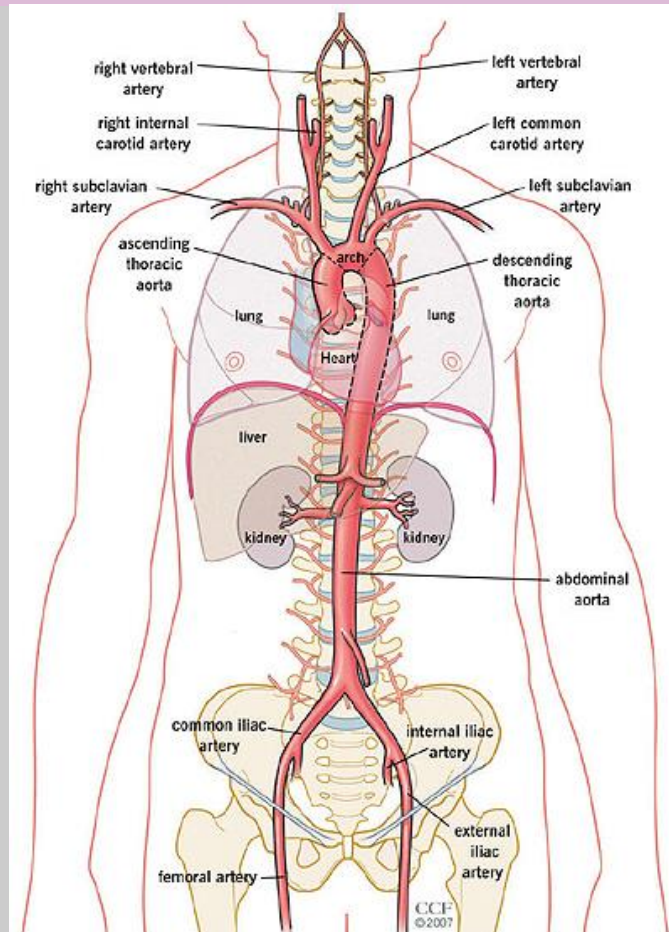


The Blood Vessels of Thorax and Head & Neck



**Professor
Ashraf H. Abd El-Hakim**

OBJECTIVES

- ☐ Describe the different parts of aorta regarding its beginning, course, branches, important relations and termination
- ☐ Name and classify branches of each of thoracic and abdominal part of aorta
- ☐ State the origin, course and main branches of the main arteries of the head and neck (carotid arteries)
- ☐ Mention the beginning and termination of main veins of the head and neck and list their tributaries.
- ☐ Mention the beginning and termination of main veins of the thorax and list their tributaries.

AORTA

Parts

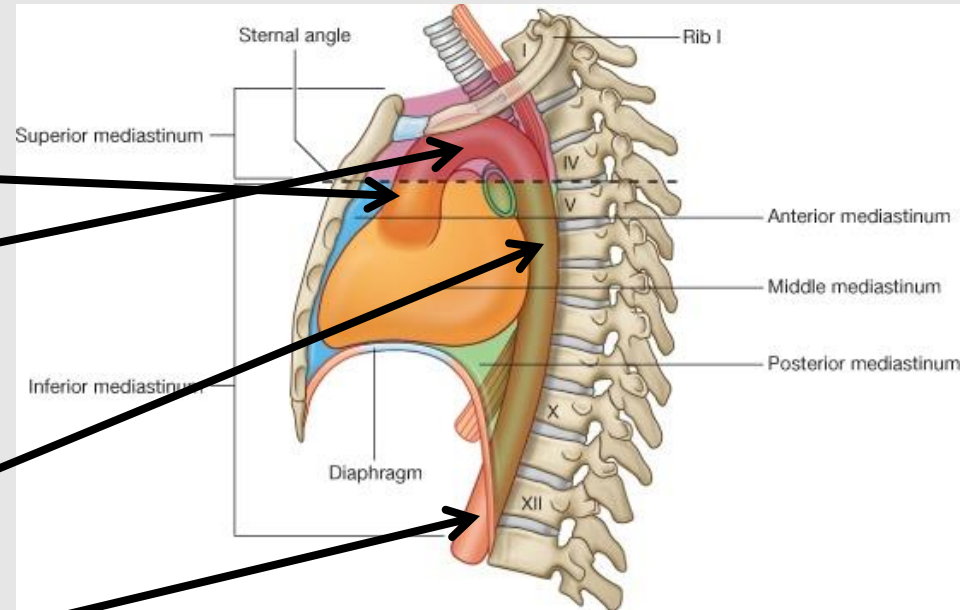
Ascending aorta

Arch of aorta

Descending aorta

Thoracic aorta

Abdominal aorta



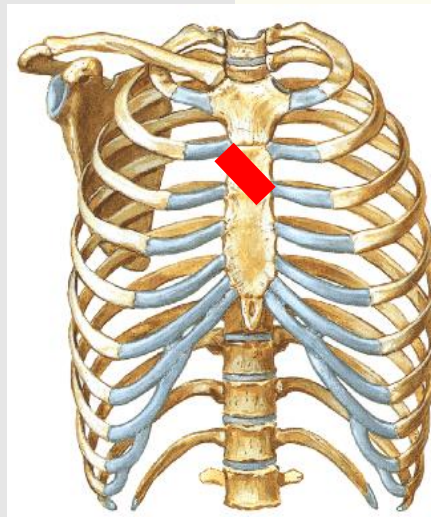
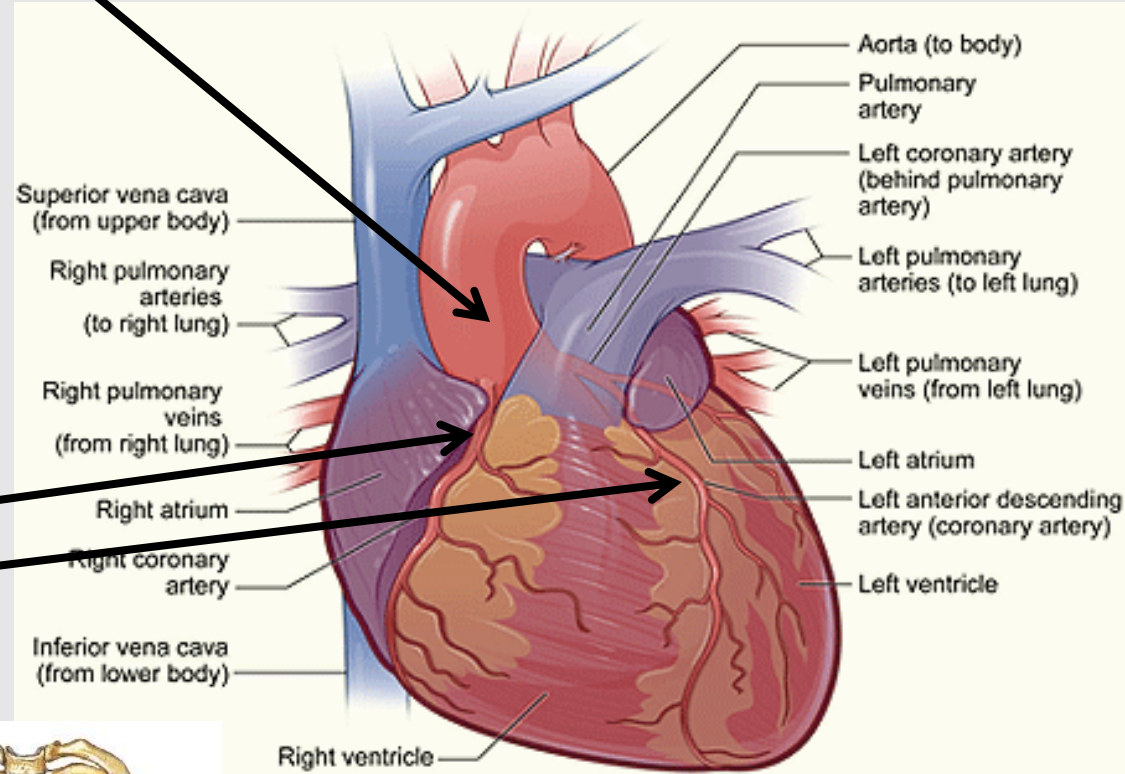
Ascending Aorta

- Inside pericardium
- 2 inches

Branches

Rt Coronary A.

Lt Coronary A.



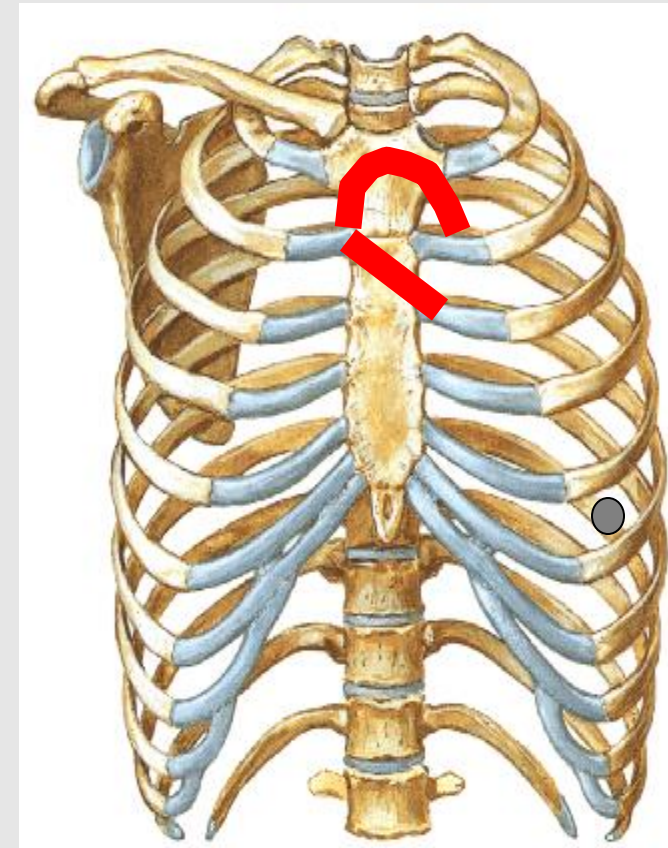
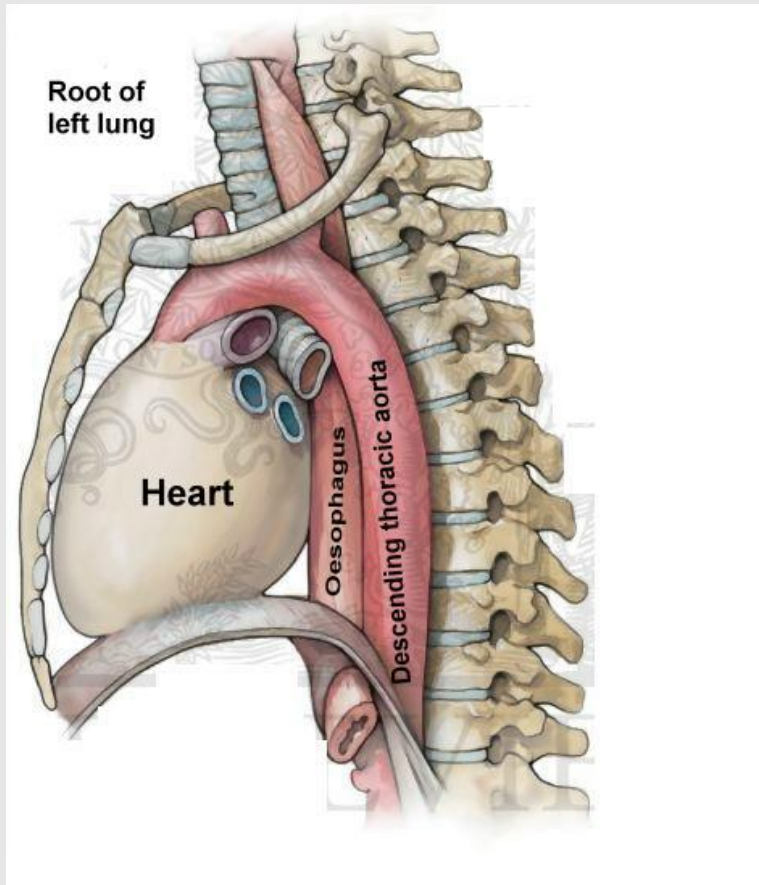
Arch of Aorta

Arch of aorta

Continuation of ascending aorta

(R) 2nd CC

(L) 4th thoracic vertebra ---descending thoracic aorta



Arch of Aorta

Branches

Brachiocephalic trunk

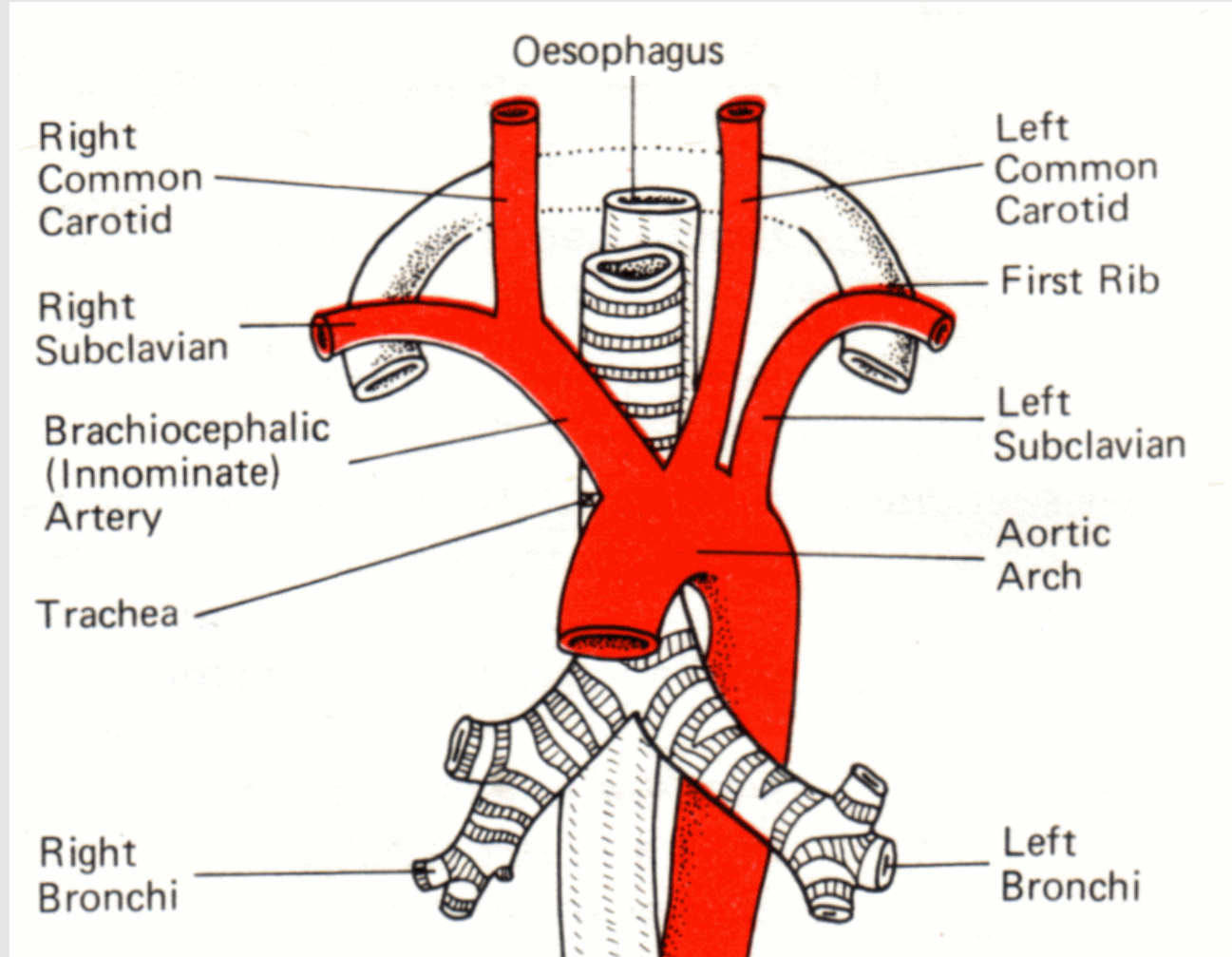
R. Subclavian A

R. Common carotid A

Left common carotid A

Left subclavian A

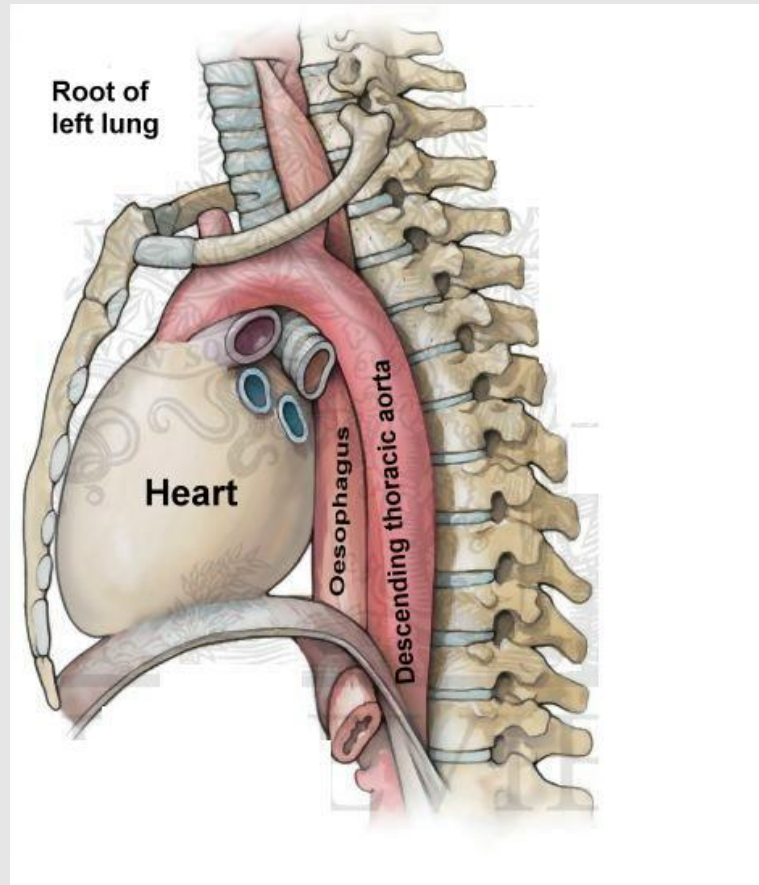
Thyroid Ima A (10%)



Descending thoracic aorta

Continuation of the aortic arch

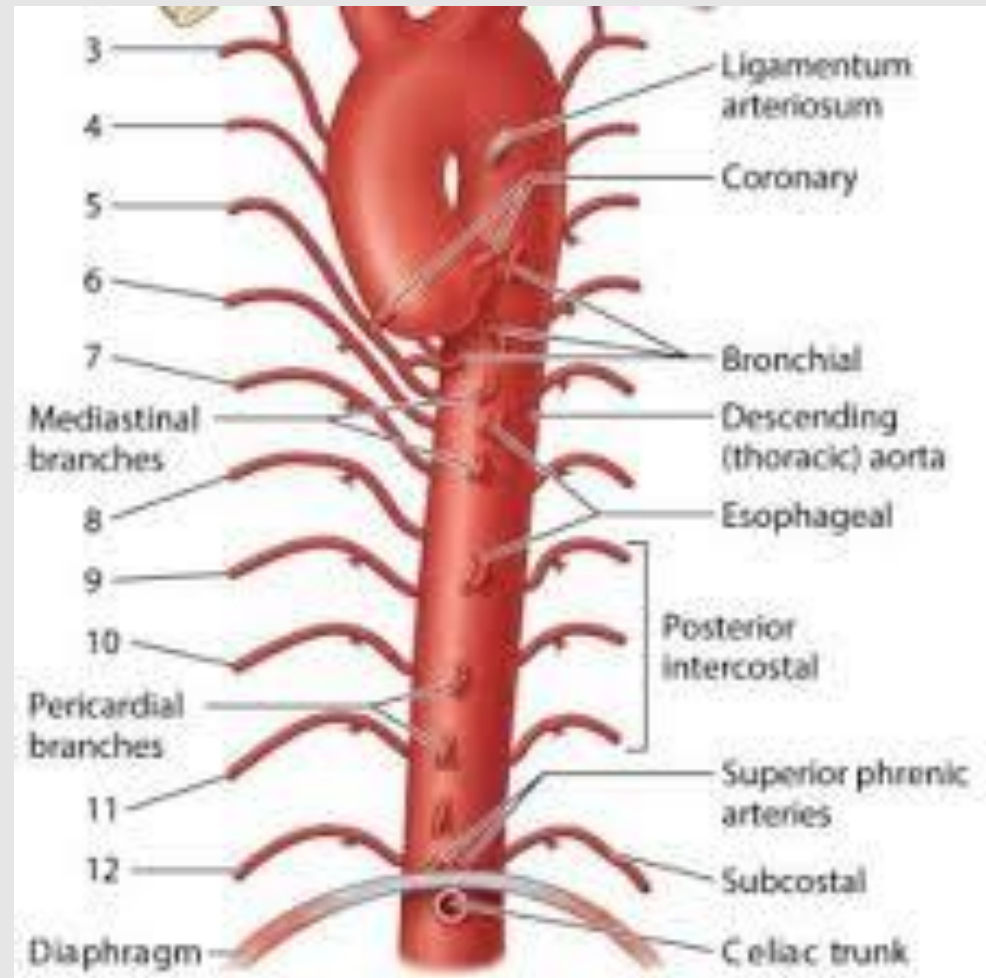
4th T.V. → 12th T.V. ----- abdominal aorta



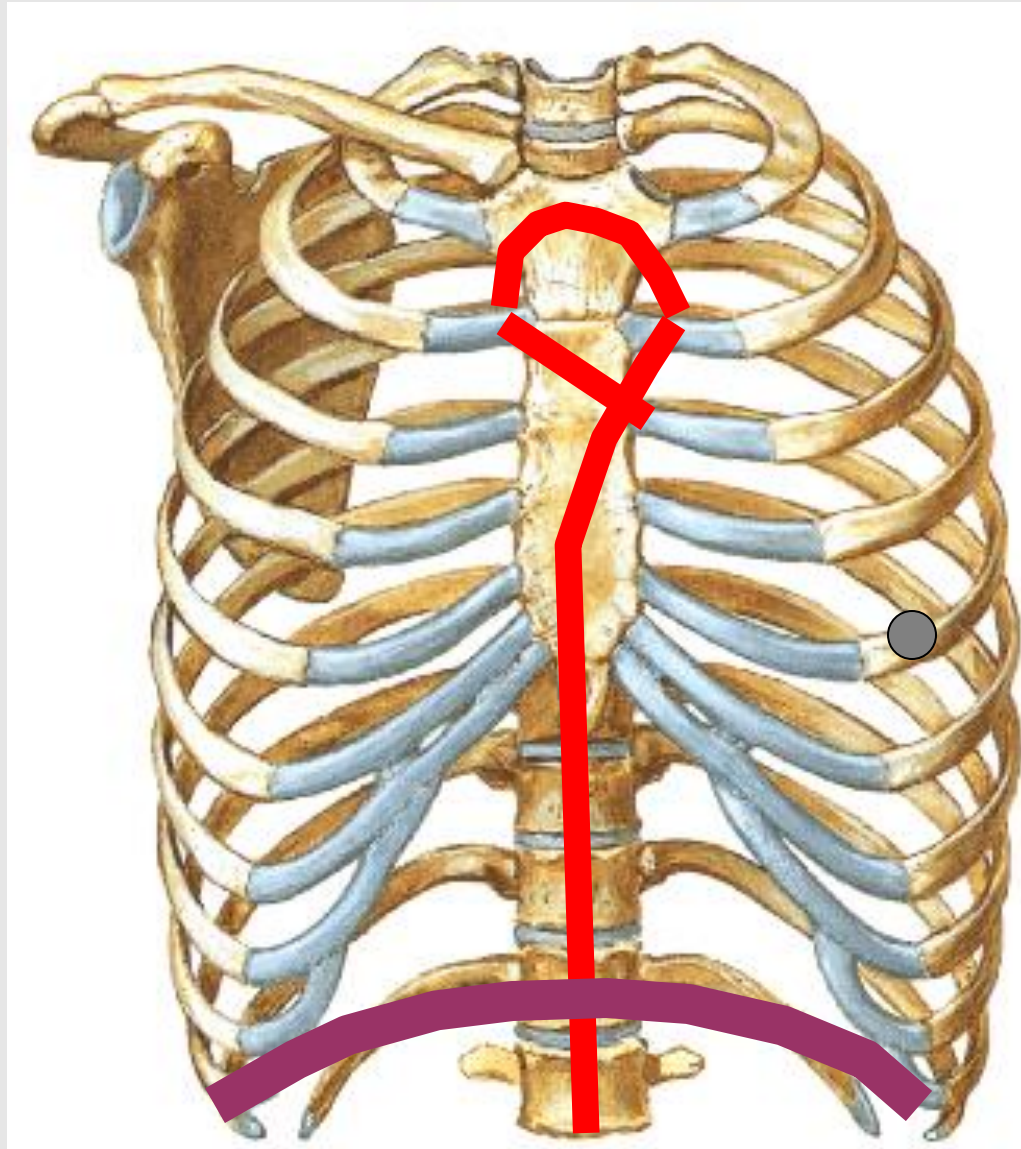
Descending thoracic aorta

Branches

- Intercostal Arteries (3-11th)
- Subcostal Artery (12th)
- 2 bronchial Arteries
- Esophageal branches
- Pericardial branches
- Mediastinal branches
- Superior Phrenic Artery

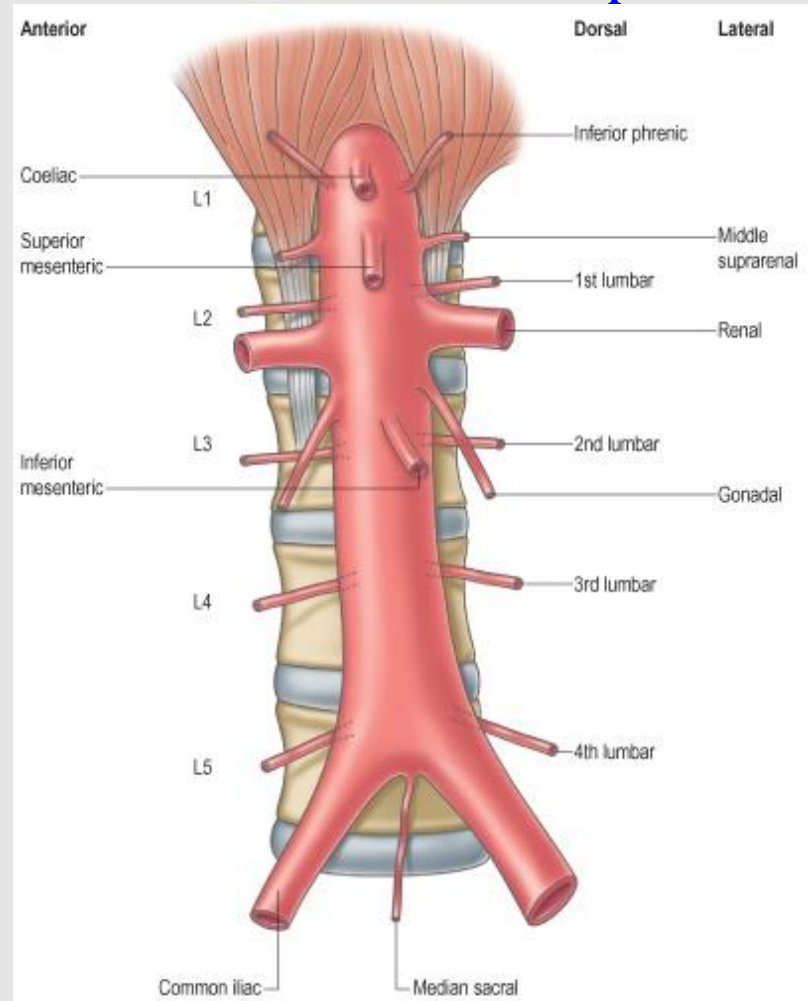


Descending thoracic aorta



Abdominal Aorta

T12 —————→ **L4** (Lower border of body of l4)
1 cm left of med plane



Abdominal Aorta (Relations)

Anterior

Pancreas (body)

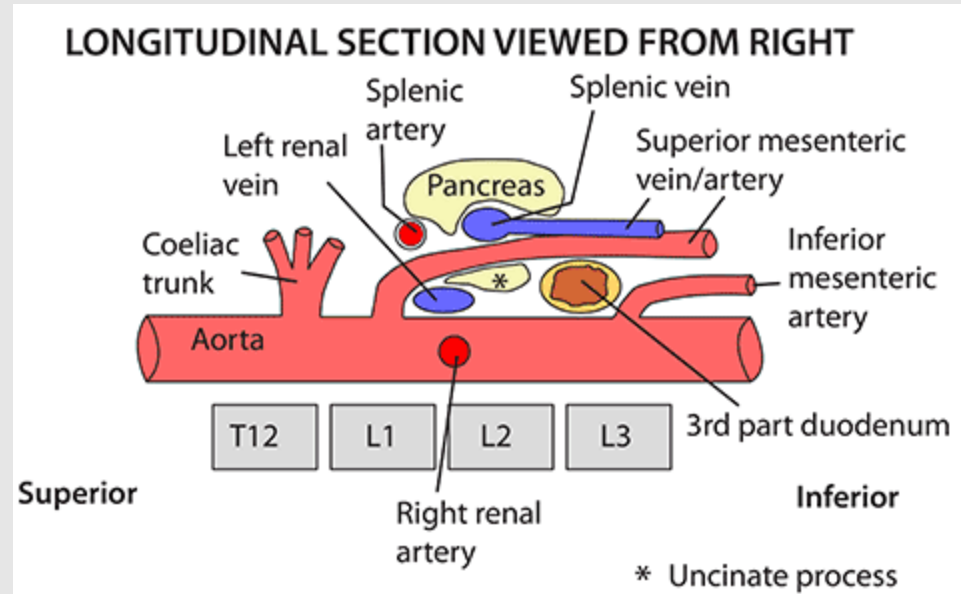
Duodenum (3rd part)

Peritoneum

Posterior

L1-L4 vertebral bodies

Int. Vertebral discs



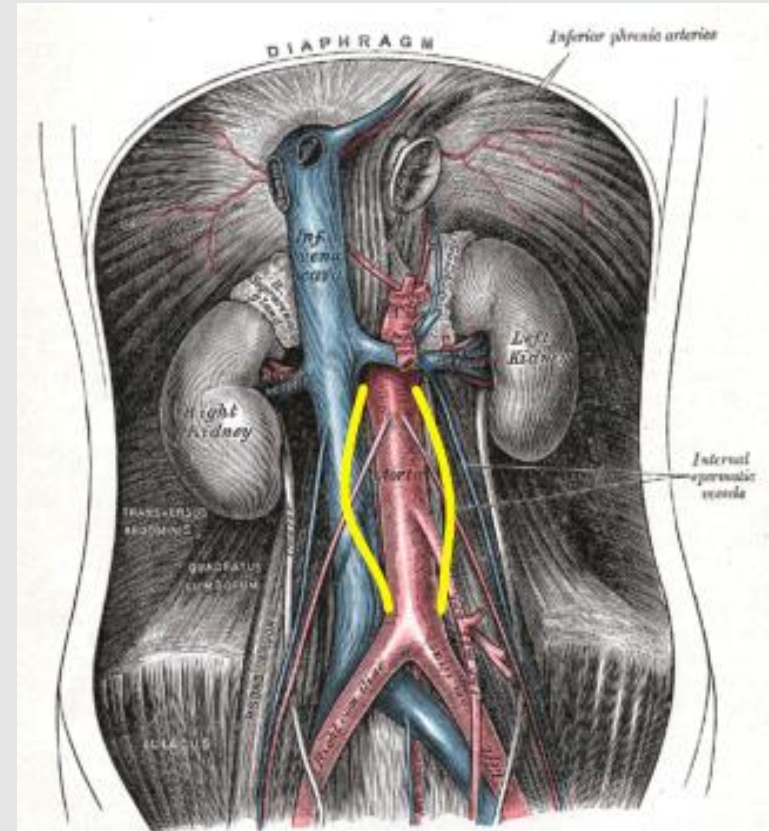
Abdominal Aorta (Relations)

Right

- IVC
- Rt. Crus
- Rt. Iliopsoas

Left

- Lt. Crus
- Pancreas (head)
- 4th of duodenum
- Lt. Iliopsoas



Abdominal Aorta (Branches)

Ventral branches

- Coeliac trunk
- Superior Mesenteric Artery
- Inferior Mesenteric Artery

Lateral branches

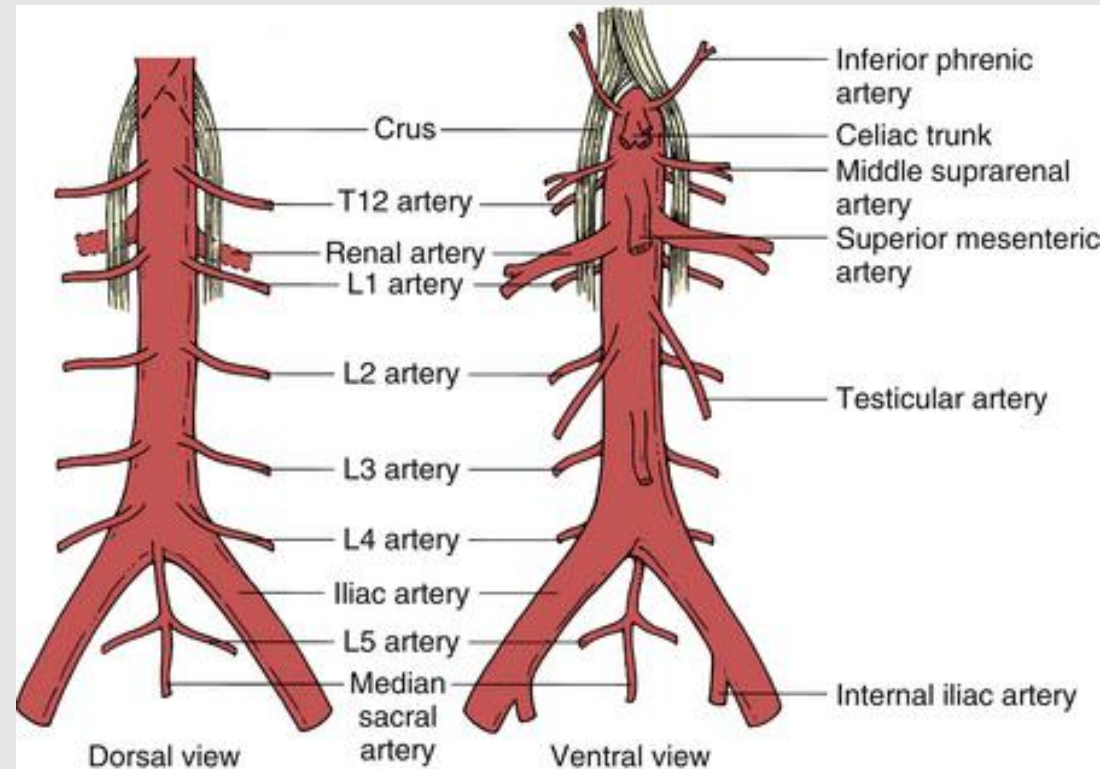
- 2 Inferior Phrenic Arteries
- 2 Middle Suprarenal Arteries
- 2 Renal Arteries
- 2 Gonadal Arteries

Dorsal branches

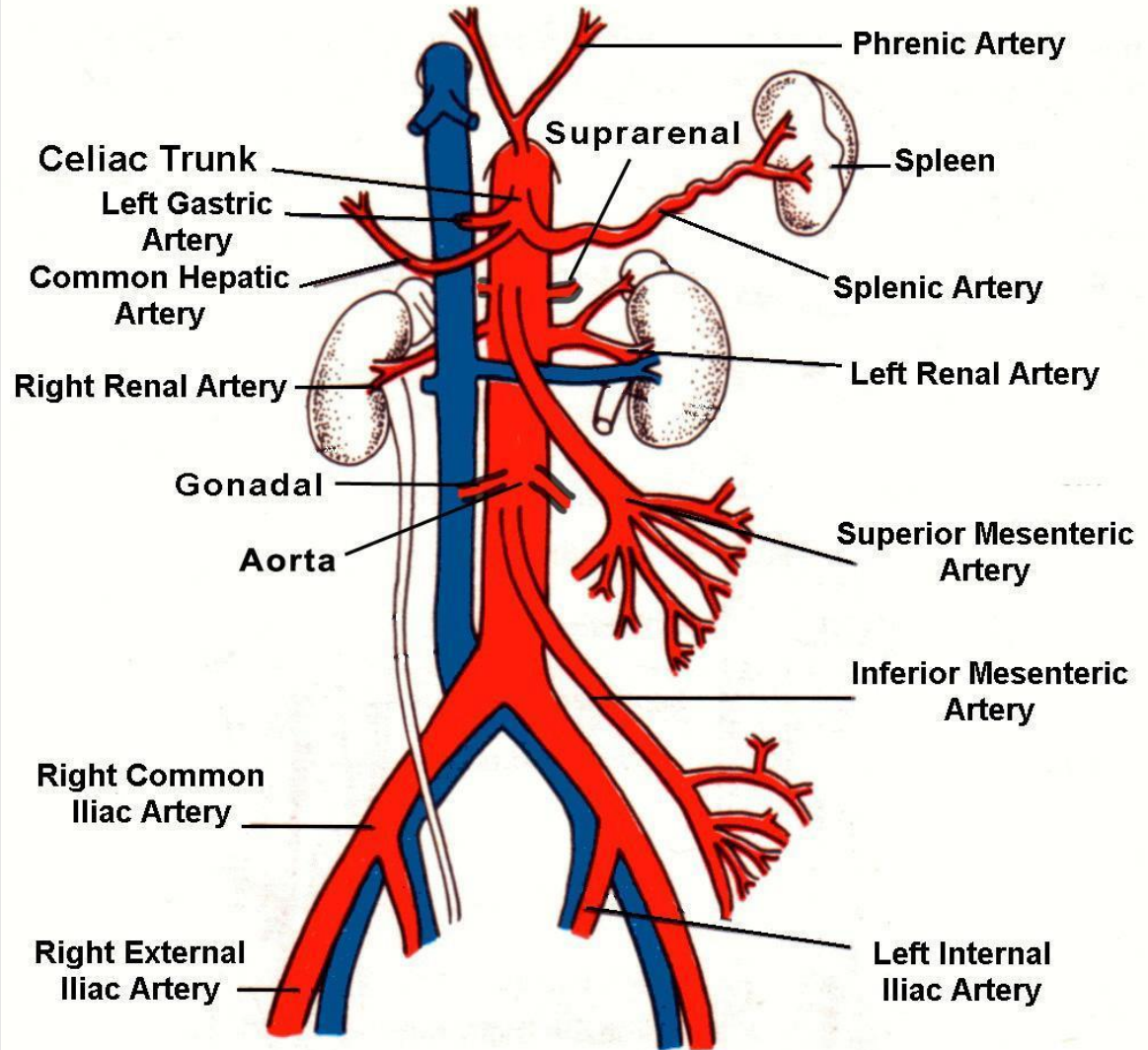
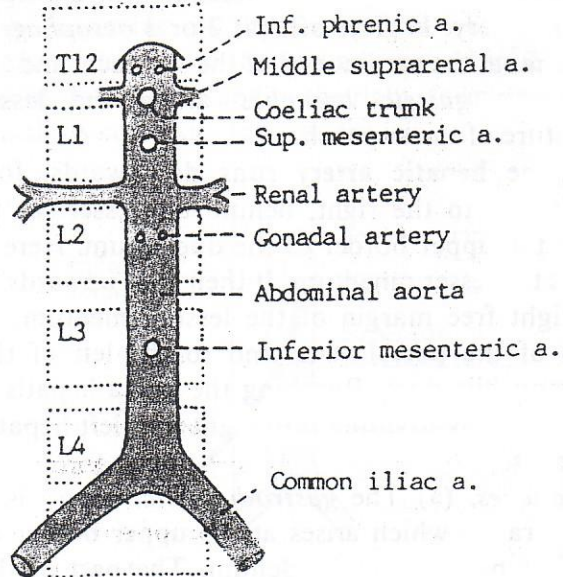
- Lumbar Arteries (4 pairs)
- Median Sacral Artery

Terminal branches

- 2 Common Iliac Arteries

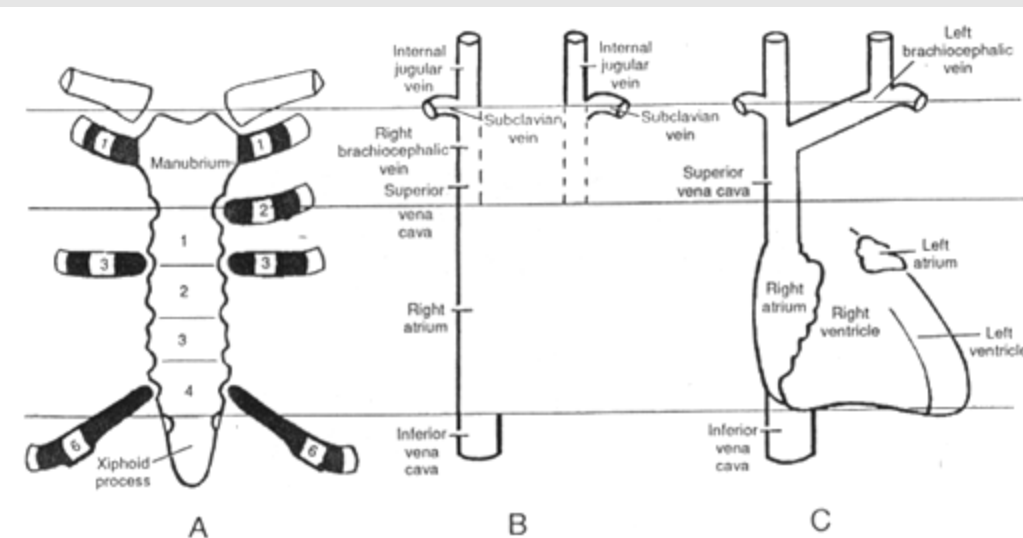
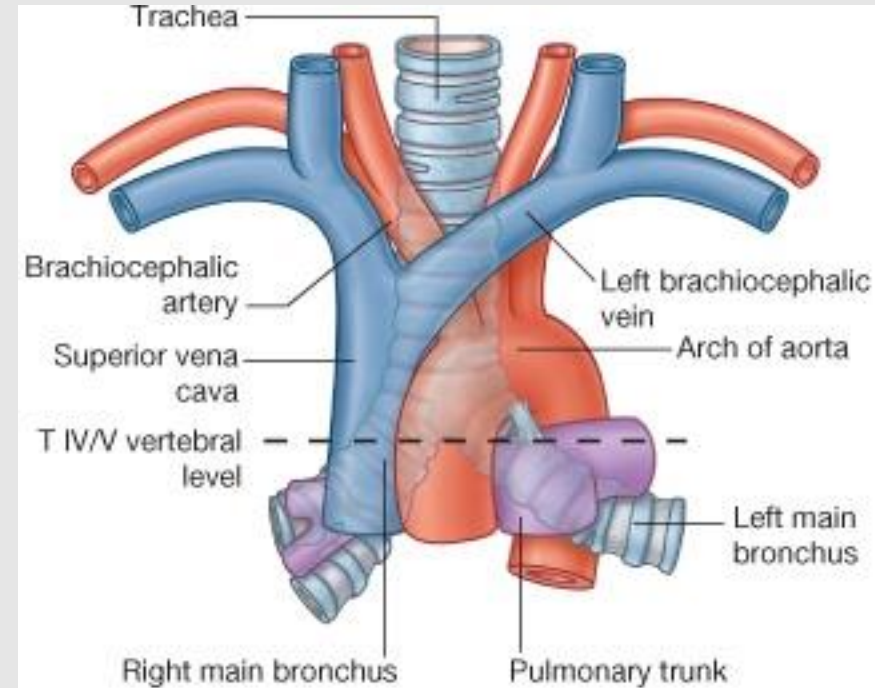


Abdominal Aorta (Branches)



Superior vena cava (svc)

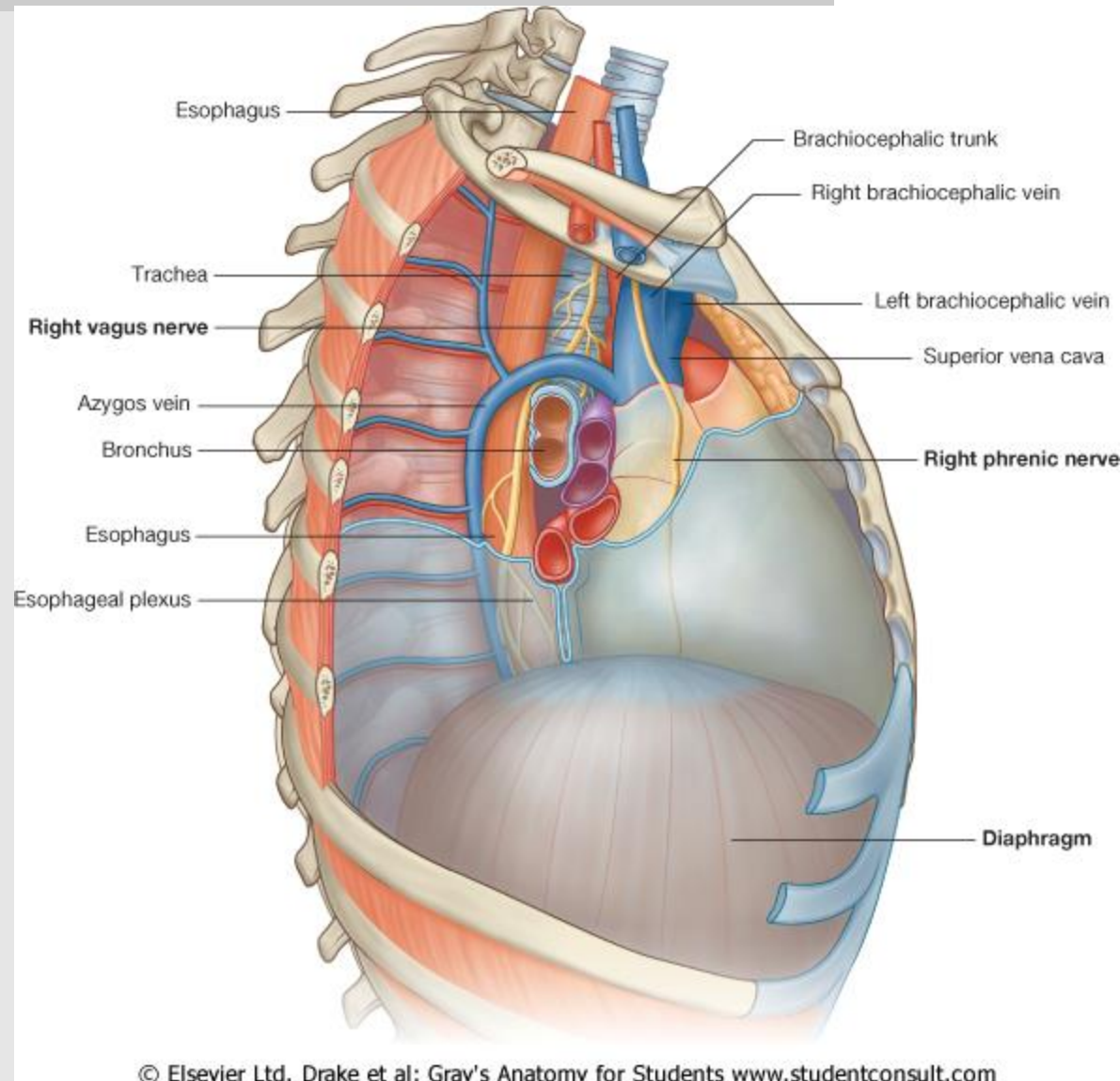
- ❑ Main draining channel for upper half of the body (Head & neck + both upper limbs)
- ❑ It is about 7 cm , valve less channel
- ❑ Formed by union of Rt & Lt Braciocephalic vein at level of 1st costal cartilage (R)
- ❑ Inside pericardium



Braciocephalic vein = Sub Clavian V + Internal Jugular V At Sternoclav. Joint on both sides

Superior vena cava (Tributaries)

1. Azygos vein
2. Mediastinal veins
3. Pericardial veins



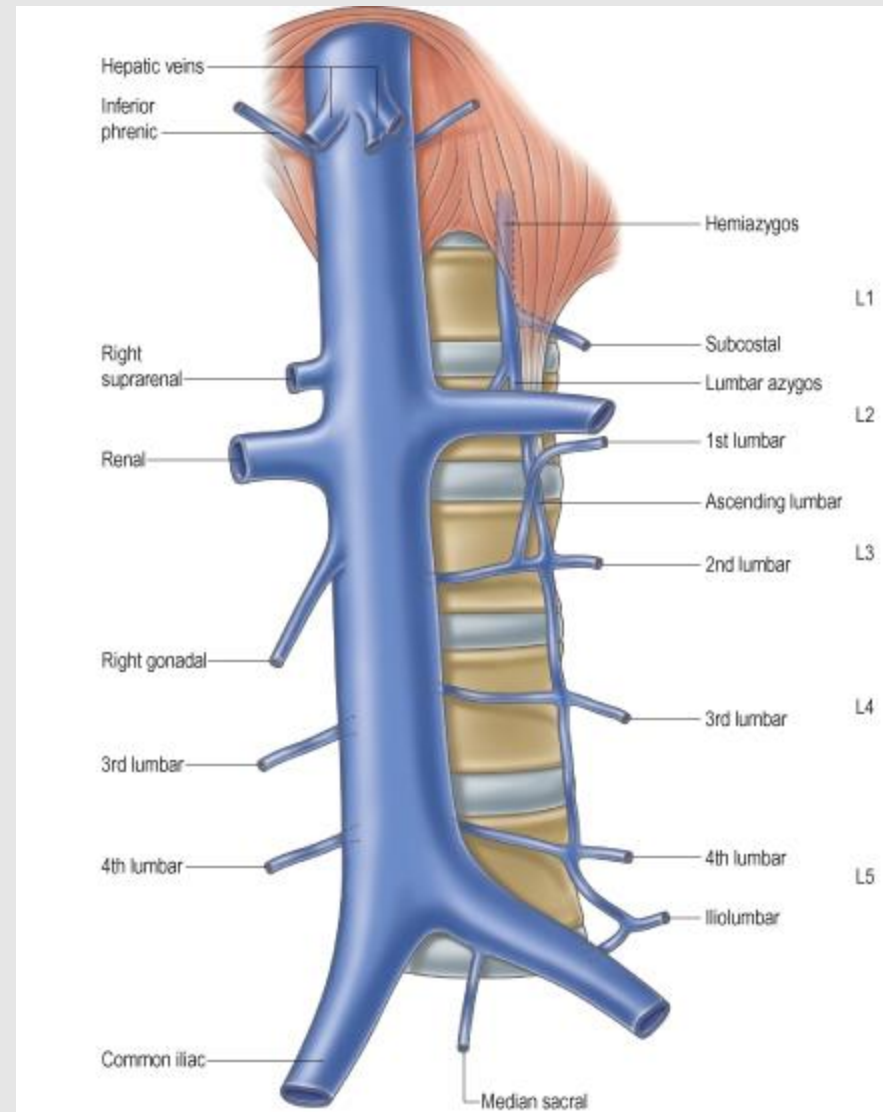
Inferior vena cava (IVC)

Formation

By union of Rt. & Lt.
Common Iliac V at Rt Side
of body of L5

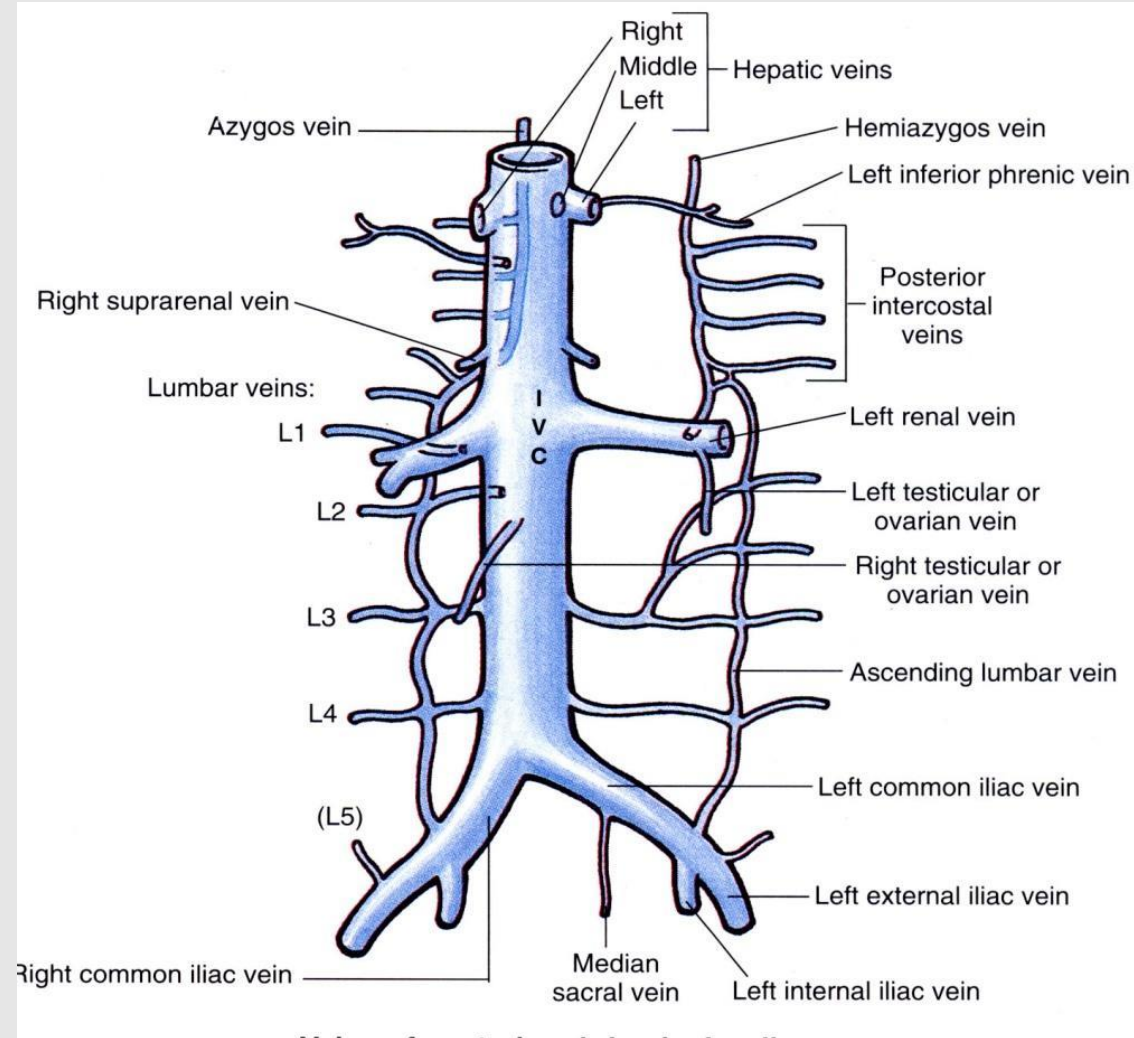
Termination

Passing through caval
opening **T8** to end in the
Rt Atrium

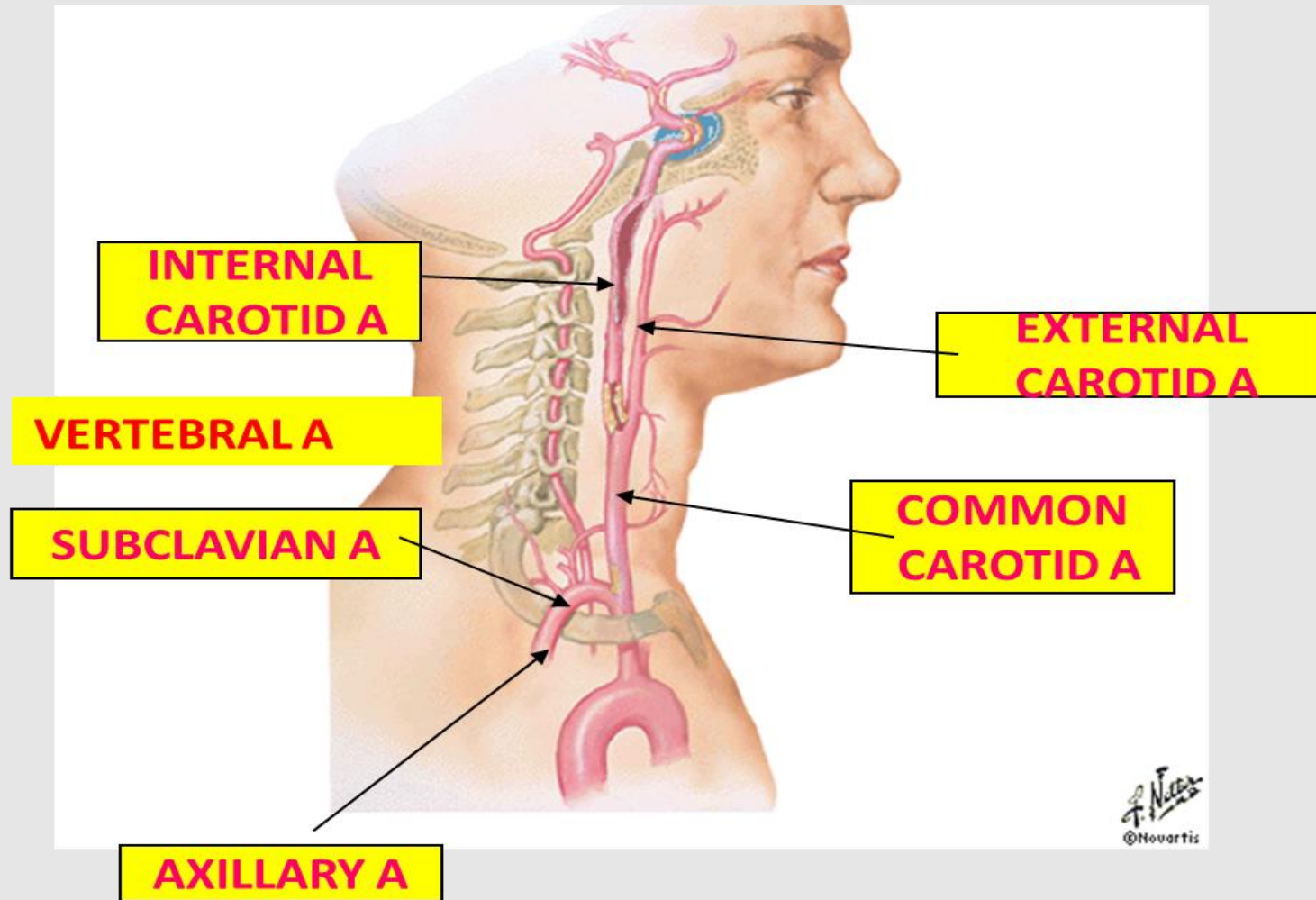


Inferior vena cava (Tributaries)

1. 2 common iliac veins
2. 3rd, 4th lumbar vein
3. R. Gonadal vein
4. R. Suprarenal v
5. 2 renal veins
6. Hepatic vein



ARTERIES OF THE HEAD & NECK



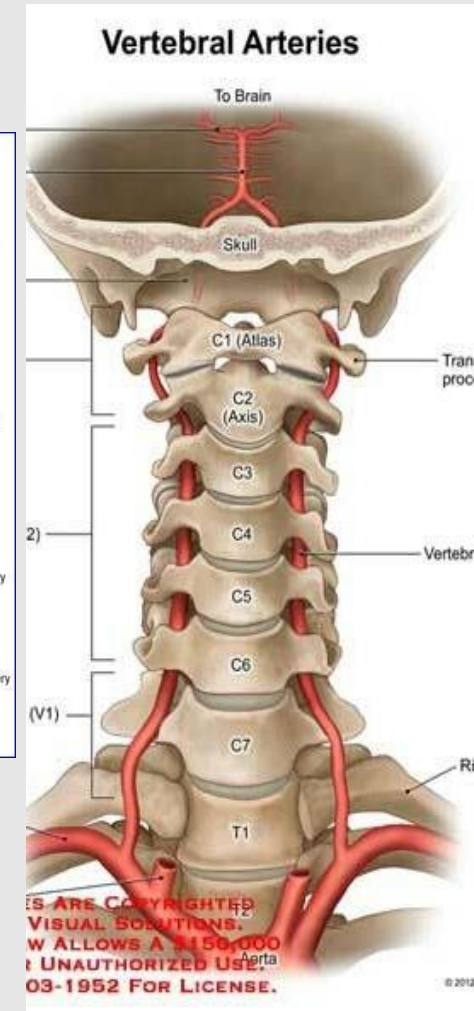
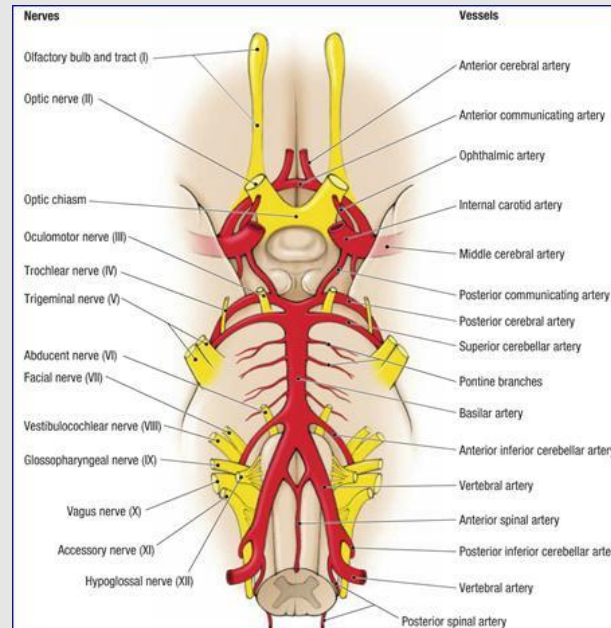
ARTERIES OF THE HEAD & NECK

Vertebral Artery

- Arises from Subclavian artery
- 2 vertebral arteries join to form Basilar artery.

Basilar artery

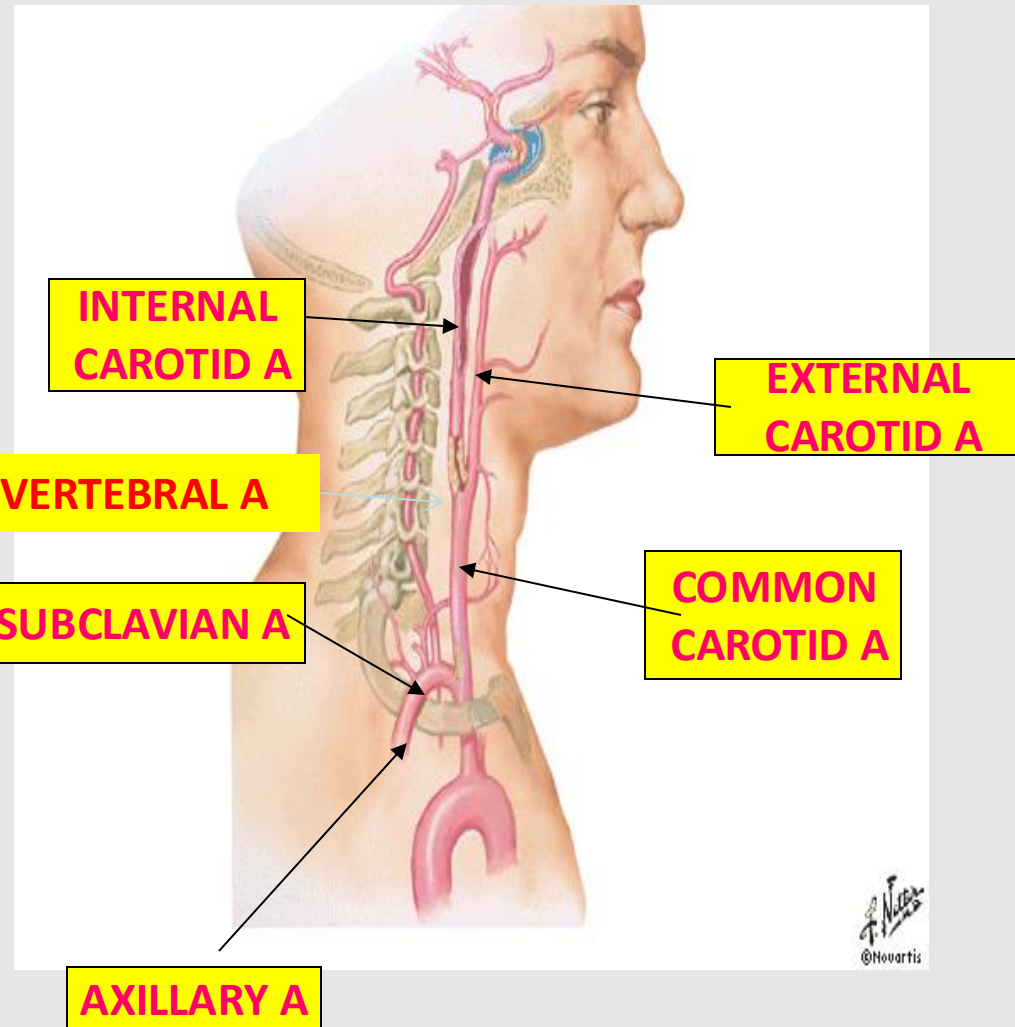
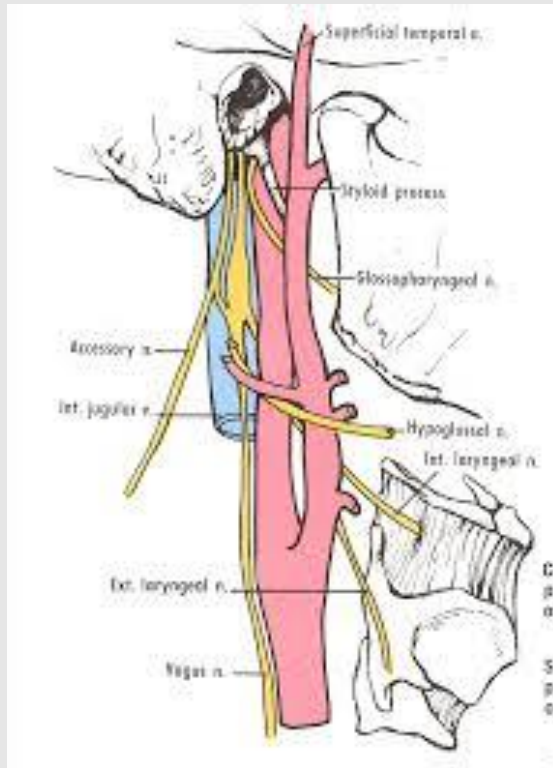
- Ventral to pons in the pontine cistern.
- **Branches:** numerous to cerebellum and pons
- **Termination:** division into the two posterior cerebral arteries



ARTERIES OF THE HEAD & NECK

Common Carotid A

- Internal Carotid A
- External Carotid A



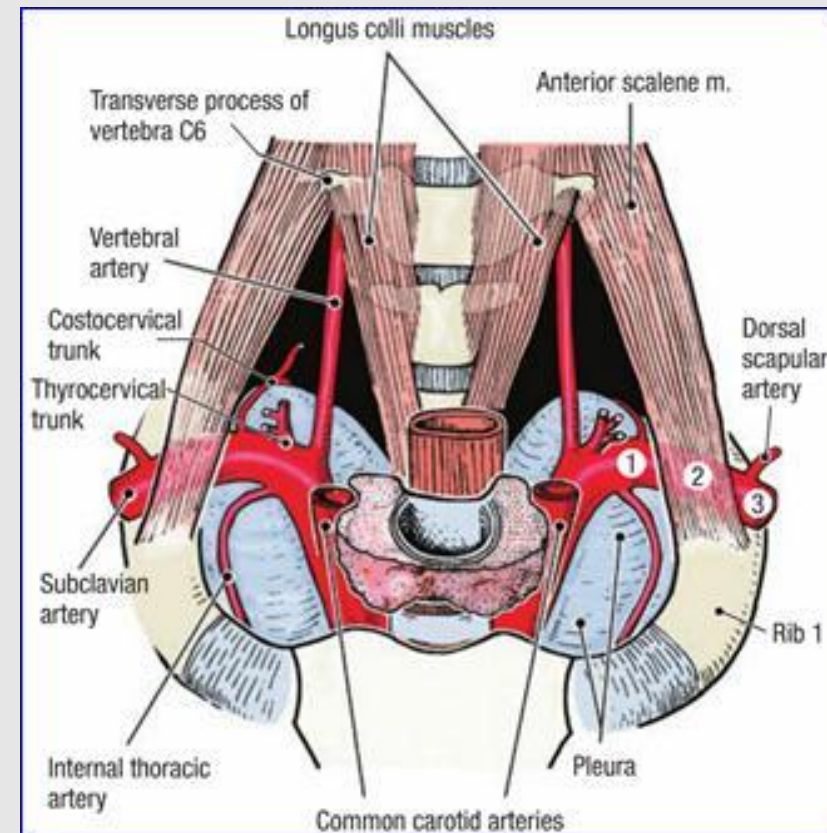
ARTERIES OF THE HEAD & NECK

SUBCLAVIAN ARTERY

- Principal artery of the upper limb
- Also supplies a part of the neck and brain

BEGINNING:

- **Right:** behind the sternoclavicular joint. As ONE terminal branch of brachiocephalic trunk
- **Left:** behind the manubrium sterni as a branch of arch of aorta. It ascends and enters the neck behind the left sternoclavicular joint.
- **TERMINATION:** outer border of the 1st rib as Axillary A

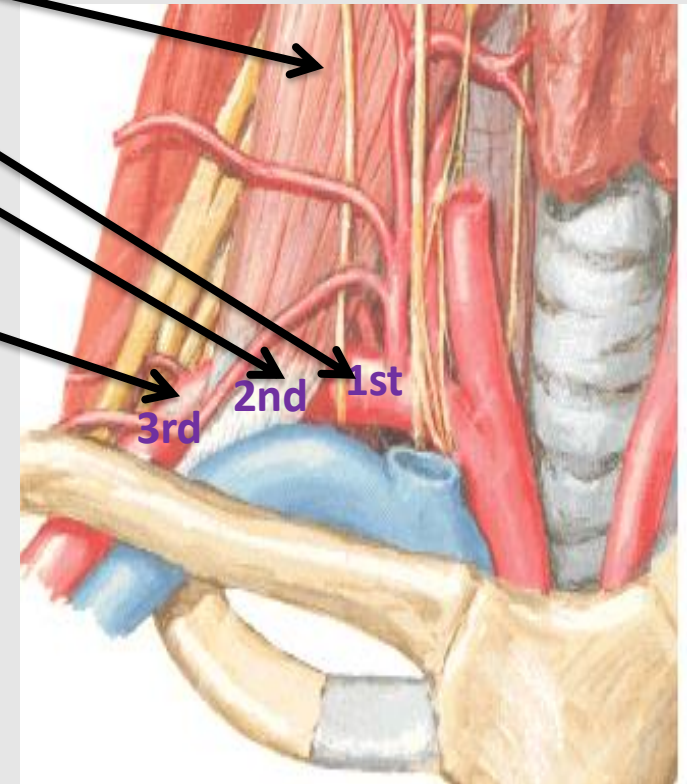


ARTERIES OF THE HEAD & NECK

SUBCLAVIAN A ---- COURSE

- Arches laterally
- The scalenus anterior muscle crosses it anteriorly and divides it into three parts.

1. 1st Part: Medial to the muscle
2. 2nd Part: Post. to the muscle
3. 3rd Part: Lateral to the muscle



ARTERIES OF THE HEAD & NECK

SUBCLAVIAN A ---- BRANCHES

1. Vertebral

2. Internal thoracic

3. Thyrocervical trunk

◀ Inferior thyroid

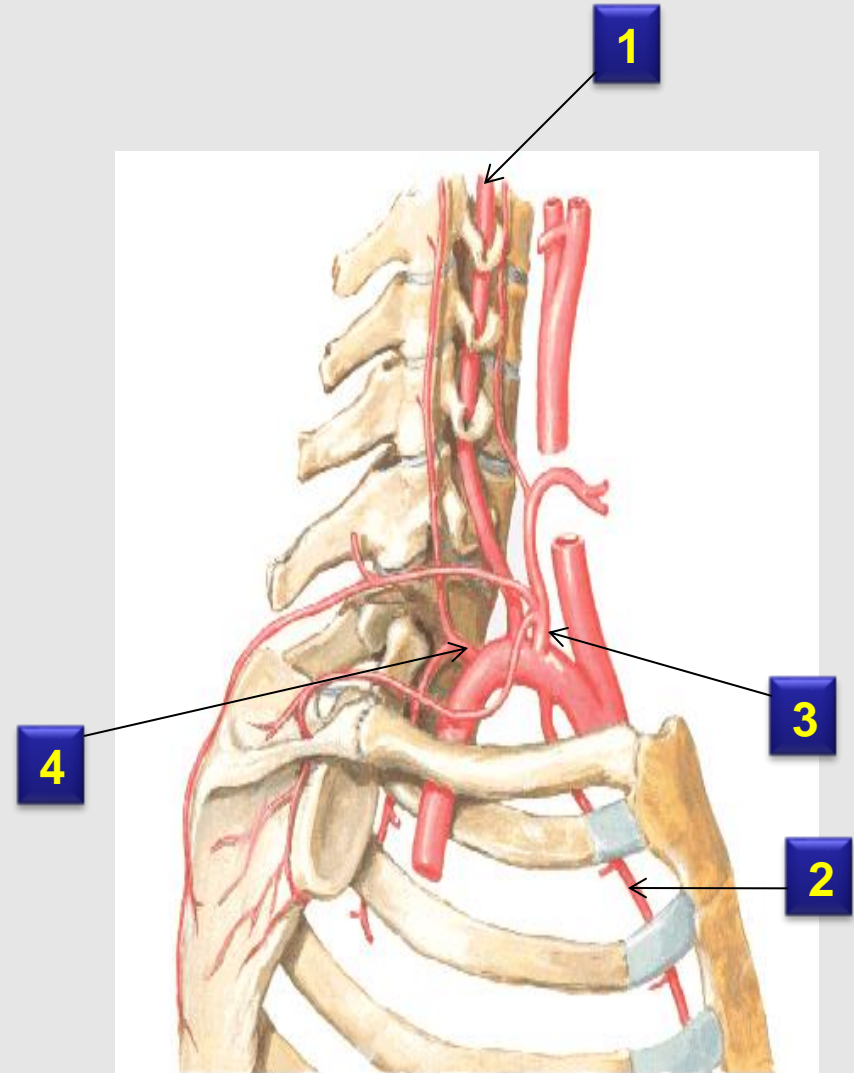
◀ Suprascapular

Superficial cervical

4. Costocervical trunk

Superior intercostal

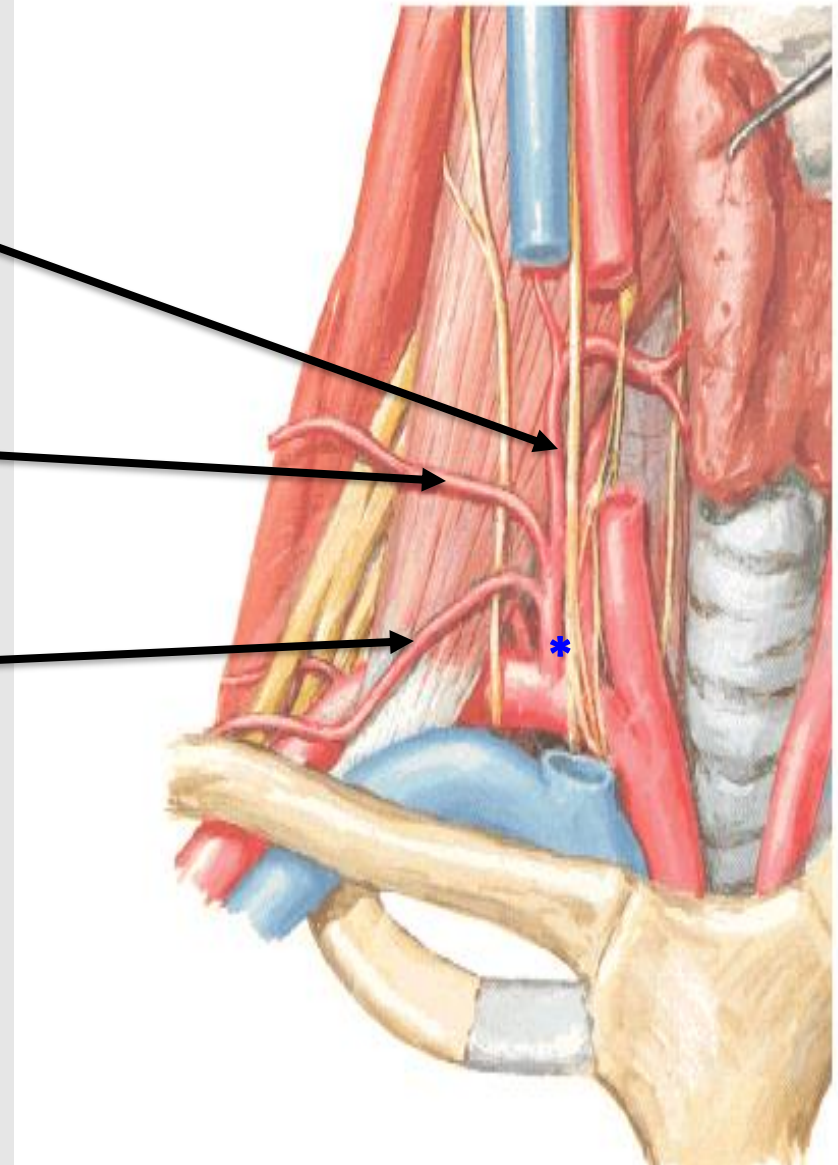
Deep cervical



ARTERIES OF THE HEAD & NECK

Thyrocervical Trunk

1. Inferior Thyroid A
2. Superficial Cervical A
3. Suprascapular A

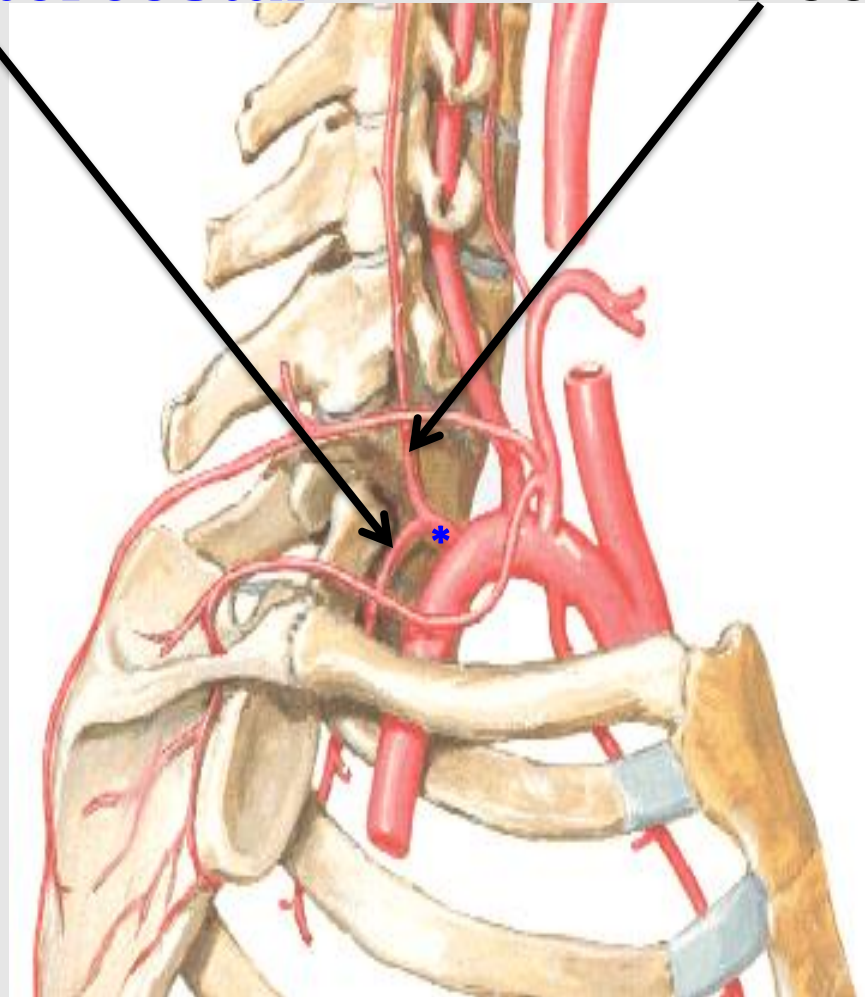


ARTERIES OF THE HEAD & NECK

Costocervical Trunk

Superior intercostal

Deep cervical



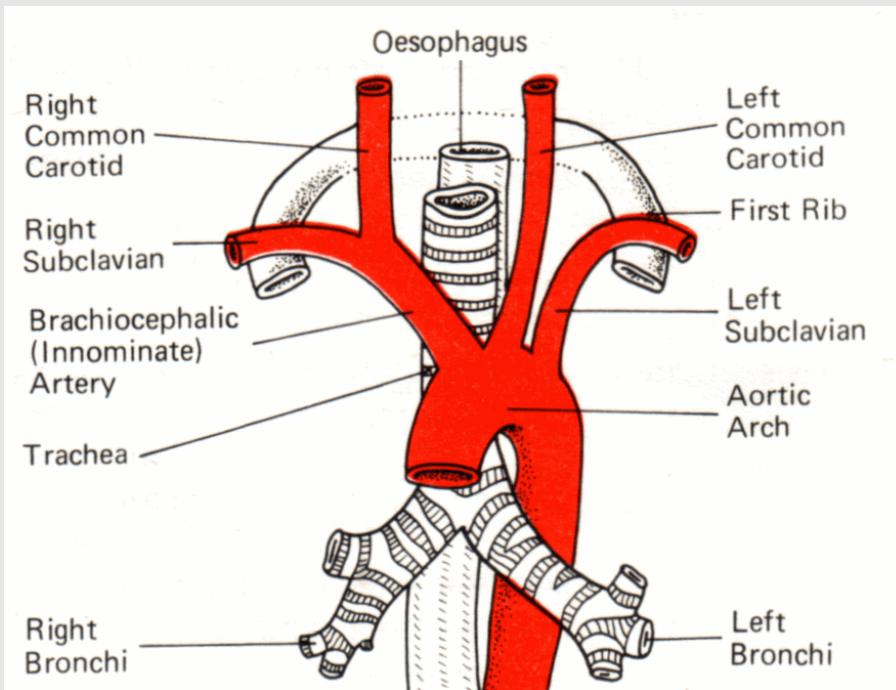
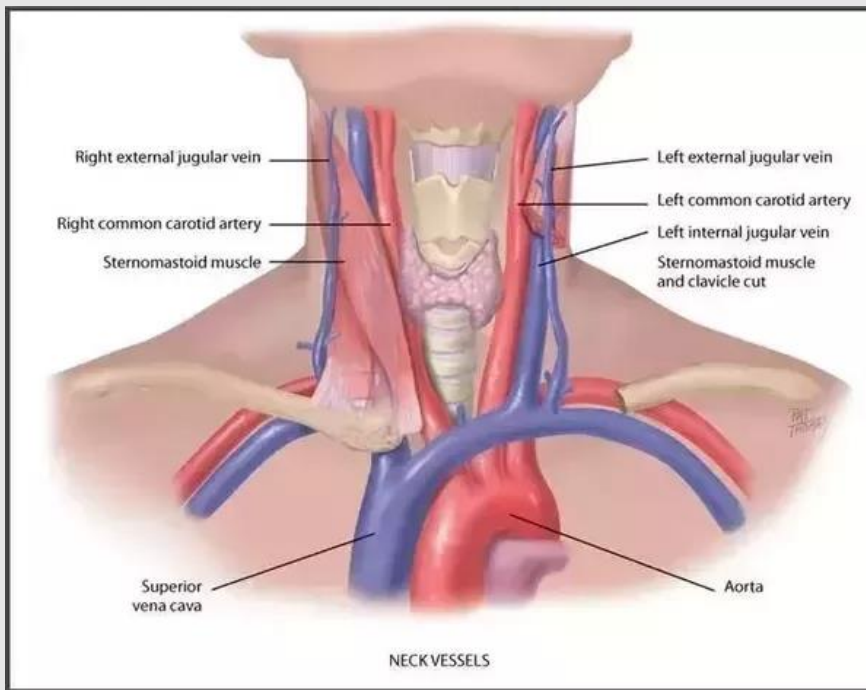
ARTERIES OF THE HEAD & NECK

Common Carotid Artery

BEGINNING:

Right: Behind the sternoclavicular joint As a terminal branch of brachiocephalic trunk

Left: Behind the manubrium sterni As a branch of arch of aorta

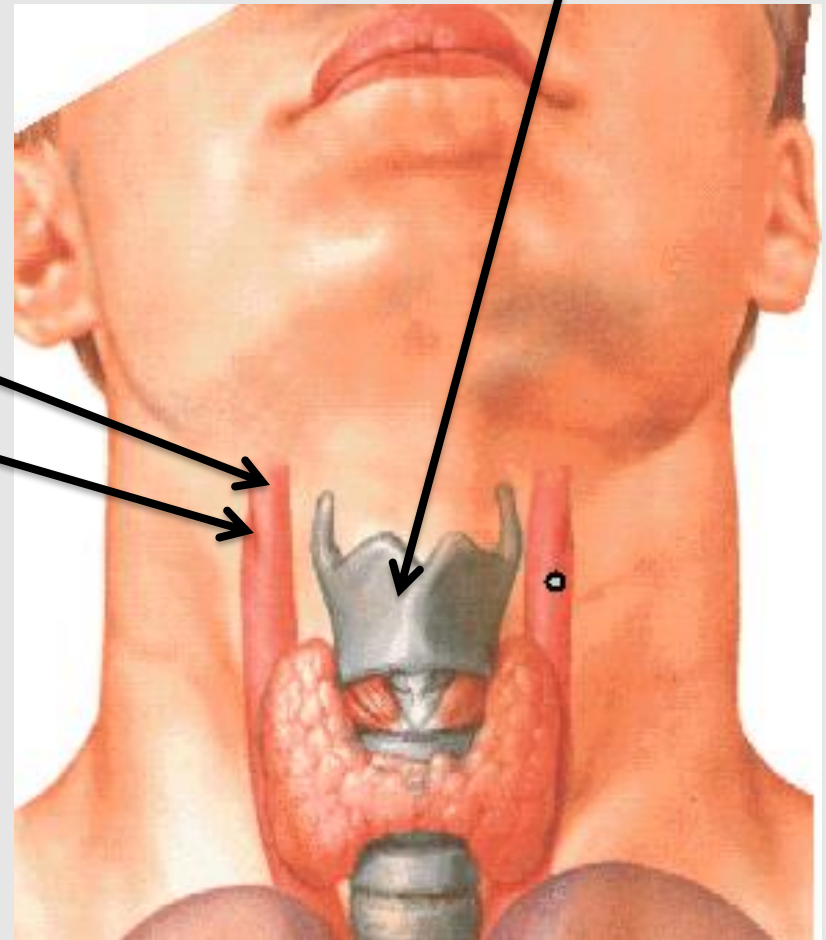


ARTERIES OF THE HEAD & NECK

Common Carotid Artery

TERMINATION: At the upper border of thyroid cartilage
dividing into

- External carotid A
- Internal carotid A



ARTERIES OF THE HEAD & NECK

Common Carotid Artery

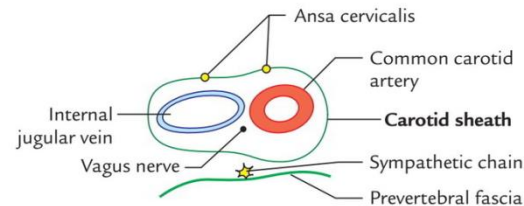
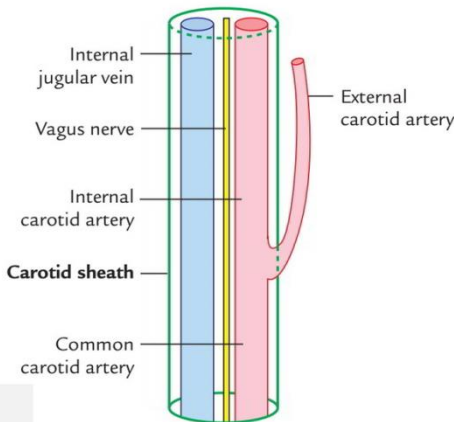
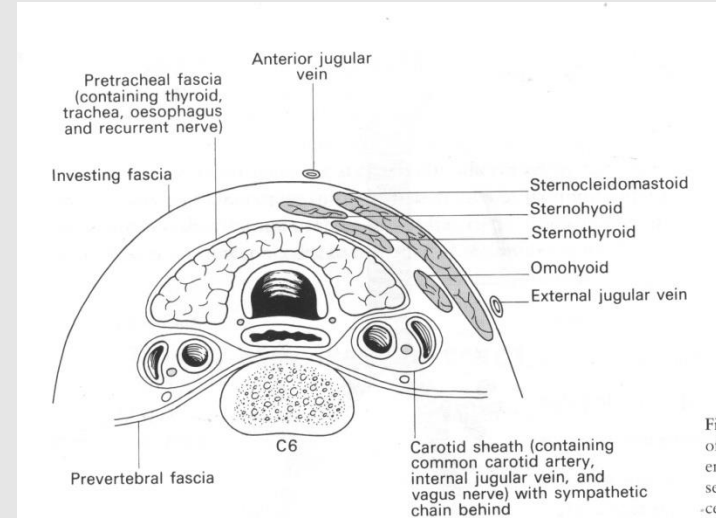
COURSE

Runs upwards in Carotid sheath

Under ant. Border of SCM with IJV & vagus N

BRANCHES:

- External carotid A &
- Internal carotid A



ARTERIES OF THE HEAD & NECK

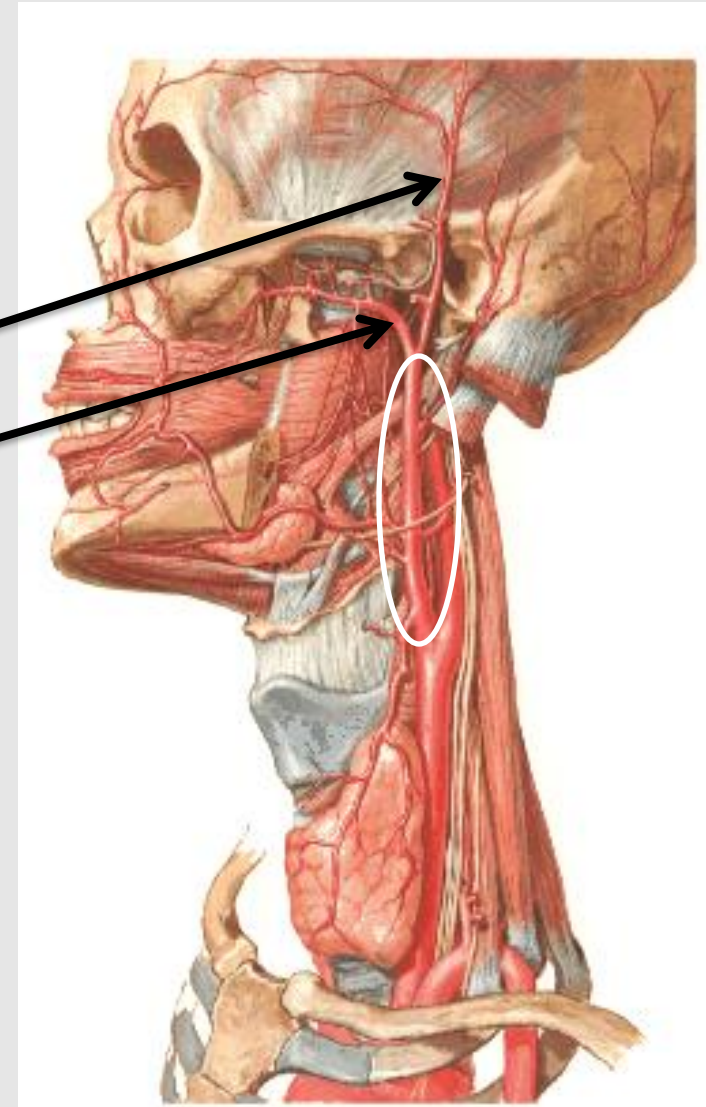
EXTERNAL CAROTID ARTERY

Beginning: Upper border of thyroid cartilage as a terminal br. Of CCA

Termination: Behind the neck of mandible by dividing into

Superficial temporal

Maxillary



EXTERNAL CAROTID A BRANCHES

From the front

1. Superior thyroid
2. Lingual
3. Facial

From the medial side

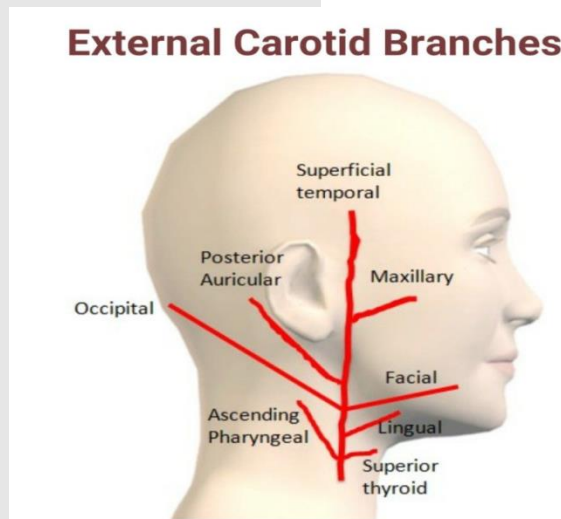
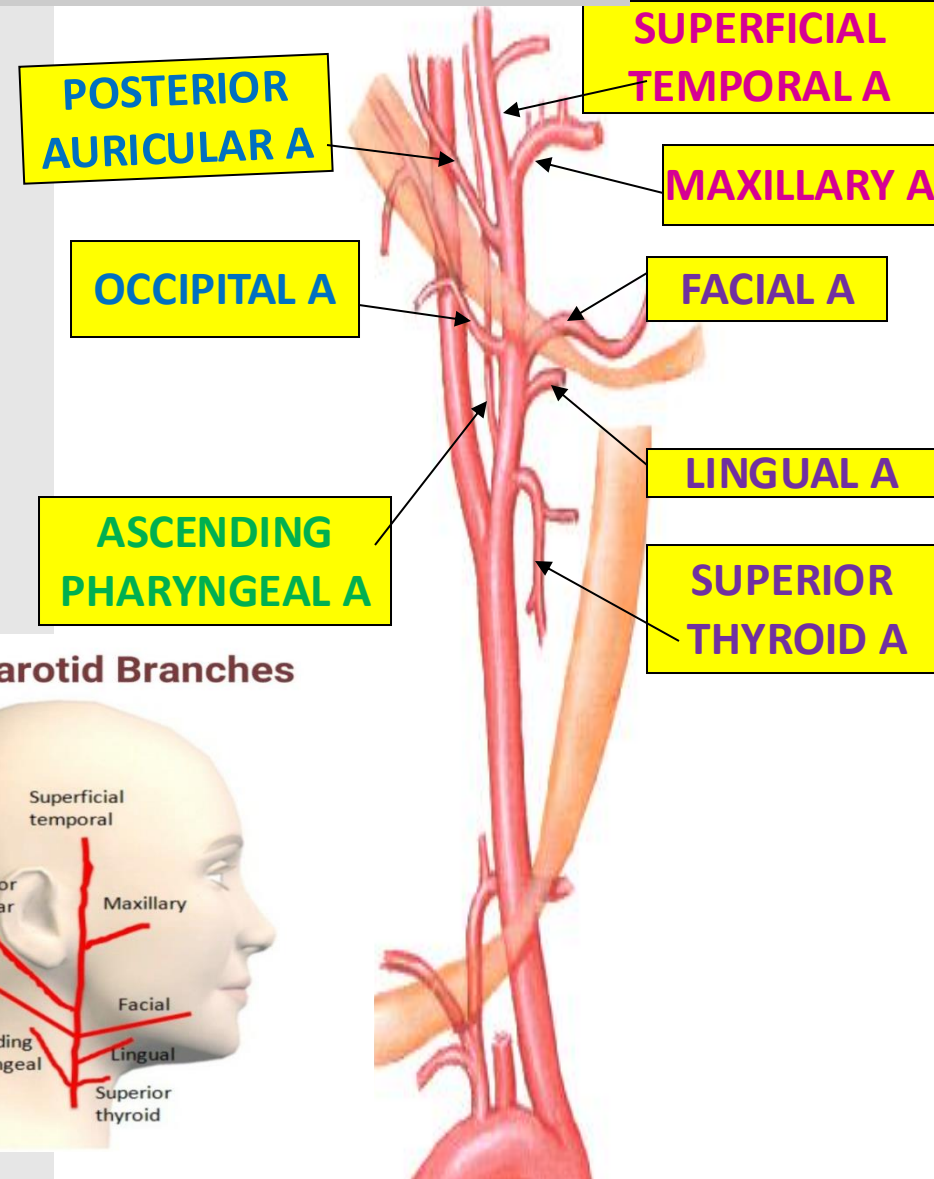
1. Ascending pharyngeal

From behind

1. Posterior auricular
2. Occipital

Terminal

1. Superficial temporal
2. Maxillary

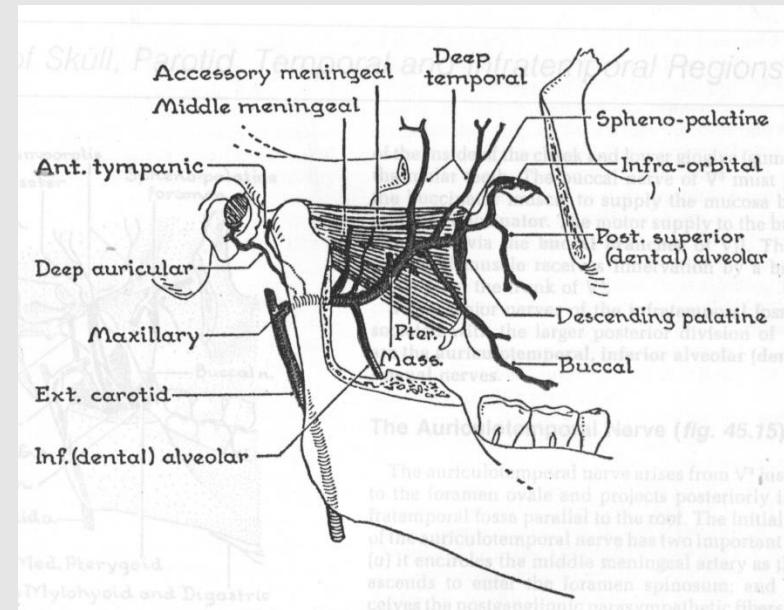
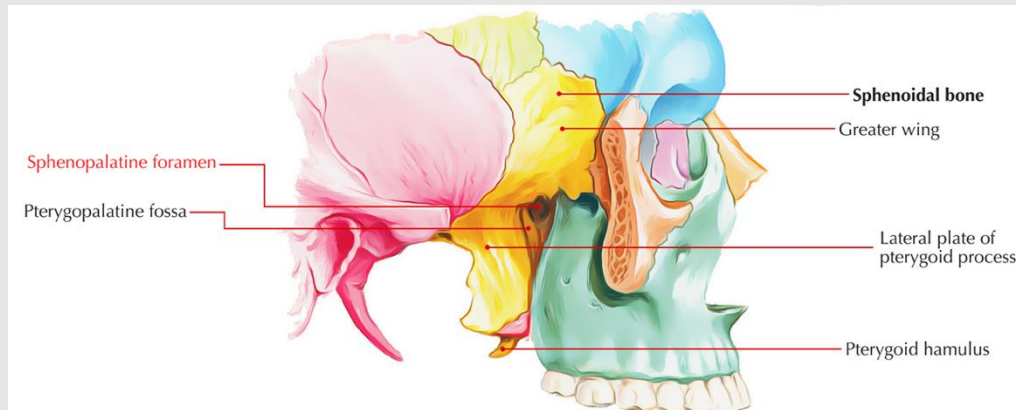


Maxillary Artery

BEGINNING: Behind the neck of the mandible as a terminal branch of ext. carotid A.

TERMINATION: In the sphenopalatine foramen to continue as the sphenopalatine A

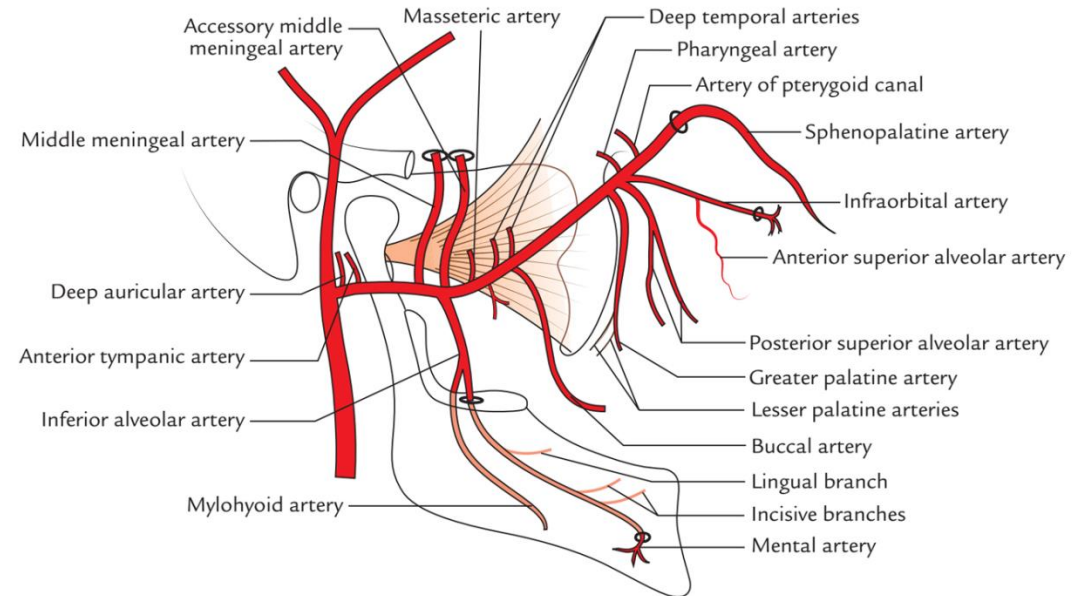
COURSE: divided into 3 parts by the lat. pterygoid muscle.



Maxillary Artery

FROM 1ST PART

1. Deep auricular
2. Ant. Tympanic
3. Middle meningeal
4. Accessory meningeal
5. Inf. Alveolar

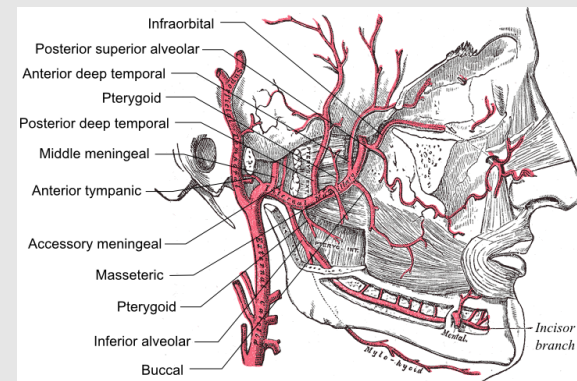


FROM 2nd PART

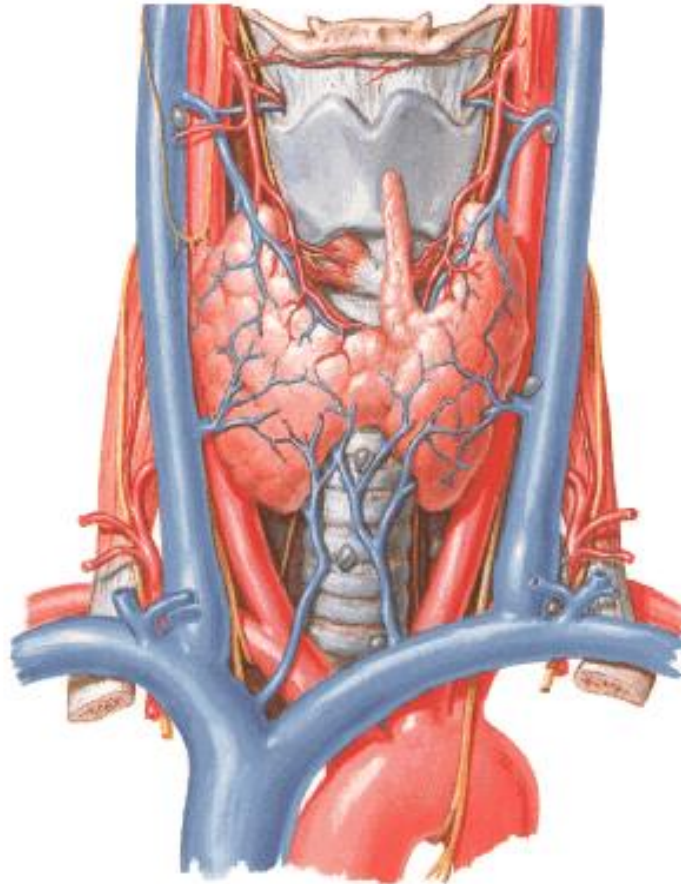
1. Deep temporal
2. Pterygoid
3. Masseteric
4. Buccal

FROM 3rd PART

1. Post. Sup. alveolar
2. Infraorbital
3. Greater palatine
4. Pharyngeal
5. A of pterygoid canal
6. Sphenopalatine



Veins Of The Head & Neck And Thorax



Veins Of The Head & Neck And Thorax

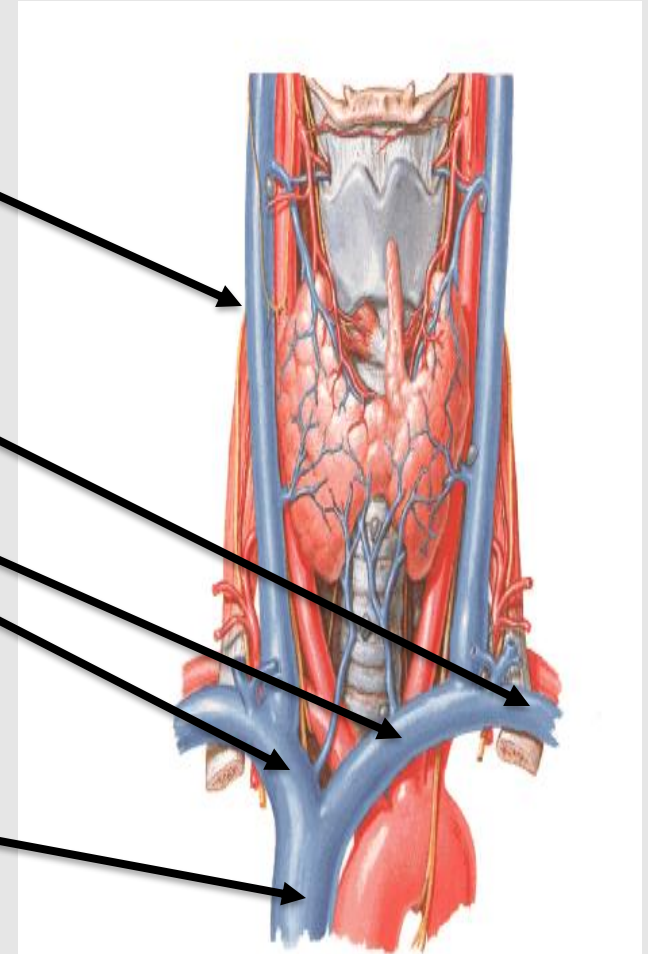
**Internal Jugular V &
Subclavian V**



Brachiocephalic Veins



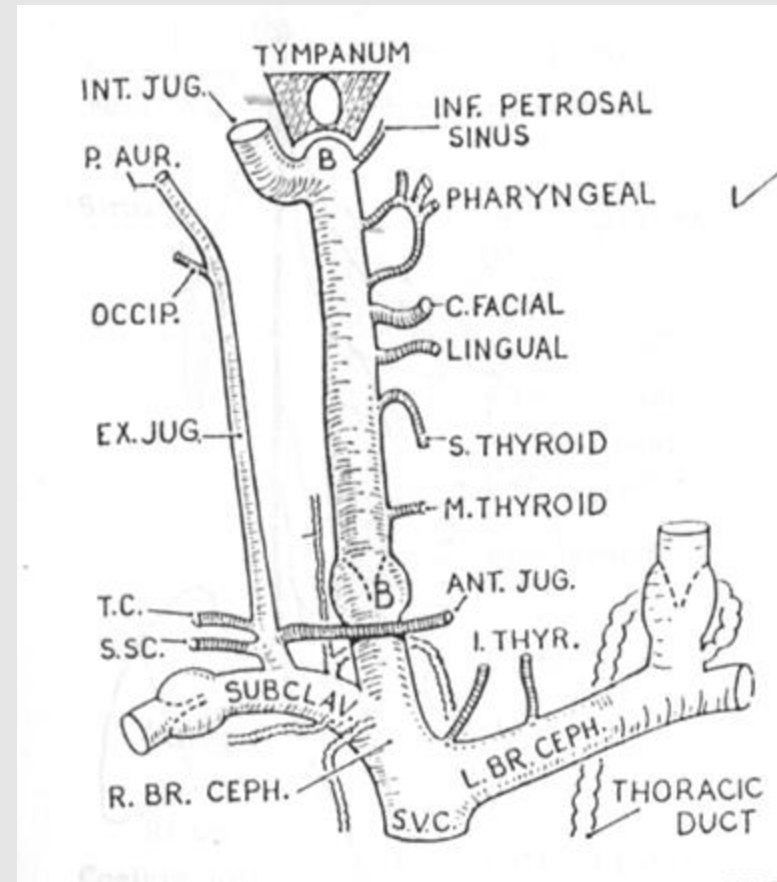
Superior Vena Cava



INTERNAL JUGULAR VEIN

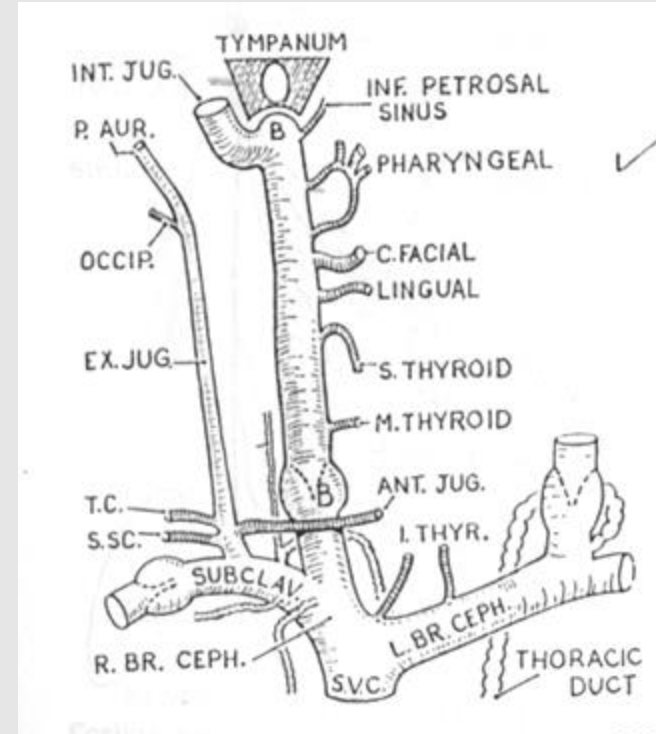
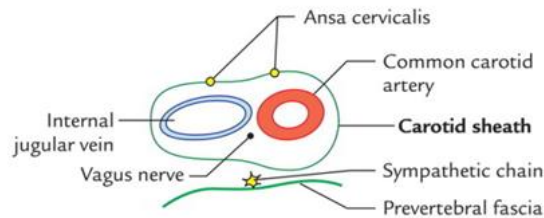
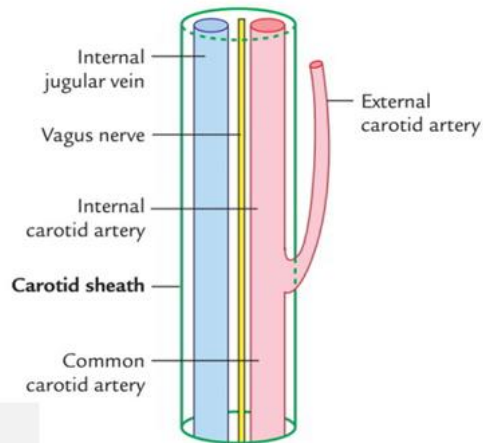
Beginning: At the Jugular foramen as the continuation of Sigmoid sinus

Termination: Behind the medial end of clavicle by joining the subclavian V to form the brachiocephalic V



INTERNAL JUGULAR VEIN

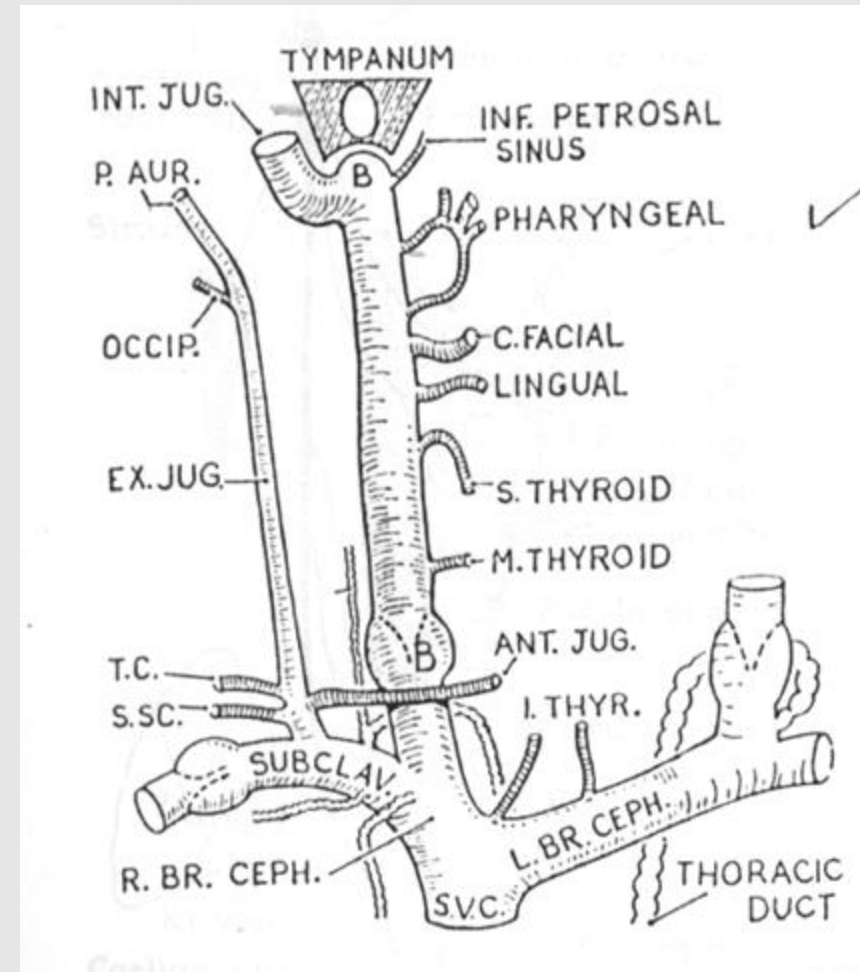
- In the carotid sheath
- Under ant. Border of SCM
- Superior bulb: at the origin
- Inferior bulb: at the termination



INTERNAL JUGULAR VEIN

Tributaries:

1. Inferior petrosal sinus
2. Common facial vein
3. Lingual vein
4. Pharyngeal veins
5. Superior thyroid vein
6. Middle thyroid vein
7. Occipital vein



SUBCLAVIAN VEIN

Beginning:

At the Outer border of 1st rib as the continuation of axillary V

Termination:

Behind the medial end of clavicle by joining the IJV to form the brachiocephalic V

Tributaries

- External jugular V
- Dorsal scapular V

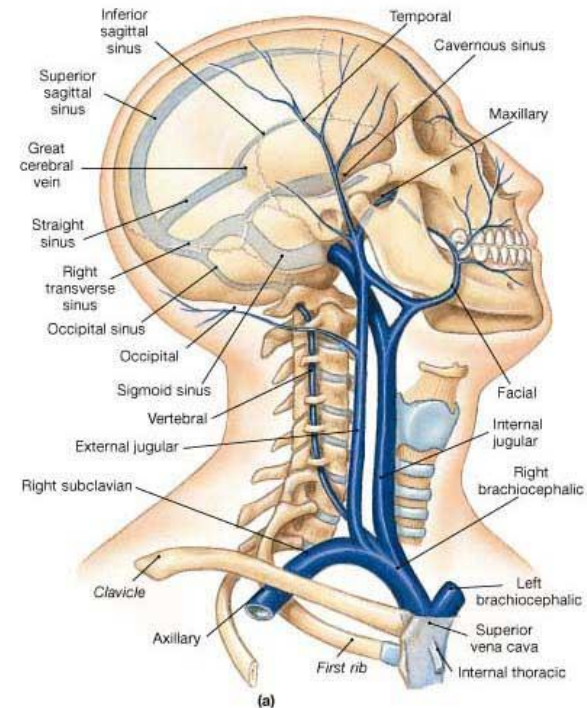
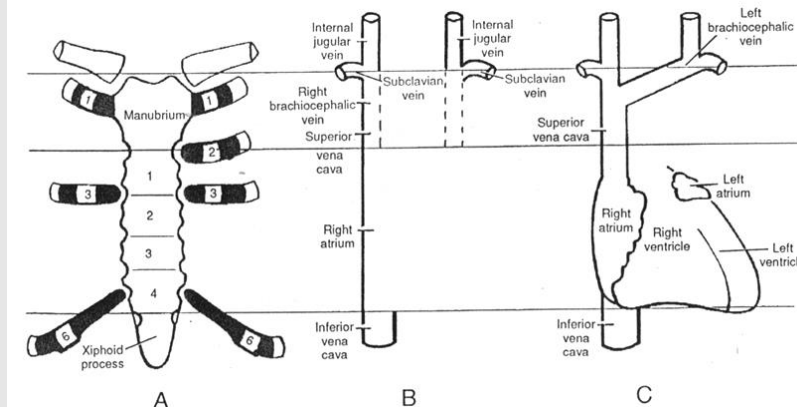


FIG 21-31 Major Veins of the Head, Neck, and Brain. (a) Veins superficial and deep portions of the head and neck.

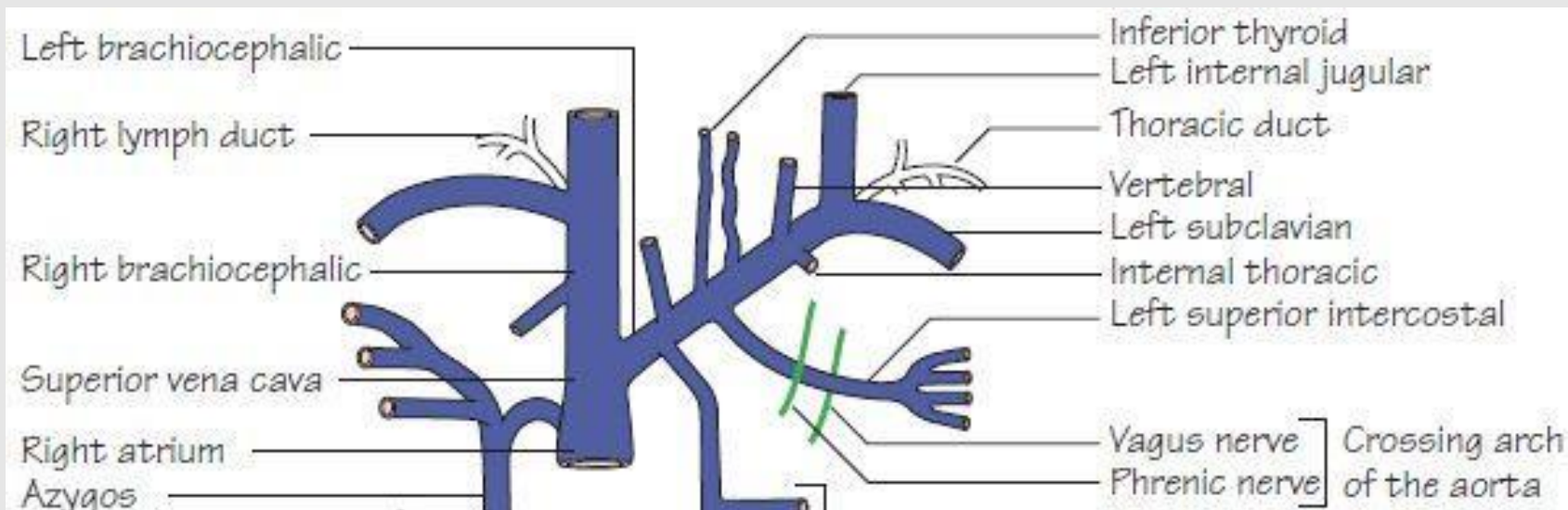


Brachiocephalic Veins

Begening:

Sternoclavicular joint

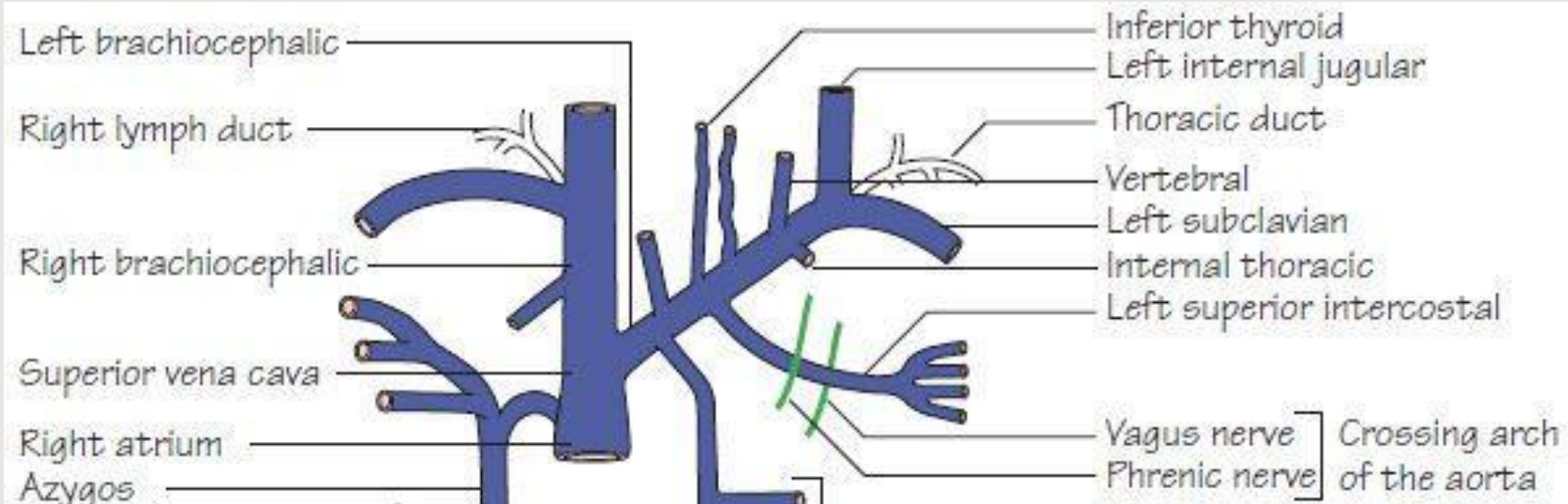
Termination: Behind the lower border of right 1st costal cartilage ---
--- SVC



Brachiocephalic Veins (Tributaries)

The Right Brachiocephalic Vein:

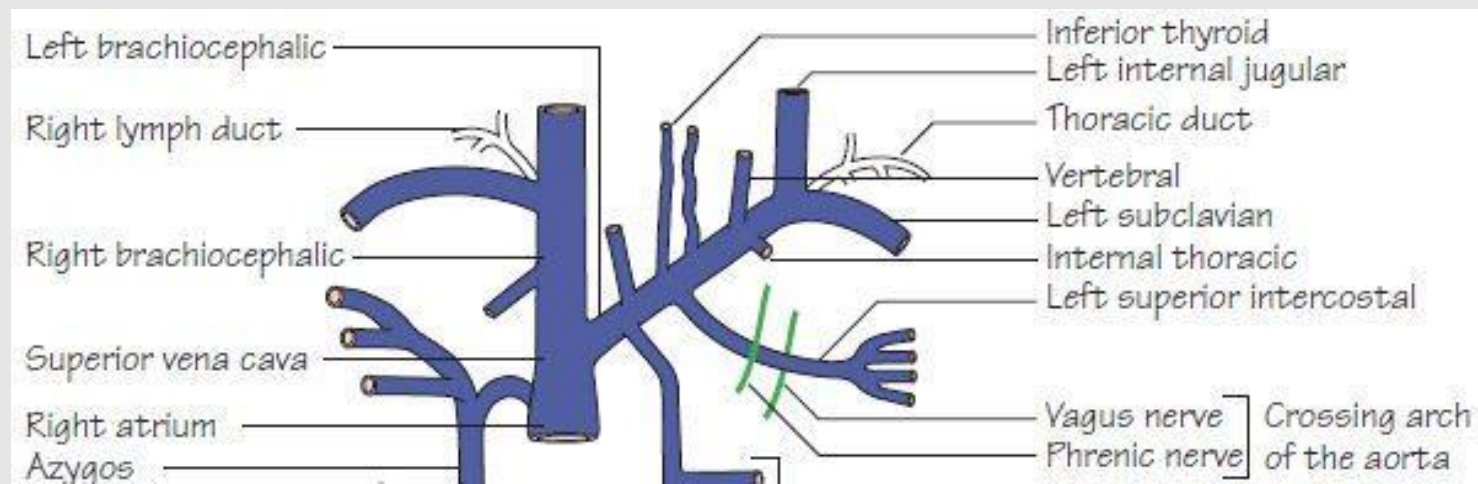
- Right Internal jugular V
- Right Subclavian V
- Right Vertebral v
- Right Internal thoracic v
- Right Supreme intercostals v
- Right Lymphatic duct



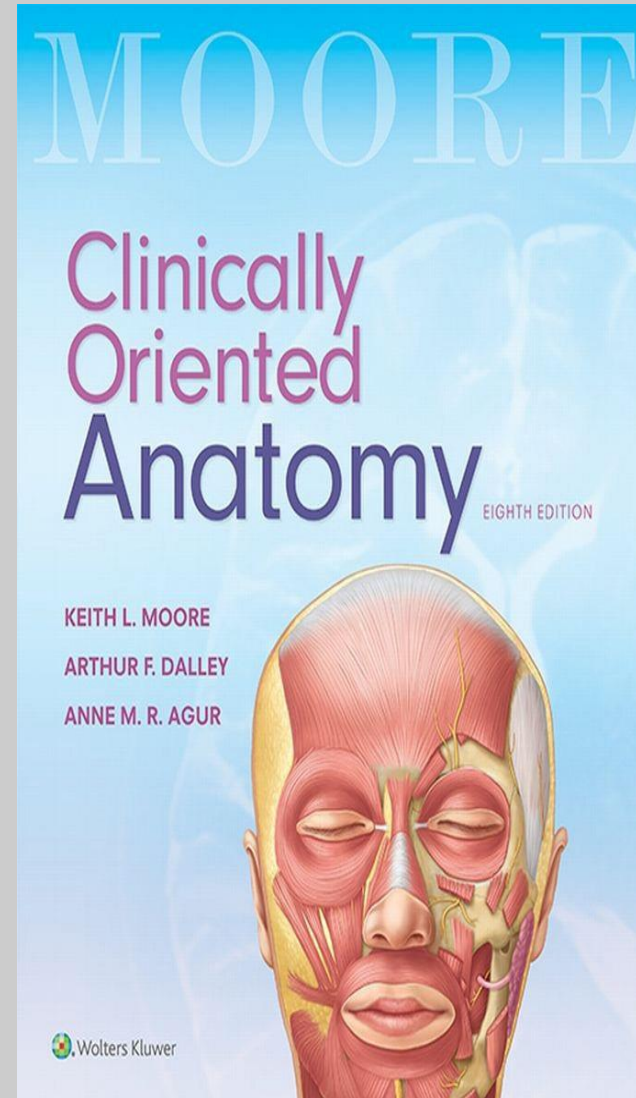
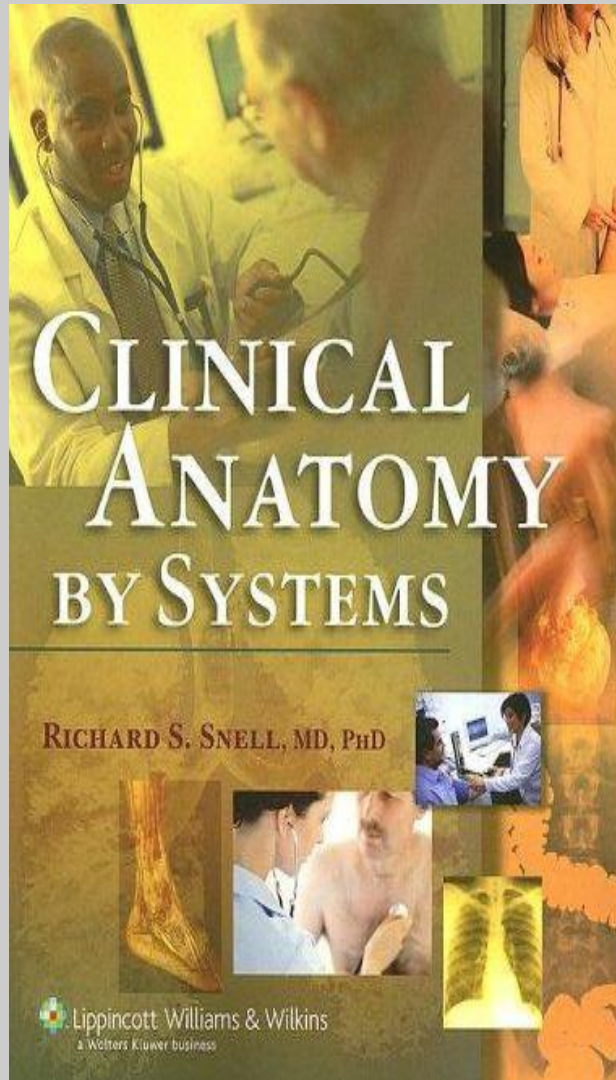
Brachiocephalic Veins (Tributaries)

The Left Brachiocephalic Vein:

- Left Internal jugular V
- Left Subclavian V
- Left Vertebral v
- Left Internal thoracic v
- Left Supreme intercostals v
- Left Superior intercostals v
- Inferior Thyroid vein
- Thymic v
- Pericardial vein
- Thoracic duct



References





THANK YOU
