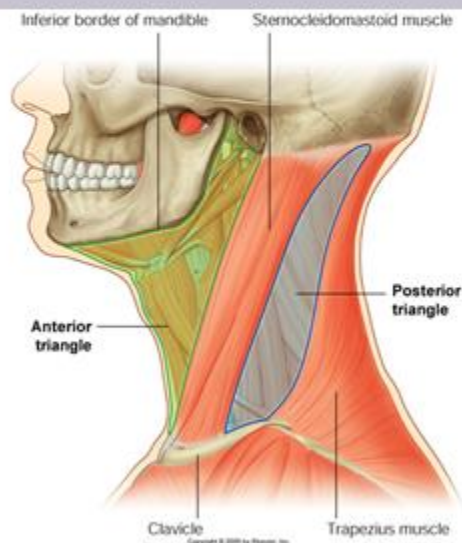
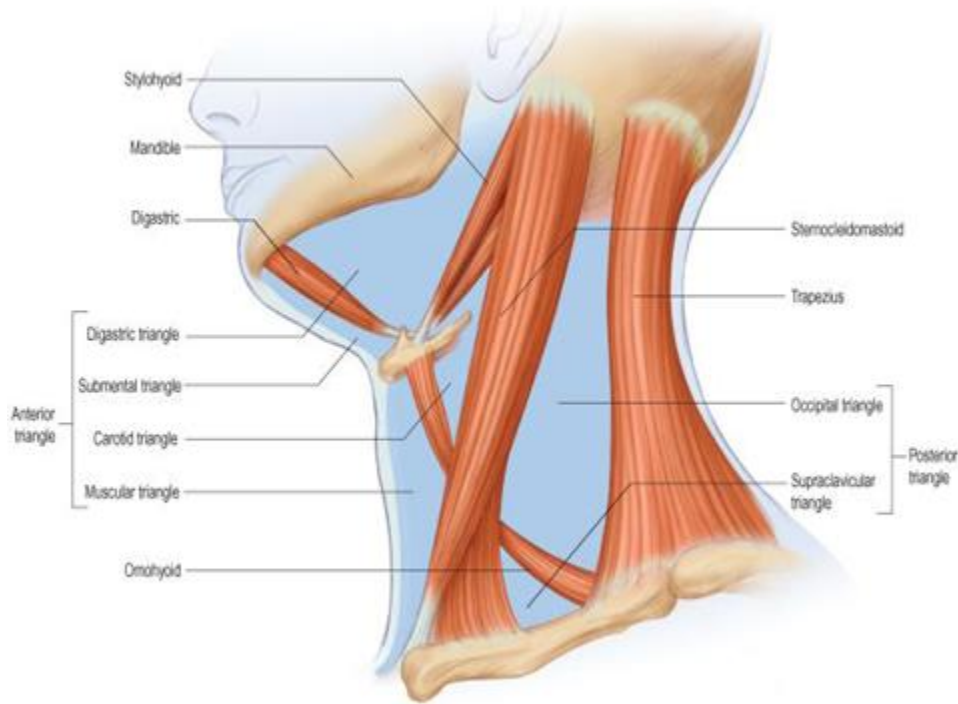
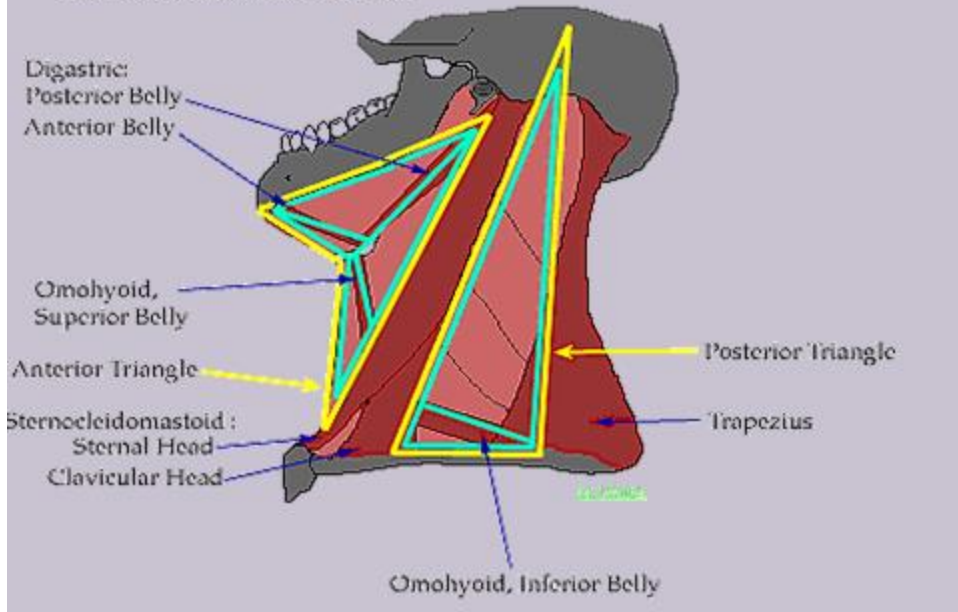


# Triangles of the neck

- **Anterolaterally** the neck appears as a **quadrilateral area**
- This quadrilateral area is divided into anterior and posterior triangles by **sternocleidomastoid**, which passes obliquely from the sternum and clavicle to the mastoid process and occipital bone.



The ANTERIOR TRIANGLE lies anterior to the sternocleidomastoid muscle, while the POSTERIOR TRIANGLE lies posterior to the sternocleidomastoid muscle.



# **THE ANTERIOR TRIANGLES**

## ANTERIOR TRIANGLE OF THE NECK

### BOUNDARIES

Anteriorly- median line of the neck,

Posteriorly- anterior margin of sternocleidomastoid.

Base - inferior border of the mandible

- and its projection to the mastoid process,
- and its apex at the manubrium sterni.

Made of suprahyoid and infrahyoid areas above and below the hyoid bone,

### **TRIANGLES HERE ARE:**

- Digastric/submandibular
- Submental
- Muscular
- Carotid triangles

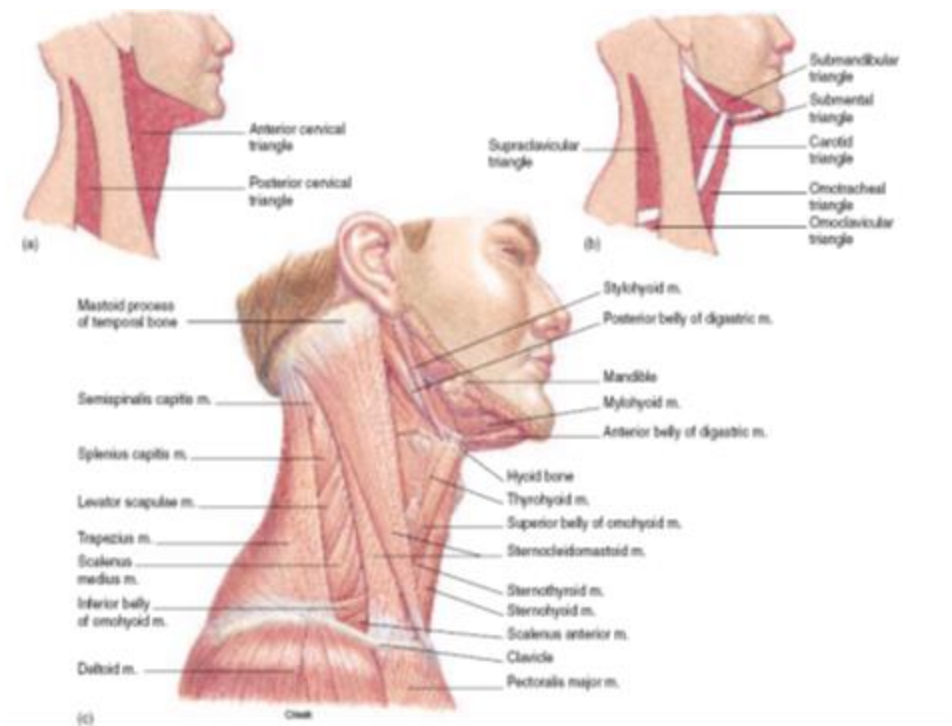
By passage of digastric and omohyoid across the anterior triangle

## Table of Muscles

Muscle	Origin	Insertion	Action	Nerve Supply
Sternohyoid	sternum	hyoid		ansa
Omothyoid	Suprascapular notch	hyoid		ansa
Sternothyroid	Below sternohyoid on manubrium	Thyroid cartilage oblique line		ansa
Thyrohyoid	Thyroid cartilage oblique line	hyoid		C1-C2 (ansa)
Anterior Belly Digastric	----- intermediate tendon-----	Inner surface of mandible		Trigeminal nerve
Posterior Belly Digastric	Medial aspect of the mastoid process	-intermediate tendon-		Facial nerve
Mylohyoid	Mylohyoid line of mandible	Hyoid bone		Trigeminal nerve
Hyoglossus	Hyoid bone	Lateral side of tongue		hypoglossal
Stylohyoid	Styloid process	hyoid		Facial nerve

## Suprahyoid Muscles

MUSCLE	ORIGIN	INSERTION	ACTION	INNERVATION
Digastric	•Digastric notch, medial surface of base of mastoid process	•Digastric fossa	•Depress the mandible	•Posterior belly: facial nerve •Anterior belly: nerve to mylohyoid
Stylohyoid	•Back of styloid process near the base of skull	•By two slips into the junction between the greater horn and body of hyoid bone	•Elevate hyoid bone	•Facial nerve
Mylohyoid	•Whole length of mylohyoid line of its own side on the inner aspect of the mandible from medial to the third molar tooth to below the mental spines	•Anterior 1/2 into each other (interdigitation) •Posterior 1/2 anterior surface of the body of hyoid bone	•Forms a mobile but stable floor of the mouth	•Mylohyoid nerve
Geniohyoid	•Inferior mental spine	•Upper border of the body of hyoid bone.	•Protracts and elevates the hyoid bone in swallowing or if the hyoid is fixed to depresses the mandible.	•C1 (superior root of ansa cervicalis)



## Sternocleidomastoid Muscle

- ▣ **Origin** (SCM)
  - medial third of the clavicle (clavicular head)
  - manubrium (sternal head)
- ▣ **Insertion**
  - mastoid process
- ▣ **Nerve supply**
  - spinal accessory nerve (CNXI)
- ▣ **Blood supply**
  - occipital a. or direct from ECA
  - superior thyroid a.
  - transverse cervical a.

## SCM

- ▣ Function – turns head toward opposite side & tilts head toward the ipsilateral shoulder
- ▣ Surgical considerations
  - Leave overlying fascia (superficial layer of deep cervical fascia down)
  - Lateral retraction exposes the submuscular recess

## Omohyoid muscle

- ▣ Origin
  - upper border of the scapula
- ▣ Insertion
  - via the intermediate tendon onto the clavicle and first rib
  - hyoid bone lateral to the sternohyoid muscle
- ▣ Blood supply
  - Inferior thyroid a.
- ▣ Function
  - depress the hyoid
  - tense the deep cervical fascia

- ▣ The INFERIOR BELLY OF THE OMOHYOID MUSCLE crosses the posterior triangle as it spans from the hyoid bone to the scapula.



## Omohyoid

- ▣ Surgical considerations
- ▣ Absent in 10% of individuals
- ▣ Landmark demarcating level III from IV
- ▣ Inferior belly lies superficial to the brachial plexus
- ▣ Phrenic nerve transverse cervical vessels
- ▣ Superior belly lies superficial to IJV

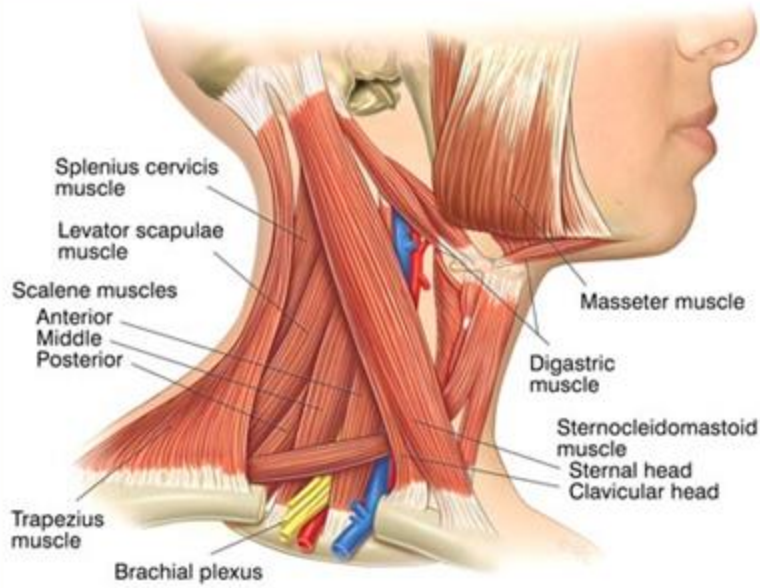
## Digastric muscle

- ▣ Origin
  - digastric fossa of the mandible (at the symphyseal border)
- ▣ Insertion
  - hyoid bone via the intermediate tendon
  - mastoid process
- ▣ Function
  - elevate the hyoid bone
  - depress the mandible (assists lateral pterygoid)

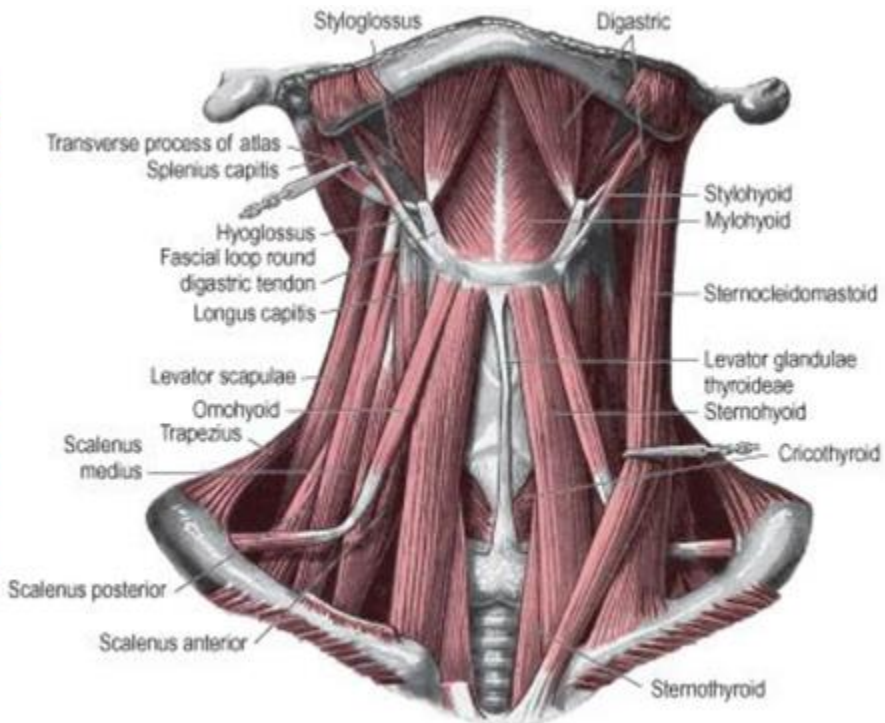
## Digastric

- ▣ Surgical considerations
  - Posterior belly is superficial to
  - ECA
  - Hypoglossal nerve
  - ICA
  - IJV
- ▣ Anterior belly
  - Landmark for identification of
  - mylohyoid for
  - dissection of the submandibular triangle

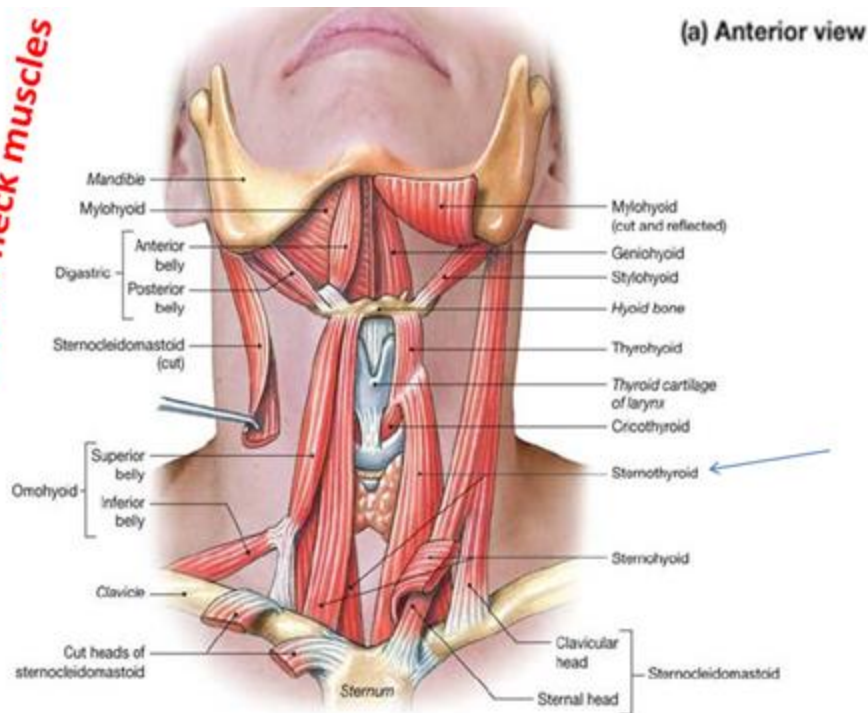
# Muscles of neck



## Anterior view of neck muscles



Anterior view of neck muscles



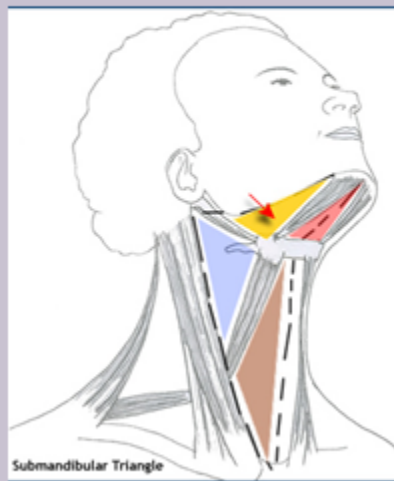
## Submandibular triangle / Digastric triangle

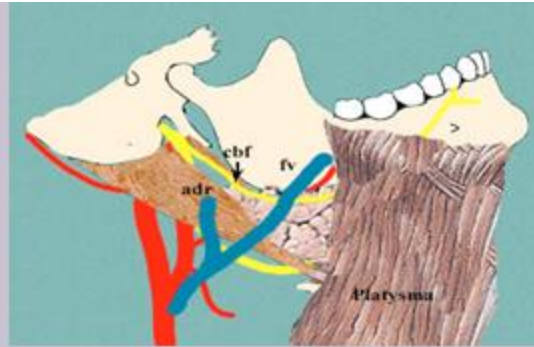
### Boundaries:

- ❑ **Inferomedially:** Anterior belly of digastric.
- ❑ **Anterosuperiorly:** Inferior border of the mandible.
- ❑ **Inferolaterally:** Posterior belly of digastric.

### Floor;

- ❑ Mylohyoid (forms diaphragm oris)
- ❑ hyoglossus
- ❑ middle constrictor muscle of the pharynx





### ROOF OF SUBMANDIBULAR TRIANGLE:

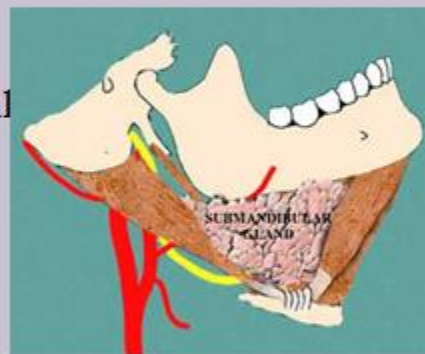
The skin.

Superficial fascia

Platysma

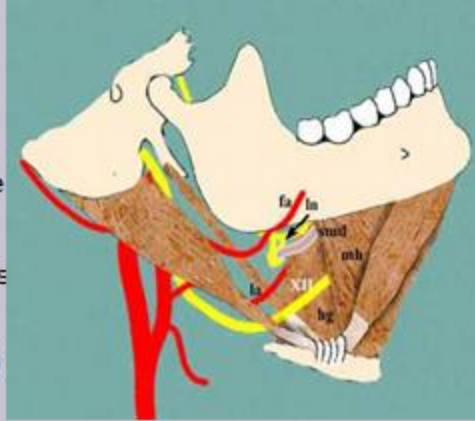
Deep fascia containing branches of the facial and transverse cutaneous cervical nerves e.g. cervical branch of facial nerve

- ▣ Removal of the superficial structures displays the submandibular salivary gland itself.



## CONTENTS OF SUBMANDIBULAR TRIANGLE:

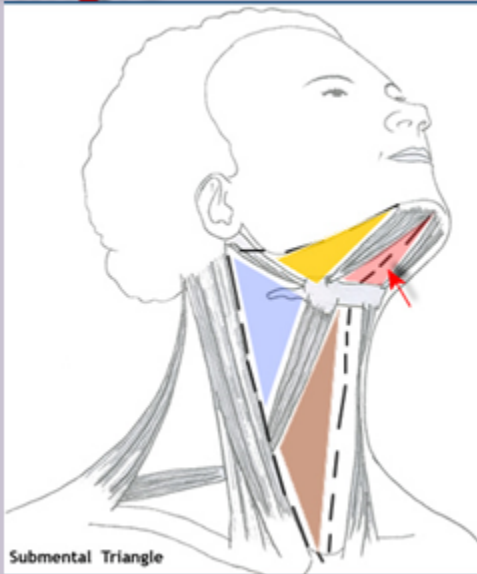
- ▣ Submandibular gland
- ▣ XII nerve & Mylohyoid nerve
- ▣ Facial artery and vein.
- ▣ Submandibular lymph nodes
- ▣ Lingual nerve and submandibular ganglion (ln)
- ▣ Submandibular duct (smd)
- ▣ Lingual artery (la)
- ❖ The lingual nerve and submandibular duct pass through a gap between the XII (hg) and mylohyoid (mh) muscles
- ❖ the lingual artery passes deep to the hyoglossus muscle.



## Submental triangle

### BOUNDARIES

- ▣ **Apex** -Inferior end of symphysis menti. Laterally: Right and left anterior bellies of digastric.
- ▣ **Base inferiorly** -Body of the hyoid bone
- ▣ **Floor** - mylohyoid muscles.(mh) Arise from the body of the hyoid bone and insert into the mylohyoid line of the inside of the mandible.
- Aids in swallowing and in depressing the mandible.



### **Submental lymph nodes.**

These receive lymph from the following areas:

- Tip of the tongue.
- Floor of the mouth.
- Mandibular incisor teeth and associated gingivae
- Central part of the lower lip.
- Skin of the chin.

Lymph from here drains into submandibular and deep cervical lymph nodes.

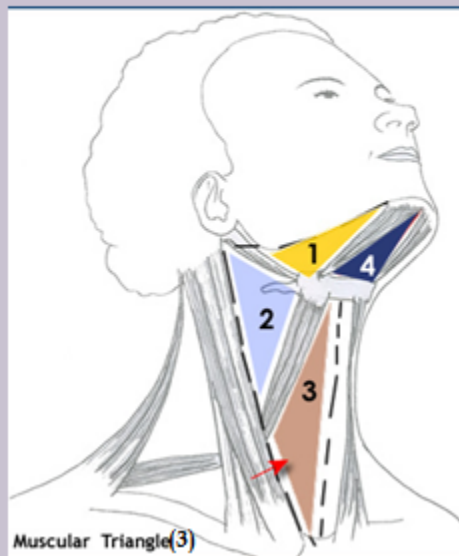
### **Submental veins and arteries.**

The submental veins unite to form the anterior jugular vein.

## **Muscular triangle**

### BOUNDARIES

- ▣ **Anteriorly** -median line of the neck from the hyoid bone to the sternum,
- ▣ **Inferoposteriorly** by the anterior margin of sternocleidomastoid,
- ▣ **Posterosuperiorly** by the superior belly of omohyoid.
- ▣ **Apex**-jugular notch



## CONTENTS OF MUSCULAR TRIANGLE

1) **Infrahyoid muscles** (strap muscles).

- Sternohyoid 1
- Sternothyroid
- Thyrohyoid
- Omohyoid\* 2 forming part of the boundary.

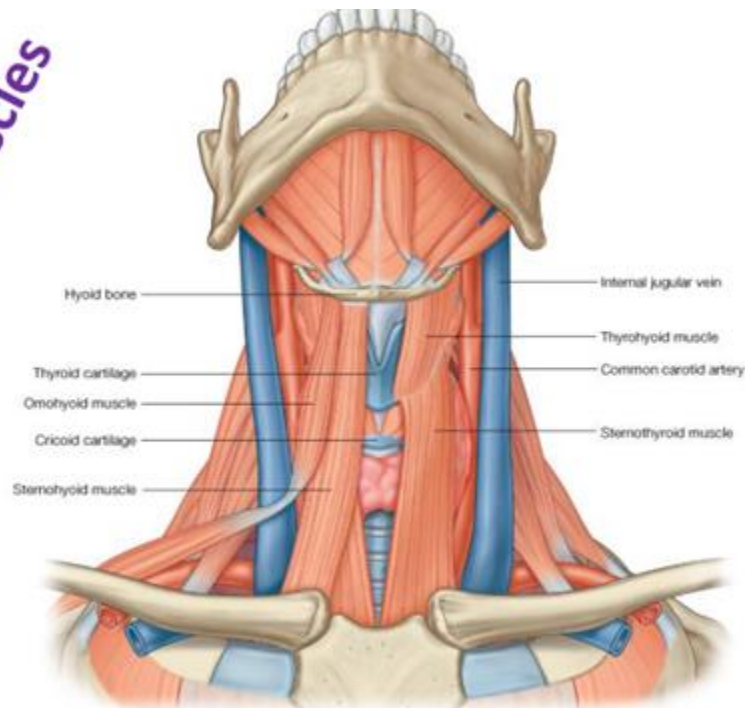
NOTE: These muscles are innervated by ansa cervicalis (c1-c3) except thyrohyoid that is innervated by C1 via Hypoglossal nerve. They depress the hyoid bone and larynx during swallowing and speaking, anchoring it in position

2) **The anterior jugular veins**, run in both sides of the midline. They are joined by the jugular arch at the suprasternal notch.

- 1-Sternohyoid
- 2-Omohyoid
- 3-Sternal head of sternocleidomastoid



Infrahyoid muscles



## Carotid triangle

### BOUNDARIES

#### *Superomedially*

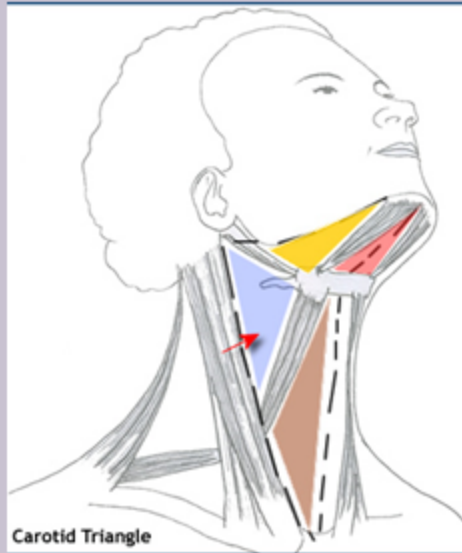
- ▣ Posterior belly of the digastric

#### **Laterally:**

- ▣ Anterior border of the sternocleidomastoid muscle

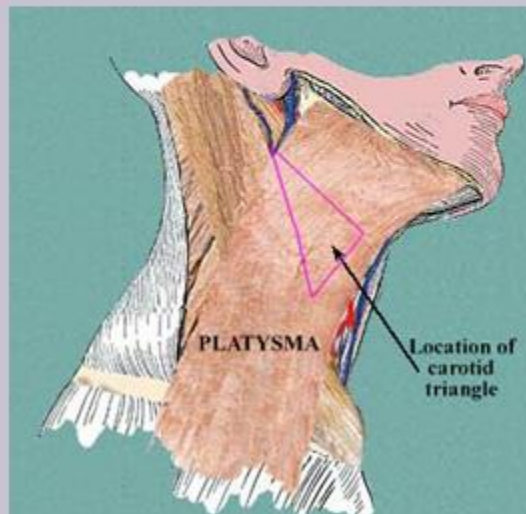
#### *Inferomedially:*

- ▣ superior belly of omohyoid



## Roof of the Carotid Triangle

- ▣ Skin and superficial fascia
- ▣ Platysma
- ▣ Deep fascia; ramifying in which are branches of the facial and cutaneous cervical nerves.



### ***Floor of the carotid triangle***

- ▣ The muscles, at this level, are: Thyrohyoid, hyoglossus, the middle and inferior pharyngeal constrictors.
- ▣ The structures seen passing through this level are:
  - **Superior laryngeal** nerve, a branch of the vagus its two terminal branches
  - **Internal laryngeal-sensory** to upper part of the larynx.
  - **External laryngeal -motor** to the Cricoid muscle.

### **CONTENTS OF CAROTID SHEATH**

1. Common and Internal Carotid arteries medially.
2. Internal jugular vein laterally.
3. Vagus nerve posteriorly and between the above two.
4. Ansa cervicalis embedded in the carotid sheath(anteriorly).
5. Deep cervical lymph nodes.

▣ **Note:**

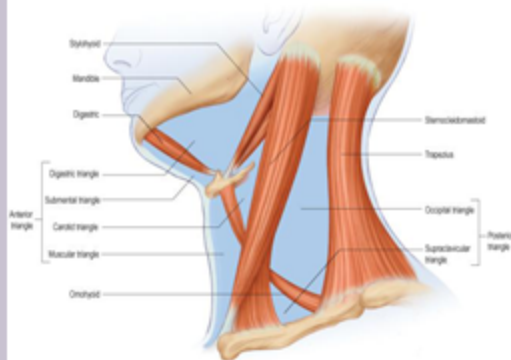
- 1) **Common carotid** artery divides at superior border of thyroid gland (C3,4).
- ▣ 2) The **carotid sinus** (the baroreceptor) is a slight dilatation at the proximal part of the internal carotid artery. It is innervated by Carotid sinus nerve, a branch of glossopharyngeal.
  - A branch of vagus nerve.
  - Sympathetic division of ANS.
- ▣ 3) The **carotid body**, is a small reddish brown, ovoid mass of tissue located at the carotid bifurcation. The same nerves that go to the carotid sinus innervate it.

## **THE POSTERIOR TRIANGLES**

## A. Posterior triangle Boundaries

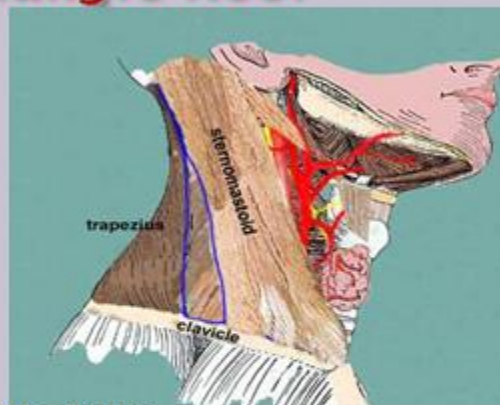
- ▣ **Posterior** : anterior border of trapezius
  - ▣ **Base** : middle 3<sup>rd</sup> of clavicle
  - ▣ **Apex** : meeting point of sternocleidomastoid & trapezius at superior nuchal line.
  - ▣ The inferior belly of omohyoid mscl, divides the posterior triangle into two;
    - ▣ Occipital triangle
    - ▣ Supraclavicular/ omoclavicular triangle.
- 
- ▣ The floor of the posterior triangle consists of four muscles, covered by the prevertebral layer of the deep cervical fascia. The splenius capitus, levator scapulae, and the three scalenus muscles.
  - ▣ The anterior free edge of the TRAPEZIUS MUSCLE forms the posterior border of the posterior triangle.
  - ▣ The LEVATOR SCAPULAE MUSCLE forms a portion of the floor of the posterior triangle.
  - ▣ The SCALENE MEDIUS AND POSTERIOR MUSCLES complete the floor of the posterior triangle

- ❑ The **SCALENE ANTERIOR MUSCLE** appears in the lower anterior corner of the triangle, often under the cover of the sternocleidomastoid muscle.
- ❑ The **PHRENIC NERVE** can be observed on the anterior surface of the scalene anterior muscle.
- ❑ The **ROOTS AND TRUNKS OF THE BRACHIAL PLEXUS** emerge from the interval between the scalene anterior and scalene medius & posterior muscles.



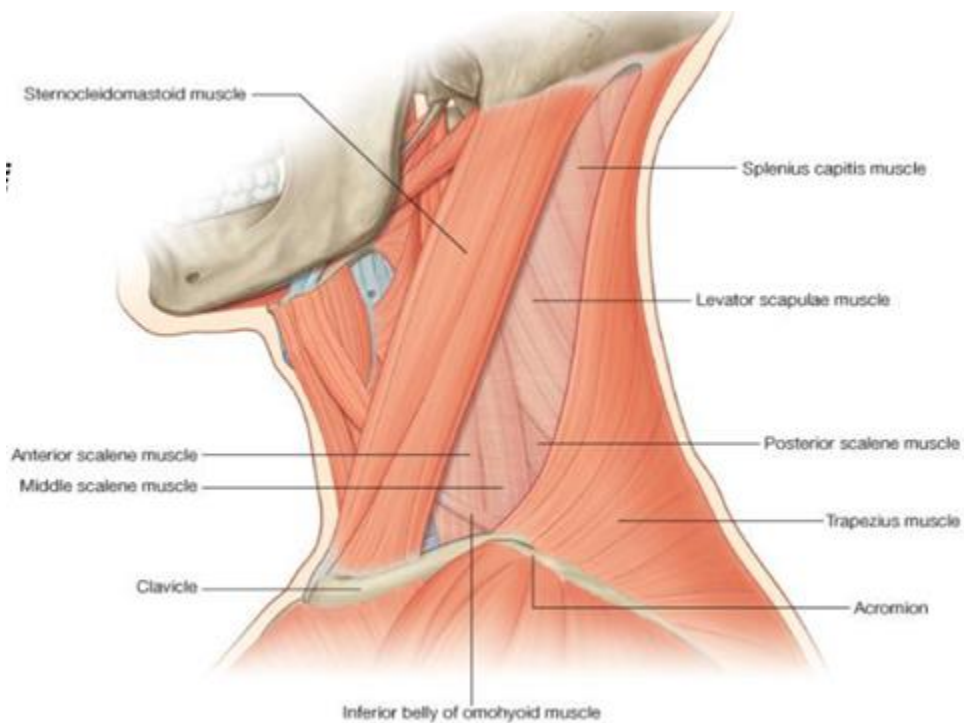
## B. Posterior triangle Roof

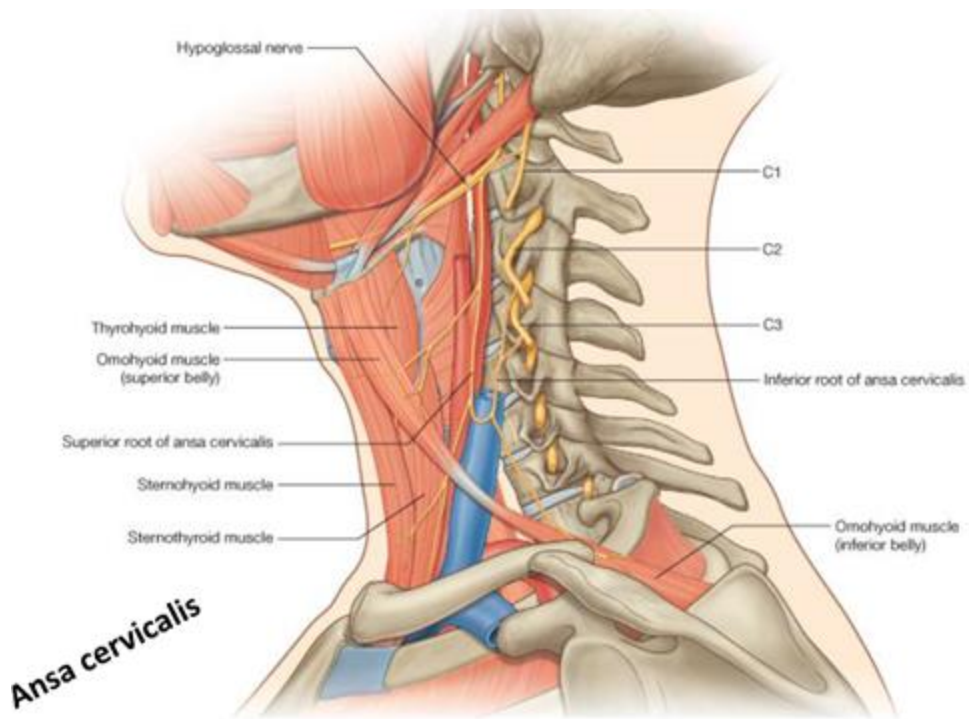
- a. Skin
- b. Superficial fascia
- c. Investing layer of deep cervical
- d. Roof is pierced by :
  1. Nerves : Lesser occipital,
  2. Great auricle
    - i. Transverse cutaneous nerves of neck
    - ii. Supraclavicular nerves
  2. Veins : external jugular veins and its tributaries.
  3. Lymph vessels



## C. Posterior triangle Floor

- ▣ Mainly form by 2<sup>nd</sup> layer of muscle of neck
  1. Splenius capitis.
  2. Levator scapulae.
  3. Occasionally by semispinalis capitis at apex.
  4. Scaleneus medius.
  5. Scaleneus posterior.
  6. Muscular floor is carpeted by prevertebral fascia.





## CERVICAL PLEXUS

