c-The left subclavian artery

Why we call it subclavian?

- arises from the aortic arch
- Runs in a groove in the first rib

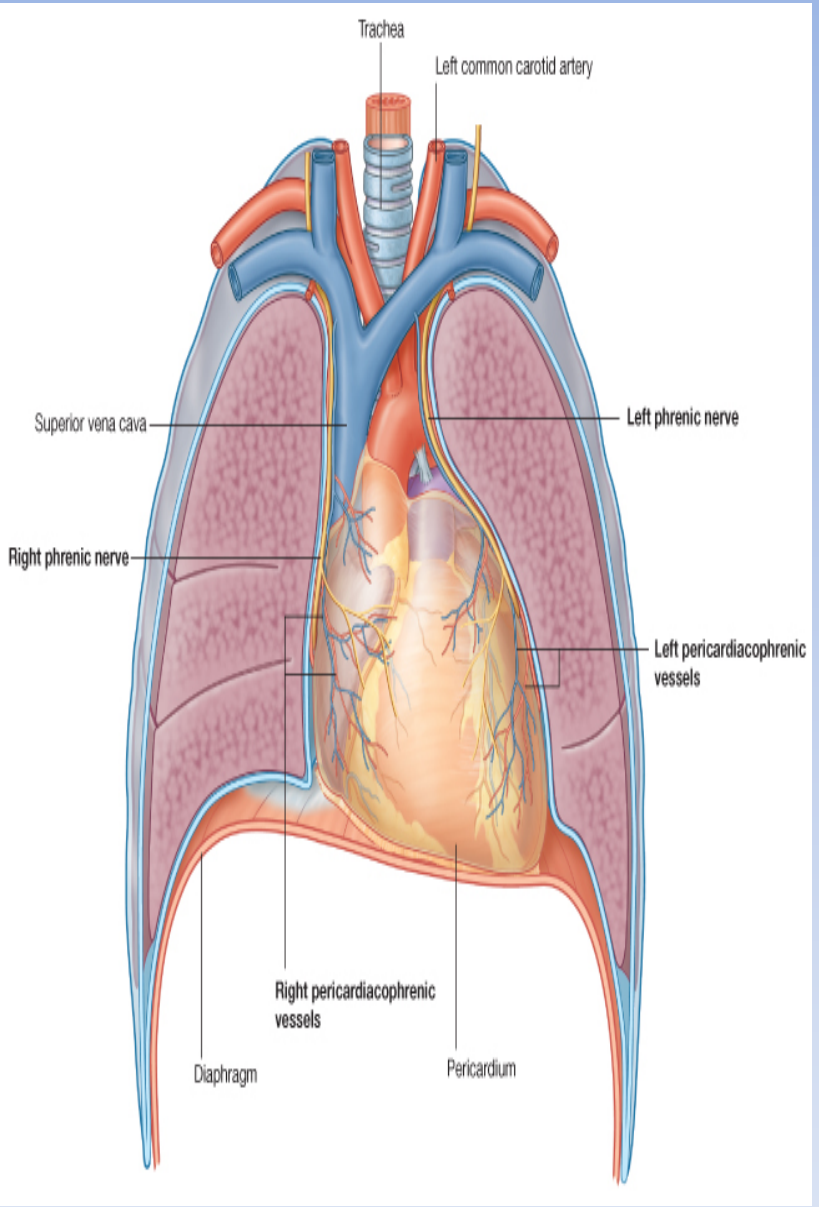


Phrenic Nerves

➢ ***The phrenic nerves arise from the anterior rami of the third, fourth, and fifth cervical nerves***

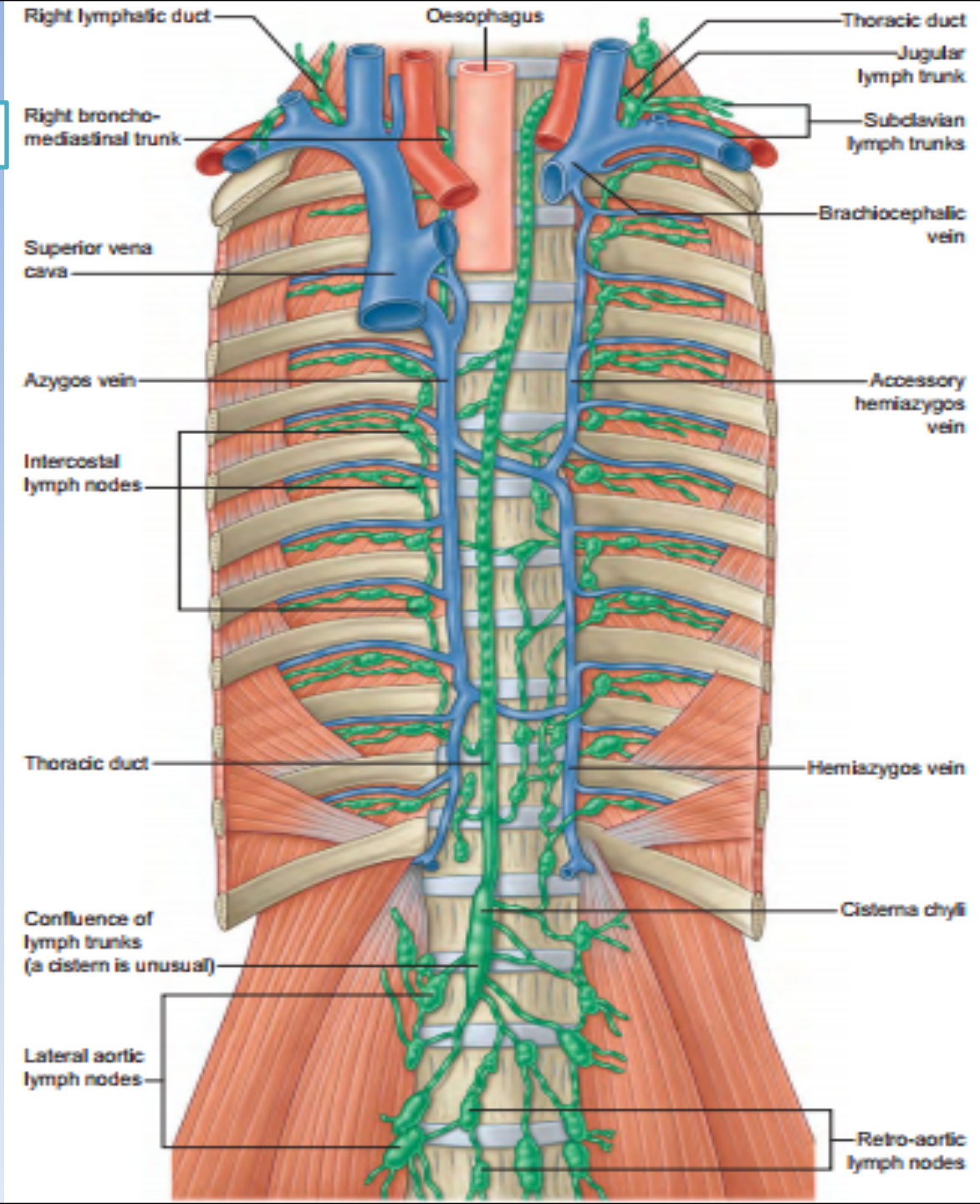
•It passes ***in front of the root*** of the lungs

Supplies the diaphragm



MEDIASTINAL LYMPH NODES

are classified into regional lymph node stations by thoracic surgeons for the purposes of staging lung cancer



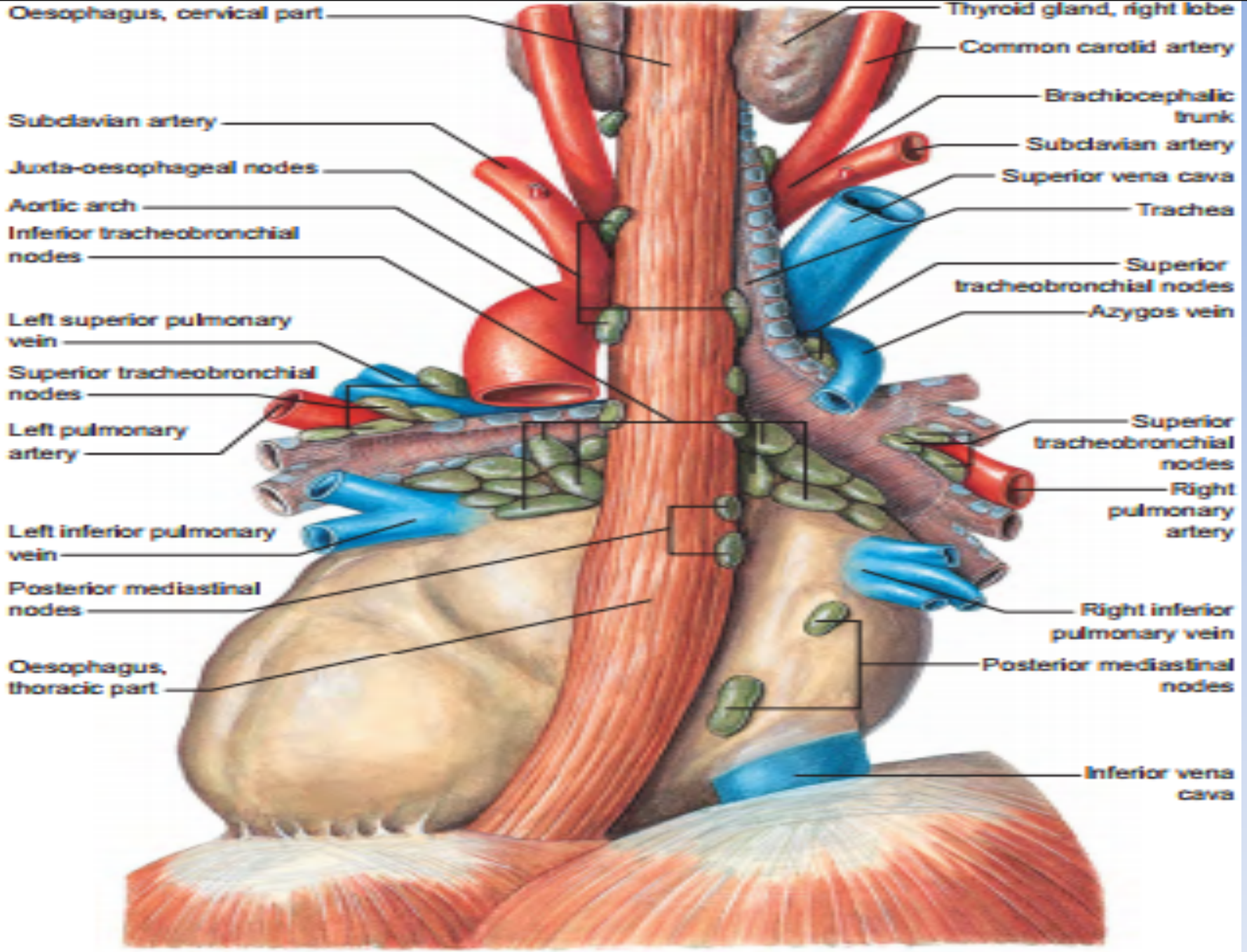


Fig. 55.4 Thoracic lymph nodes. (From Sobotta 2006.)

Venous access for central and dialysis lines

Large systemic veins are used to establish central venous access for administering large amounts of fluid, drugs, and blood. Most of these lines (small bore tubes) are introduced through venous puncture into the axillary, subclavian, or internal jugular veins

How about Reading this

Brachiocephalic veins: an overlooked approach for central venous catheterization.
Badran DH[1], Abder-Rahman H, Abu Ghaida J
https://www.ncbi.nlm.nih.gov/pubmed/12203378

Doppler ultrasound-guided brachiocephalic central line insertion in cardiac surgery: An overlooked approach revisited
Massad I.M., Alhadidy A.M., Elsmady M.M., Abu-Abeeleh M.M., Attyat B.A., Abu-Ali H.M., Abder-Rahman H., Abu-Ghaida J.H., Badran D.H.
http://eurjanat.com/web/paper.php?id=08030153

Because the superior and inferior vena cava are oriented along the same vertical axis, a guide-wire, catheter, or line can be passed from the superior vena cava through the right atrium and into the inferior vena cava. This is a common route of access for procedures such as:

transjugular liver biopsy

On each side,
the internal jugular and subclavian veins join to form
the brachiocephalic veins
behind the sternal ends of the clavicles
near the
sternoclavicular joints

The brachiocephalic veins unite to form the ***superior vena cava behind the lower border of the costal cartilage of the right first rib.***

The arch of aorta begins and ends at the transverse plane between the sternal angle anteriorly and vertebral level TIV/V posteriorly. The arch may reach as high as the midlevel of the manubrium of sternum.