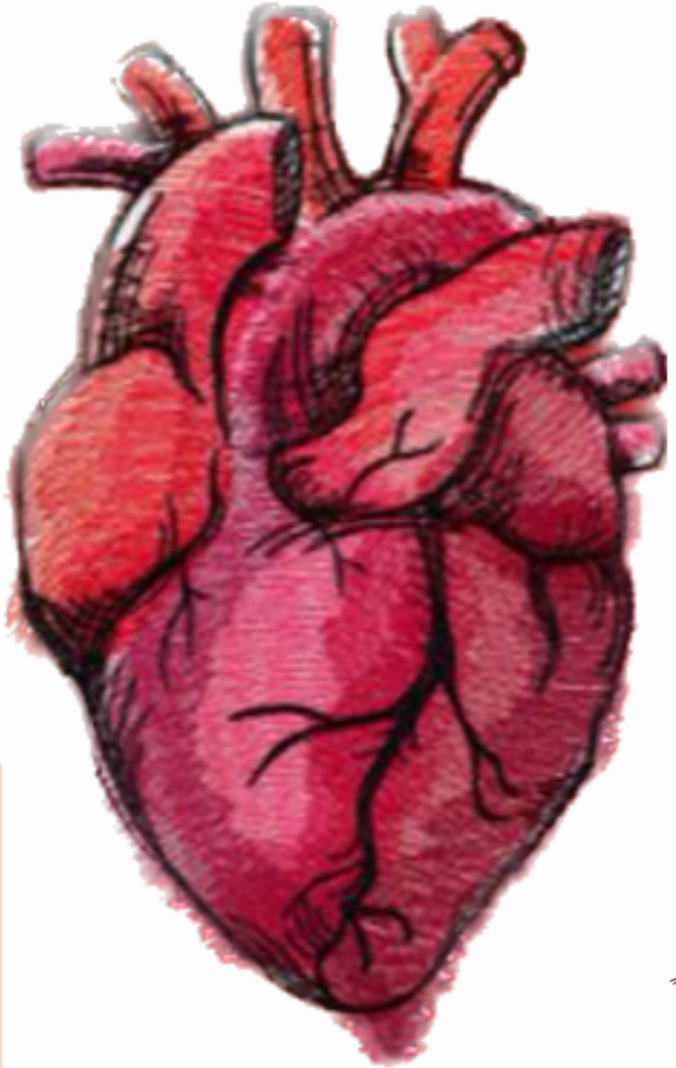


النادي الطبي

CARDIOVASCULAR SYSTEM

SUBJECT : Anatomy

LEC NO. : Lecture 7

DONE BY : Gaith & ahmad

وقل رب زدني علماً

SCAN ME!

CVS….

Lecture (7)

Blood vessels I – Arterial system

Anatomy of the Arteries in the Head &Neck regions.

Dr. Amany Allam

Assistant professor of Anatomy & embryology

ILOs

1. To describe the course, relations and branches of arch of aorta.
2. To describe the common, external and internal carotid arteries concerning with their course, relations and branches.
3. To describe branches of the subclavian artery in the head and neck regions.

Arch of aorta

نتذكر انه ال mediastinum بتقسم إلى جزء علوي وجزء سفلي الفاصل بينهم ال sternum angle بما انه ال superior mediastinum يعني انه arch of the aorta upward

Beginning:

- Begins at sternal end of **right 2nd costal cartilage as a continuation of the** ascending aorta وبنتهي ascending aorta ال بيلش بالتواصل مع arch of aorta ال

بالتواصل مع ال descending aorta ، وال arch of aorta بكون

موجود في ال superior mediastinum خلف ال manubrium

sterni

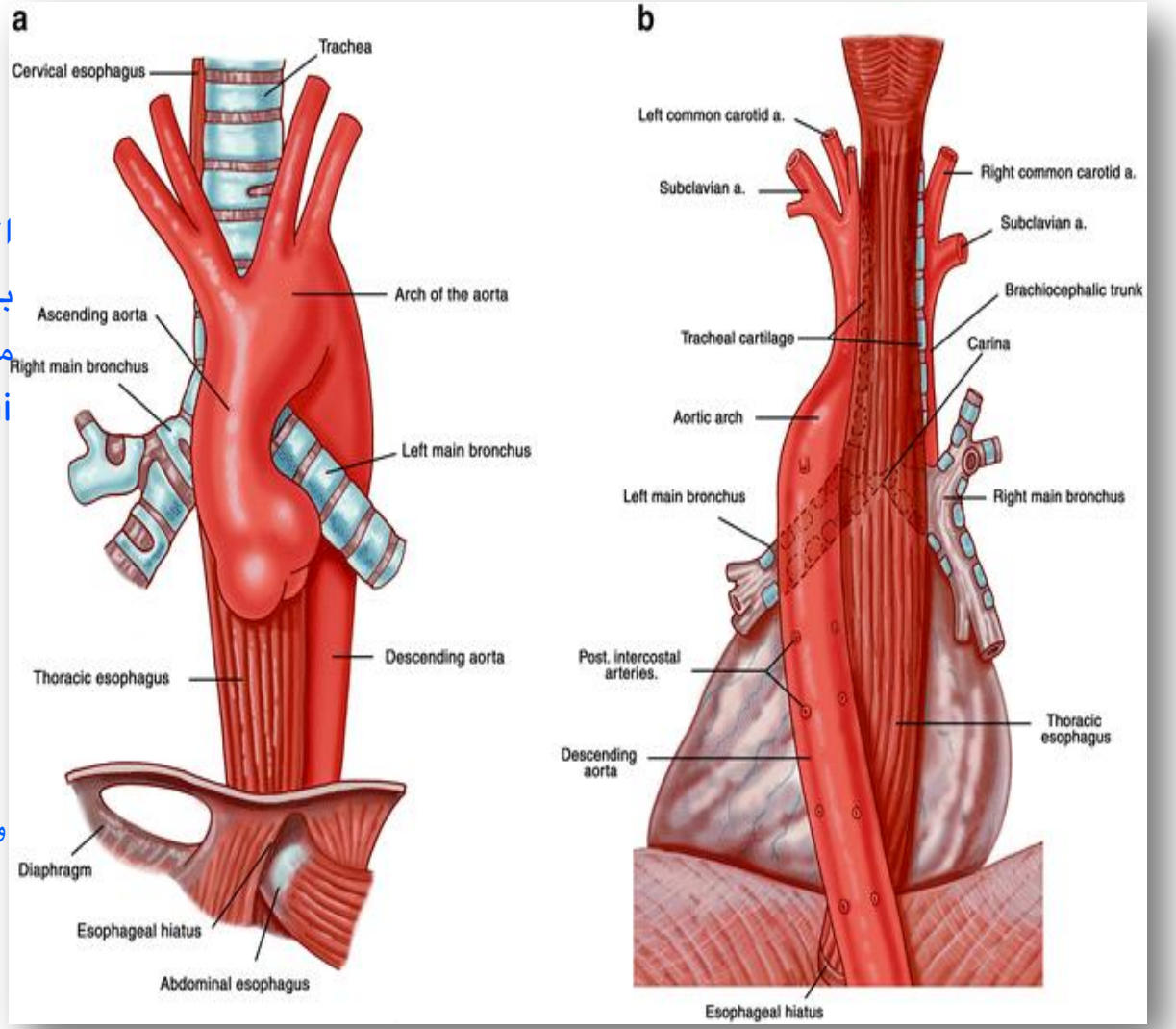
Course:

- It **arches upward, backward and to the left** in front of the trachea.
- Then **arches backward &downward** across left side of the trachea.

End:

وانت عارف انه superior mediastinum تنتهي في ال junction between T4 and T5

- It ends at the left side of T4 vertebra, to be continuous with the descending thoracic aorta.



Relations of the arch of the aorta:

Above it:

- Its 3 large branches & Left brachiocephalic vein.

3 large branches are : 1) left commen carotid,2) left subclavian artery ,3) brachiocephalic artery ،
+Rt & Lt brachiocephalic veinاال بكونوا SVC

Below it:

- Pulmonary bifurcation.
- Left principal bronchus.

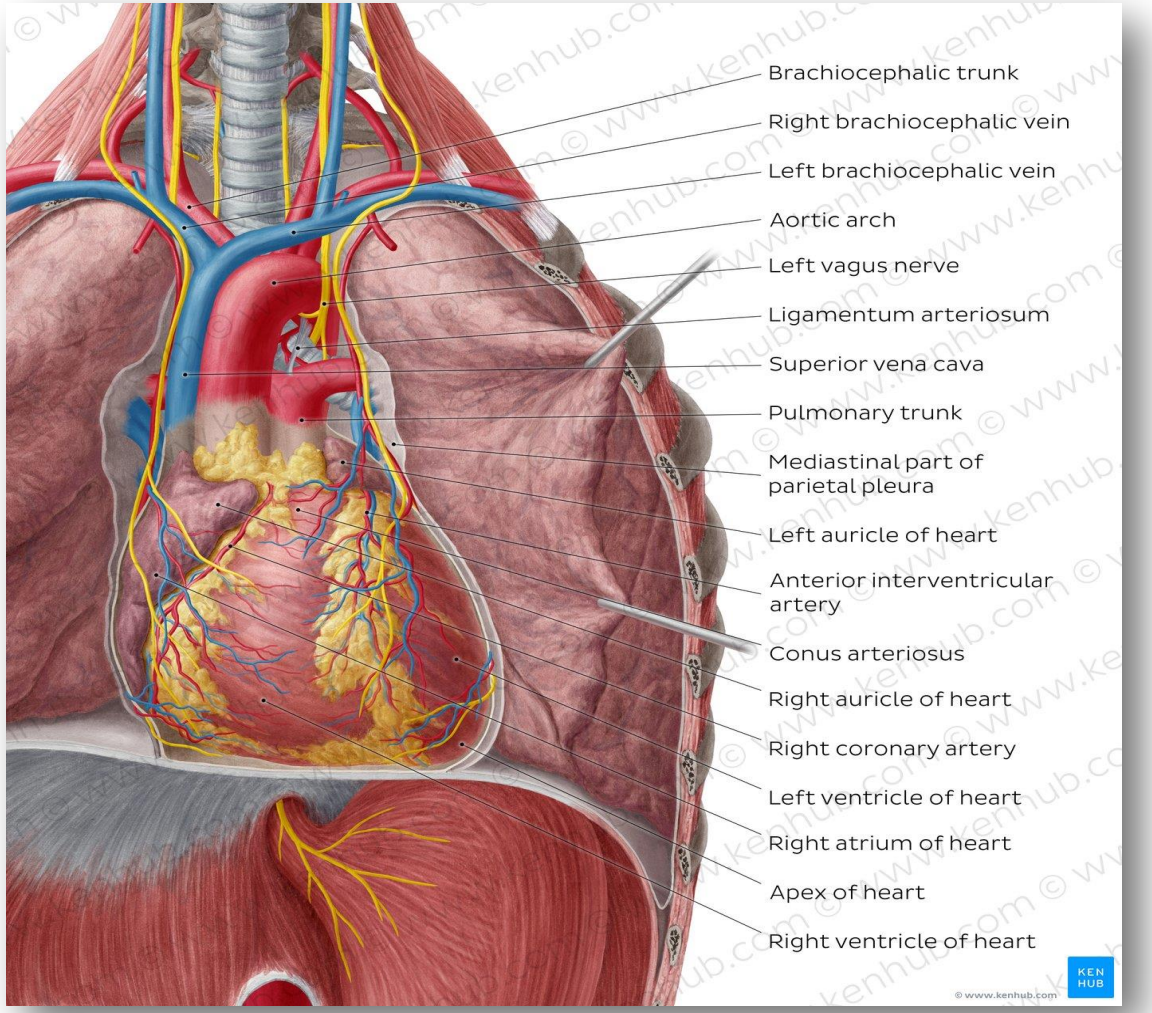
Anterior& to the left:

- Lt vagus.
- Lt lung & pleura.- Manubrium of the sternum.

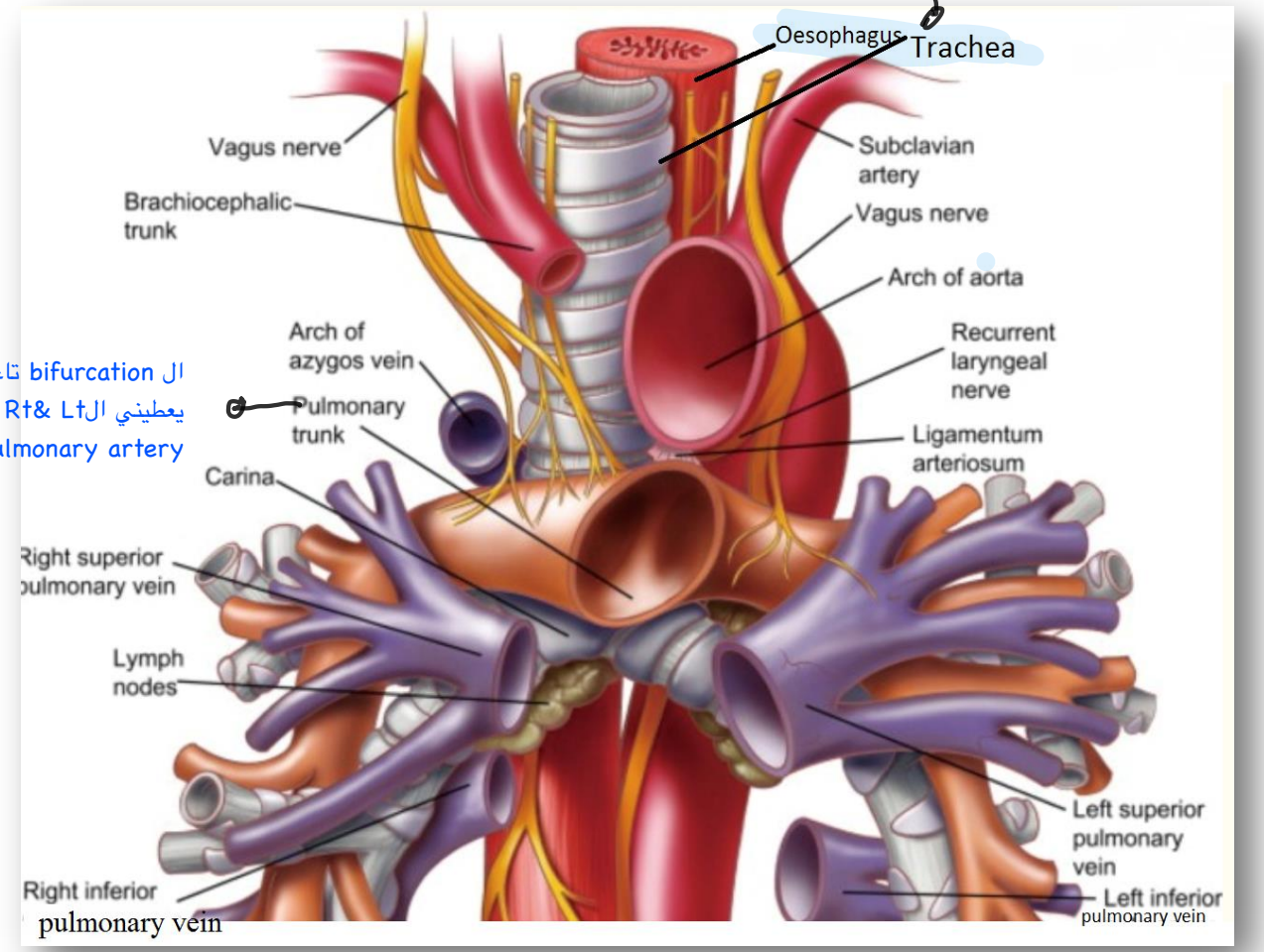
Posterior & to the right:

Structure of the middle line

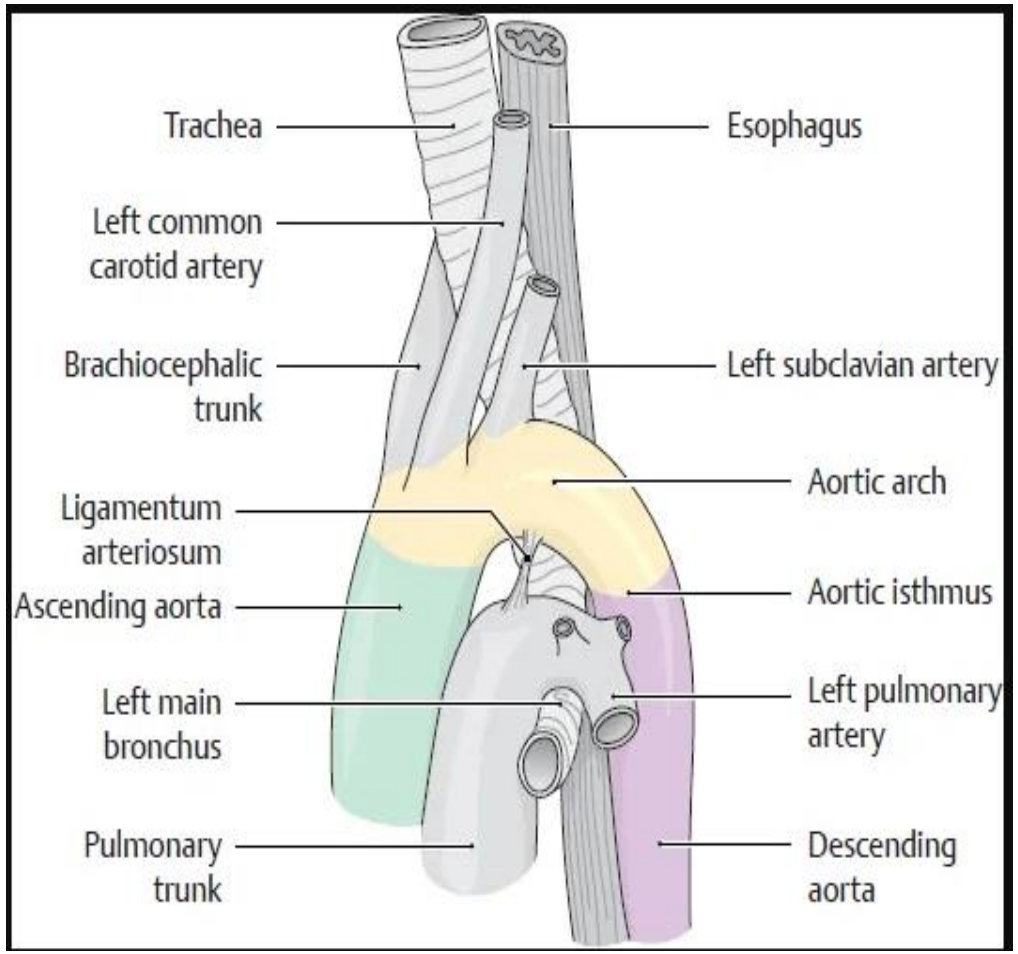
- Trachea- Oesophagus.
- Vertebral column.



Posteriorand to right



ال bifurcation تاعه راح يعطيني الRt& Lt pulmonary artery



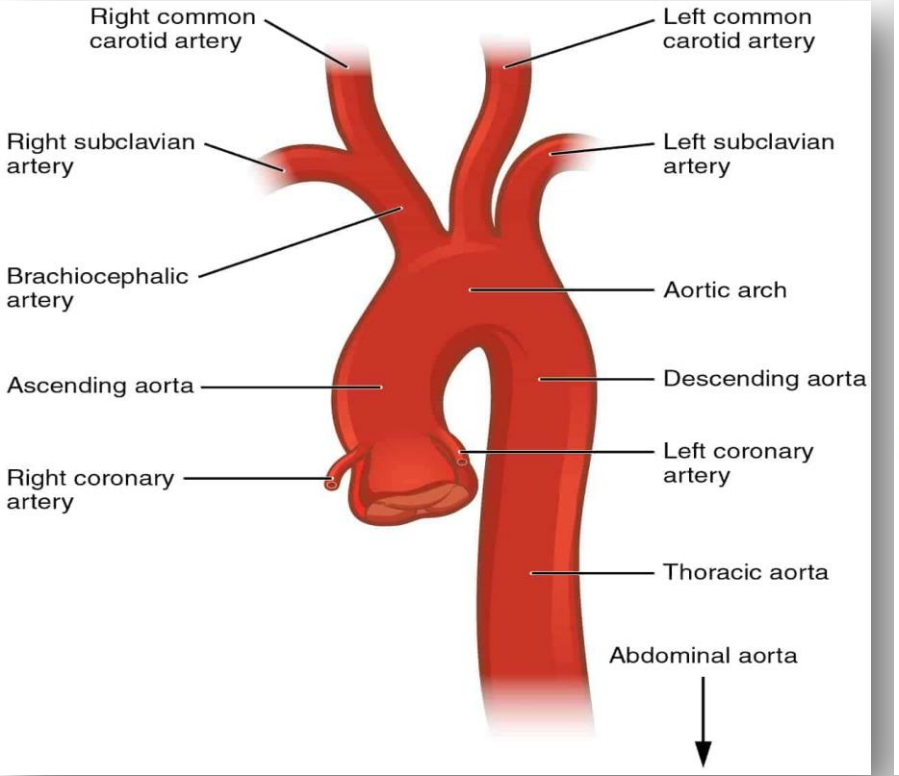
brachiocephalic وال ، left upper limbsبغذي ال left subclavian artery وال / , left side of nick , headبغذي ال left commen carotid artery ال
(right upper limbs بغذي اليي) right subclavian الى بنقسم و /(right side of nick , head) اليي بغذي Right commen carotidال الى ينقسم artery

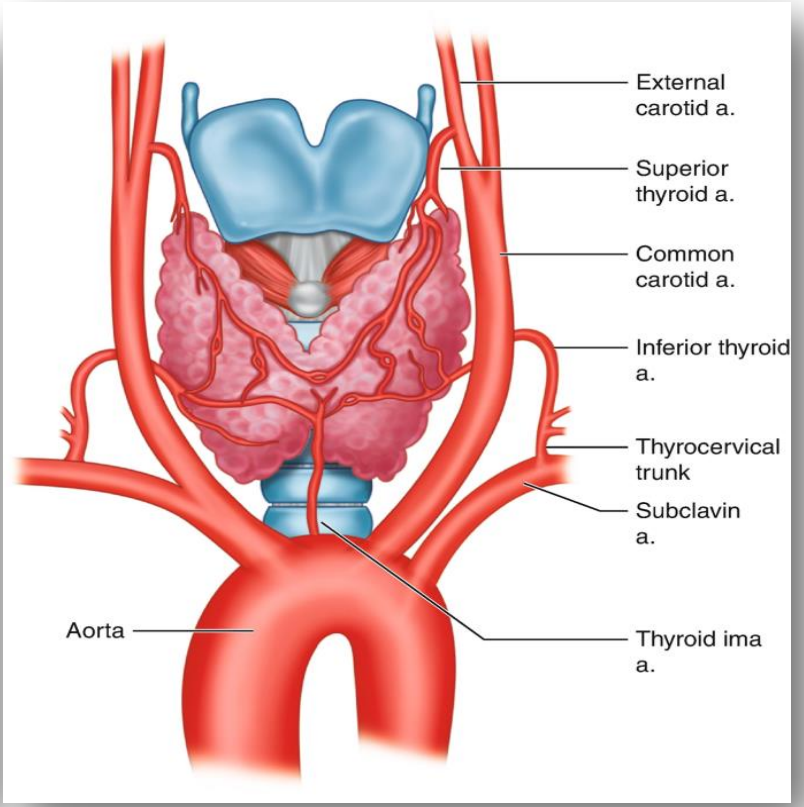
Right commen وال arch of the aorta من ال مباشرة بطلعوا left commen carotid arteries and subclavian arteries ال وين من بطلع واحد كل ركزوا
brachiocephalic من بطلعوا carotid and right subclavian artery

Branches of the arch of the aorta:

1) **Brachiocephalic artery.**
2) **Left common carotid artery.**
3) **Left subclavian artery.**
4) Thyroida ima artery.

الأخير هو ال thyroid ima artery هو بشارك
thyroid glandال تغذية في





Brachiocephalic (innominate) artery:

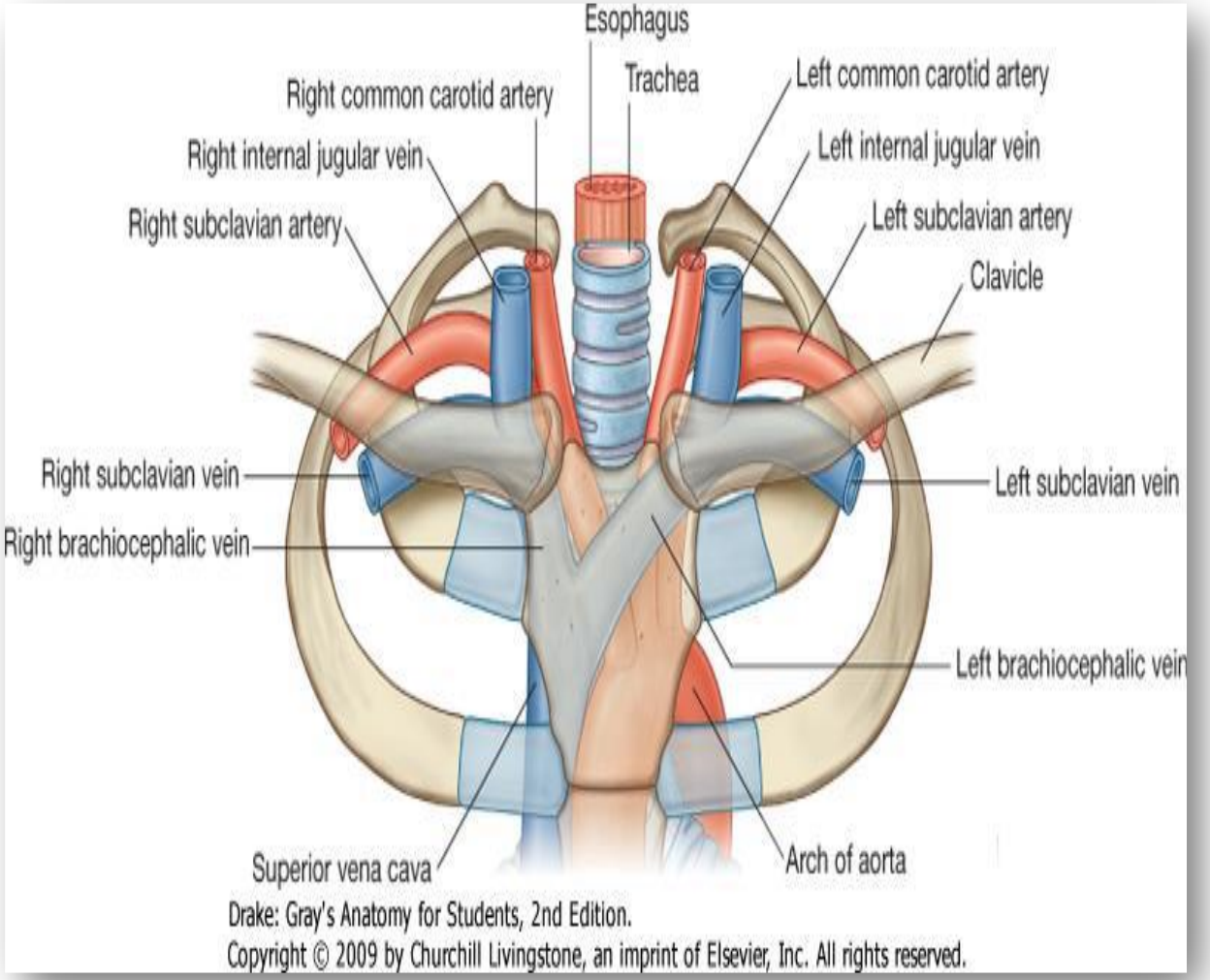
- Largest branch of the aortic arch.

Course:

- It ascends upward & to the right.

End:

- It **ends behind** the right sternoclavicular joint **as it divides** into the right common carotid and right subclavian arteries.



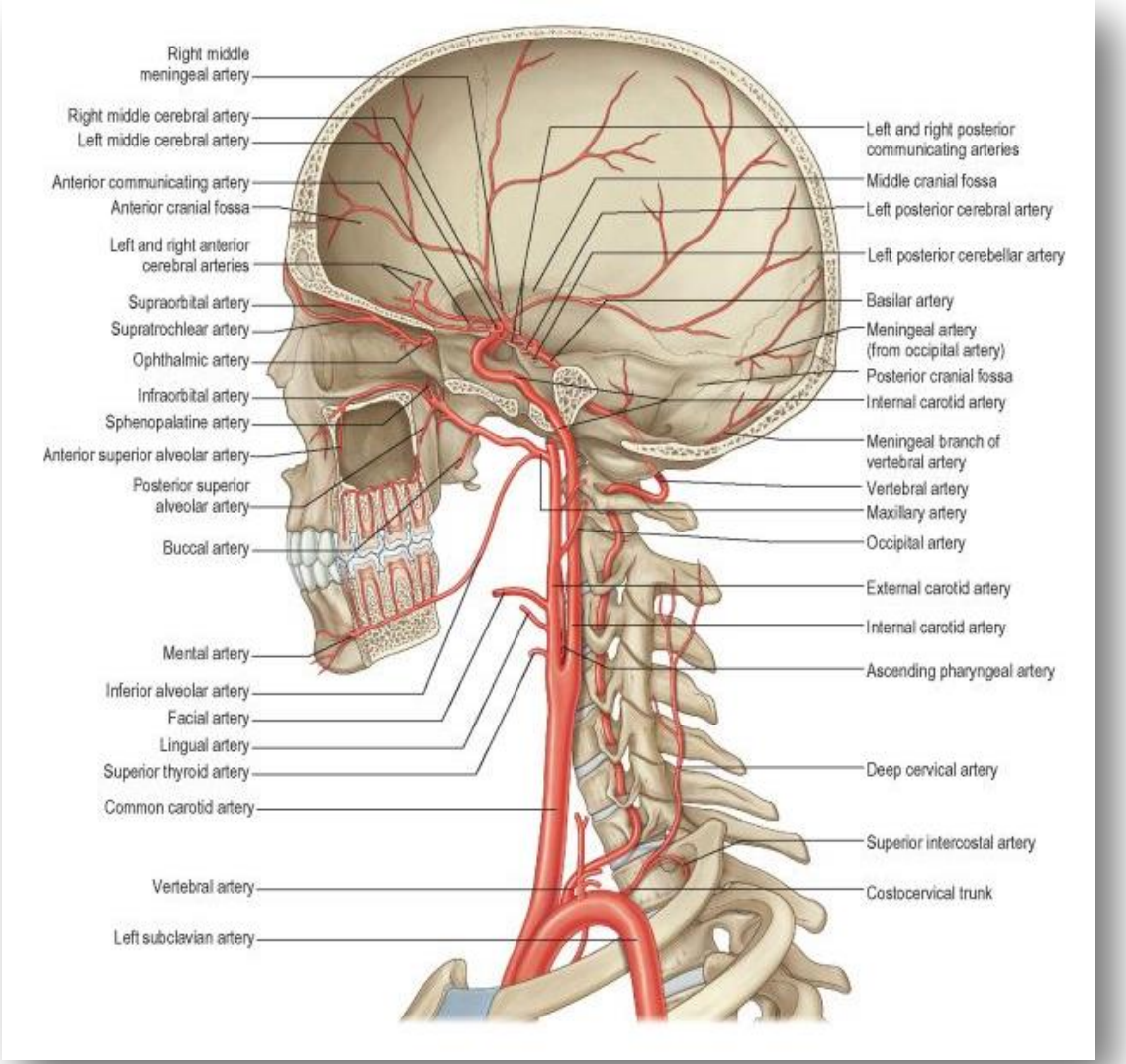
Arterial supply of head &neck

Major source of blood to the head &neck:

Carotid arteries.

Additional arteries:

From branches of the subclavian artery.



Common Carotid Artery (CCA)

Origin:

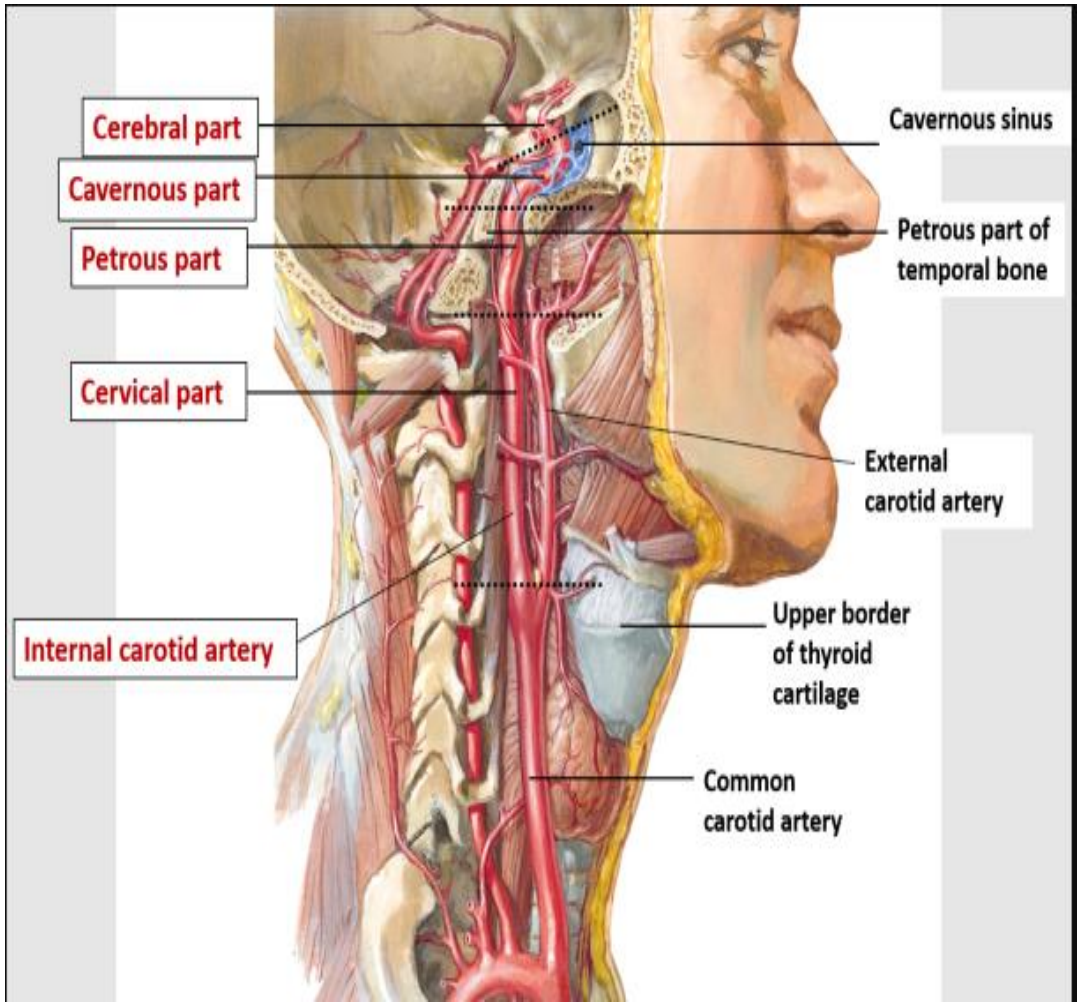
- On the right side; Brachiocephalic artery.
- On the left side; Arch of the aorta.

Course:

- They ascend upward through the neck (at corresponding side).
- Left common carotid artery has also thoracic part.

End:

- It ends **at the level of** the upper border of the thyroid cartilage of the larynx, **where it divides into** external and internal carotid arteries.



ال carotid sheath هي جزء من ال deep cervical fascia ، و ال deep cervical fascia بتغطي شغلتين
١) great vessels of nick الي بغطيها carotid sheath ٢) بتغطي muscles

Relations of CCA:

- Each artery lies within the carotid sheath with the internal jugular vein and the vagus nerve.

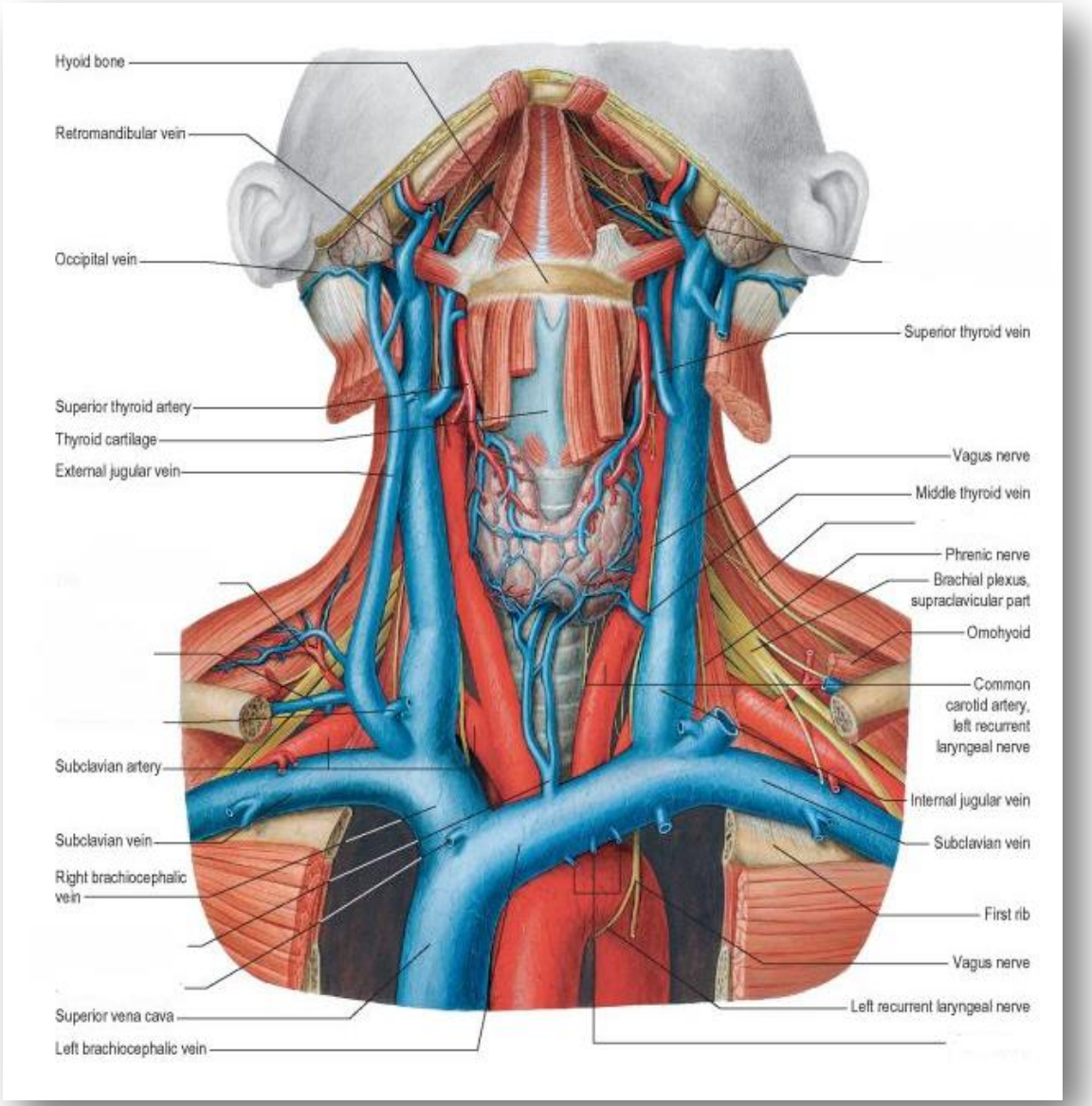
Anterolaterally:

- **Its lower part,** is sited **deeply** covered by sternocleidomastoid& infrahyoid muscles.
- **Its upper part,** it is more **superficial** (covered only by skin and fascia).

Posteriorly:

- Transverse processes of the fourth to sixth cervical vertebrae and the related muscles.

The carotid sheath is an important landmark in head and neck anatomy and contains several vital neurovascular structures, including the carotid artery, jugular vein, vagus nerve, and sympathetic plexus. It extends upwards from the arch of the aorta and terminates at the skull base



anterior view but we cut the sternocleidomastoid and هاي الصوره infrahyoid muscles

Medially:

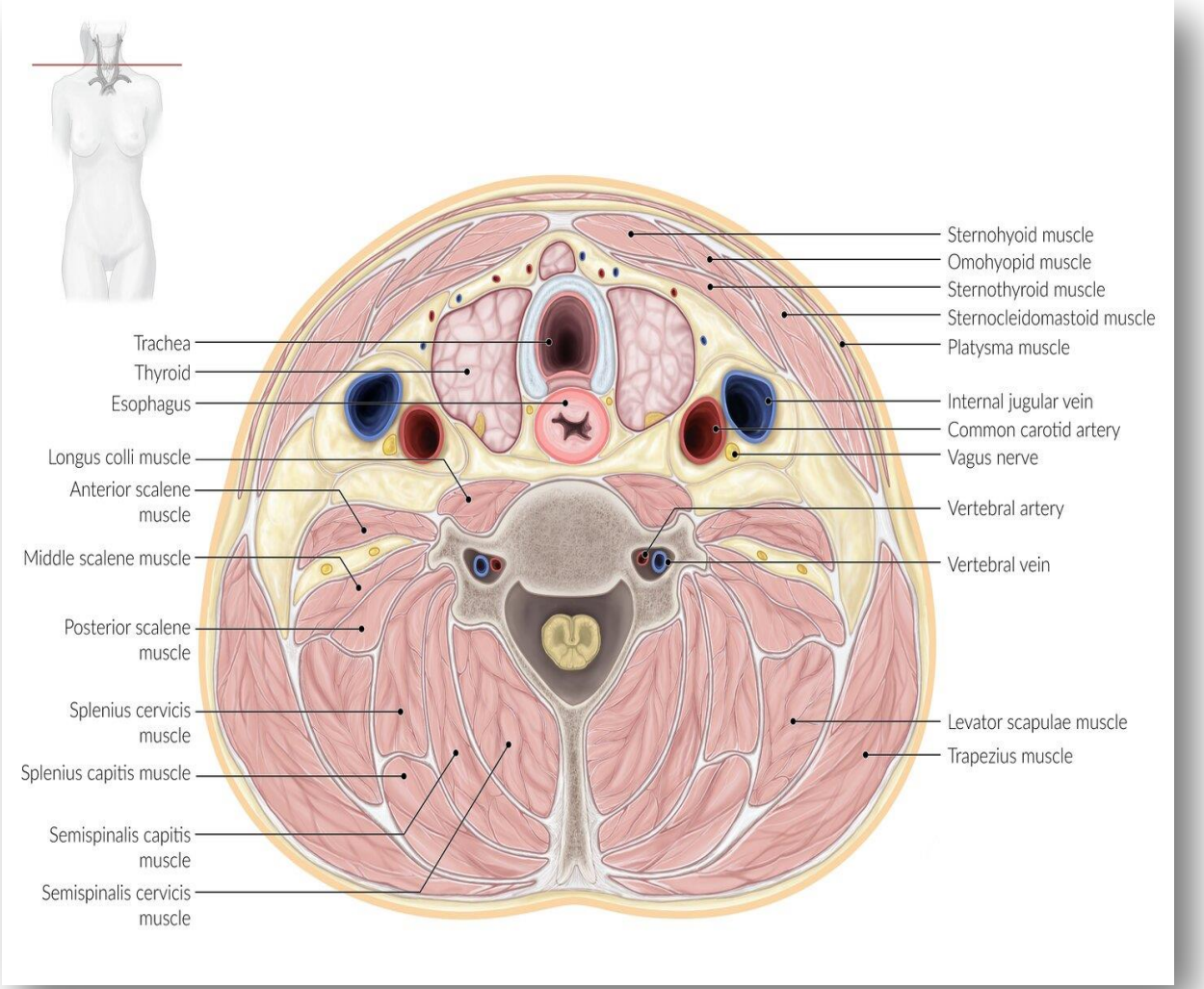
- Larynx & pharynx above.
- Trachea & esophagus below.
- Lobe of the thyroid gland.

Laterally:

- Internal jugular vein.

Posterolaterally:

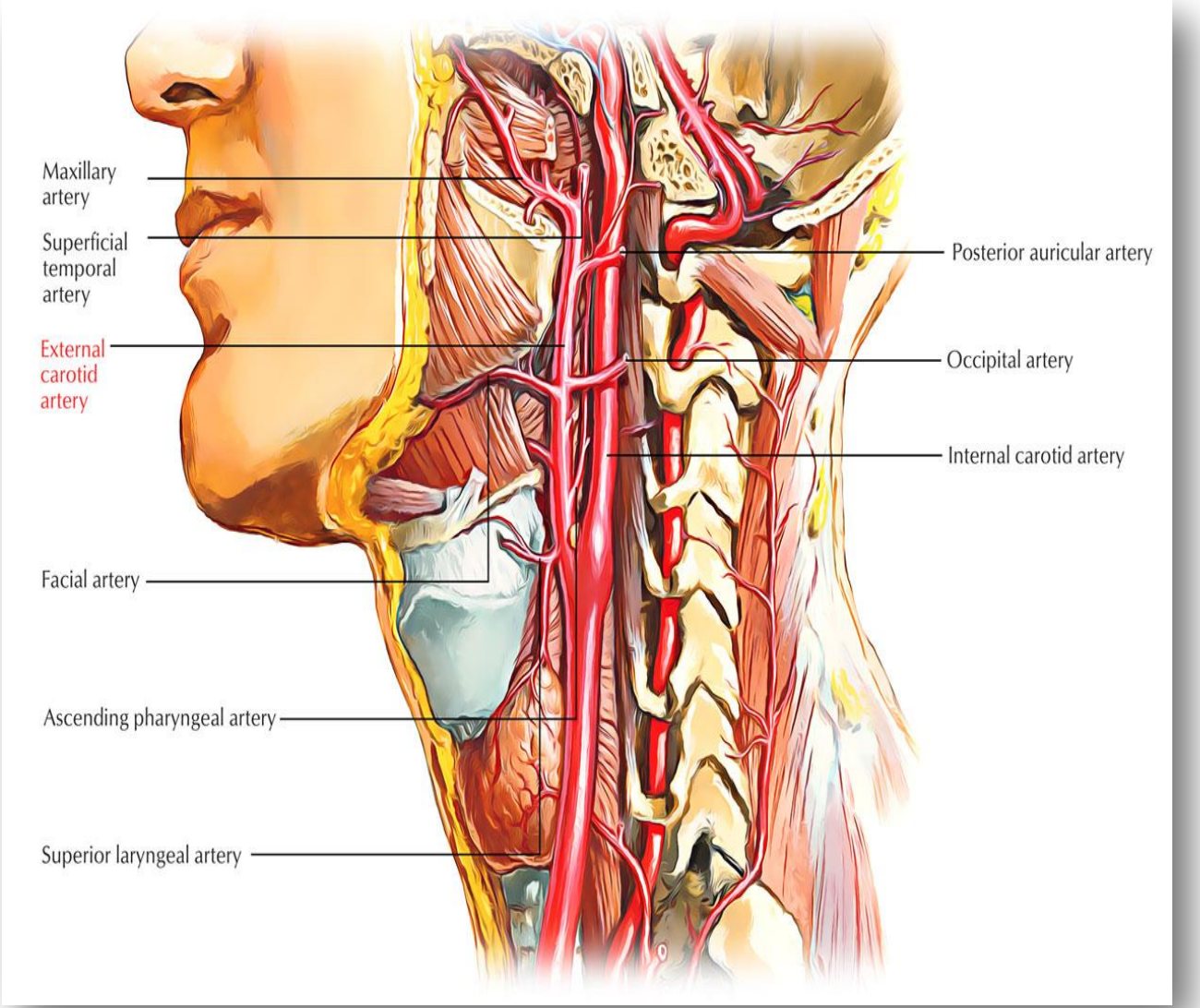
- Vagus nerve.



Branches of CCA:

It gives only its two terminal branches:

- **External carotid artery.**
- **Internal carotid artery.**



External Carotid Artery (ECA)

Begins:

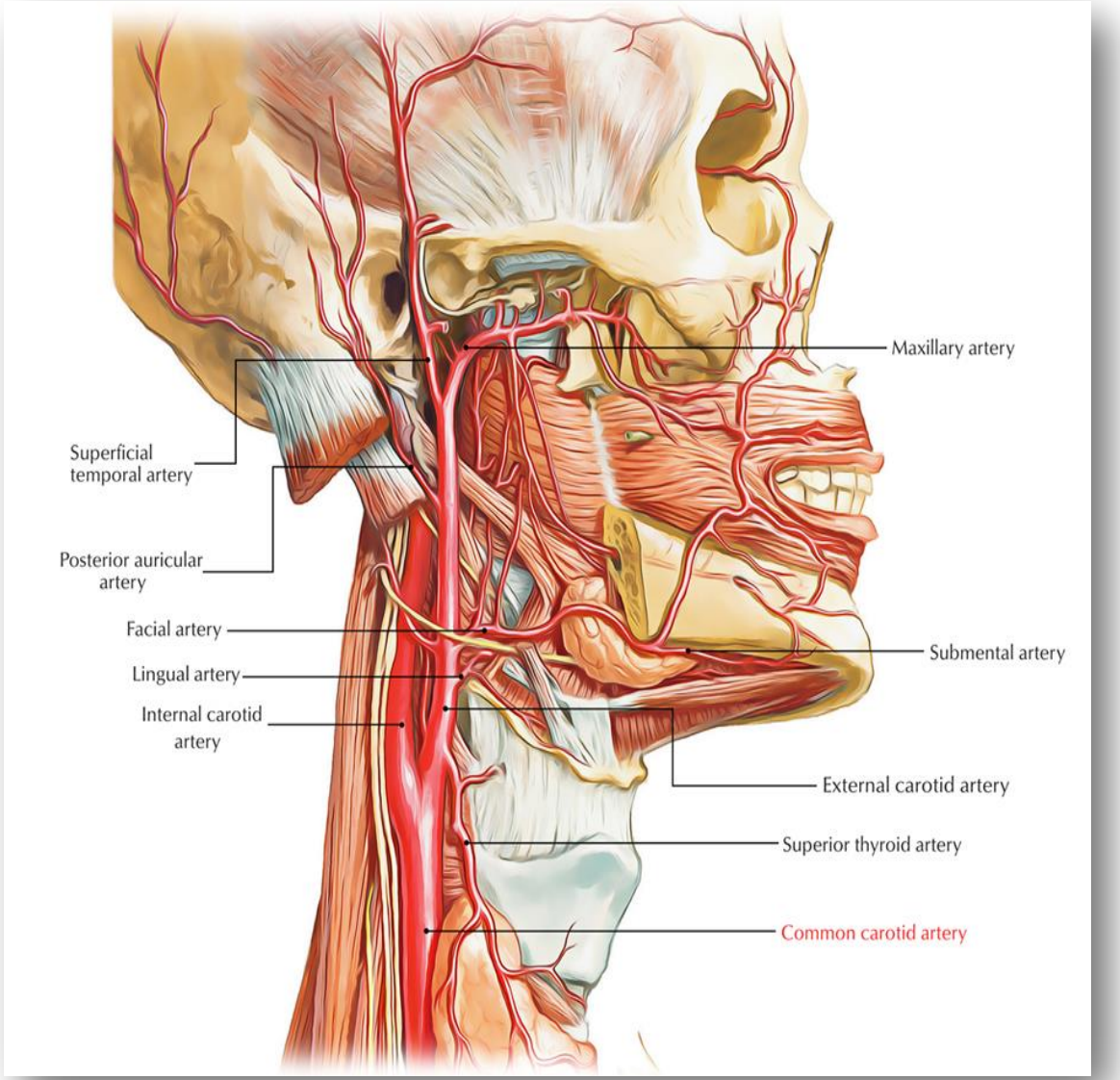
- At the level of the upper border of the thyroid cartilage from CCA.

Course:

- It **ascends upward** through the carotid triangle of the neck.
- Then through the parotid gland (between the mastoid process & the ramus of the mandible).

Terminates:

- In the **parotid gland, behind the neck of the mandible** by **dividing into** the terminal branches superficial temporal and maxillary arteries.



جزء من الECA موجود في الcarotid triangle ، ال upper
part of ECA موجود في الparotod gland

Relations of the ECA:

- **Superficial to it while it is in the carotid triangle:**
- Skin and cervical fascia.
- Anterior margin of sternocleidomastoid muscle.

سبب تسمية الcarotid triangle، لانها تحتوي على الICA,
(commen carotid artery جزء من ال+ EXA,

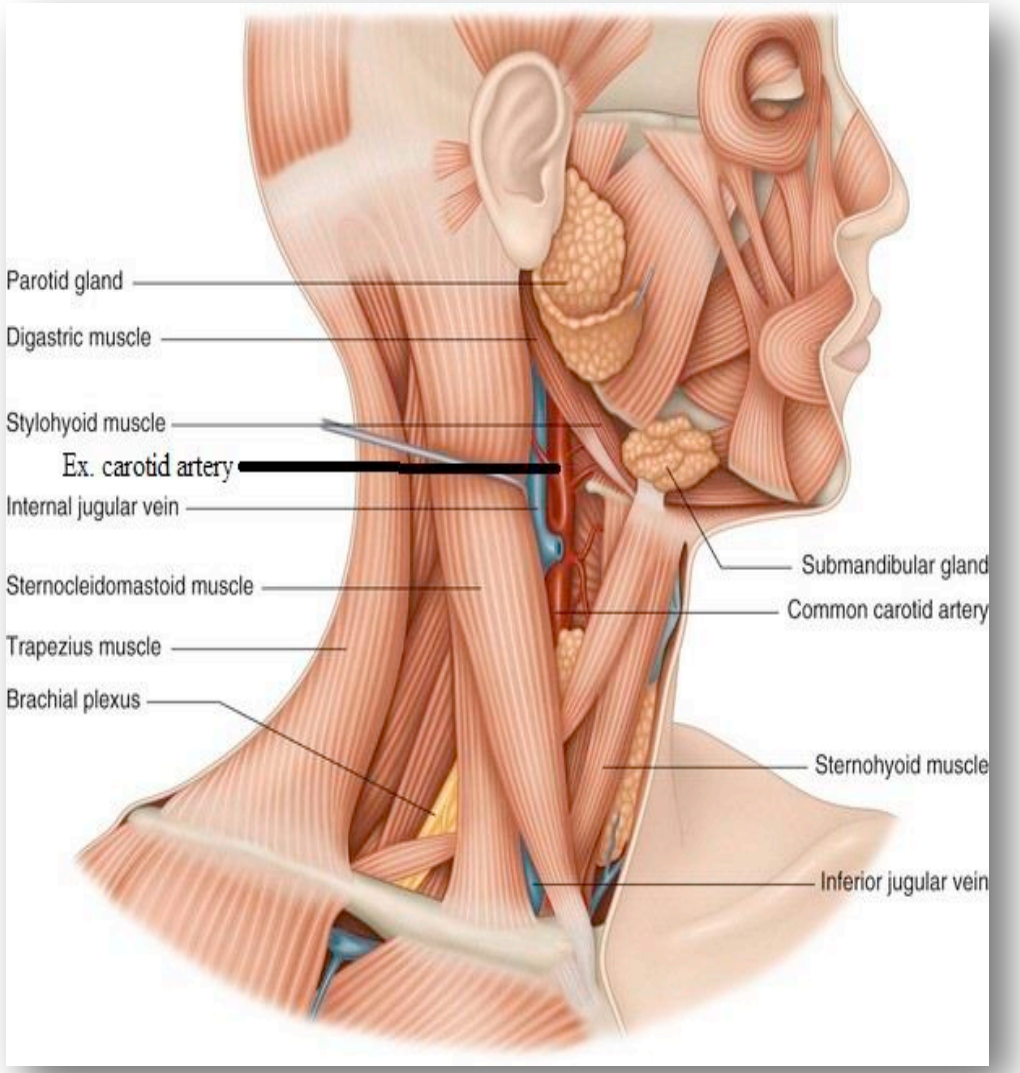
- **Leaving the carotid triangle it is crossed by** the posterior belly of digastric muscle.
- Its upper part lie within the parotid gland.

الي هي واحدة من ال
salivary glands

Medial relations:

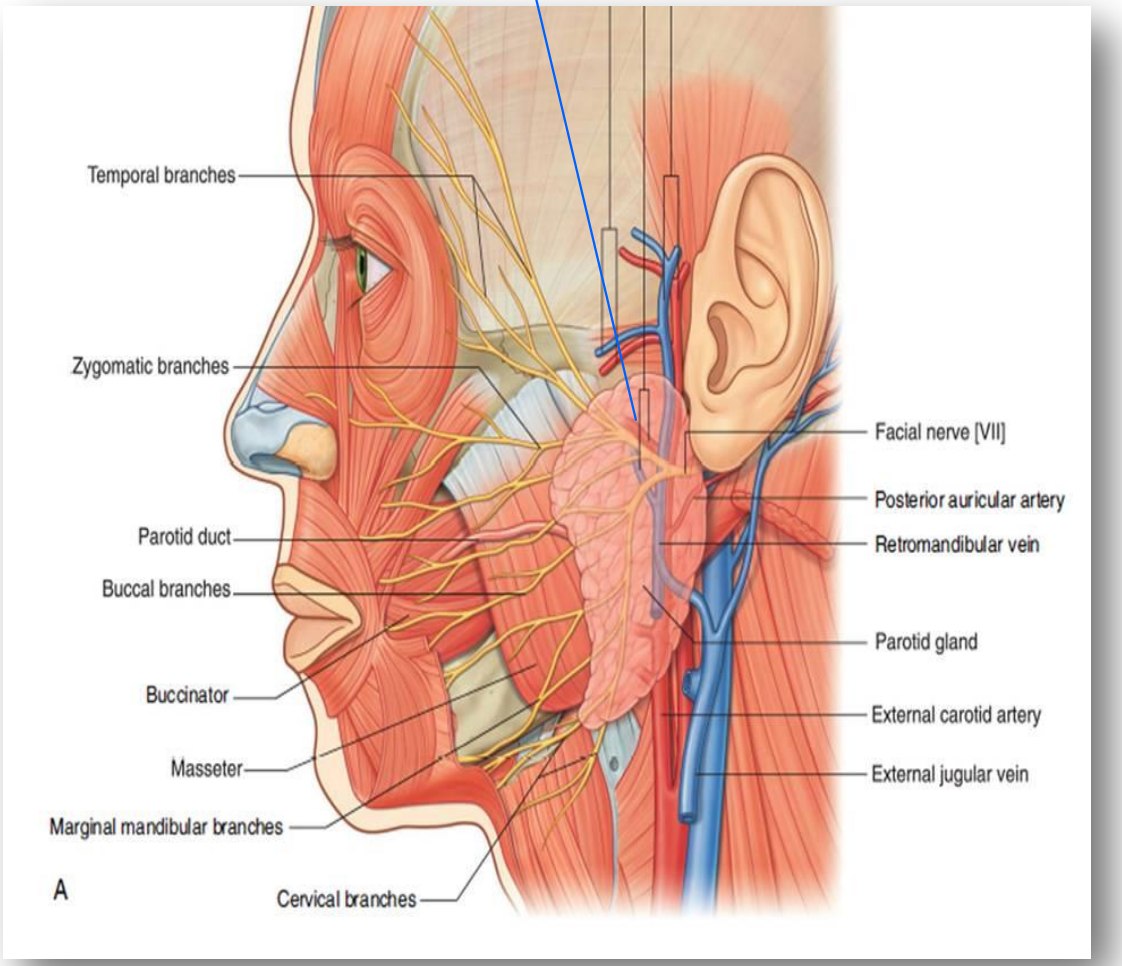
- Pharynx.
- ICA medial to its upper part.
- The styloid process & its attached structures intervene between the ICA is deep to it and the ECA superficial to it.

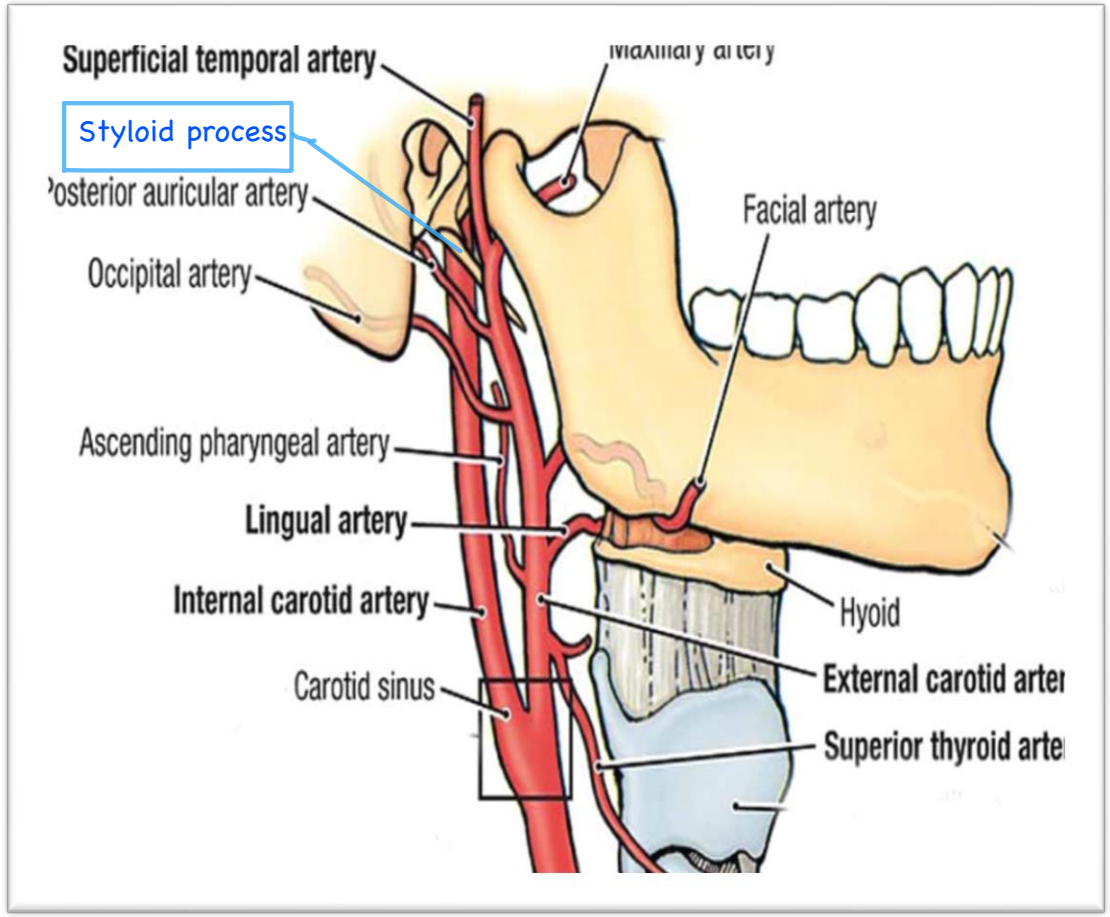
deep = medial /superficial= lateral



The upper part of ECA lie within the parotid gland and Terminates in the parotid glands

الstyloid process موجودة بين الexternal caroti artery &iternal carotid، بحيث يكون اتجاهICA (deep to the styloid process او mediel) ، ويكون اتجاه الECA (lateral to the styloid process او superfacial)





Branches of the external carotid artery:

1-Superior thyroid artery

2-Lingual artery

3-Facial artery

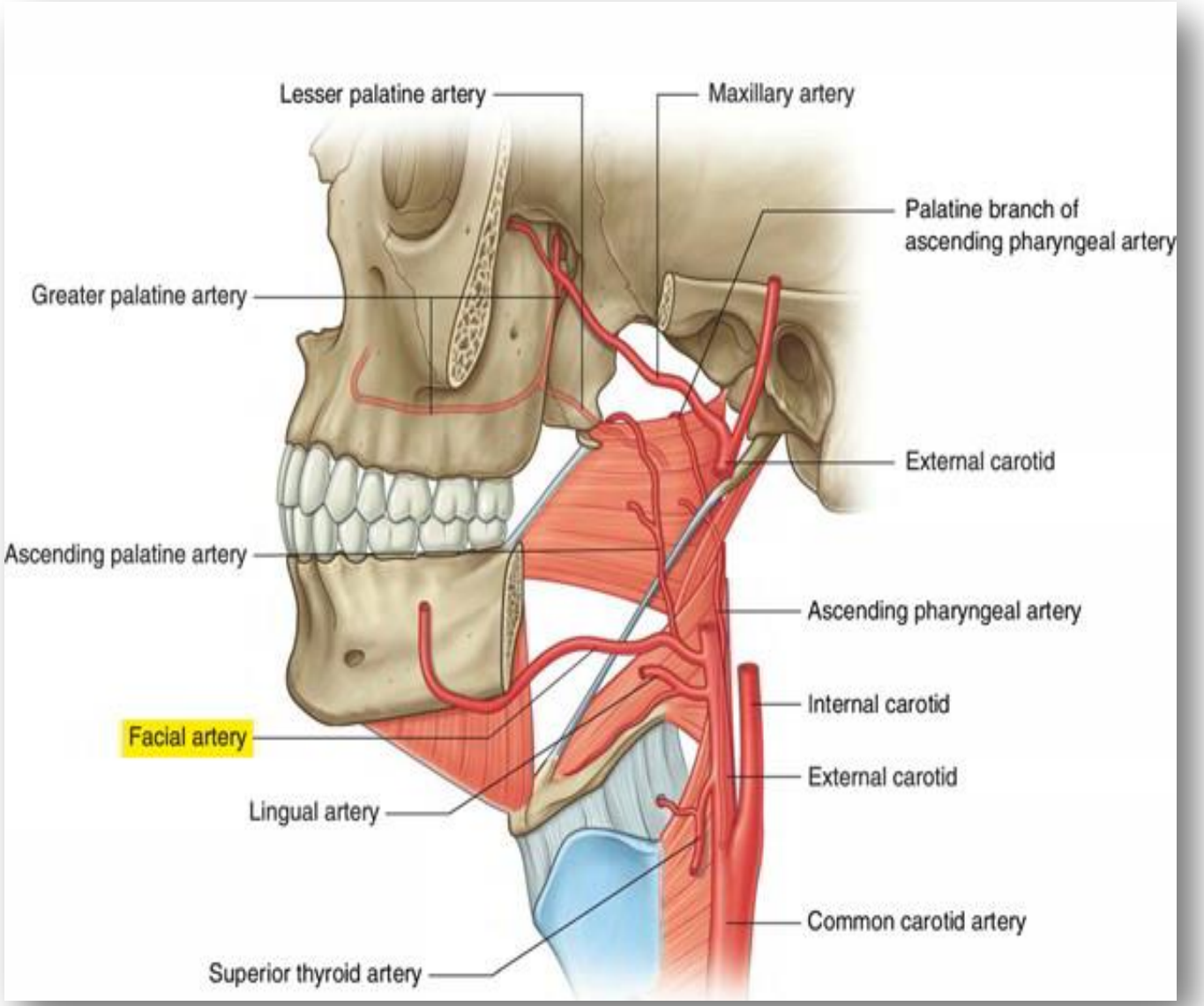
4-Posterior auricular artery

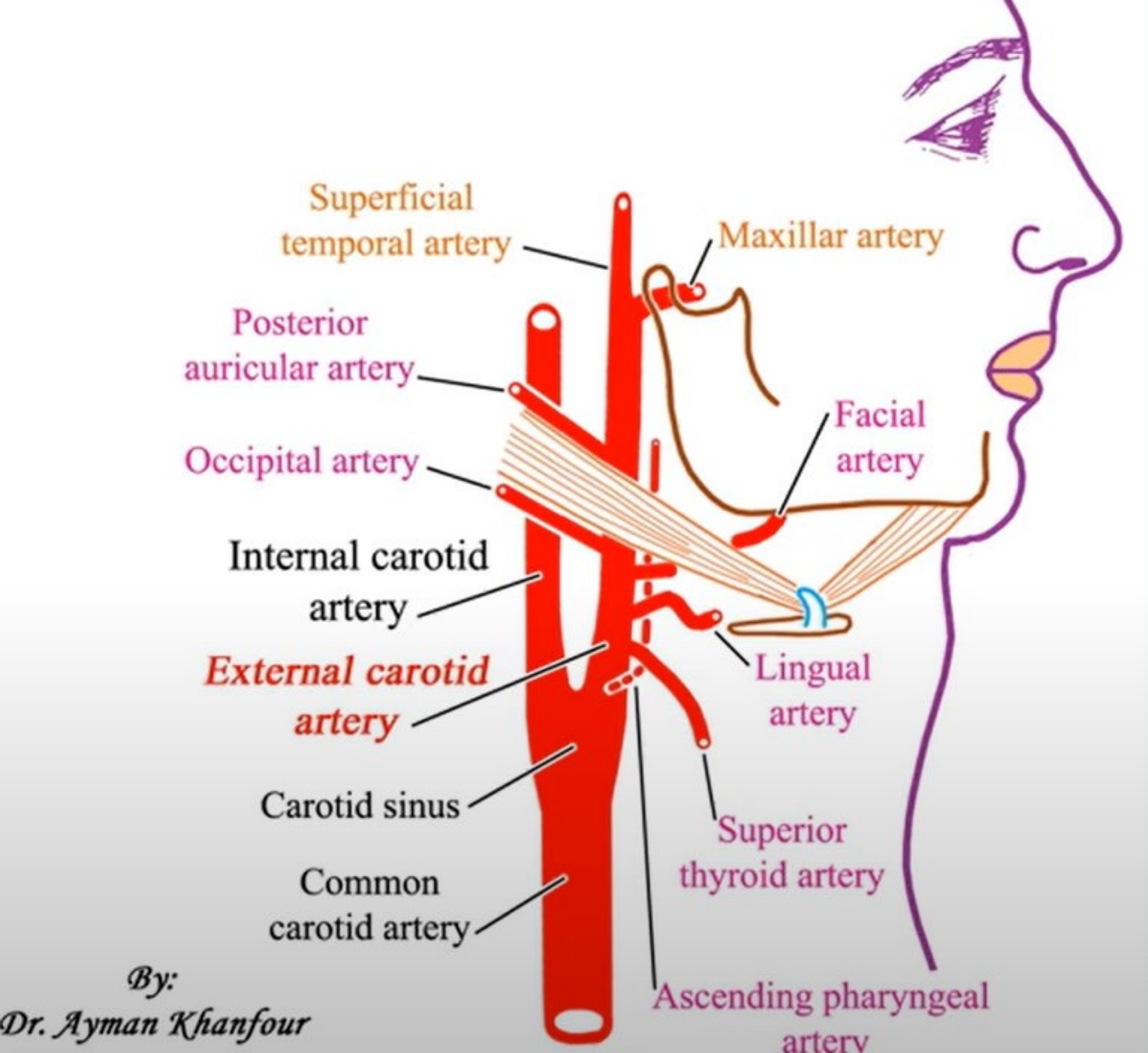
5-Occipital artery

6-Ascending pharyngeal artery

7-Superficial temporal artery

8-Maxillary artery

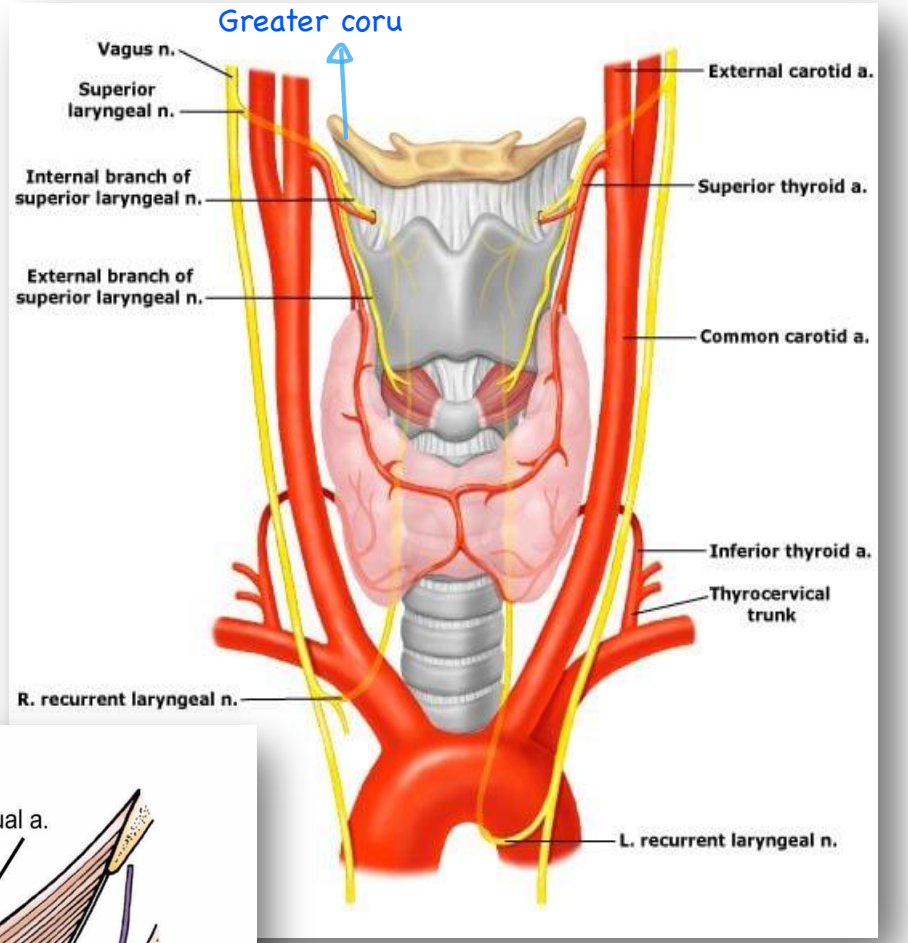



Superficial temporal artery
Maxillar artery
Posterior auricular artery
Facial artery
Occipital artery
Internal carotid artery
External carotid artery
Lingual artery
Carotid sinus
Superior thyroid artery
Common carotid artery
Ascending pharyngeal artery
By:
Dr. Ayman Khanfour

first branch of ECA after originate from commen carotid هي

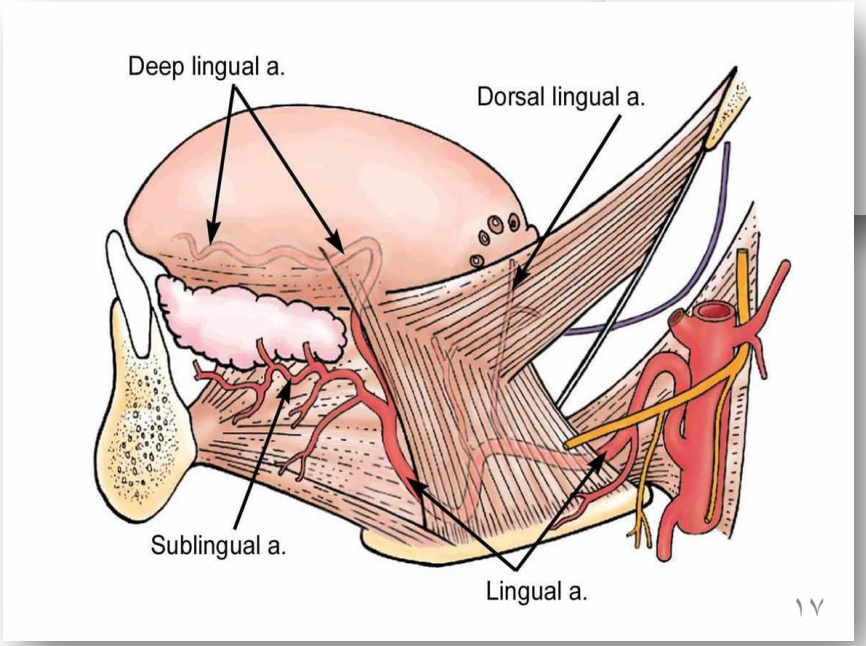
Superior thyroid artery:

- Is the first branch **arises** from the ECA just below the level of the greater cornu of the hyoid bone.
- It **descends** to reach the apex of the lobe of the thyroid gland.



Lingual artery:

- It **arises** opposite the tip of the greater cornu of the hyoid bone.
- **Provides** the chief blood supply to the tongue and the floor of the mouth.



Facial artery:

- It arises at a level immediately above the greater cornu of the hyoid bone.
- It hooks the lower border of the mandible and turns upwards at the antero-inferior angle of the masseter. هو بعمل hook عشان الفك بضل يتحرك فعشان ما ينقطع عمل هيك
- To enter the face.
- It has tortuous course. Because the movement of the muscle of the face during expression

Its branches in the face:

- Inferior labial artery.
- Superior labial artery.
- Aangular artery.

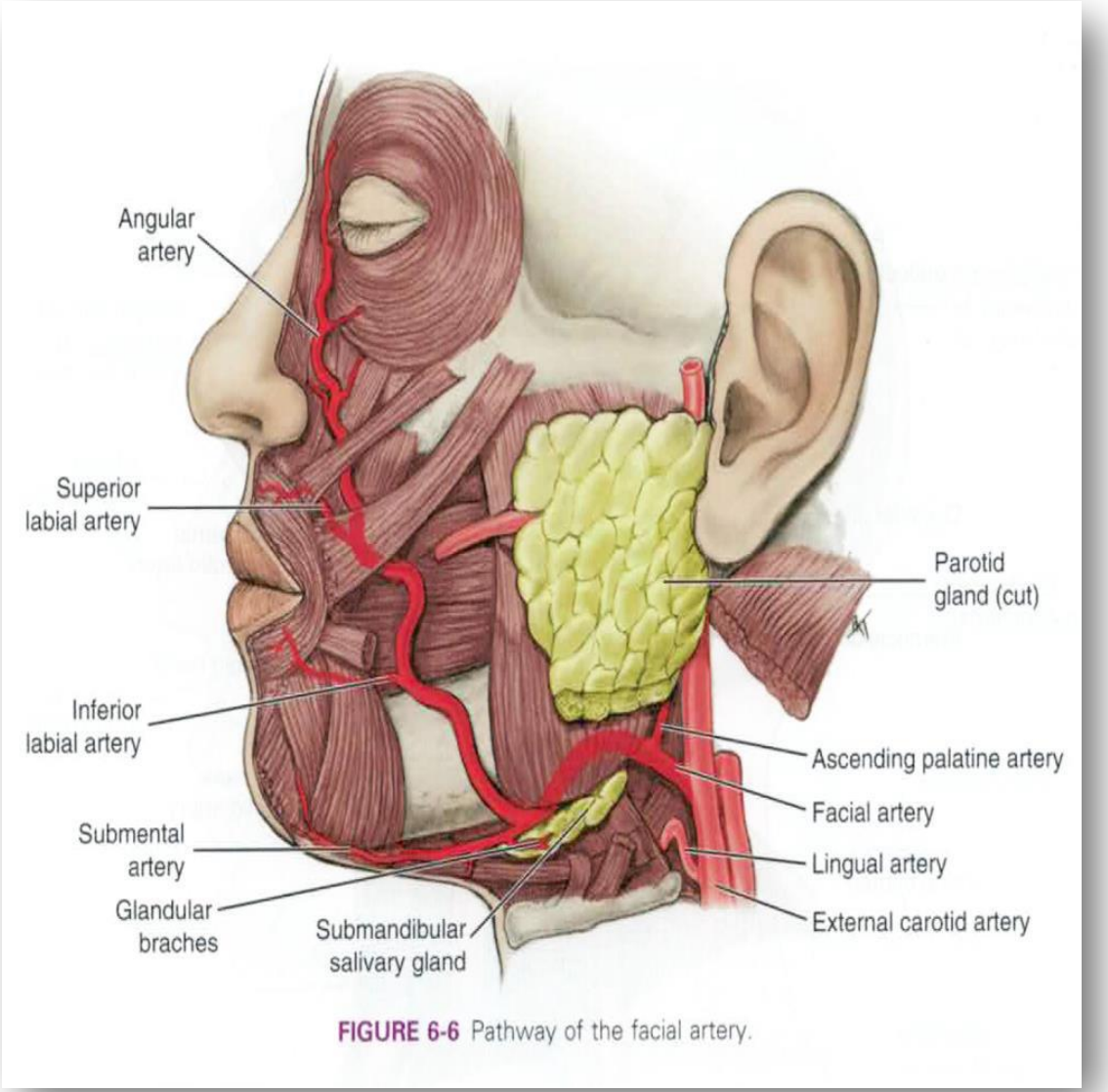


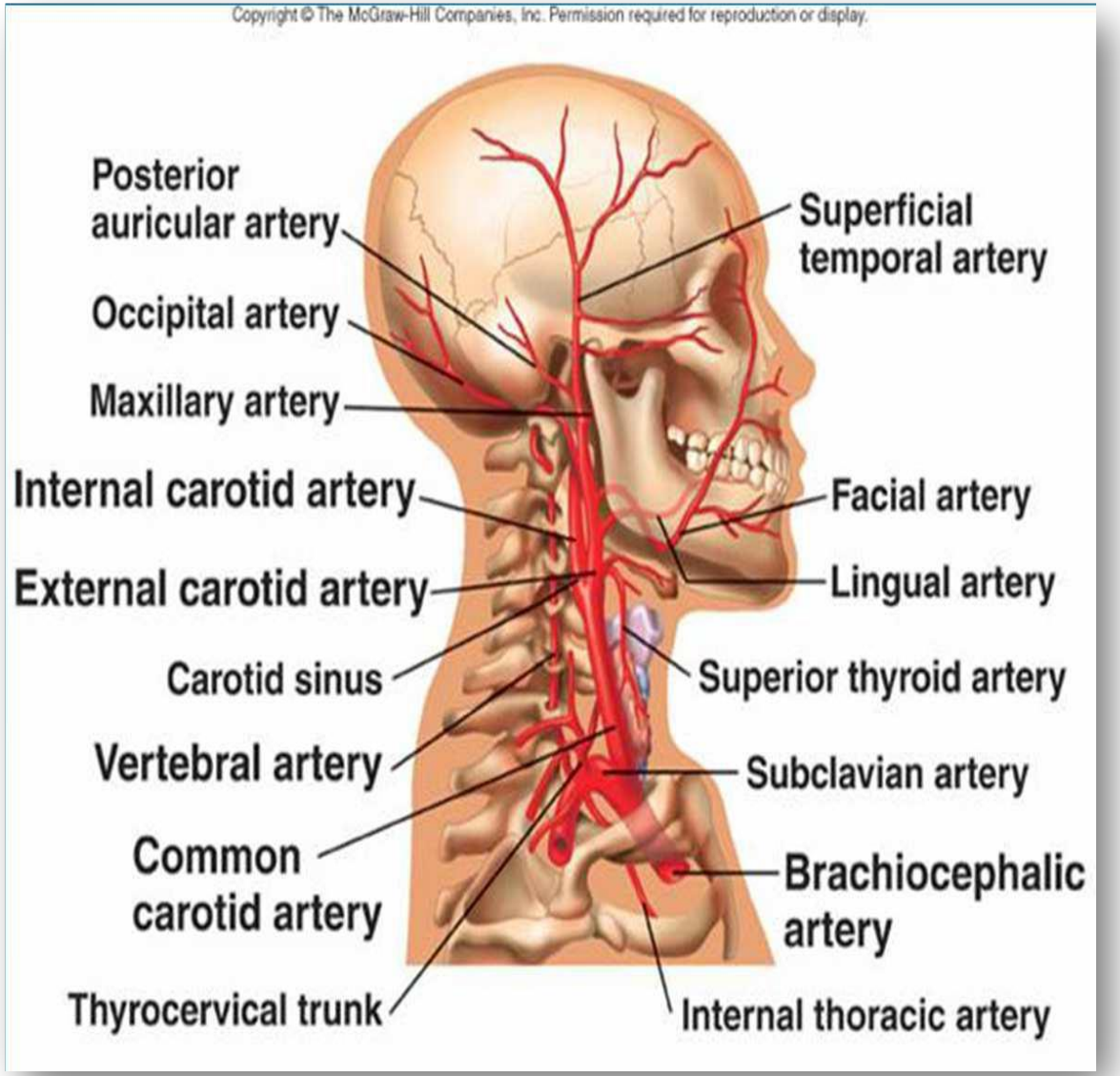
FIGURE 6-6 Pathway of the facial artery.

Occipital artery:

- It **passes** backwards, upward to supply the posterior portion of the scalp.

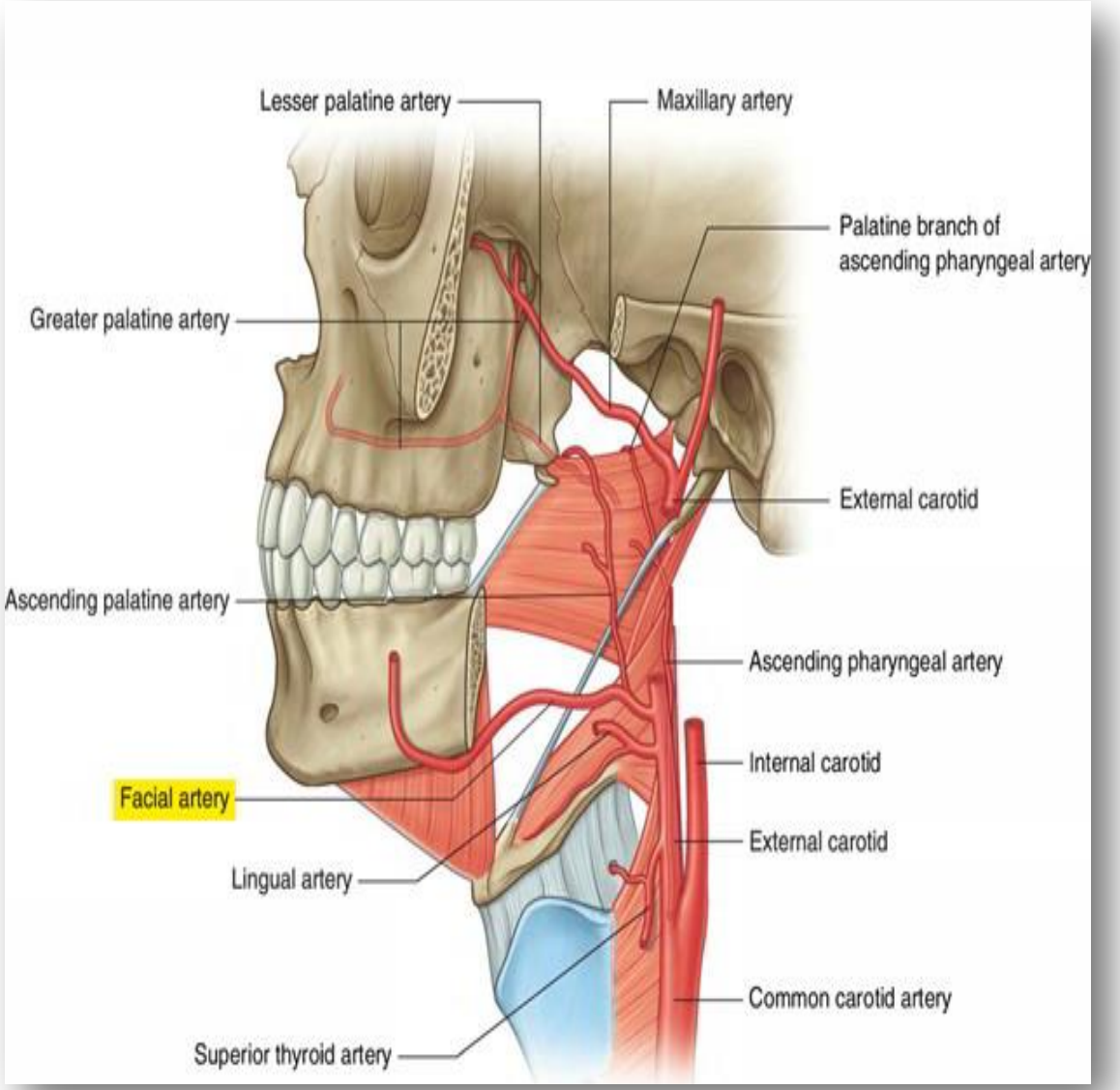
Posterior auricular:

- It **passes** backwards, upward, supplies the auricle and the scalp.



Ascending pharyngeal artery:

- Is the smallest branch of the external carotid.
- **Ascends** along the pharyngeal wall and supplies it.

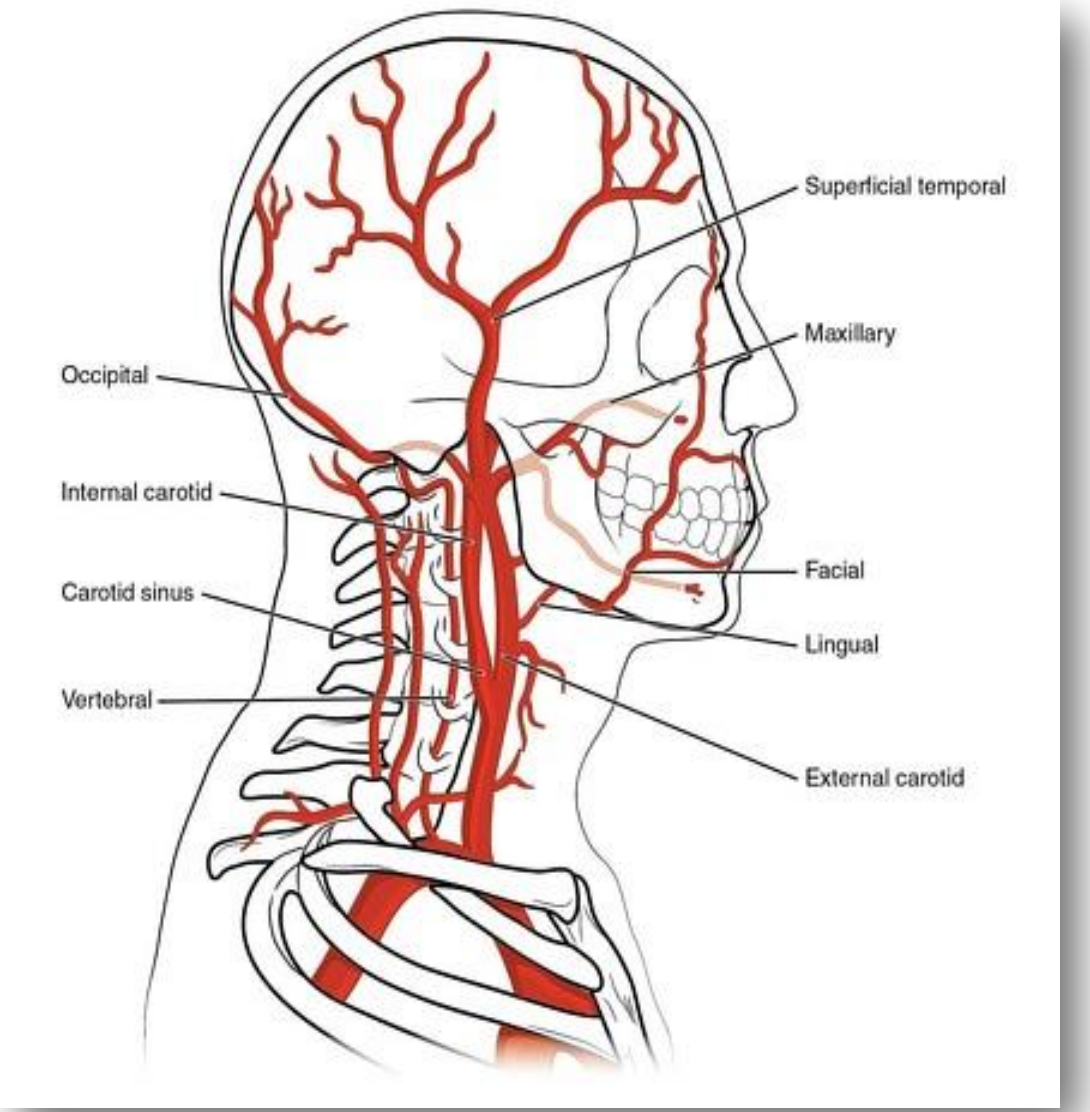


Superficial temporal artery:

- **Ascends** over the zygomatic arch, it supplies the scalp.

Maxillary artery:

- It runs forward **medial to the neck of the mandible.**
- Then passes through **the infratemporal fossa.**
- **Then** enters **the pterygopalatine fossa.**
- **It supply the** jaws, Muscles of mastication, the nose& the palate.



ليش اسمه هيك ؟لانه بدخل الcranial cavity

Internal Carotid Artery (ICA)

Beginning:

- It begins at the bifurcation of the CCA at the level of the upper border of the thyroid cartilage.

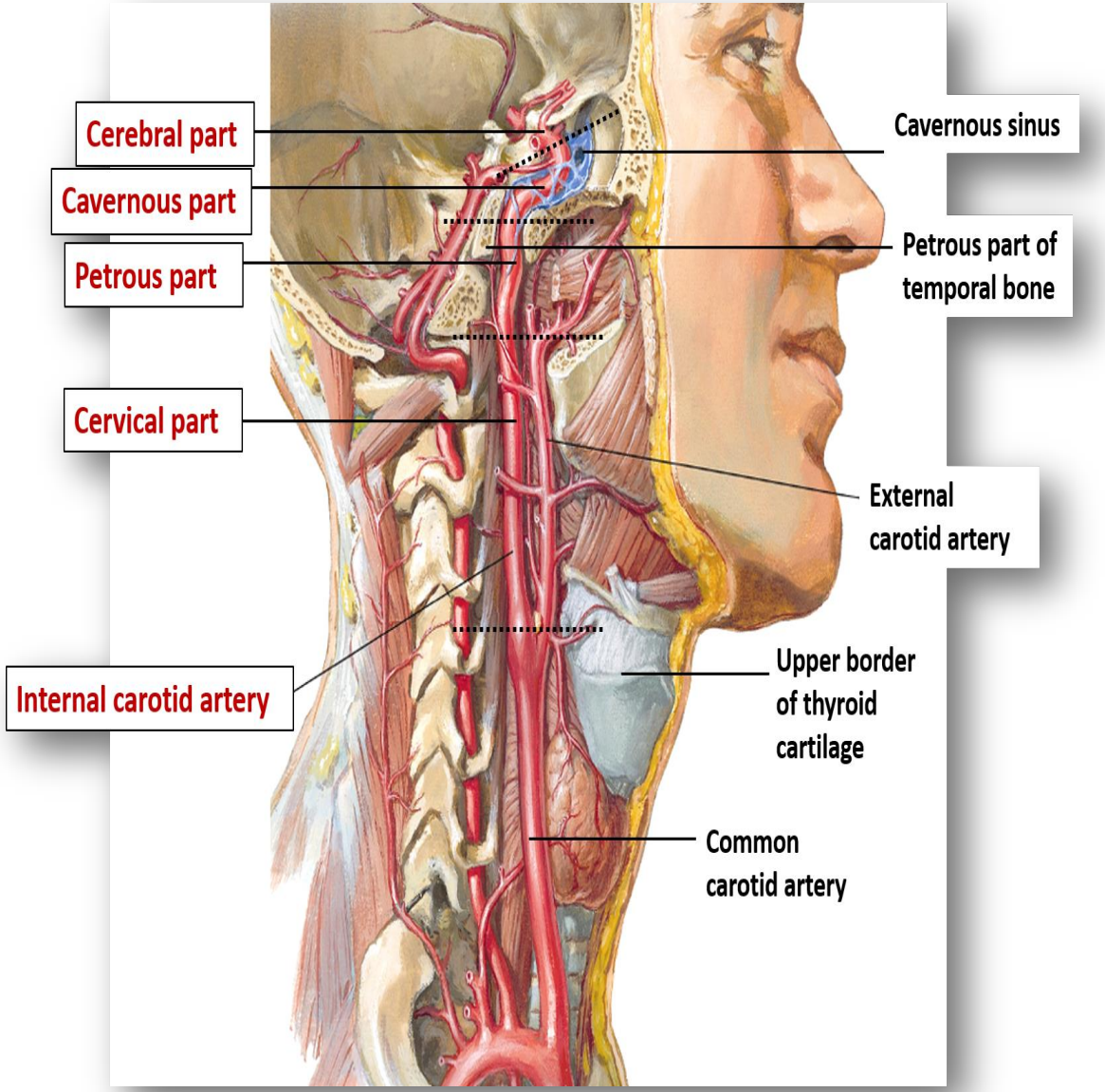
It has four parts;

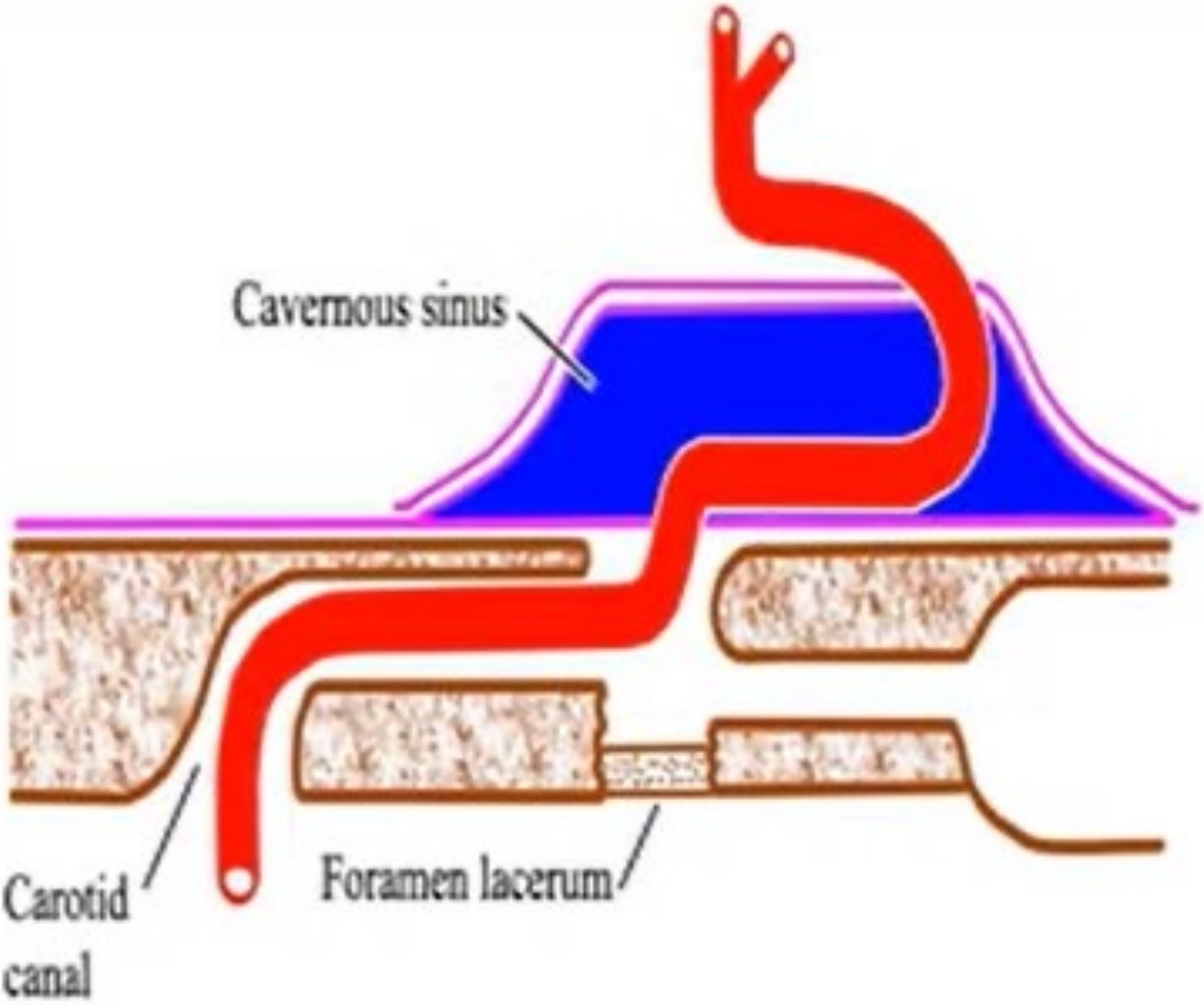
ال ICA يدخل ال الcranial cavity من خلال carotid canal (formen)الموجودة في pterous part of tempral boneال

- Cervical. Upward through the neck
- Petrous. Through the carotid canal
- Cavernous through cavernous sinus.
- Cerebral parts.

End:

- The cerebral part terminates by dividing into the Anterior &Middle cerebral arteries.




Cavernous sinus
Carotid canal
Foramen lacerum

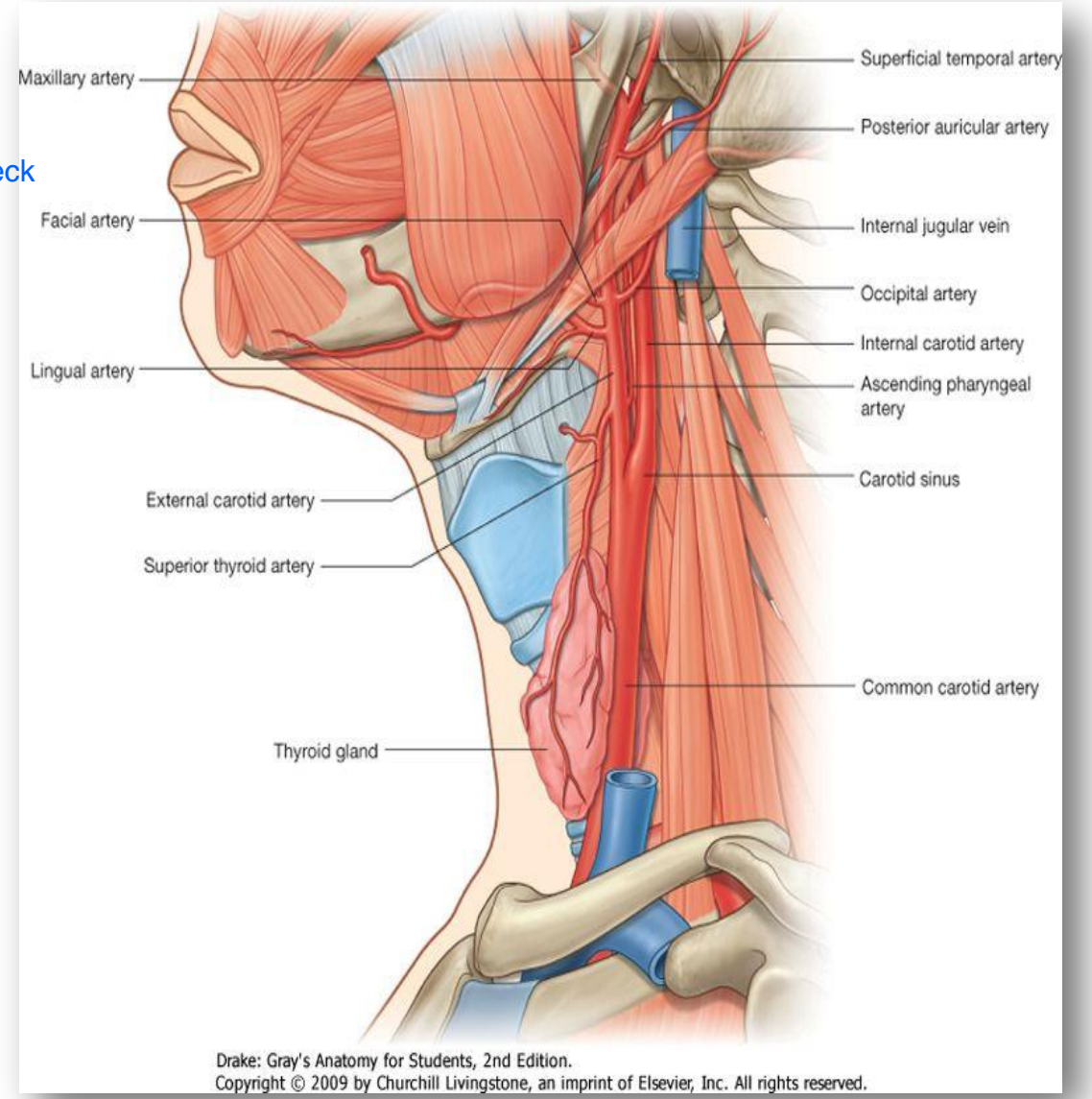
Course & relations of the ICA:

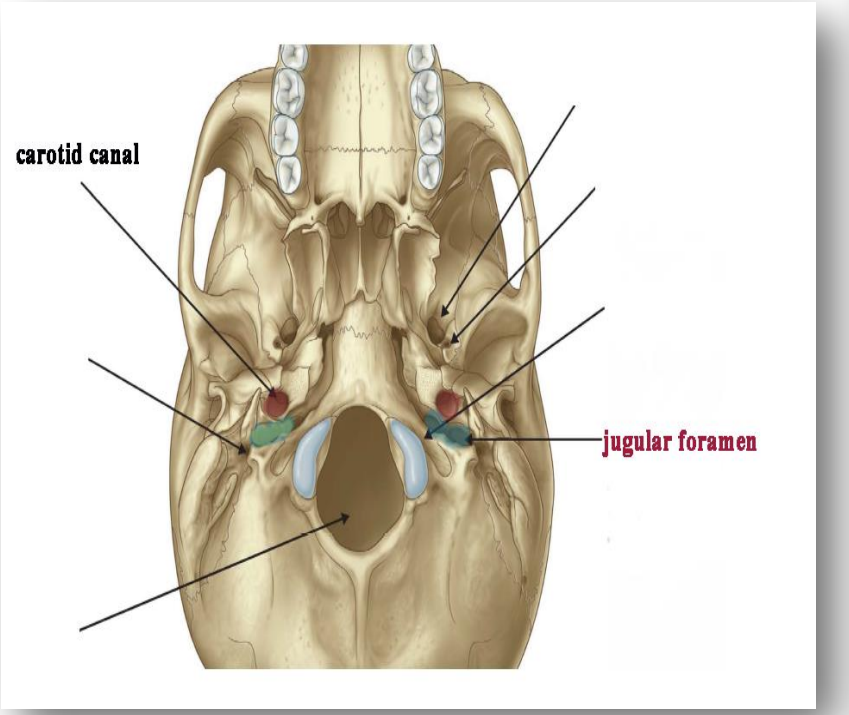
In the upper part of the neck

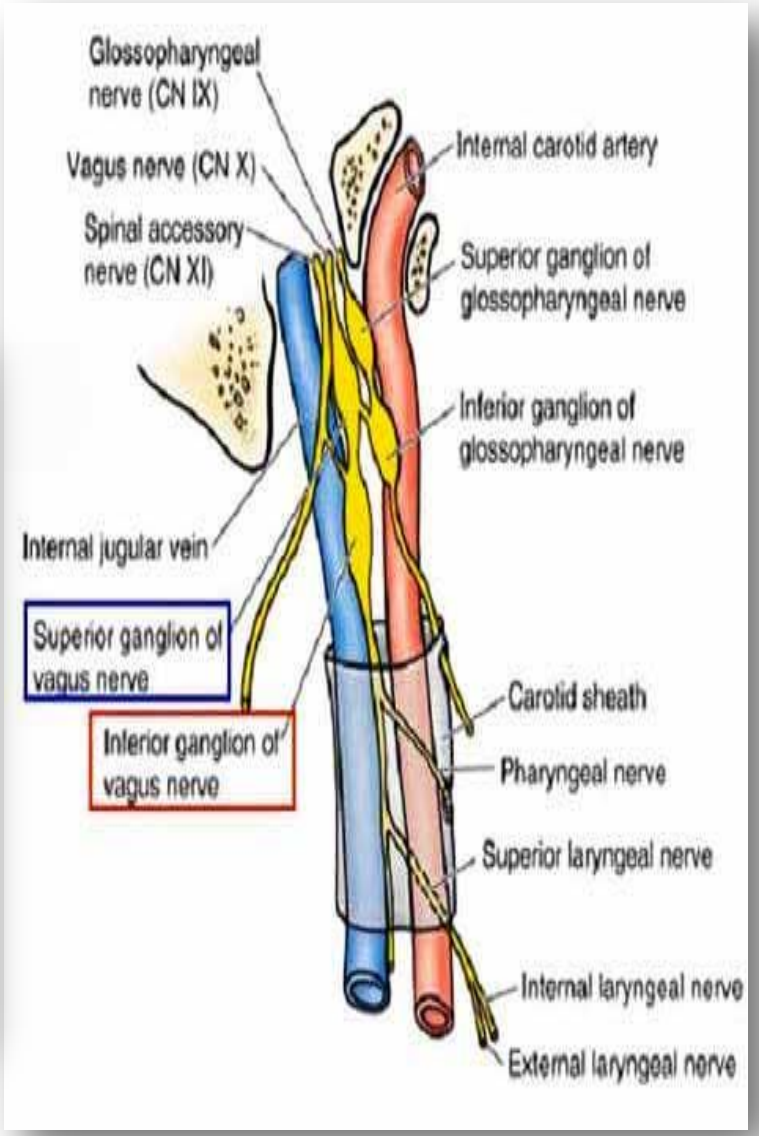
- The artery **ascends in the neck** within the carotid sheath with the internal jugular vein and vagus nerve are lateral to it.

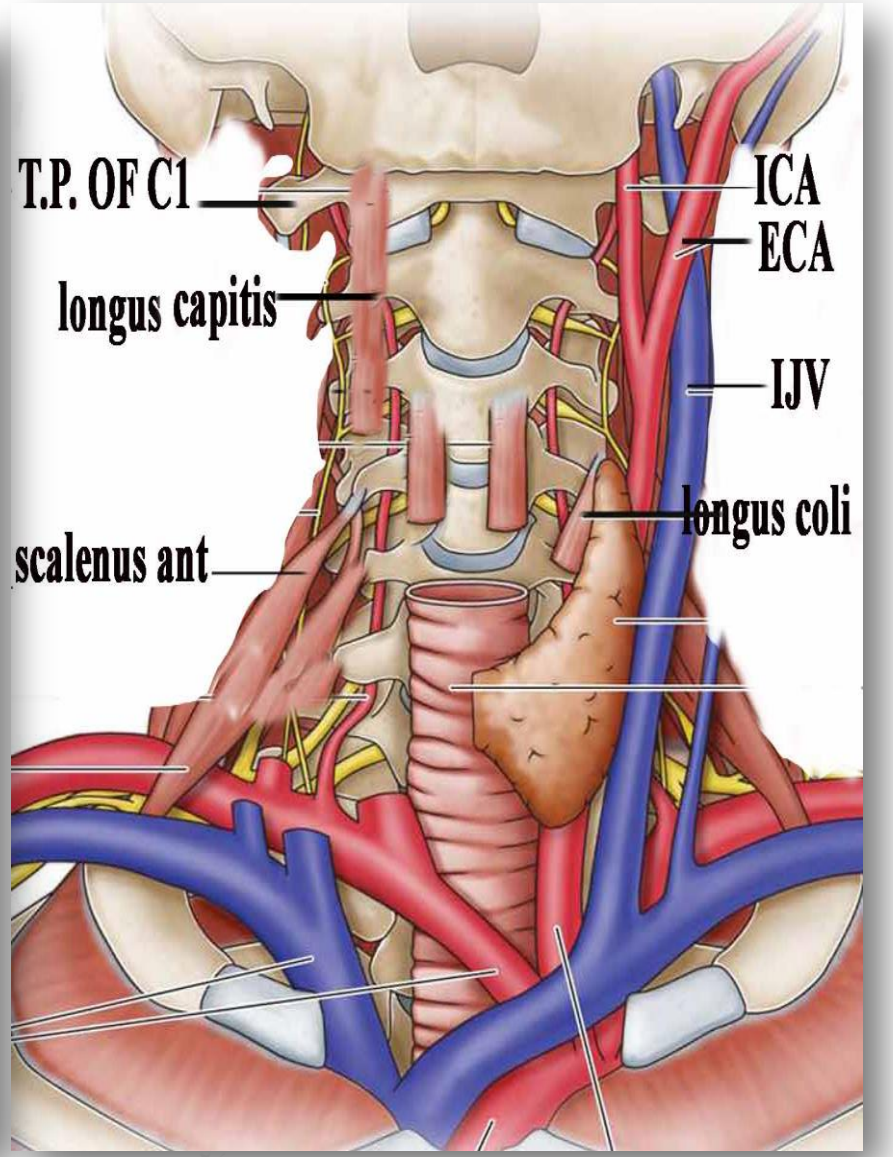
- **Medially:** Pharynx.
- **Posteriorly:** Transverse processes of the upper three cervical vertebrae.

- **It leaves the neck by passing through** the carotid canal of the skull to enters the cranial cavity.




carotid canal
jugular foramen


Glossopharyngeal nerve (CN IX)
Vagus nerve (CN X)
Spinal accessory nerve (CN XI)
Internal carotid artery
Superior ganglion of glossopharyngeal nerve
Inferior ganglion of glossopharyngeal nerve
Internal jugular vein
Superior ganglion of vagus nerve
Inferior ganglion of vagus nerve
Carotid sheath
Pharyngeal nerve
Superior laryngeal nerve
Internal laryngeal nerve
External laryngeal nerve


T.P. OF C1
ICA
ECA
longus capitis
IJV
longus coli
scalenus ant

Branches of the ICA:

Cervical part:

- Has no branches in the neck. (ECA easily distinguishable).

Petrous part:

- Caroticotympanic artery.

Supply the tympanic cavity if middle ear

Cavernous part:

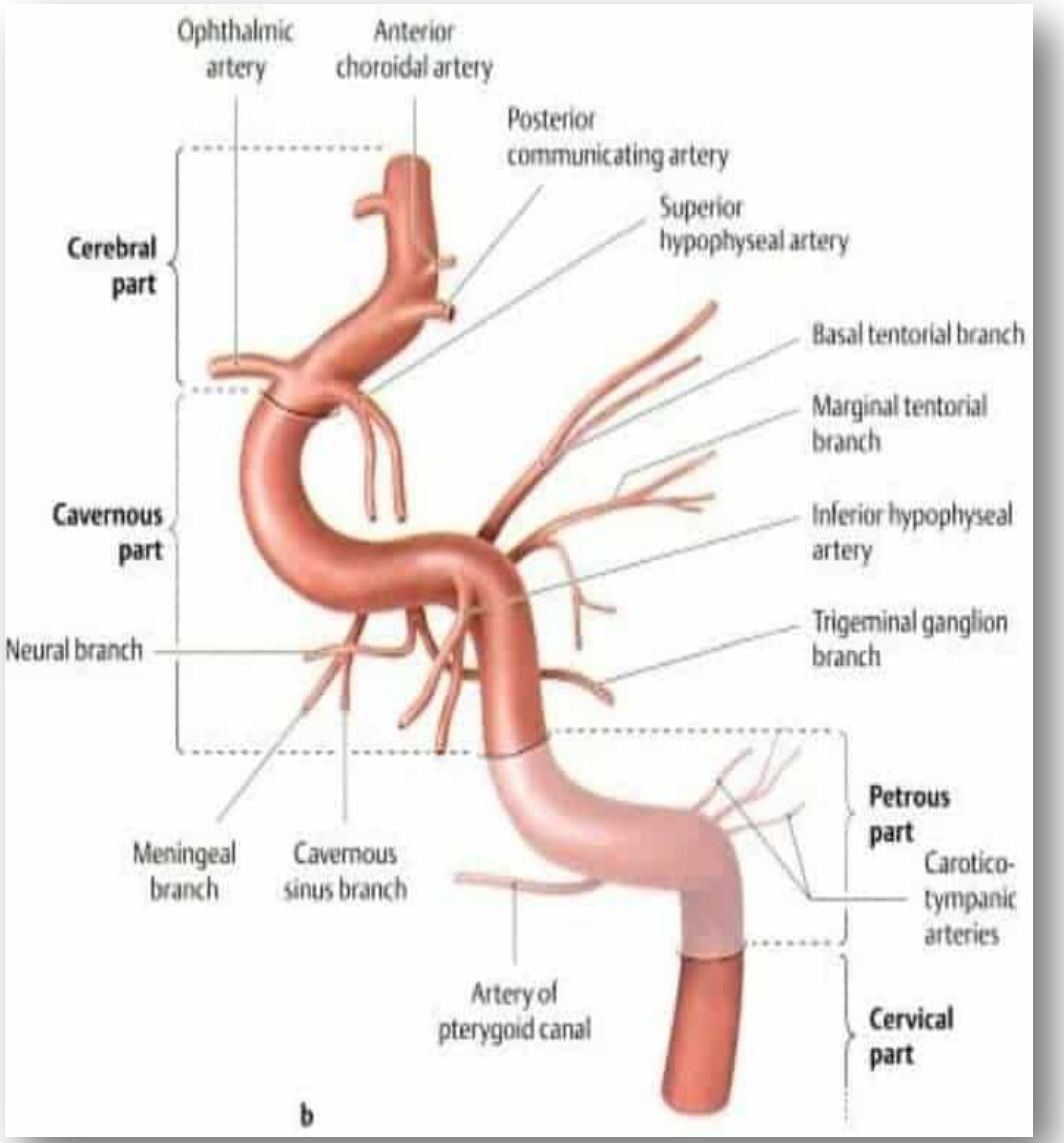
- Cavernous & hypophysial branches.

بتعطي ال cavernous sinus ، اسمها cavernous branches

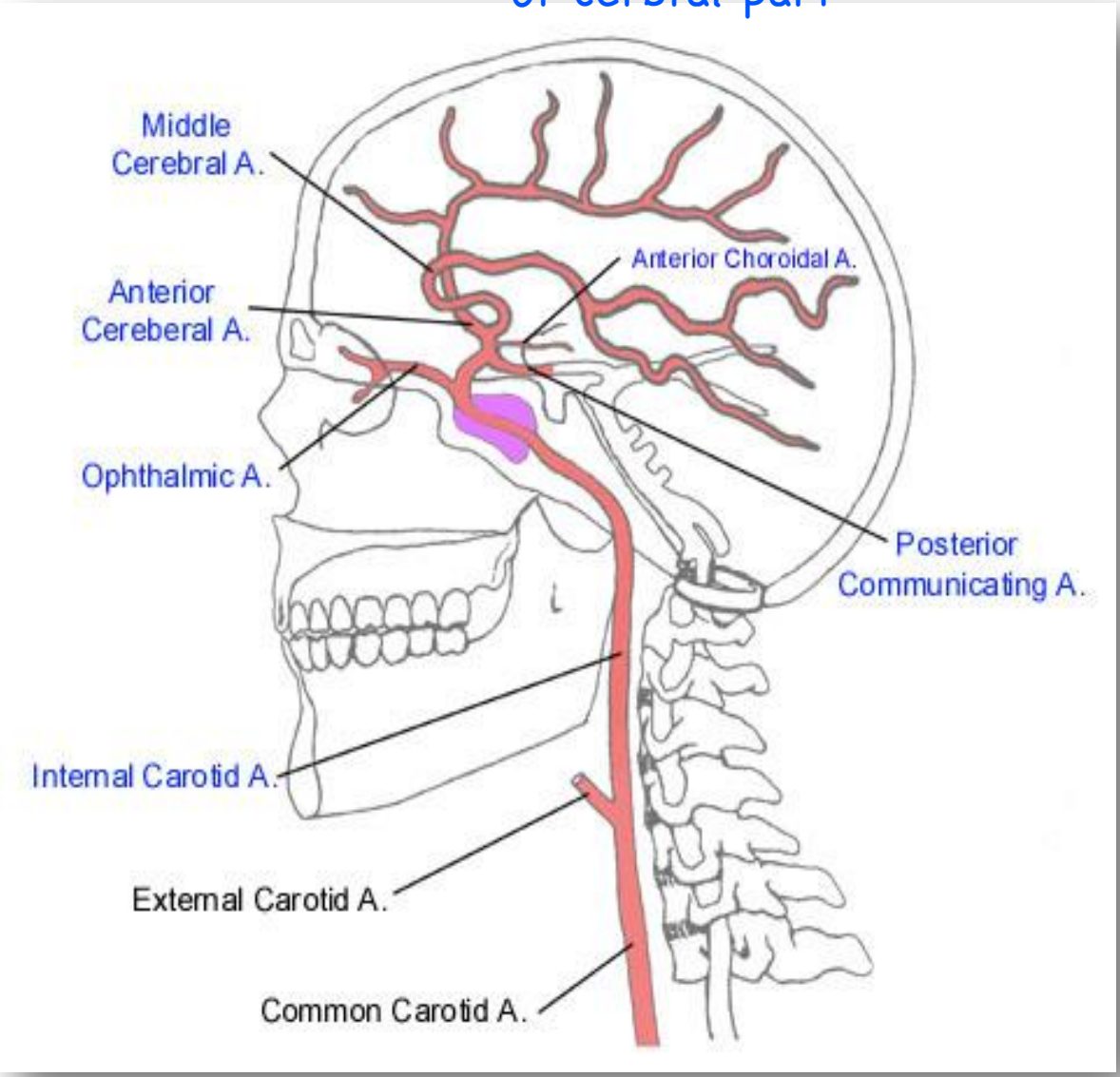
بتعطي ال pitutary gland

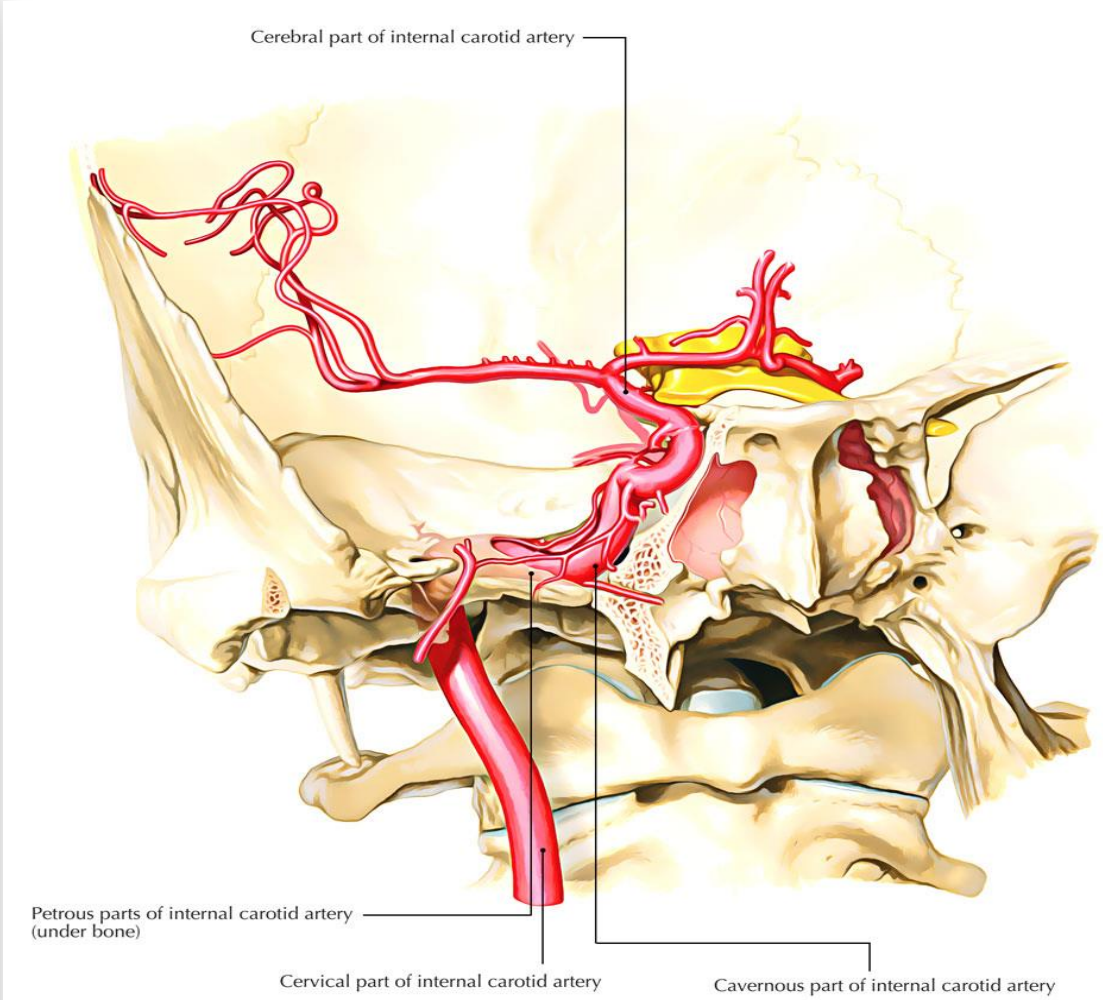
Cerebral part:

- Its terminal branches are the anterior and middle cerebral arteries.



مش مطالبين بالbranches
of cerbral part





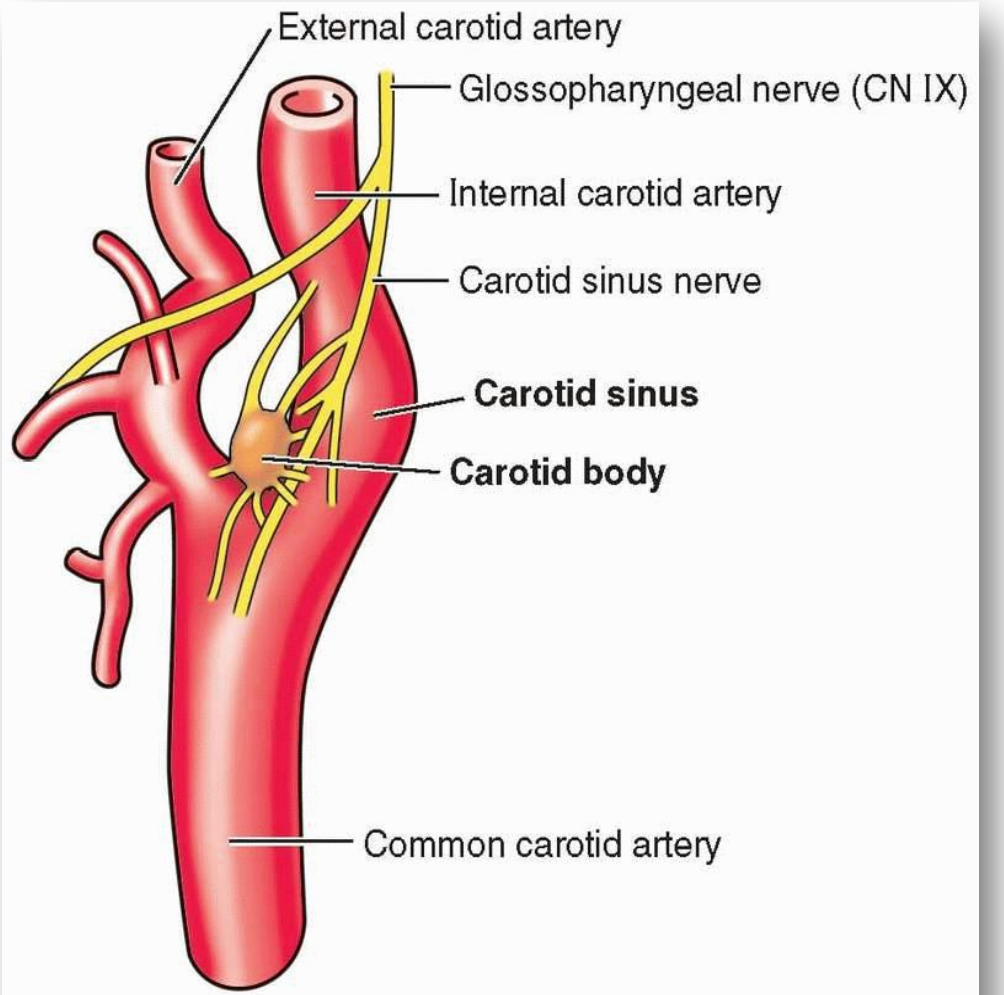
هي جزء من الcommen caroti arter ، بصير فيها dilation

Carotid Sinus:

- Site: at the terminal part of the CCA or at the beginning of the ICA **as a localized dilatation**.
- contains numerous nerve endings derived from the **glossopharyngeal nerve.** الي هو بكون ال9 cranial nerve
- It acts as **a baroreceptor** detect changes in blood pressure. اذا صار اي تغير في الblood pressure مثلا في حالات ال hypertension /hypotension

Carotid Body:

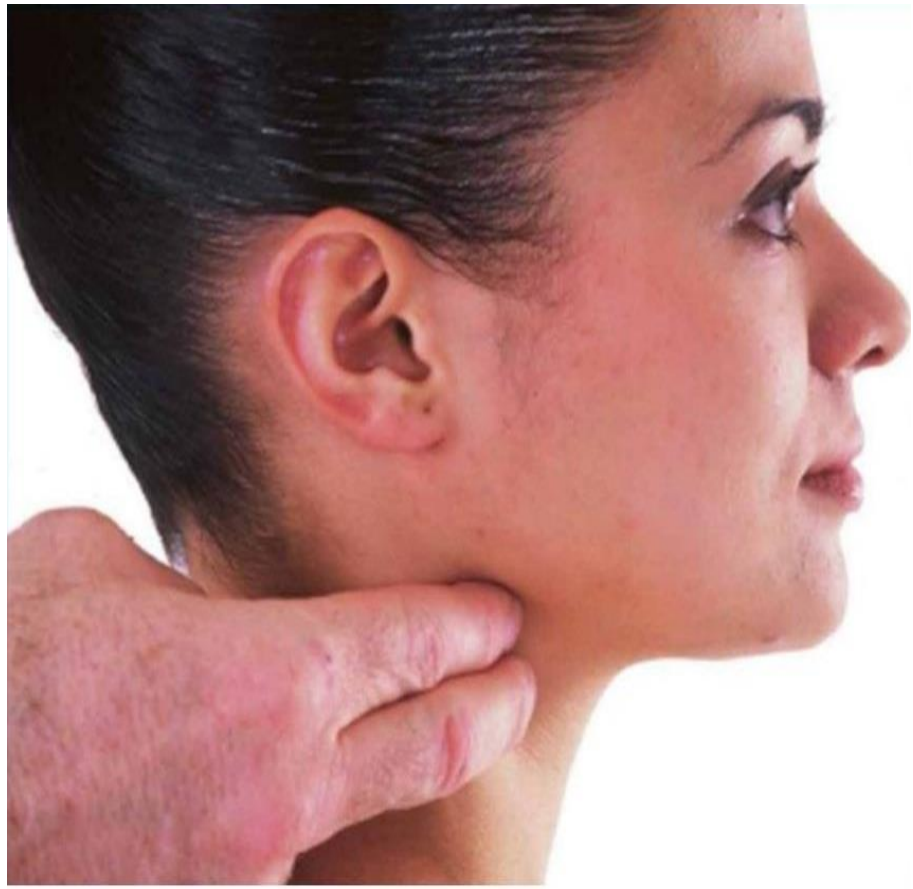
- It is a small structure that **lies on** the posterior aspect of the bifurcation of the CCA.
- It is **innervated by** the glossopharyngeal nerve.
- It is **a chemoreceptor**, being sensitive to excess carbon dioxide and reduced oxygen tension in the blood.



Medial view of right carotid artery

Taking carotid pulse:

- A fingertip placed just **beneath** the anterior border of the sternocleidomastoid muscle **at the level of** the superior border of the thyroid cartilage. perceives a powerful arterial pulsation, which represents the termination of the common carotid, the origins of external and internal carotid arteries.



Subclavian artery

Right Subclavian Artery:

- **Arises from** the brachiocephalic artery.
- **Arches** upward and laterally.
- At the outer border of the first rib, **it becomes** the axillary artery.

Left Subclavian Artery:

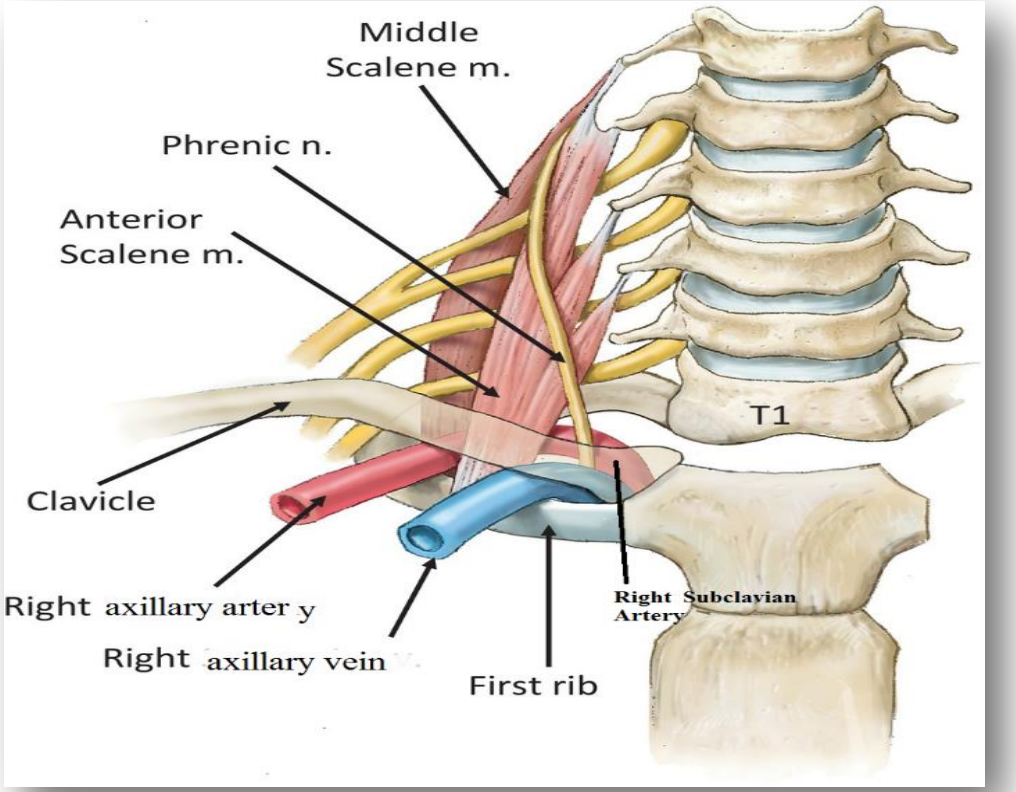
- **Arises from** the arch of the aorta.
- Ascends till reaches behind the left sternoclavicular joint then arches laterally.
- It ends in a manner similar to that of the right subclavian artery.

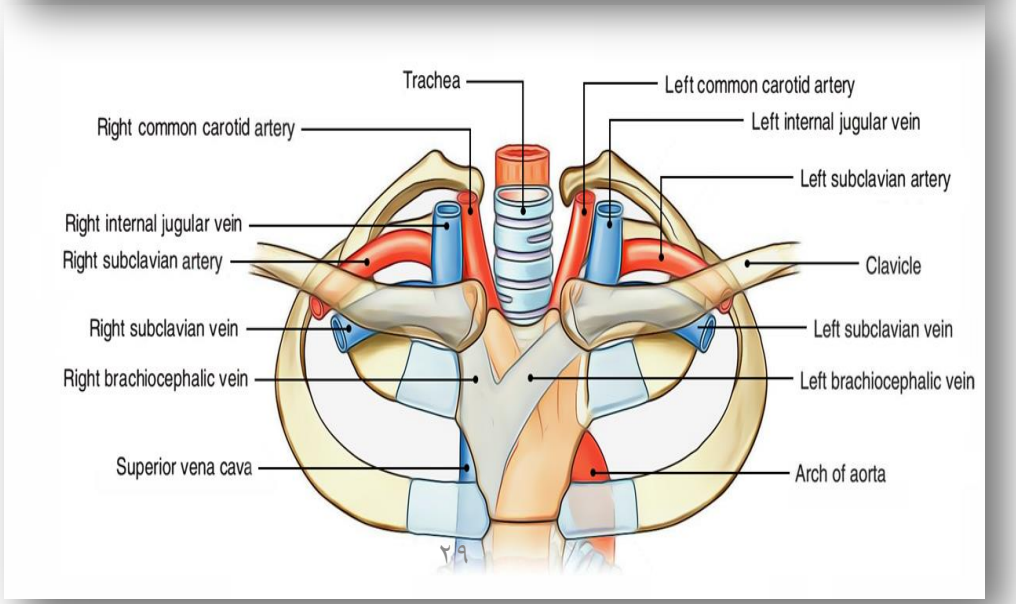
❑The **scalenus anterior muscle** passes anterior to the artery on each side and divides it into three parts.

مقسمة الى ثلاثة اجزاء :

first subclavien artery(١

second subclavien atery(٢ third subclavien atery(٣





*I. First part: **Medial** to scalenus anterior.*
*II. Second part: **Behind** scalenus anterior.*
*III. Third part: **Lateral** to scalenus anterior.*

Branches of the subclavian artery:

First part:

1-Vertebral artery

2-Thyrocervical trunk.

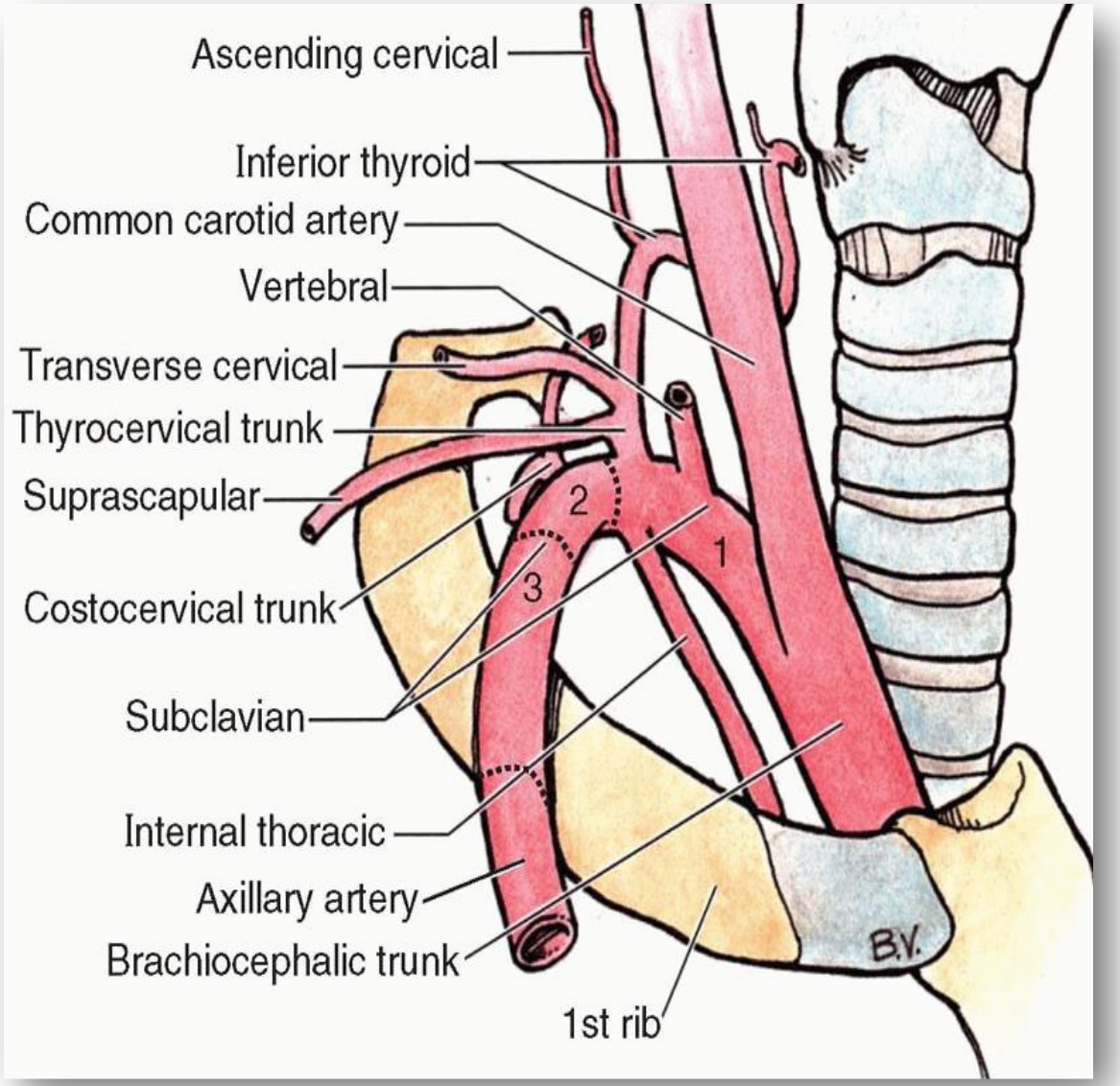
3-Internal thoracic artery.

Second part:

1-Costocervical trunk gives deep cervical& superior intercostal arteries.

Third part:

Has no branches.



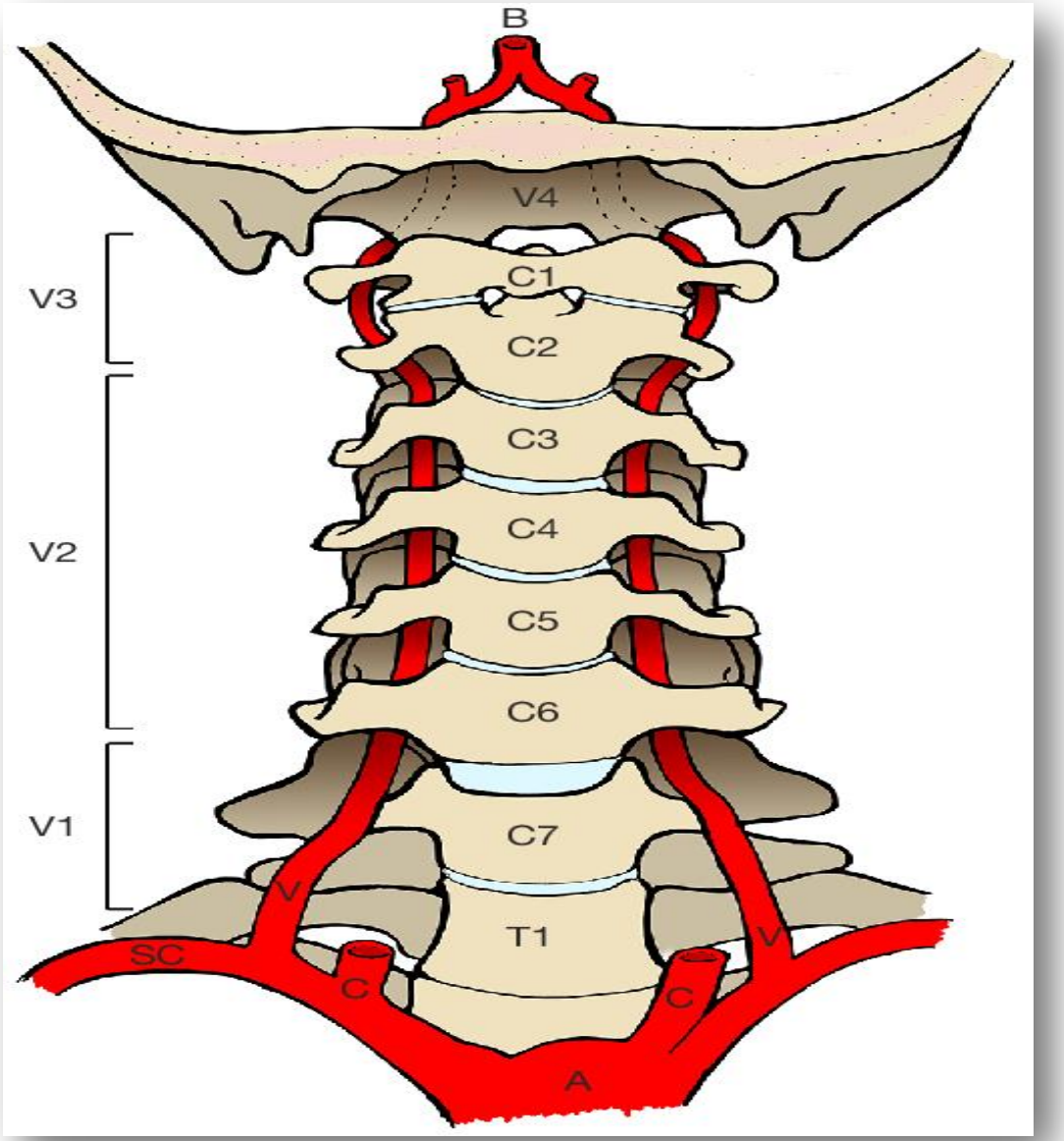
Vertebral artery:

Course:

- It **passes upward through** the foramina of the transverse processes of the cervical vertebrae.
- Then **enters the cranial cavity** via the foramen magnum.

End:

- **It joins its fellow** to form the basilar artery.



Quiz

An angiogram of a 45-year-old man shows an occlusion of the costocervical trunk. This obstruction could produce a marked decrease in the blood flow in which of the following arteries?

A. Transverse cervical artery.

B. Superior thyroid artery

C. Deep cervical artery

D. Inferior thyroid artery

Name the artery that arises from the external carotid artery opposite the tip of the greater cornu of hyoid bone.

A) Superior thyroid artery.

B) Lingual artery

C) Facial artery

D) Posterior auricular artery

E) Occipital artery

- Which of the following is not true as regard the external carotid artery?

a. Has many branches in the neck.

b. Terminates opposite the angle of the mandible.

c. Begins opposite the upper border of thyroid cartilage.

d. Crossed by the hypoglossal nerve.

- Which of the following is not a branch of the external carotid artery?

a. Superior thyroid artery.

b. Ascending pharyngeal artery.

c. Lingual artery.

d. Inferior thyroid artery.

e. Facial artery.


Thank
You