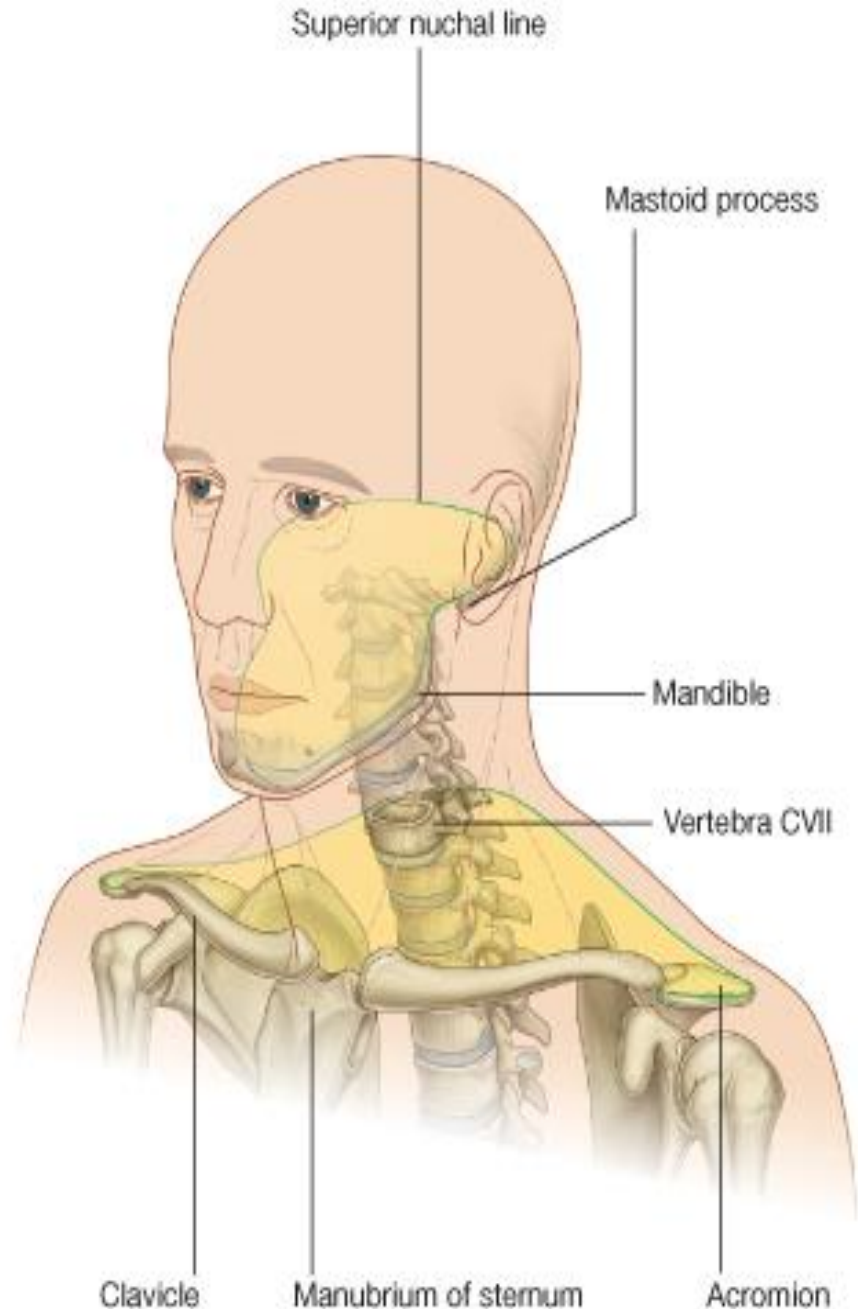


## The Neck

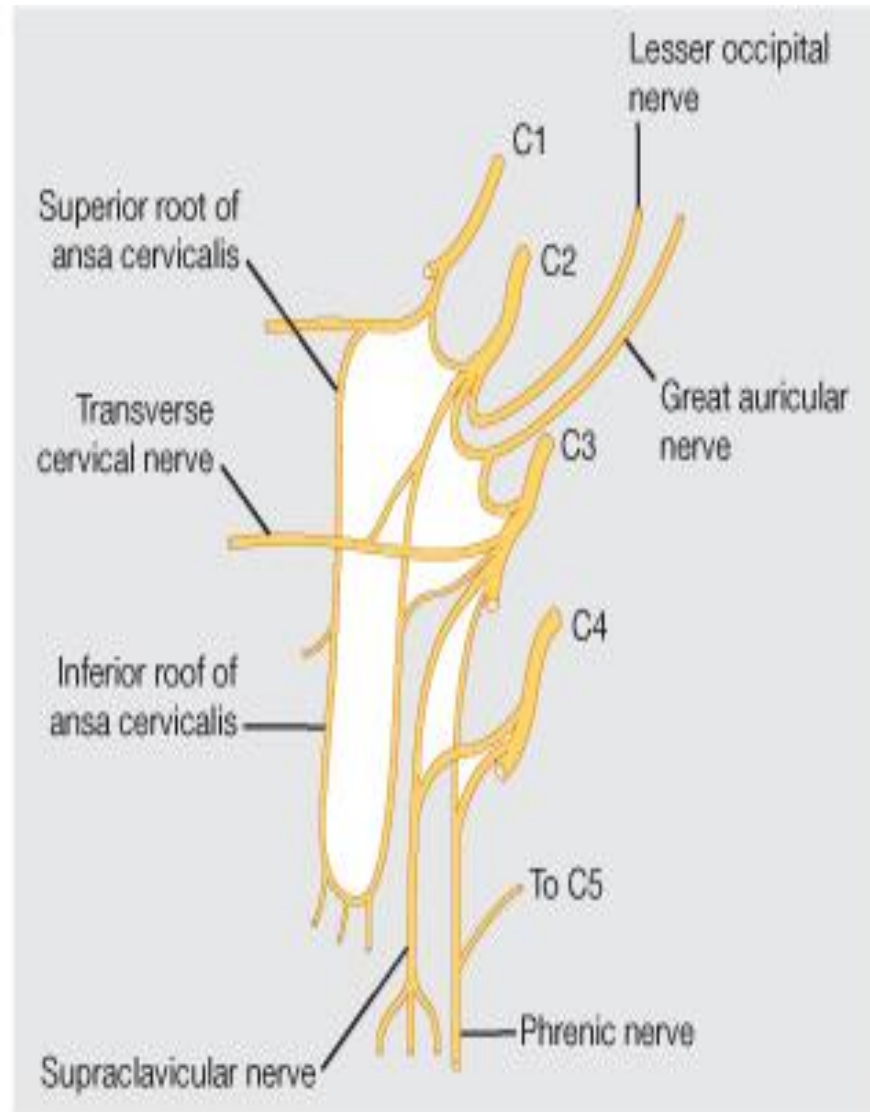
is the region of the body that lies between **the lower margin of the mandible above** and **the suprasternal notch and the upper border of the clavicle below**



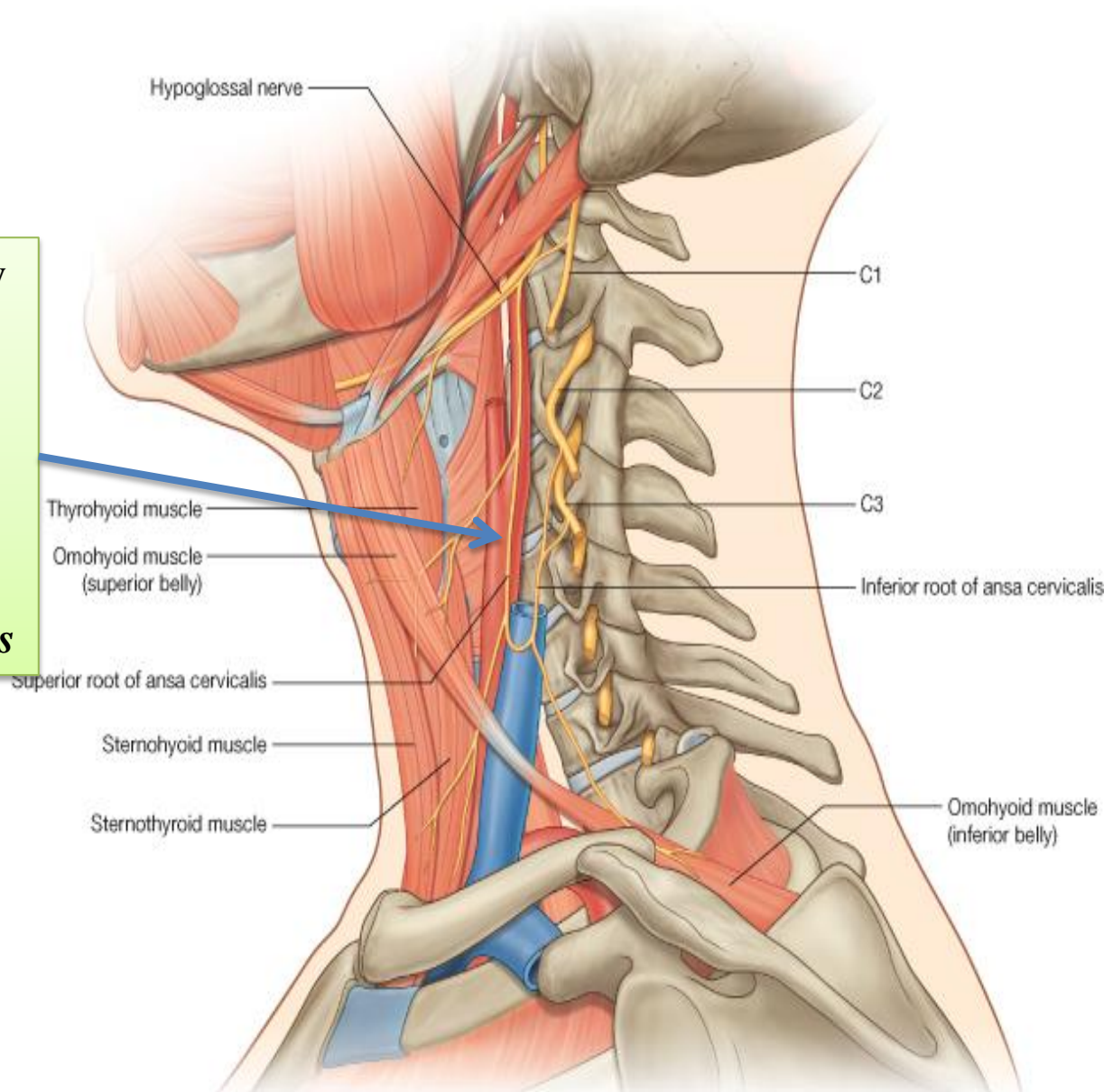
# NERVES OF THE NECK

## Cervical Plexus

➤ Is formed by the anterior rami of the first four cervical nerves.



➤ The rami are joined by connecting branches, which form loops  
➤ **(the ansa cervicalis)** that lie in front of the origins of *the levator scapulae* and *the scalenus medius* muscles



# Branches

## A-Cutaneous branches

*The first cervical nerve has no cutaneous branch.*

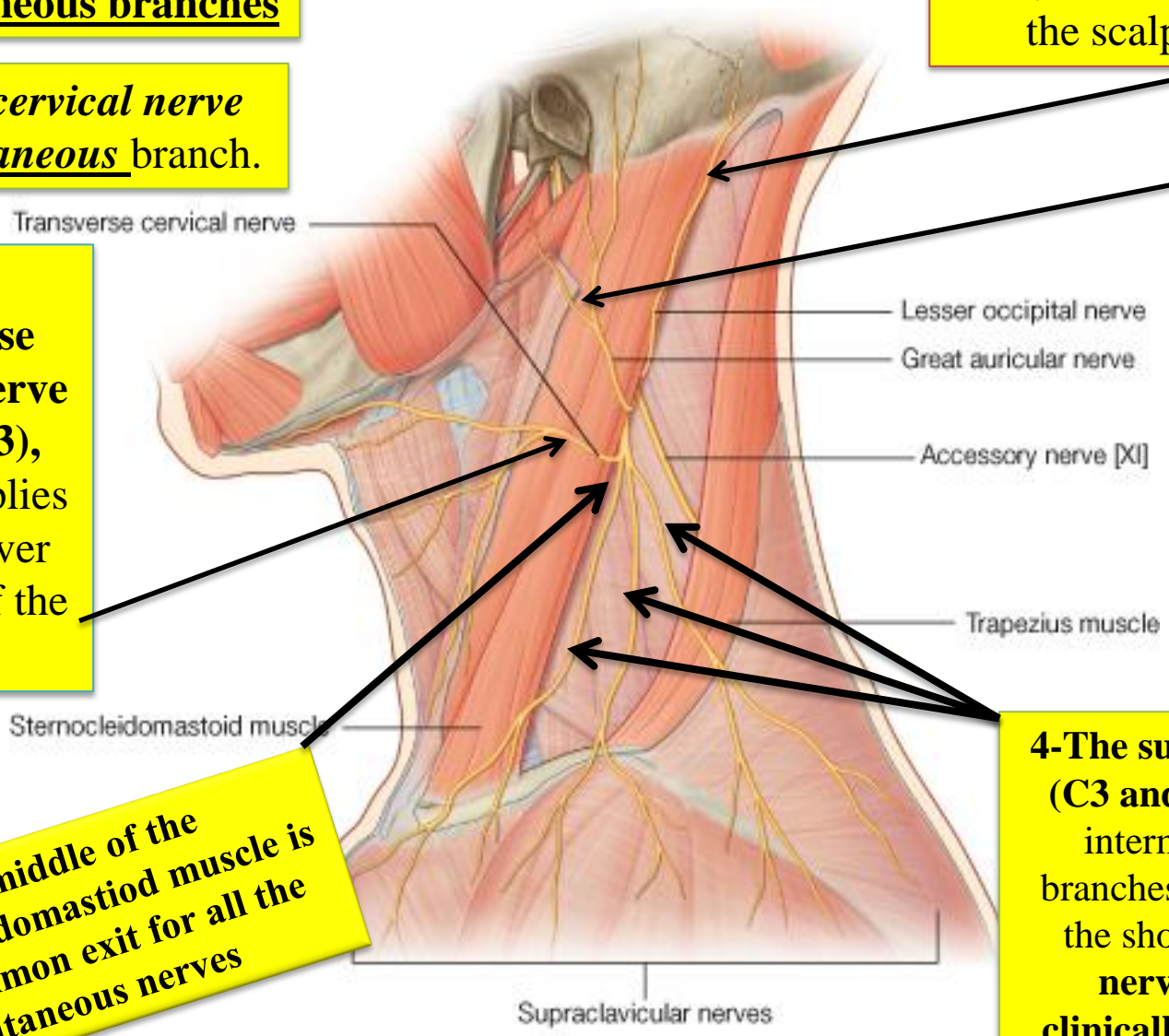
**3-The transverse cervical nerve (C2 and 3),** which supplies the skin over the front of the neck

**the middle of the sternocleidomastoid muscle is the common exit for all the cutaneous nerves**

**1-The lesser occipital nerve (C2),** which supplies the back of the scalp and the auricle

**2-The greater auricular nerve (C2 and 3),** which supplies the skin over the angle of the mandible

**4-The supraclavicular nerves (C3 and 4).** The medial, and intermediate, and lateral branches supply the skin over the shoulder region. **These nerves are important clinically, because pain may be referred along them from the phrenic nerve (gallbladder disease)????!**



**B-Muscular branches**

1-Prevertebral muscles

2-sternocleidomastoid  
(proprioceptive,  
C2 and 3),

4- trapezius  
(proprioceptive,  
C3 and 4).

Rectus capitis anterior muscle

Rectus capitis lateralis muscle

Longus capitis muscle

Levator scapulae muscle

3-levator scapulae (C3 and 4),

Longus colli muscle

Anterior

Middle

Scalene muscles

Posterior

Phrenic nerve

**5-Muscular  
branch to  
the  
diaphragm.  
Phrenic  
nerve**

**6-A branch from C1 joins the hypoglossal nerve.**

Some of these C1 fibers later leave the **hypoglossal as the descending branch**

which unites with the descending cervical nerve (C2 and 3)

**to form the ansa cervicalis**

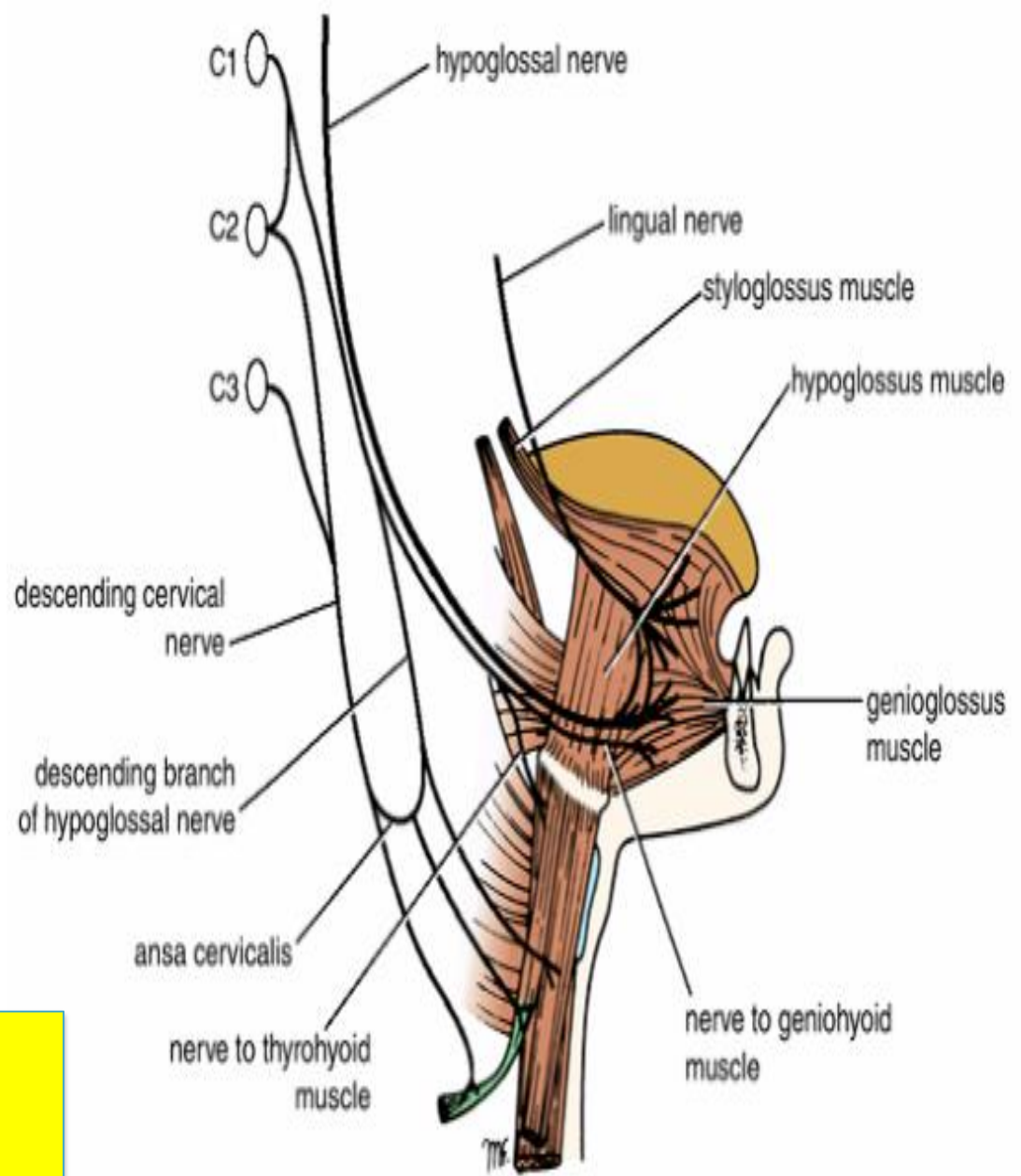
The first, second, and third cervical nerve fibers within the ansa cervicalis supply :

1- omohyoid,

2-sternohyoid

3-sternothyroid muscles

Other C1 fibers within the hypoglossal nerve leave it as the nerve to the thyrohyoid and geniohyoid.



# SUPERFICIAL VEINS OF THE NECK

# **SUPERFICIAL VEINS OF THE NECK**

## **1-External Jugular Vein**

### **The external jugular vein**

begins

**just behind the angle of the mandible**

*by the union of*

**the posterior auricular vein**

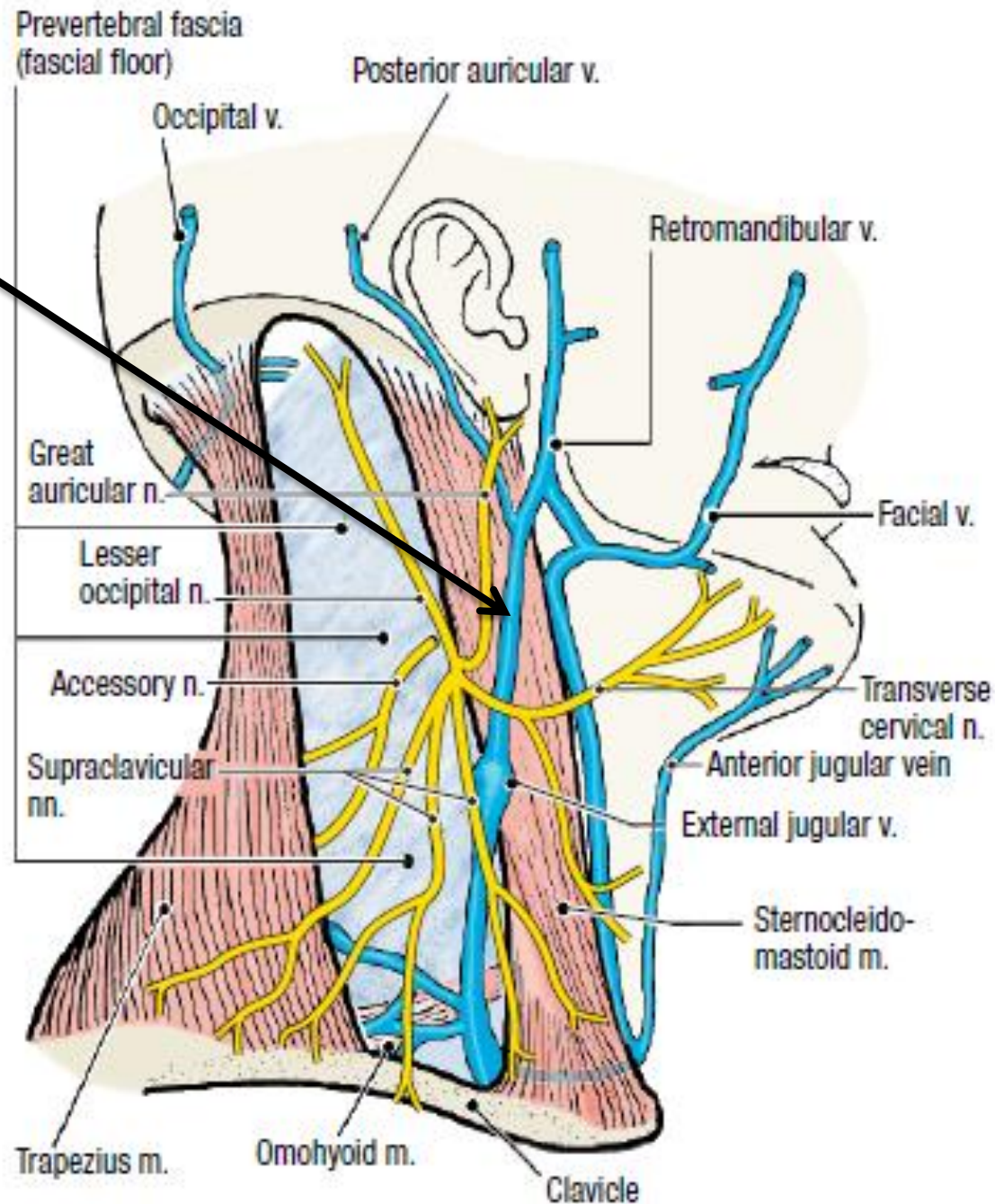
with **The posterior division of the retromandibular vein**

➤ It descends obliquely *across the sternocleidomastoid* muscle

➤ Pierces the deep fascia and drains into the subclavian vein

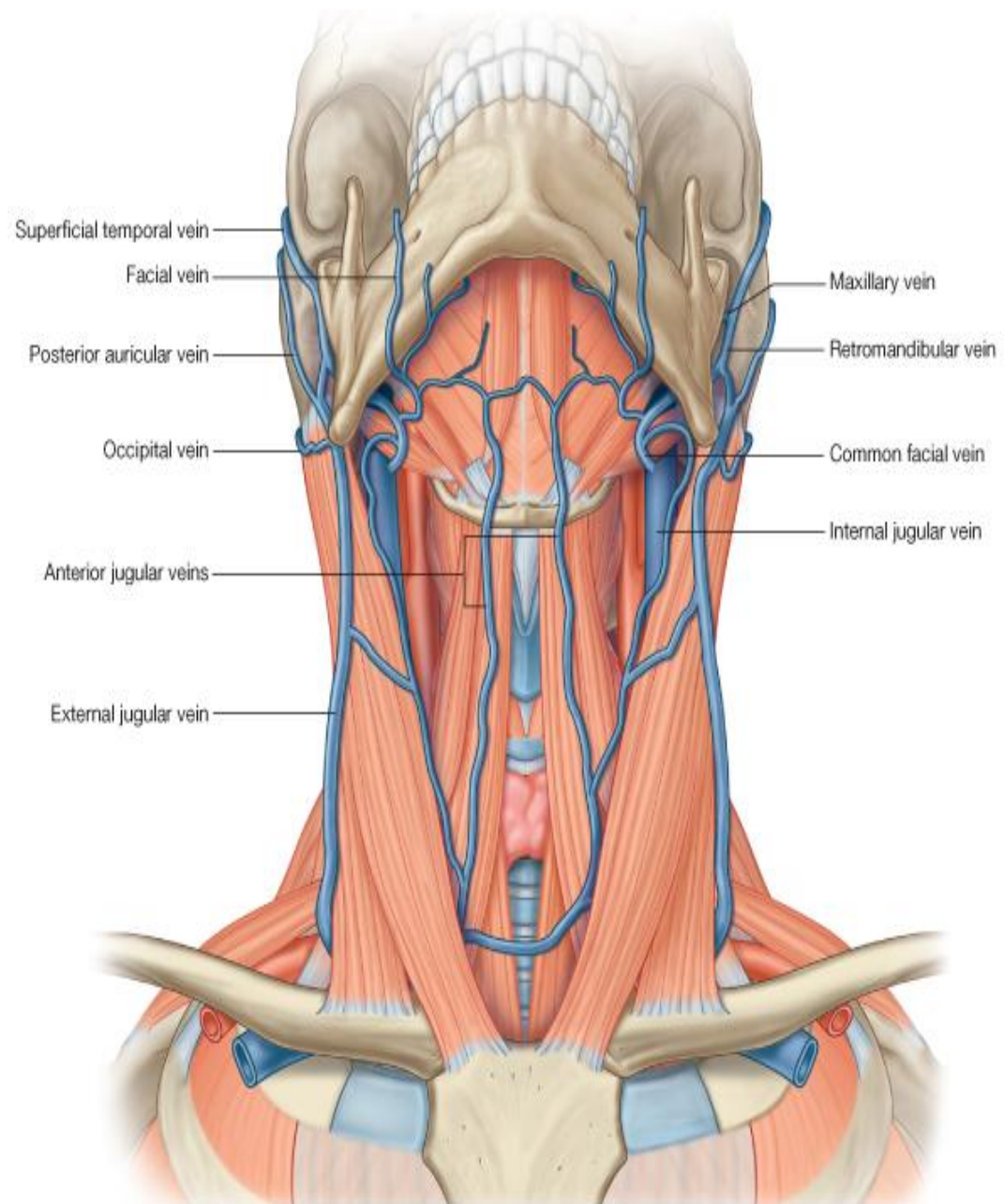
➤ It varies considerably in size, and its course extends from the angle of the mandible to the middle of the clavicle.

Tributaries: Transverse cervical, Suprascapular, posterior external jugular and anterior jugular vein



## Anterior Jugular Vein

- The anterior jugular vein begins just below the chin
- It runs down the neck close to the midline.
- Just above the suprasternal notch, the veins of the two sides are united by a transverse trunk called the jugular arch. Drains into the external jugular vein.



## **Veins of the Face and the Neck**

### **Facial Vein**

is joined by the anterior division of the retromandibular vein, and drains into the internal jugular vein.

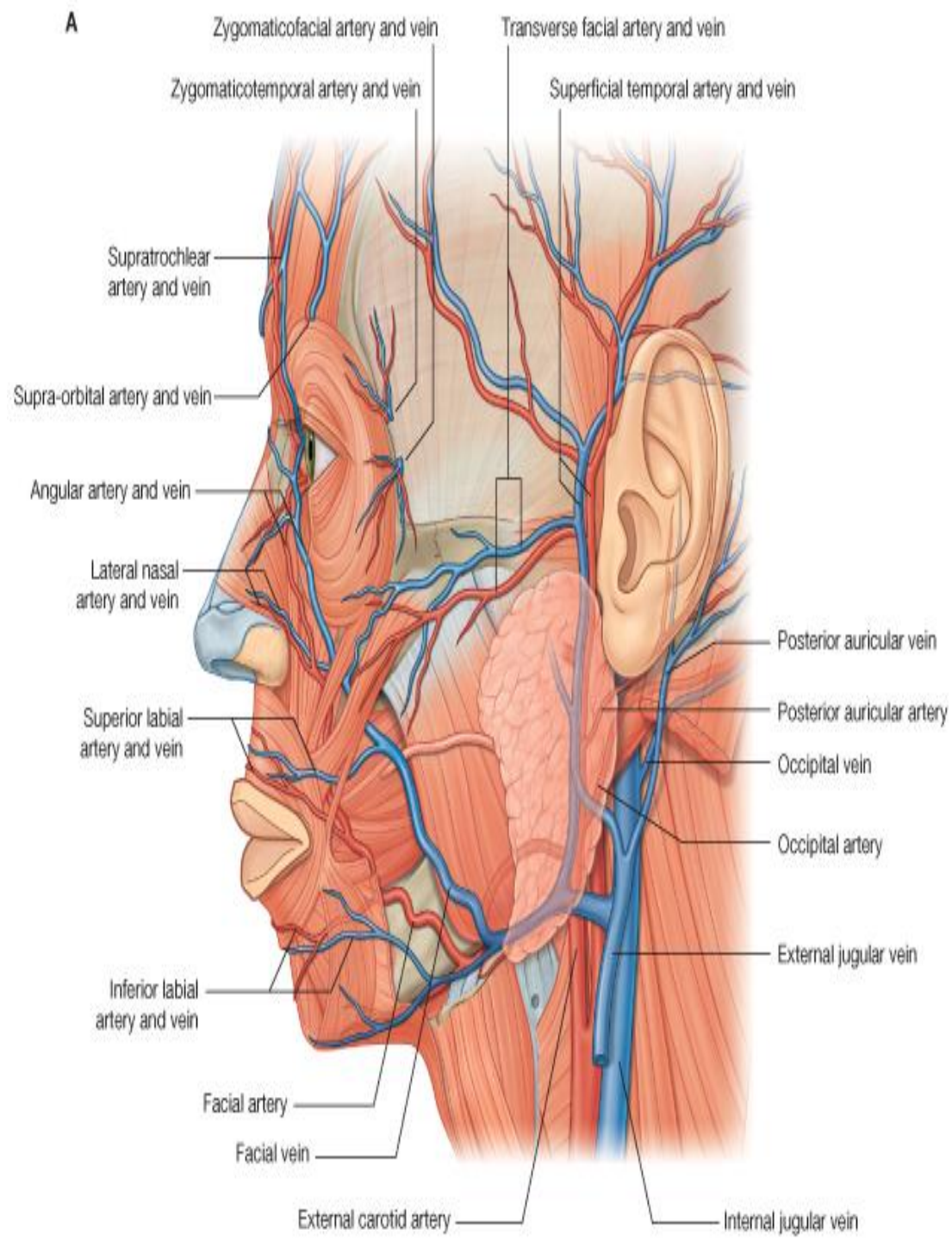
### **Superficial Temporal Vein**

The superficial temporal vein is formed on the side of the scalp enters the parotid salivary gland, where it joins the maxillary vein to form the retromandibular vein.

### **Maxillary Vein**

The maxillary vein is formed in the infratemporal fossa from the pterygoid venous plexus

The maxillary vein joins the superficial temporal vein to form the retromandibular vein.

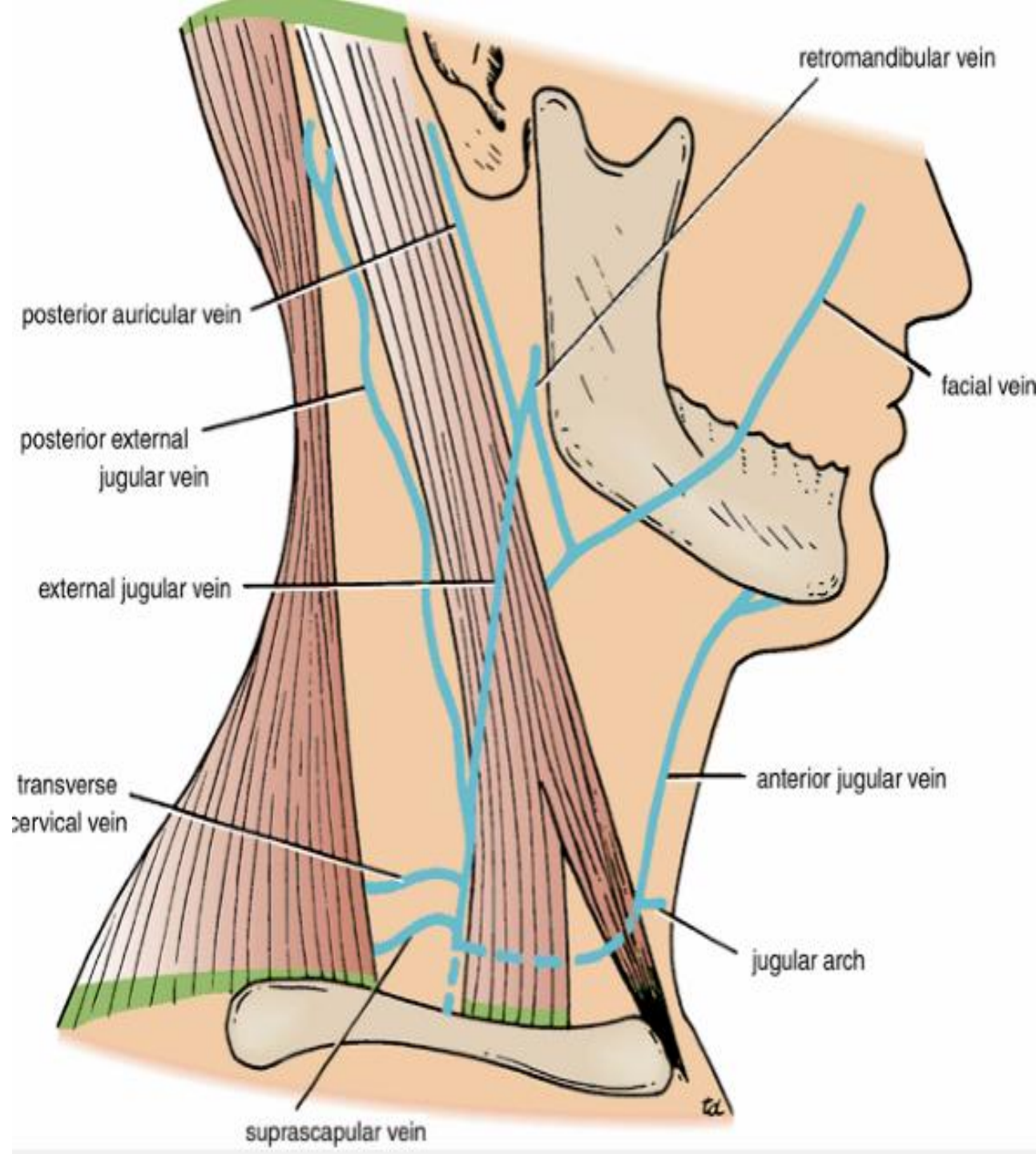


## **Retromandibular Vein**

is formed by the union of the **superficial temporal** and the **maxillary**

On leaving the parotid salivary gland, it divides into:

*an anterior branch*, which joins the facial vein,  
*a posterior branch*, which joins the posterior auricular vein to form the external jugular vein.

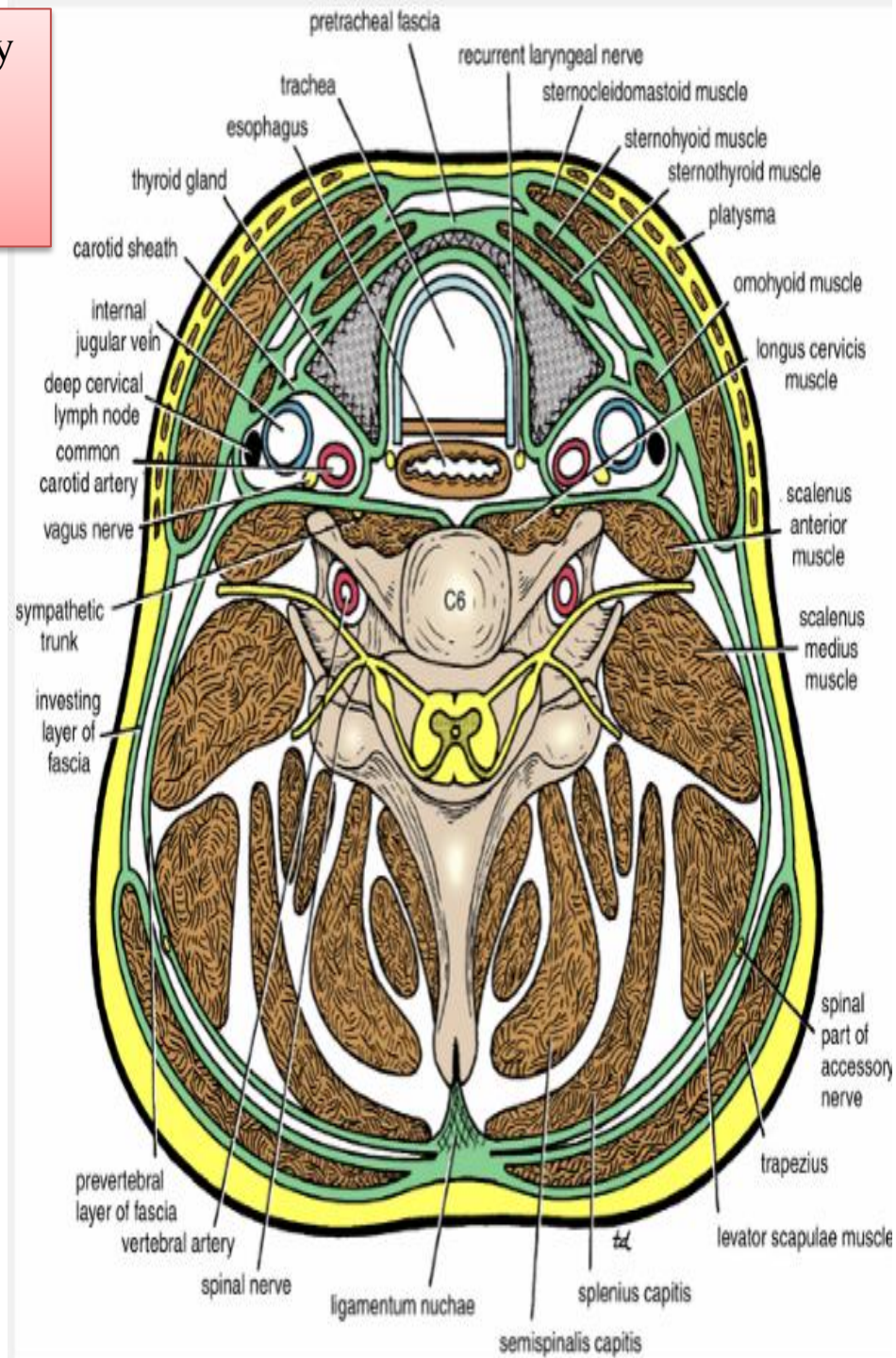


The neck is surrounded by

**1-Skin**

**2-Superficial fascia**

**3-Deep fascia**



# 1-SKIN

## Cutaneous nerves of the neck

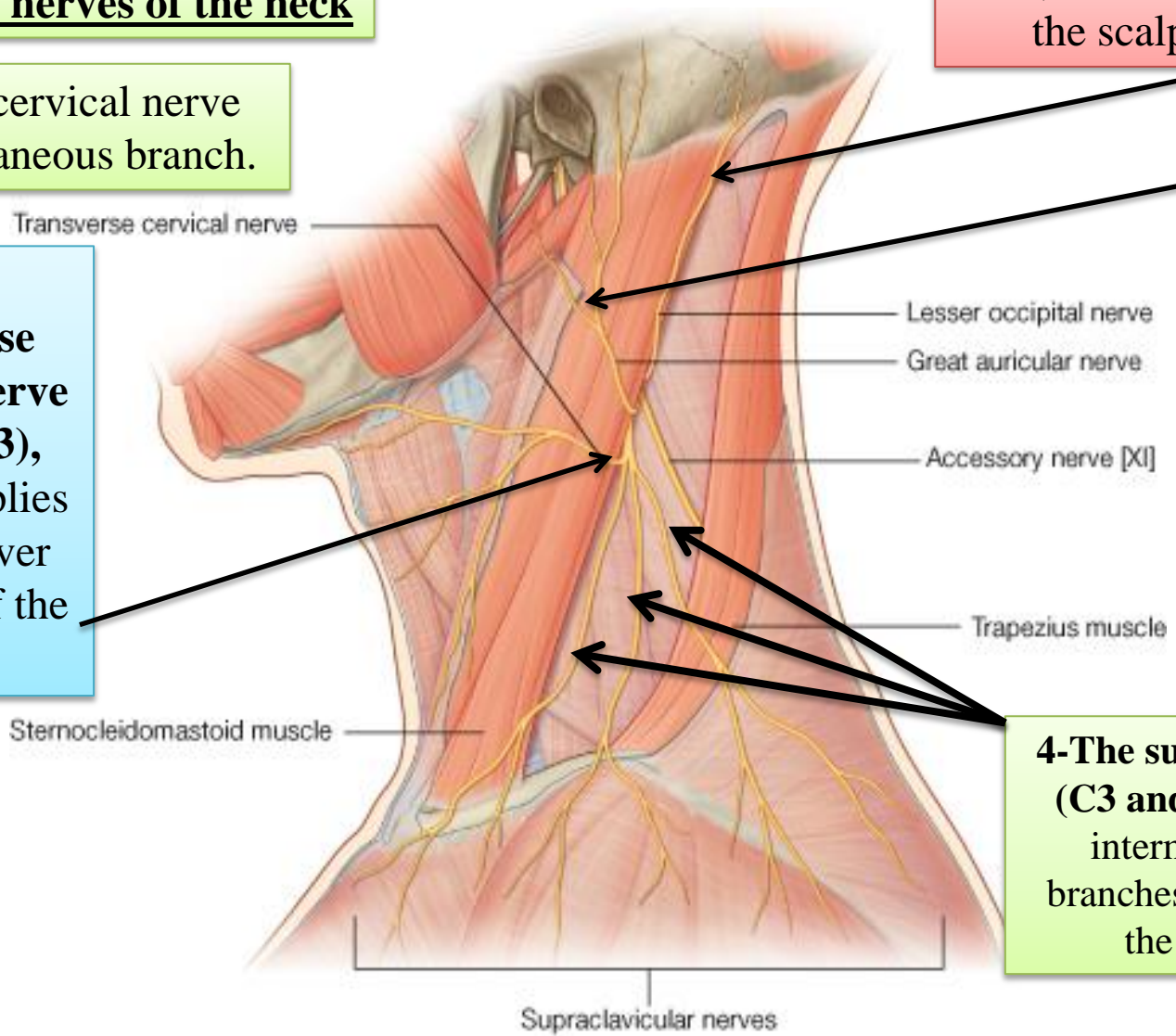
The first cervical nerve has no cutaneous branch.

**3-The transverse cervical nerve (C2 and 3),** which supplies the skin over the front of the neck

**1-The lesser occipital nerve (C2),** which supplies the back of the scalp and the auricle

**2-The greater auricular nerve (C2 and 3),** which supplies the skin over the angle of the mandible

**4-The supraclavicular nerves (C3 and 4).** The medial, and intermediate, and lateral branches supply the skin over the shoulder region.



Superficial lymph nodes  
of the face and scalp

Five groups of superficial lymph nodes

form a ring around the head

Responsible for  
the lymphatic  
drainage of the  
**Face and scalp**

1-Occipital nodes

2- Mastoid nodes

3-Pre-auricular and parotid nodes

5-Submental nodes

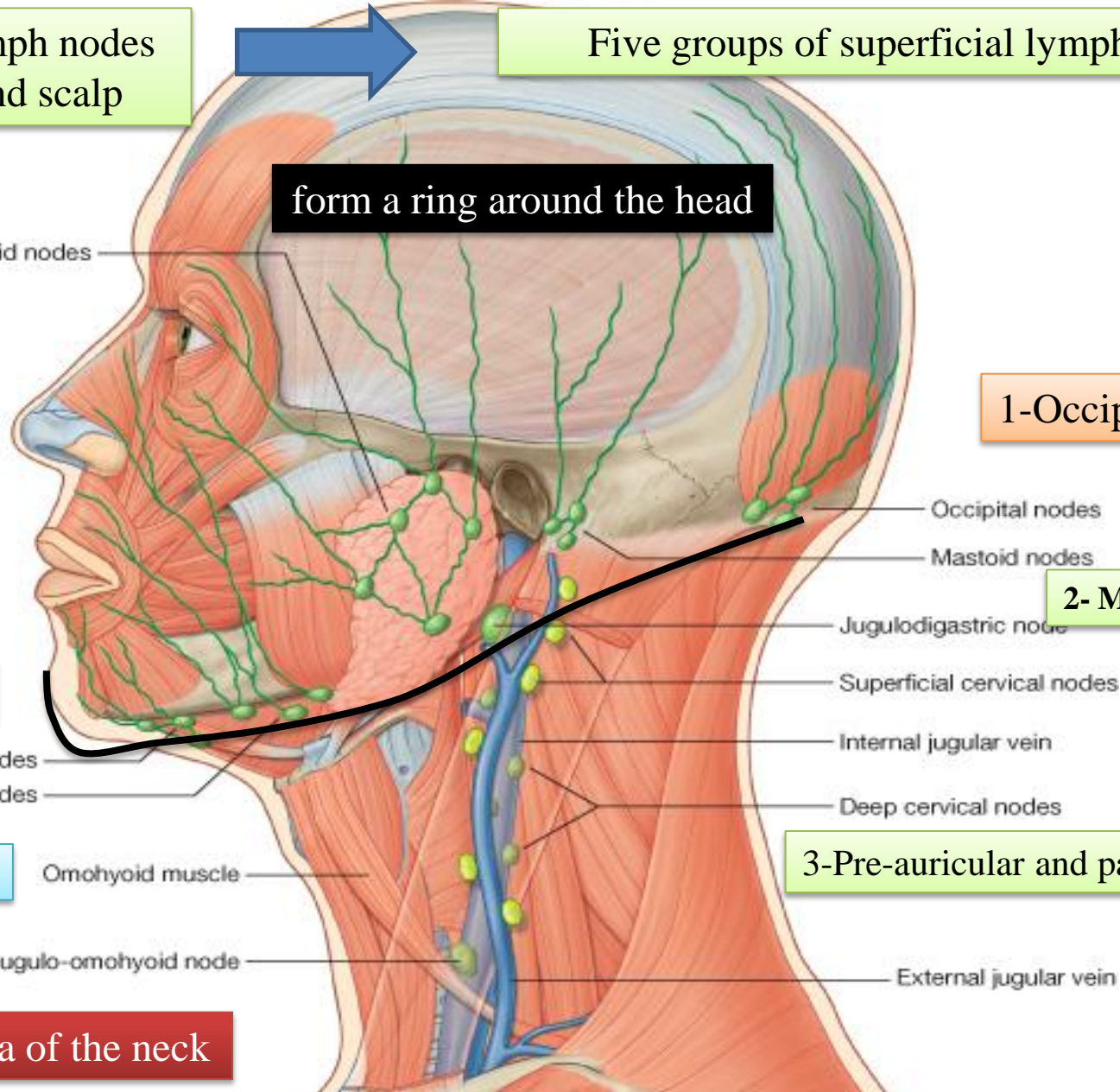
4-Submandibular nodes

2-Superficial fascia of the neck

Contains:

2-Superficial **cervical** lymph nodes

The superficial cervical nodes are a collection of lymph nodes along the external jugular vein on the superficial surface of the sternocleidomastoid muscle



The deep cervical nodes are a collection of lymph nodes that form a chain along the internal jugular vein.

This node receives lymphatic drainage from the tongue

divided into **upper and lower** groups

From the deep cervical nodes, lymphatic vessels form the right and left jugular trunks, which empty into the right lymphatic duct on the right side or the **thoracic duct on the left side.**

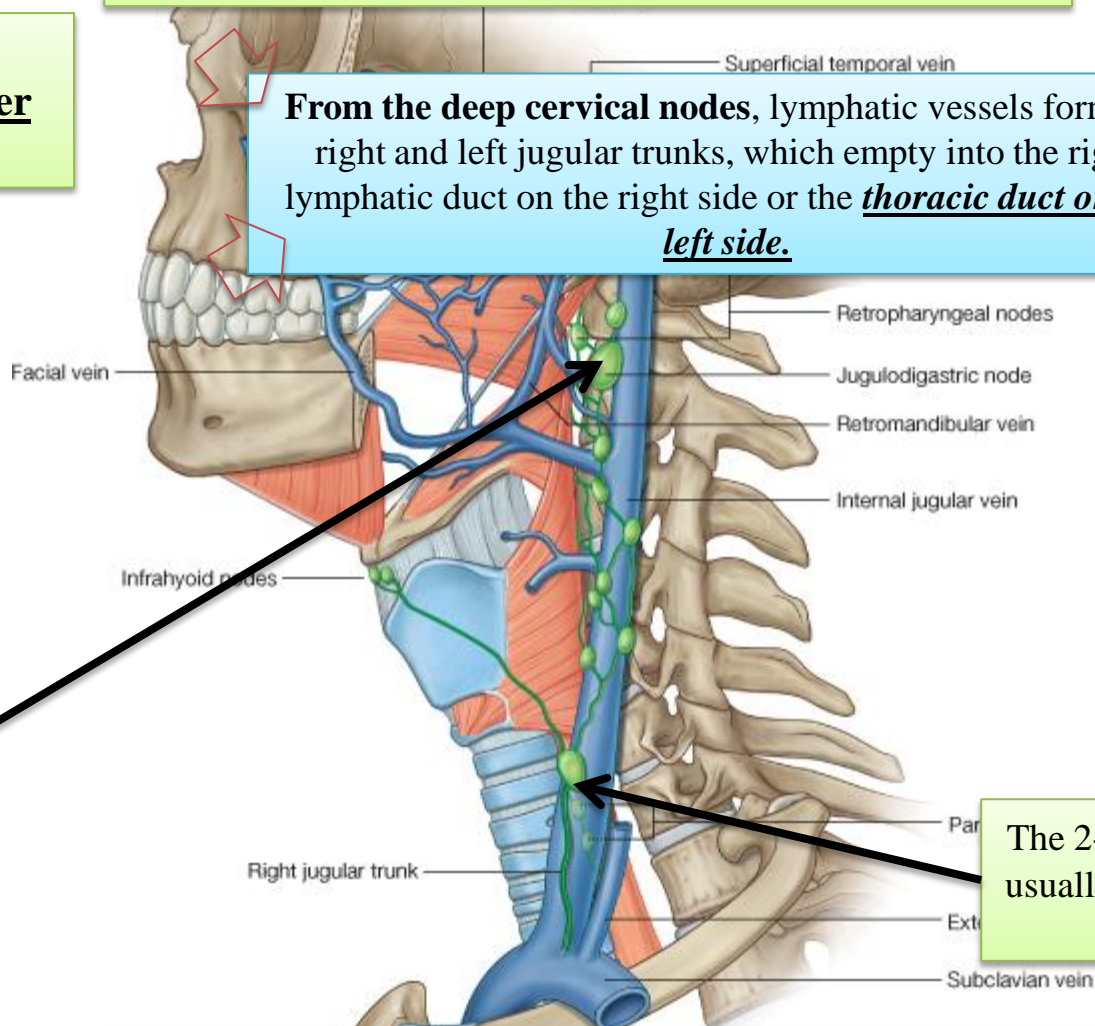
it is at or just inferior to the intermediate tendon of the omohyoid muscle,

BY the intermediate tendon of the **omohyoid** muscle

Two important nodes in the deep cervical group  
1- **jugulodigastric** node

This large node is where **the posterior belly of the digastric muscle crosses the internal jugular vein** and receives lymphatic drainage from the **tonsils and tonsillar region.**

The 2- **jugulo-omohyoid** node usually associated with the lower deep cervical group



### **3-Deep Cervical Fascia**

Has the following parts:

#### **THE INVESTING LAYER**

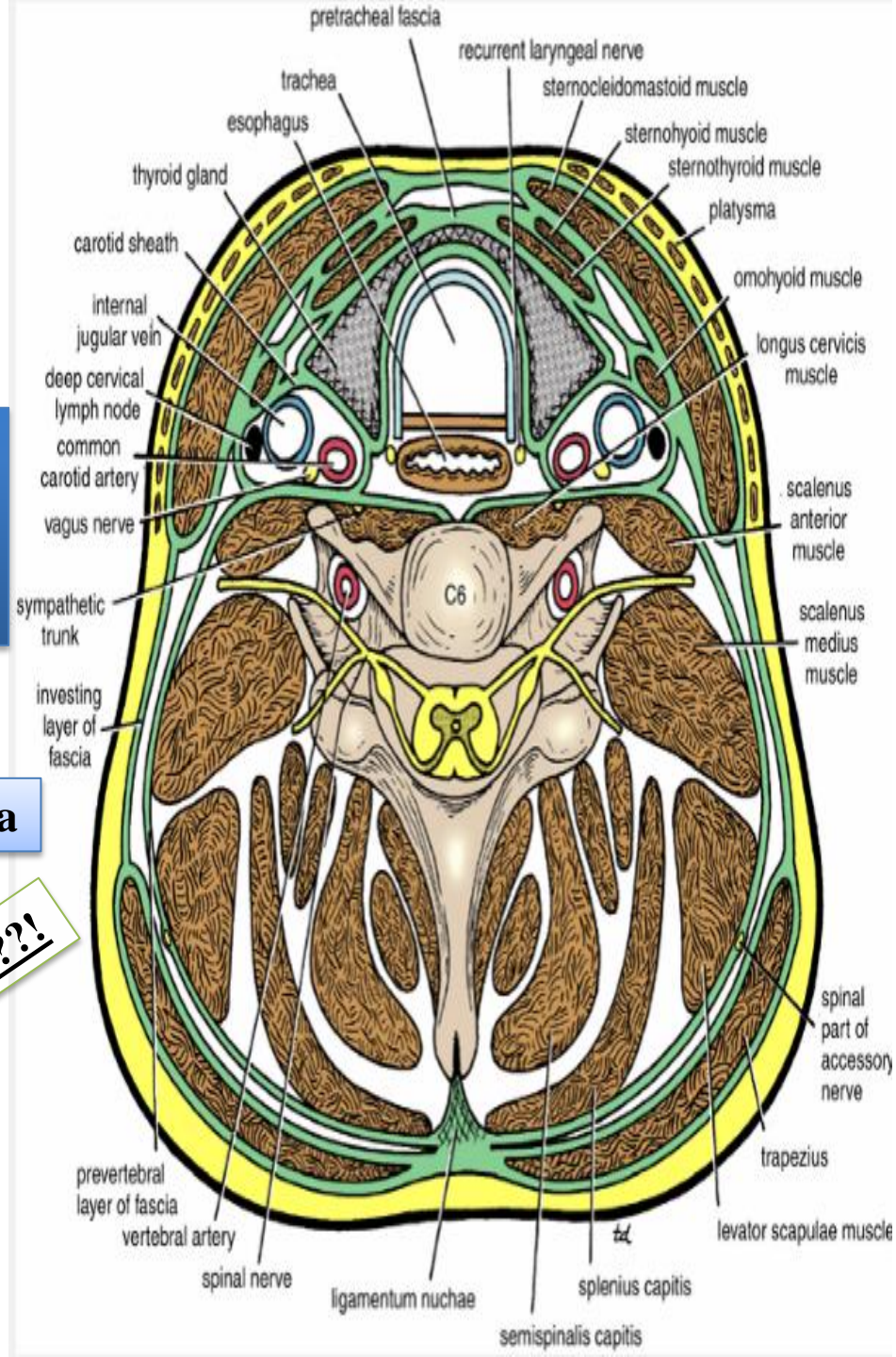
- Is a thick layer that encircles the neck
- It splits to enclose the trapezius and the sternocleidomastoid muscles
- Sends two septa inside the neck

#### **1-Pretracheal fascia**

The pretracheal layer is a thin layer that is attached above to the laryngeal cartilages. It surrounds the thyroid and the parathyroid glands, forming a sheath for them, and encloses the infrahyoid muscles.

#### **2-Prevertebral fascia**

**What does this mean????!**



The two septa divide the neck into three compartments

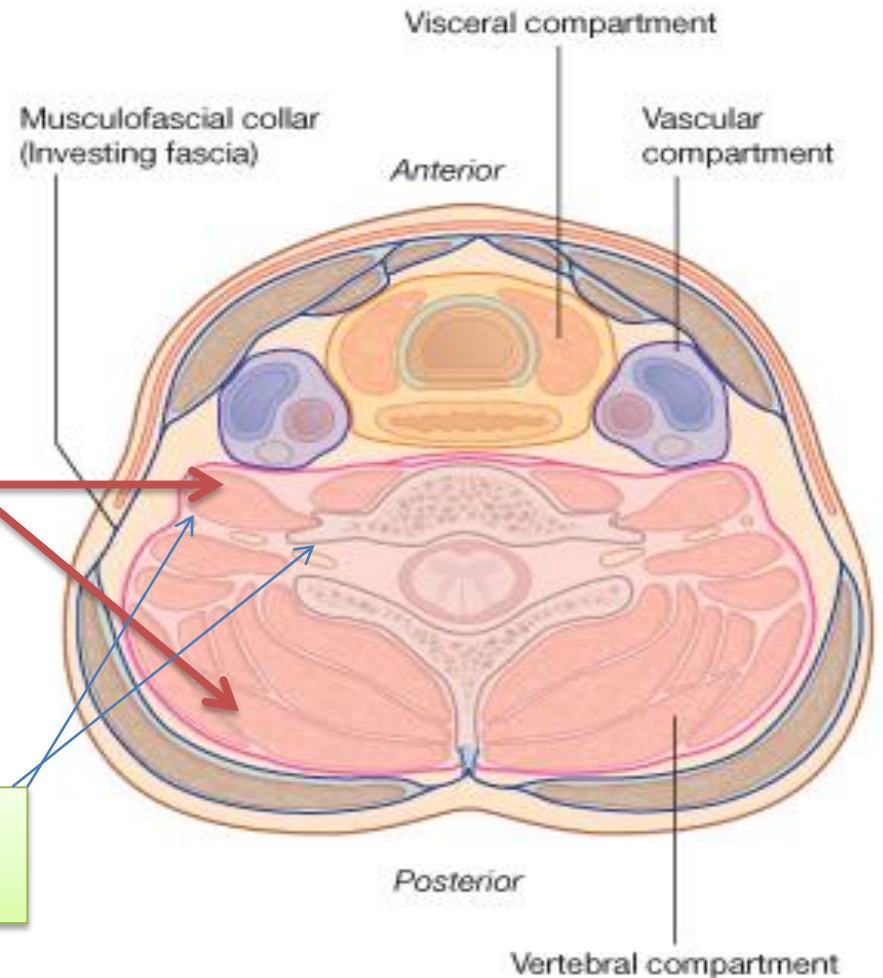
**A- Muscular compartment (vertebral)**

Located posterior to the prevertebral fascia

Contents:

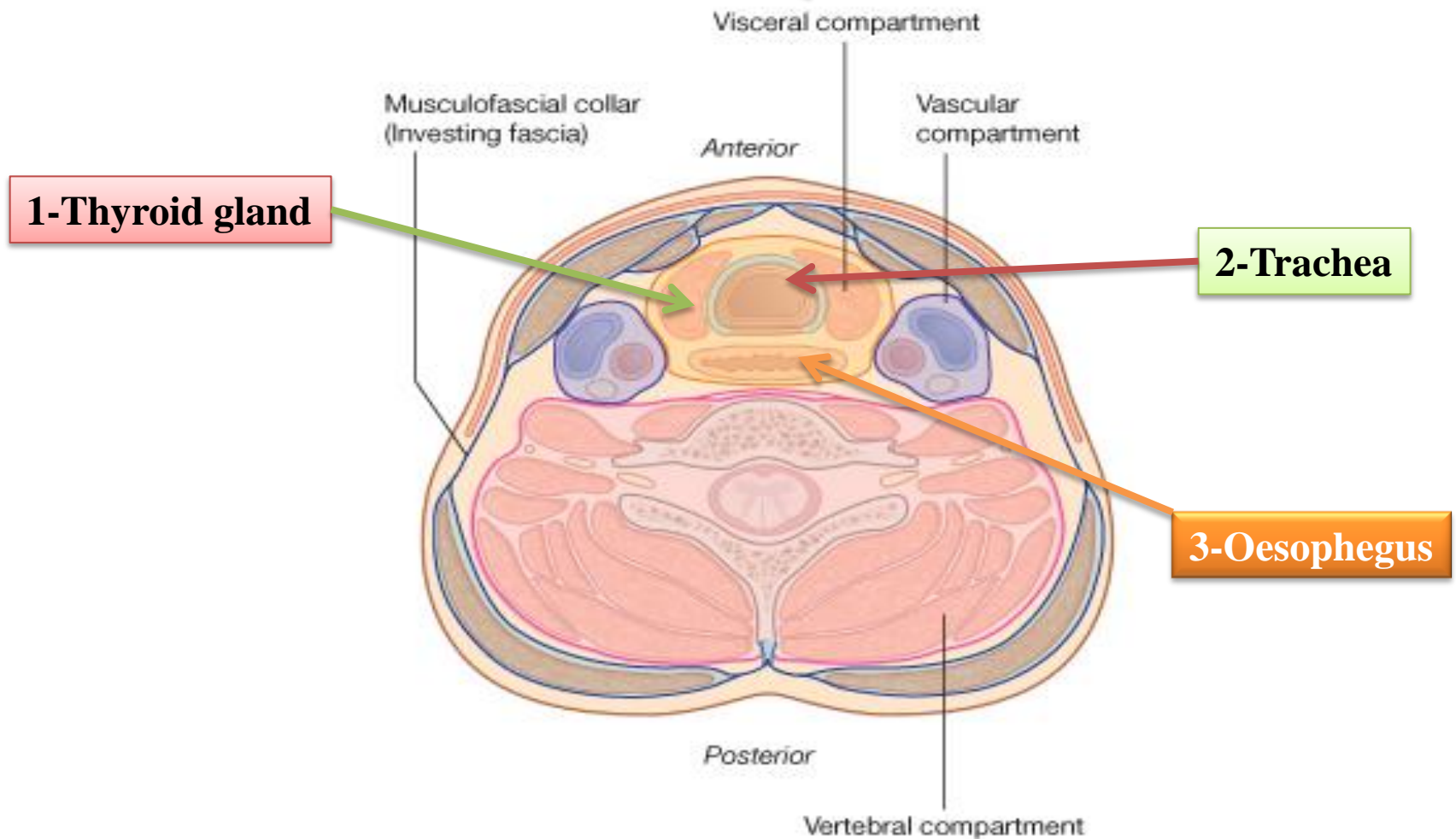
1-Prevertebral and postvertebral muscles

2-Spinal nerves (that shear in the formation of the brachial and cervical plexuses)



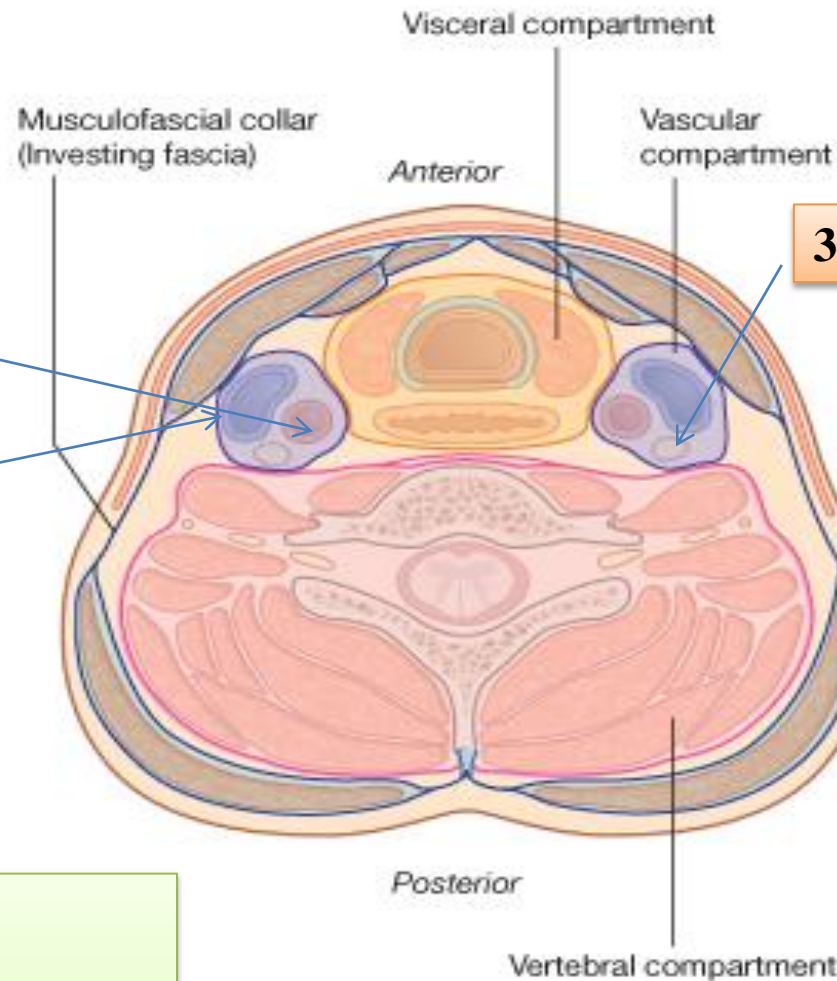
## **B- Visceral compartment**

Located anterior to the Prevertebral fascia  
And posterior to the pretracheal fascia  
Contents:



## C- Vascular compartment

Located Inside the carotid sheath  
Contents:



**1-Common carotid artery**

**2-Internal jugular vein**

**3- Vagus nerve**

**Carotid sheath contents**  
**"I See 10 CC's in the IV":**  
**I See (I.C.)= Internal Carotid artery**  
**10 = CN 10 (Vagus nerve)**  
**CC = Common Carotid artery**  
**IV = Internal Jugular Vein**

# The fascial spaces:

❖ They are potential spaces filled with loose connective tissue.

❖ These are clinically important because organisms originating in:

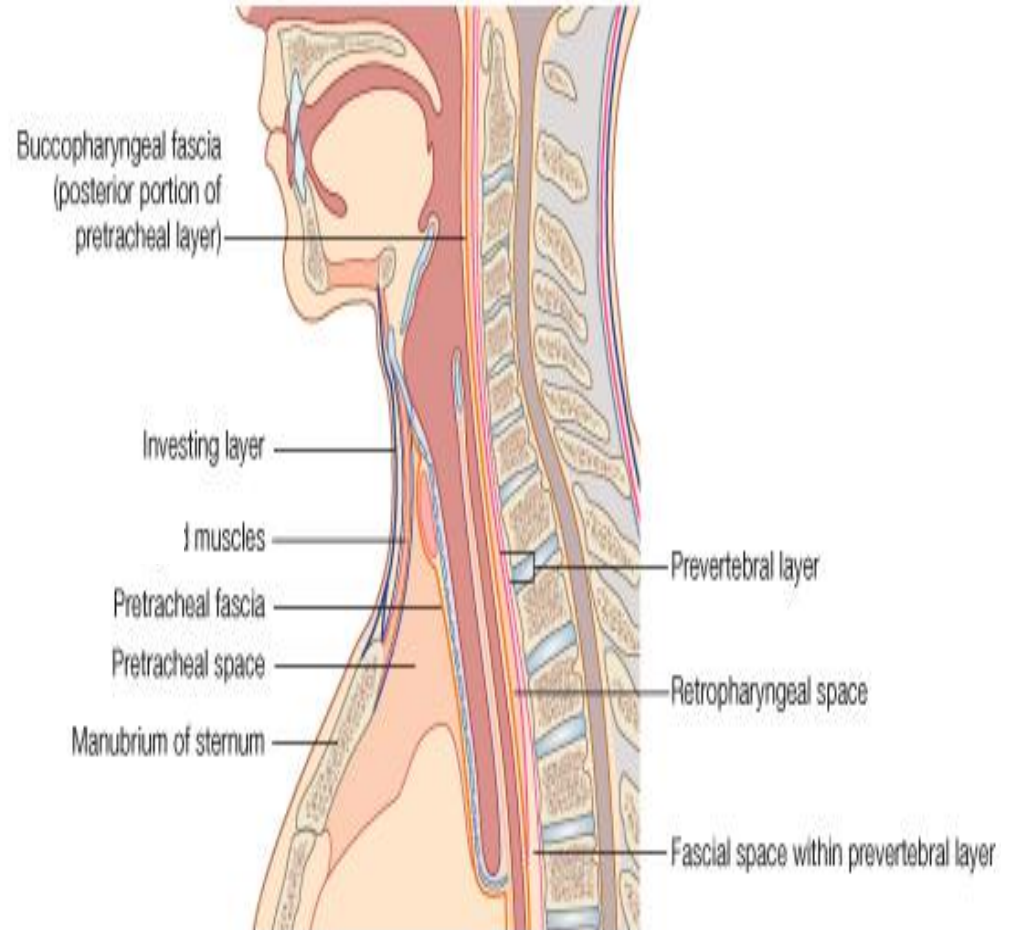
**1-THE MOUTH**

**2-TEETH**

**3-PHARYNX**

**4-ESOPHAGUS**

can spread among the fascial spaces,  
and the fascia can determine the  
direction of spread of infection



# A-Retropharyngeal space

- it is an Area of loose connective tissue lying posterior to the **pharynx**.
- The largest interfascial space in the neck which permits movement of the pharynx, esophagus, larynx, and trachea during swallowing

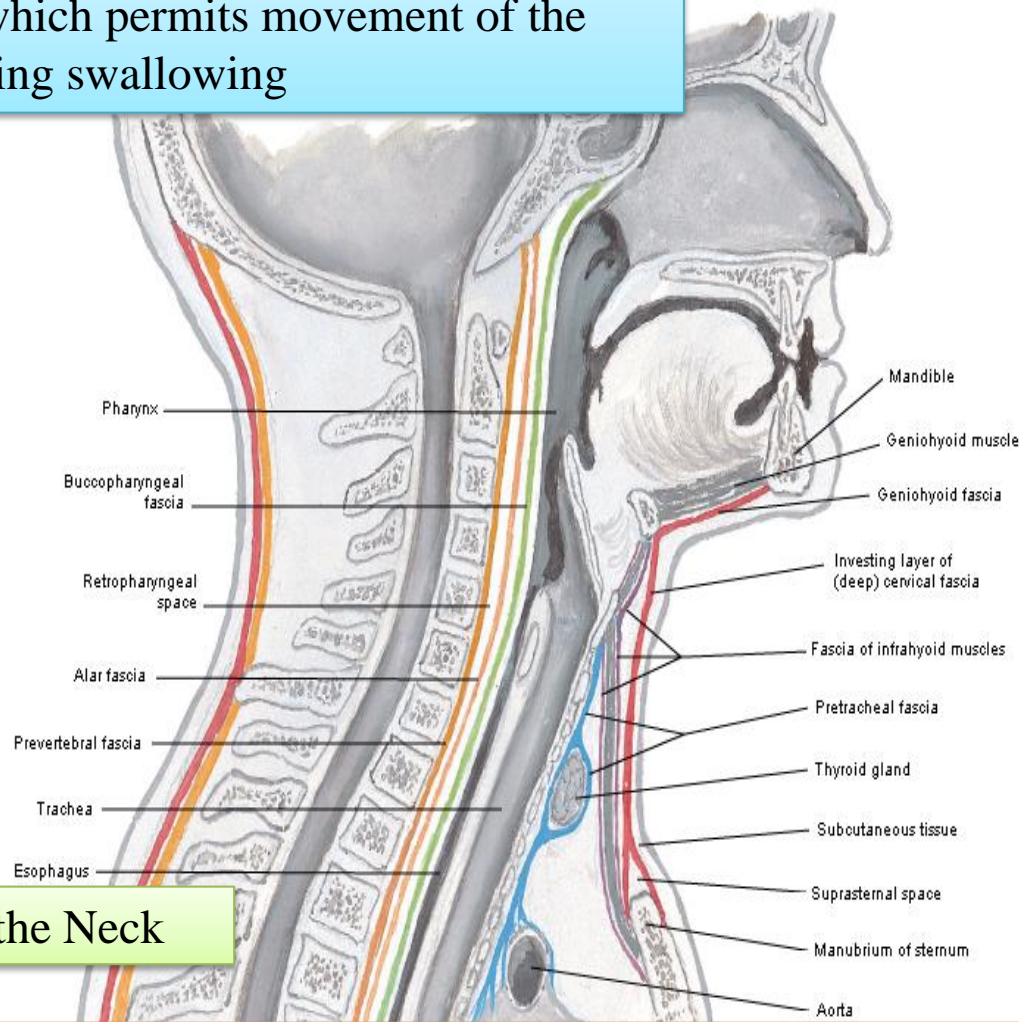
## Borders Anteriorly

by the visceral ( retropharyngeal ) fascia  
Posteriorly  
by alar fascia ( anterior part of the prevertebral fascia )

- **Commonly regarded as the route through which infections of the mouth and throat reach the mediastinum**

## Chronic Infection of the Fascial Spaces of the Neck

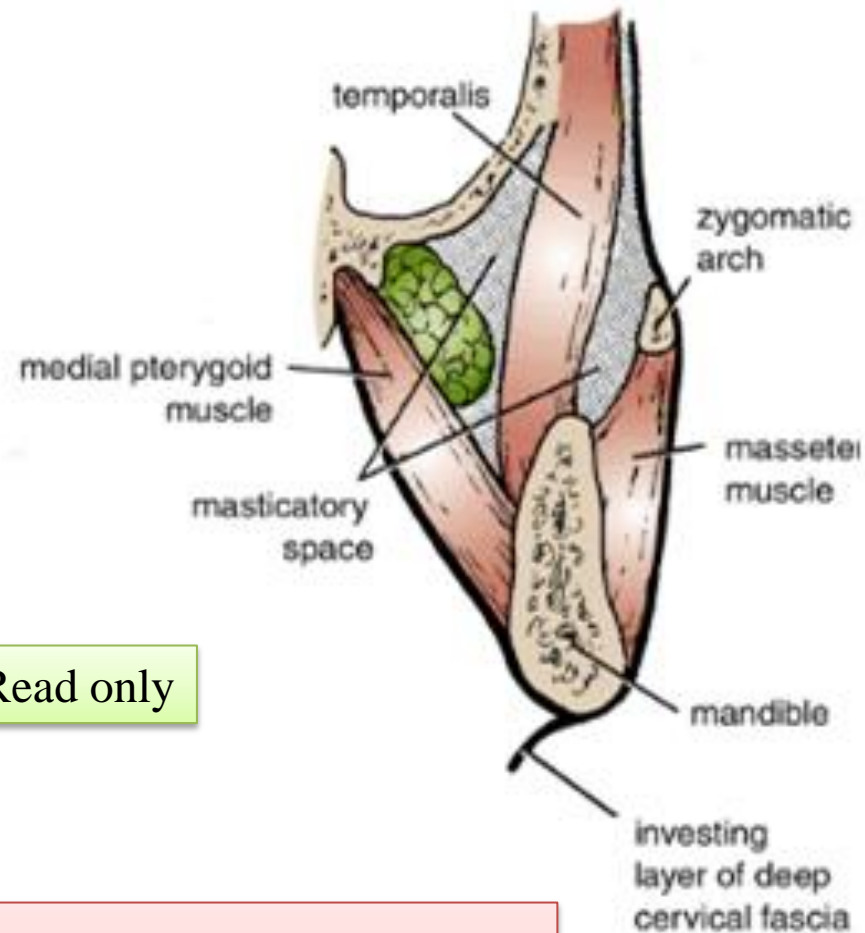
Tuberculous infection of the deep cervical lymph nodes can result in destruction of one or more of the nodes. The pus is at first limited by the investing layer of the deep fascia. Later, this becomes eroded at one point, and the pus passes into the less restricted superficial fascia. collar-stud abscess is now present.



## B- Masticatory space

- The masticatory space lies on either side of the mandibular ramus and is formed by cervical fascia, which ascends from the neck and splits at the inferior mandibular border to envelop the ramus of the mandible, the masseter, the medial and lateral pterygoid, and the lower portion of the temporalis muscle.
  - It is traversed particularly by the mandibular nerve (V3) and the maxillary vessels
  - Infections from the 2nd or 3rd mandibular molars may spread to these secondary sites

Read only



## C-Submandibular space

The submandibular space is composed of two spaces separated anteriorly by the mylohyoid muscle: the sublingual space, which is superior, and the submaxillary space, which is inferior.

**Ludwig's angina** is an acute infection of the submandibular fascial space and is commonly secondary to dental infection.

## Vascular compartment

### 1-Common Carotid Artery

➤ The right common carotid artery arises from the brachiocephalic artery behind the right sternoclavicular joint

➤ The left artery arises from the arch of the aorta in the superior mediastinum

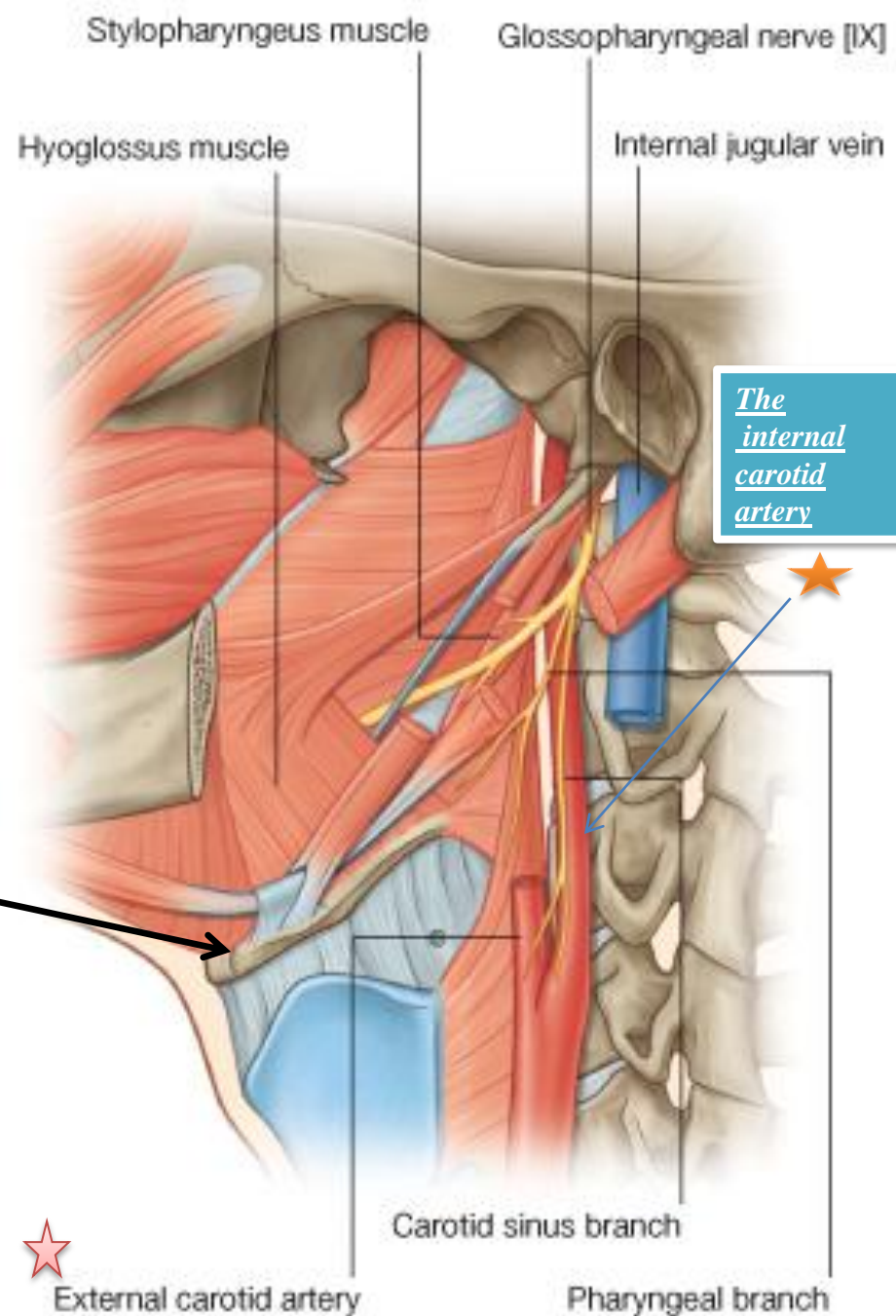
➤ The common carotid artery runs upward through the neck under cover of the anterior border of the sternocleidomastoid muscle

➤ At the upper border of the thyroid cartilage it divides into:

➤ THE EXTERNAL CAROTID ARTERY ★

➤ THE INTERNAL CAROTID ARTERY ★

Branches of the Common Carotid Artery  
Apart from the two terminal branches, the common carotid artery gives off no branches



# External Carotid Artery

❑ is one of the **terminal branches** of the **common carotid artery**

❑ It supplies structures in the neck

**1-Face**

**2- scalp**

**3-the tongue and the maxilla**

❖ It lies **outside the carotid sheath**

❖ The artery begins at the level of the **upper border of the thyroid cartilage**

❖ terminates in the substance of the **parotid gland** behind the neck of the mandible by **dividing into the superficial temporal and maxillary arteries**

## Its relation to the internal carotid artery

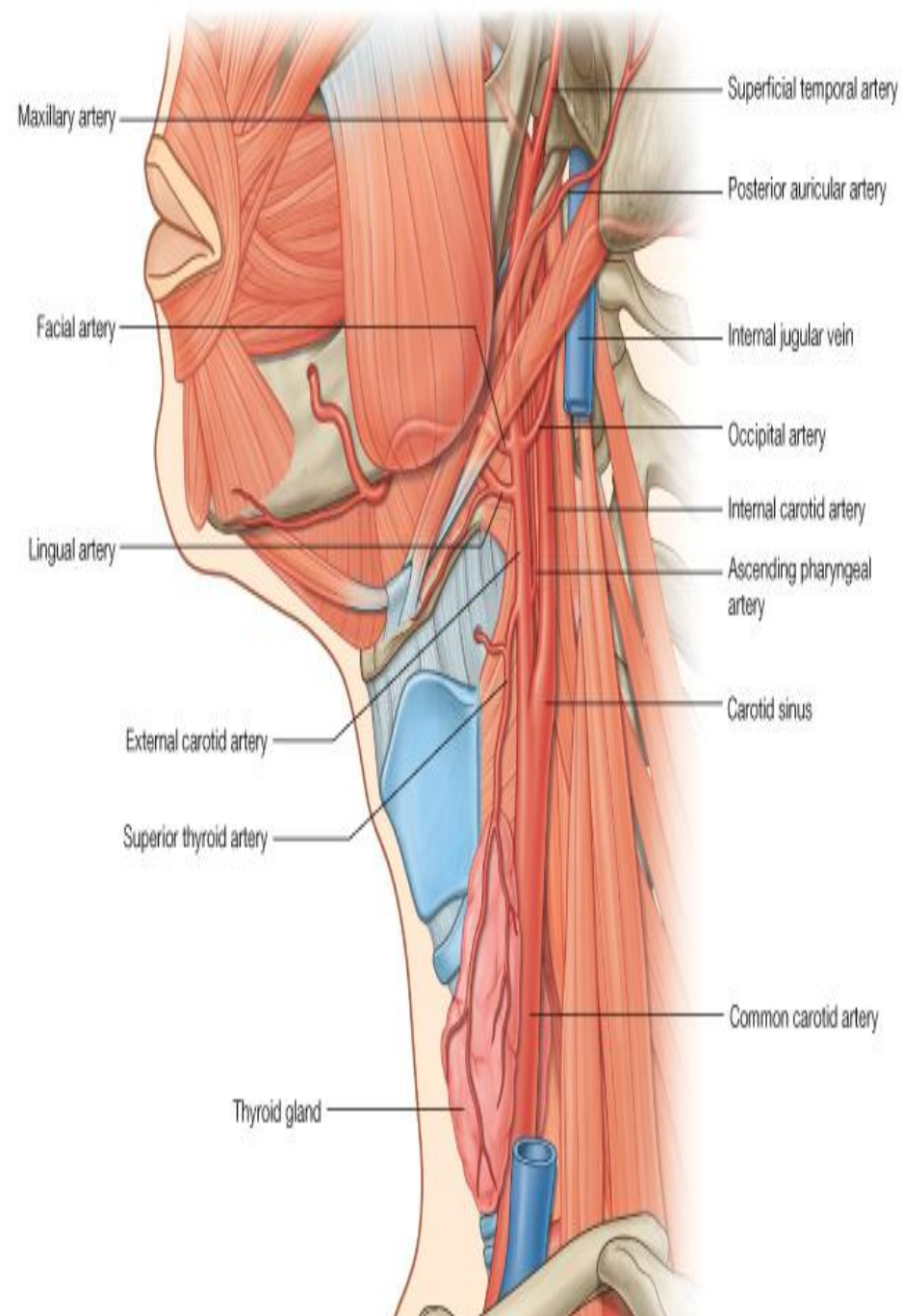
At first

it **lies medial** to the internal carotid artery

but as it ascends in the neck

it passes

**backward and lateral to it**



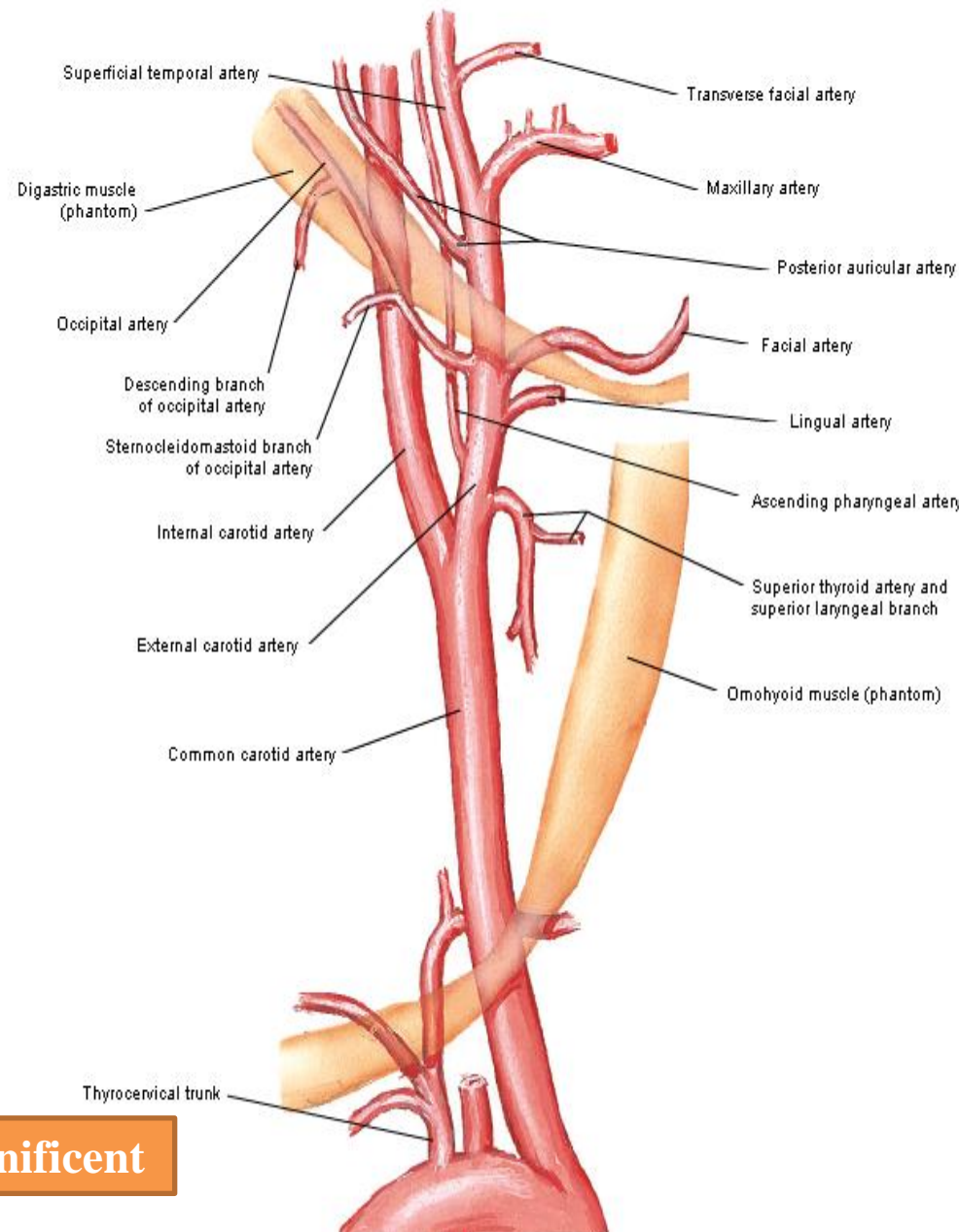
# Branches of the External Carotid Artery

- 1-SUPERIOR THYROID ARTERY
- 2-ASCENDING PHARYNGEAL ARTERY
- 3-LINGUAL ARTERY
- 4-FACIAL ARTERY
- 5-OCCIPITAL ARTERY
- 6-POSTERIOR AURICULAR ARTERY
- 7-SUPERFICIAL TEMPORAL ARTERY
- 8-MAXILLARY ARTERY



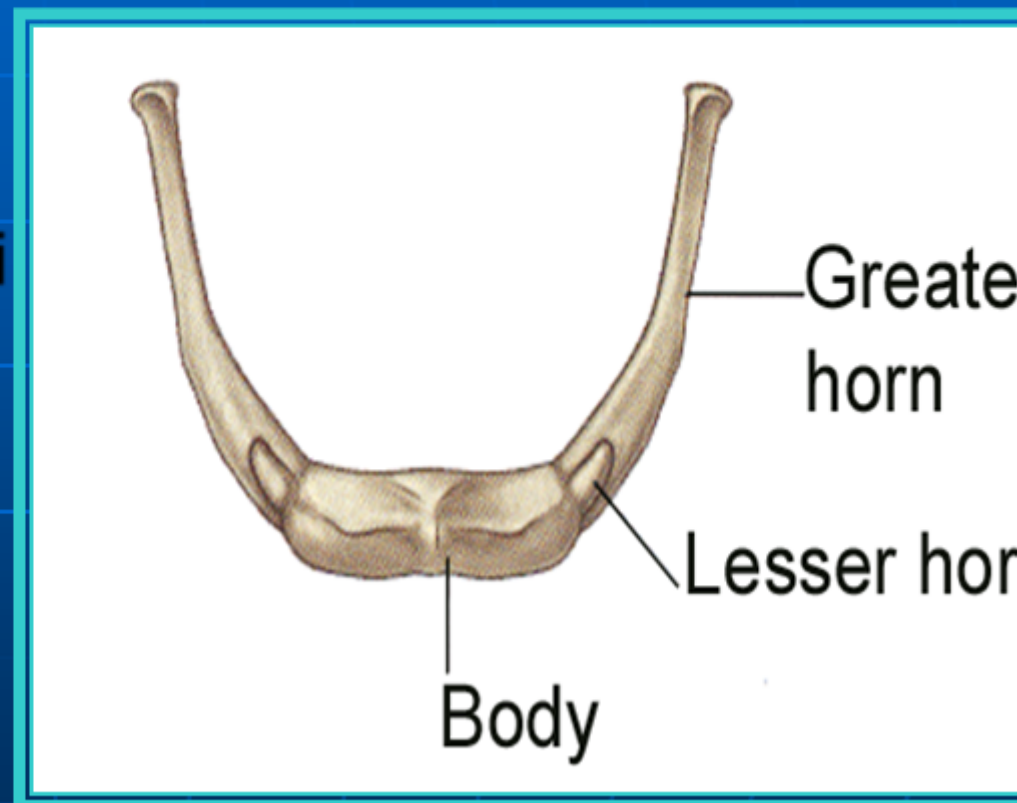
Some American ladies find our Petra so magnificent

## External Carotid Artery and Branches Schema



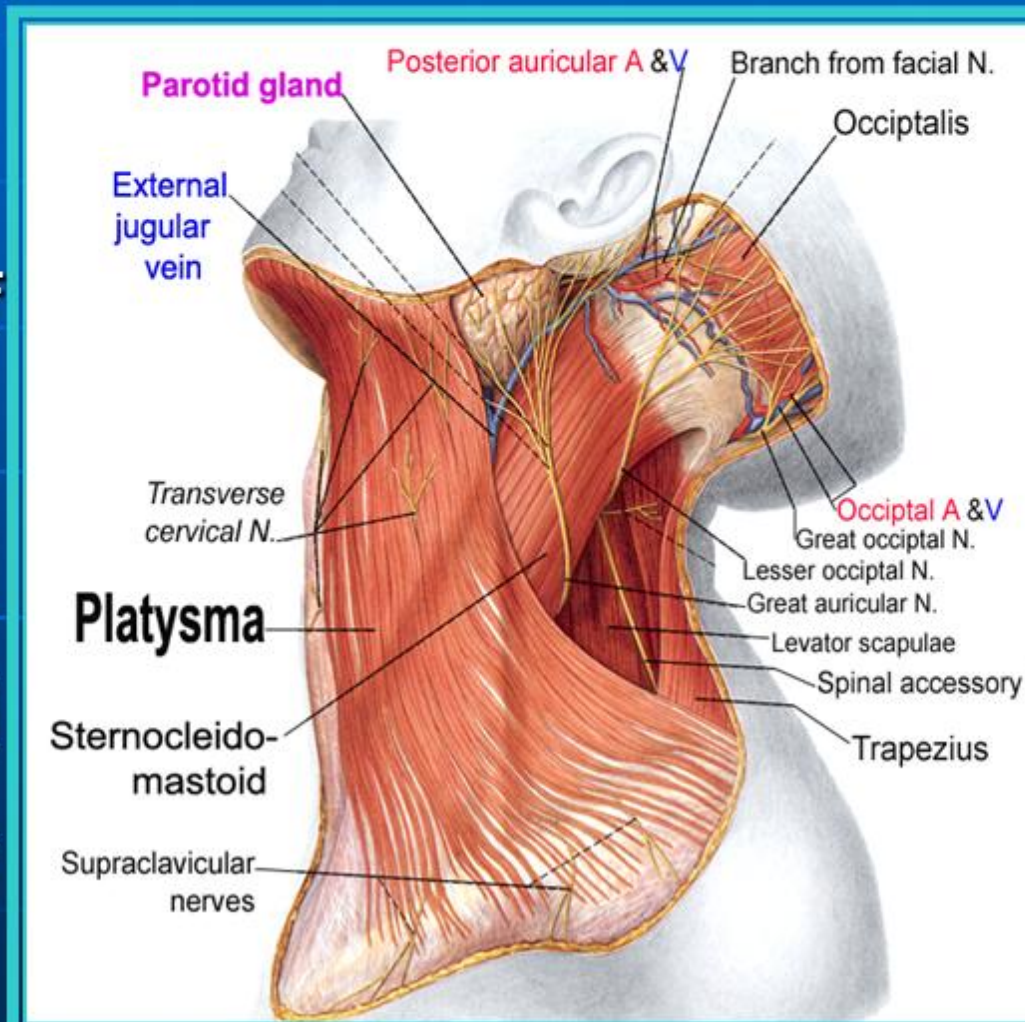
# Hyoid bone

- U-shaped mobile single bone.
- At C3 level.
- 2nd resistant point after symphysis menti
- Provides attachments for suprahyoid and infrahyoid muscles.
- **Parts:**
  - Body
  - Two greater horns.
  - Two lesser horns.



# Platysma

- **Origin:** deep fascia over deltoid and pectoralis major.
- **Insertion:** Body of mandible and angle of mouth.
- **Nerve supply:** Facial nerve.
- **Action:** Depress mandible and angle of mouth.
- One of the muscles of facial expression.



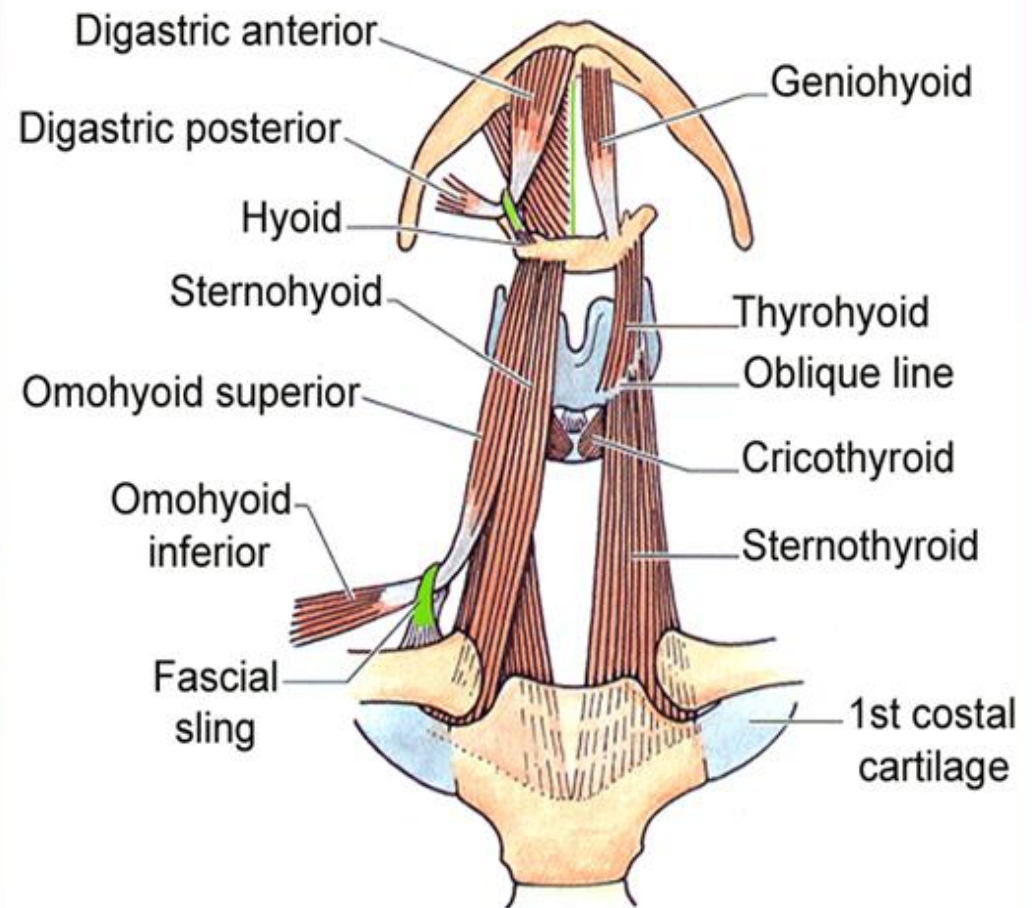
# Hyoid muscles

## Suprahyoid muscles

1. Digastric muscles
2. Mylohyoid
3. Geniohyoid
4. Stylohyoid

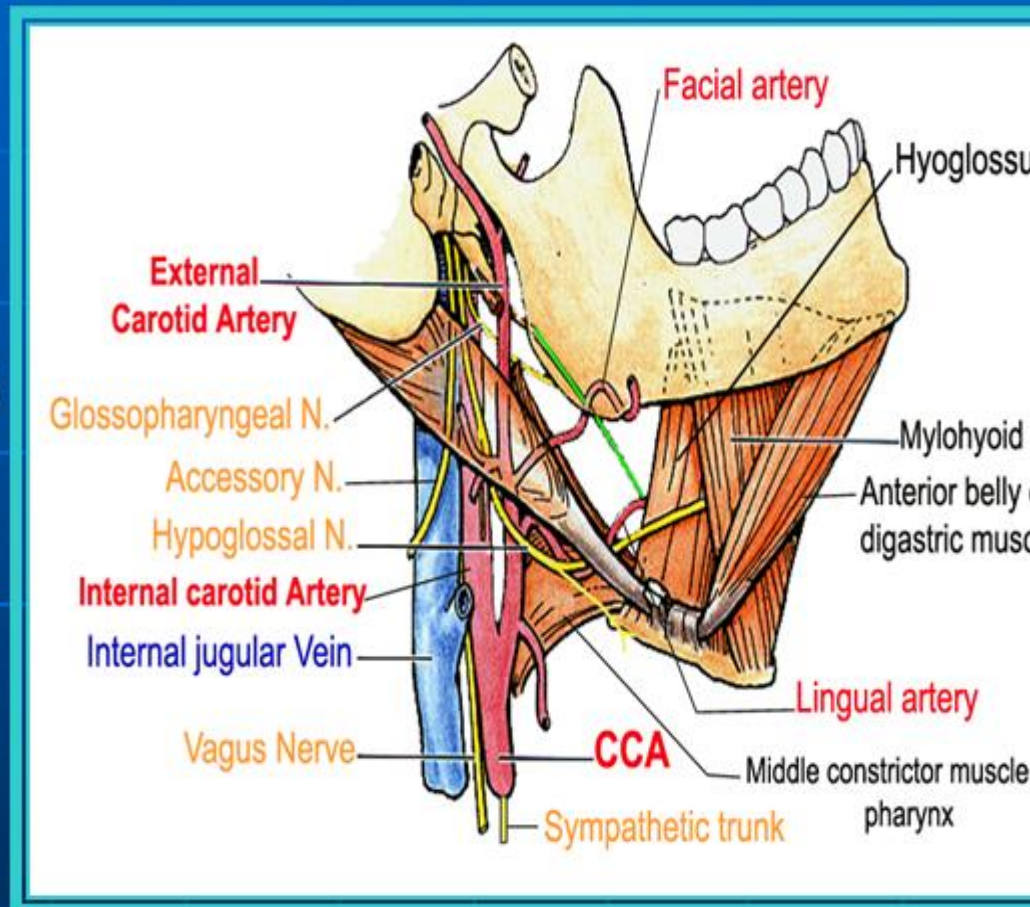
## Infrahyoid muscles

1. Omohyoid muscles
2. Sternohyoid
3. Sternothyroid
4. Thyrohyoid



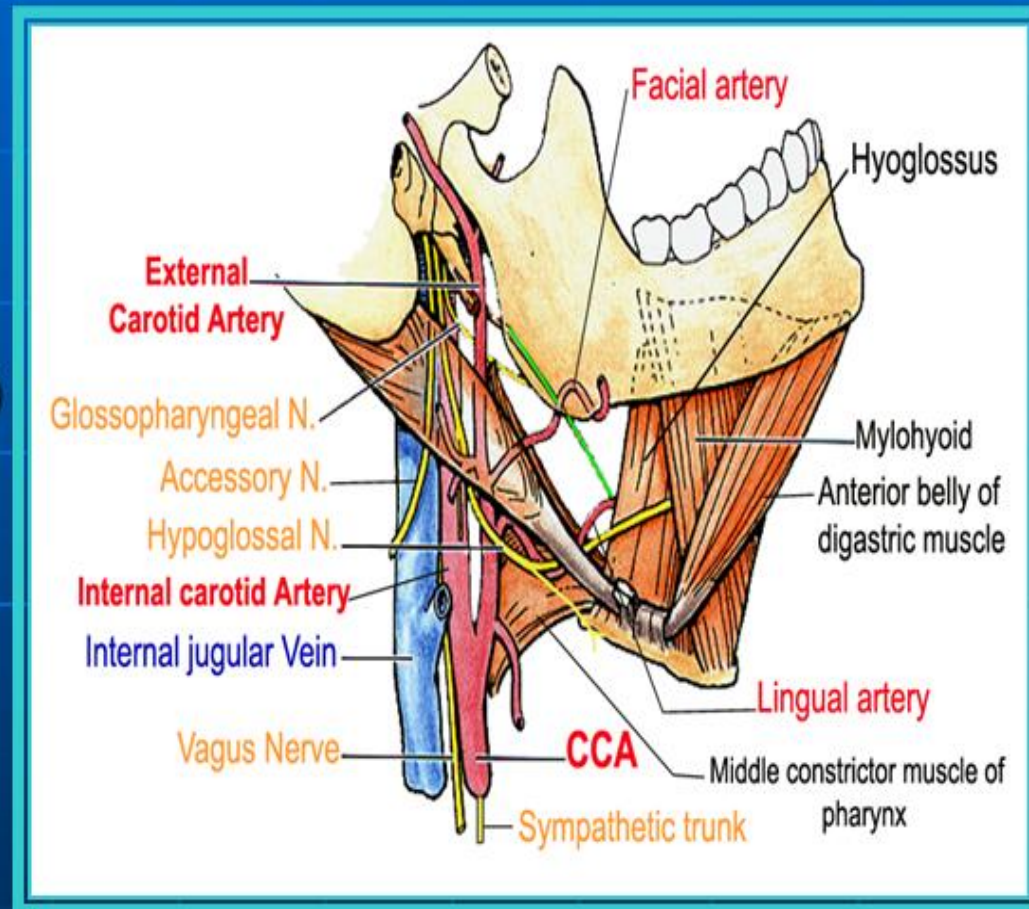
# Anterior digastric

- **Origin:** Digastric fossa of mandible.
- **Insertion:** Intermediate tendon attached to hyoid bone.
- **NS:** Mylohyoid N.
- **Action:**
  - Elevate hyoid
  - Depress mandible



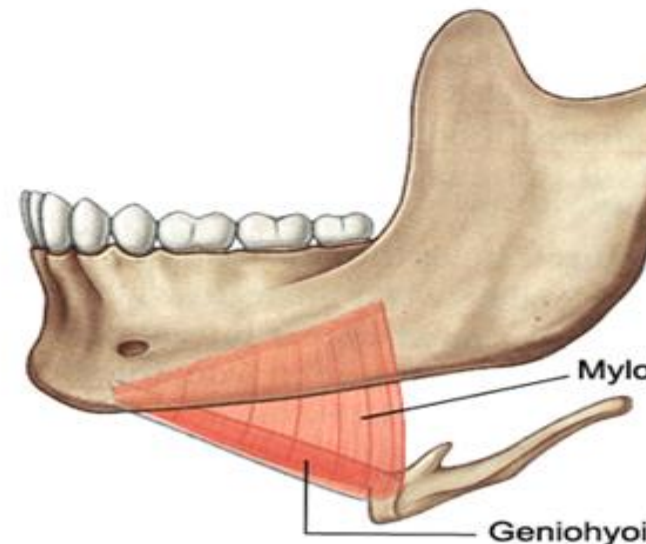
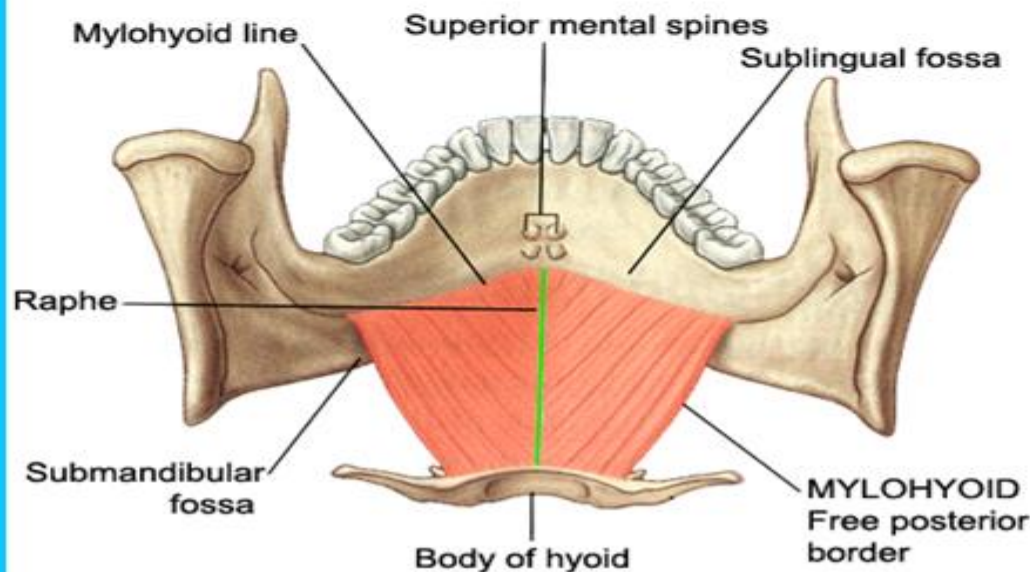
# Posterior digastric

- **Origin:** Mastoid notch.
- **Insertion:** Intermediate tendon attached to hyoid
- **NS:** Facial nerve.
- **Action:**
  - Elevate hyoid
  - Depress mandible

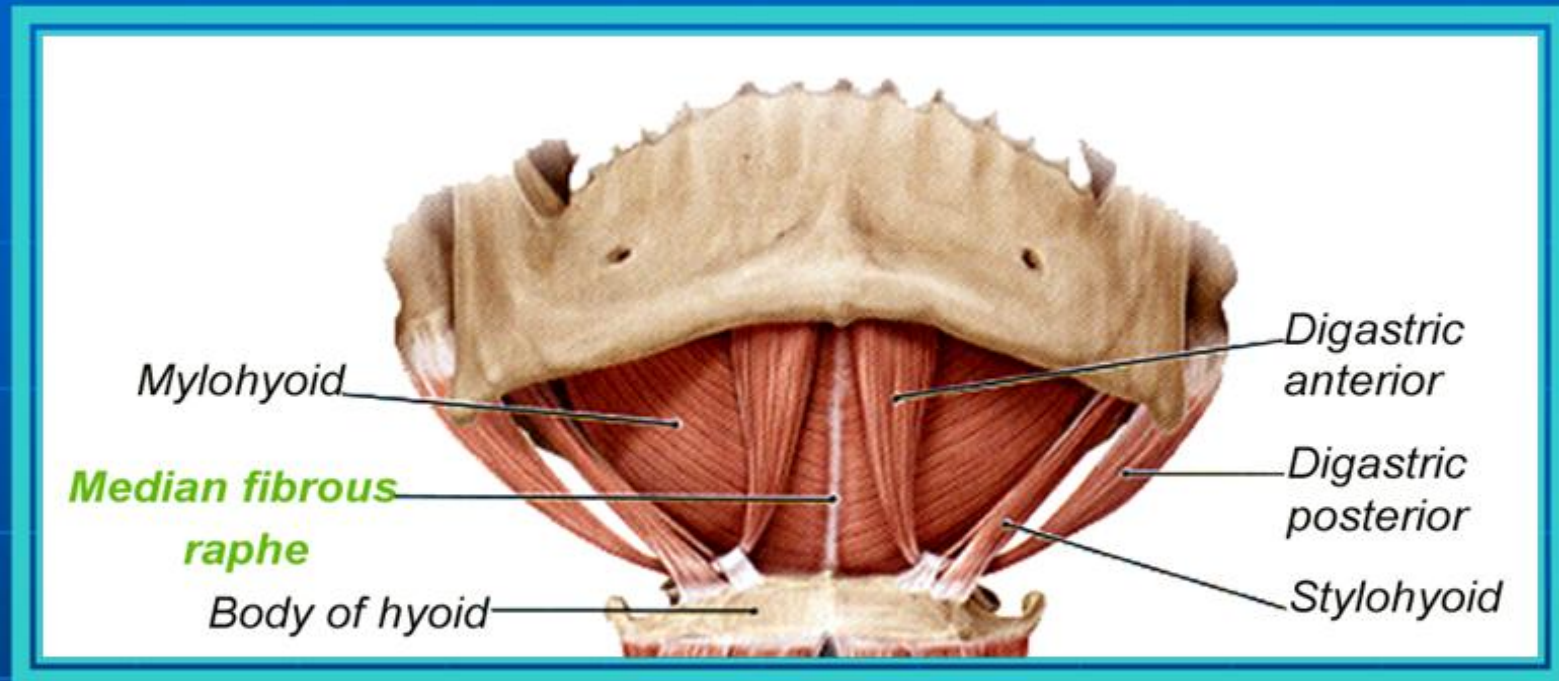


# Mylohyoid

- **Origin:** Mylohyoid line of mandible.
- **Insertion:** Median fibrous raphe and body of hyoid.
- **Innervation:** Nerve to mylohyoid from inferior alveolar nerve.
- **Action:** Support and elevates floor of oral cavity.
  - **Triangular** in shape with apex forward.
  - Has a **free posterior border**.



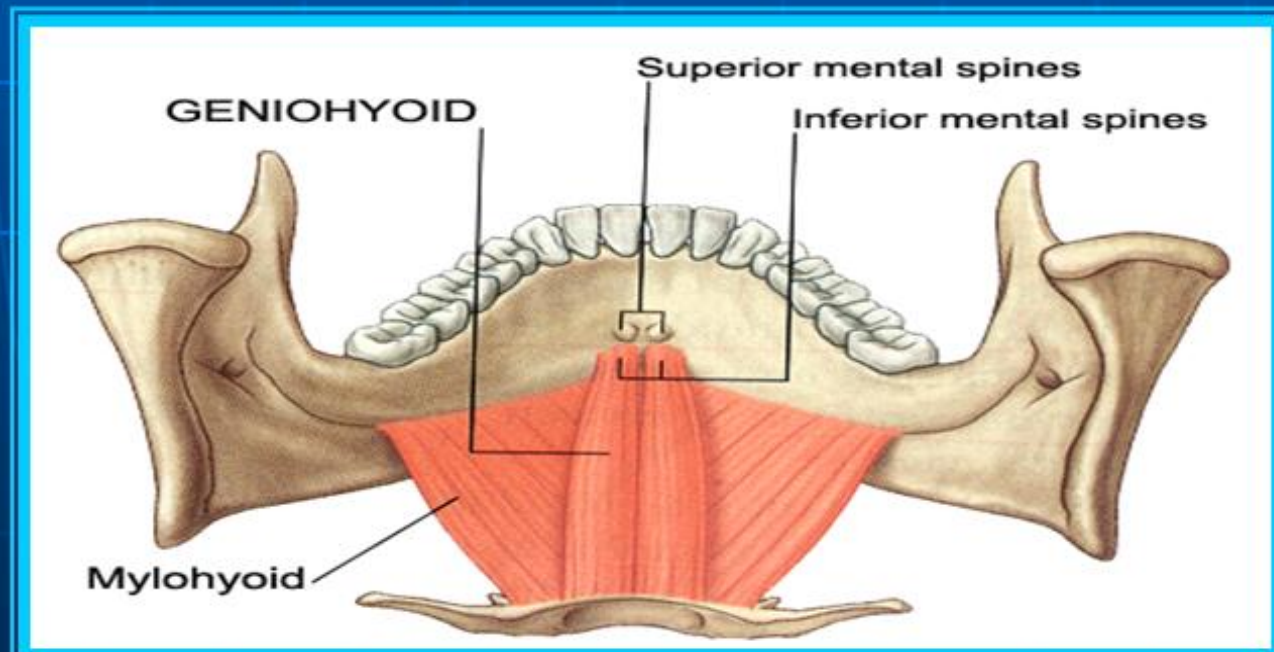
# Stylohyoid



- **Origin:** Styloid process
- **Insertion:** Body of hyoid
- **Nerve supply:** facial nerve
- **Action:** Elevate and retract hyoid

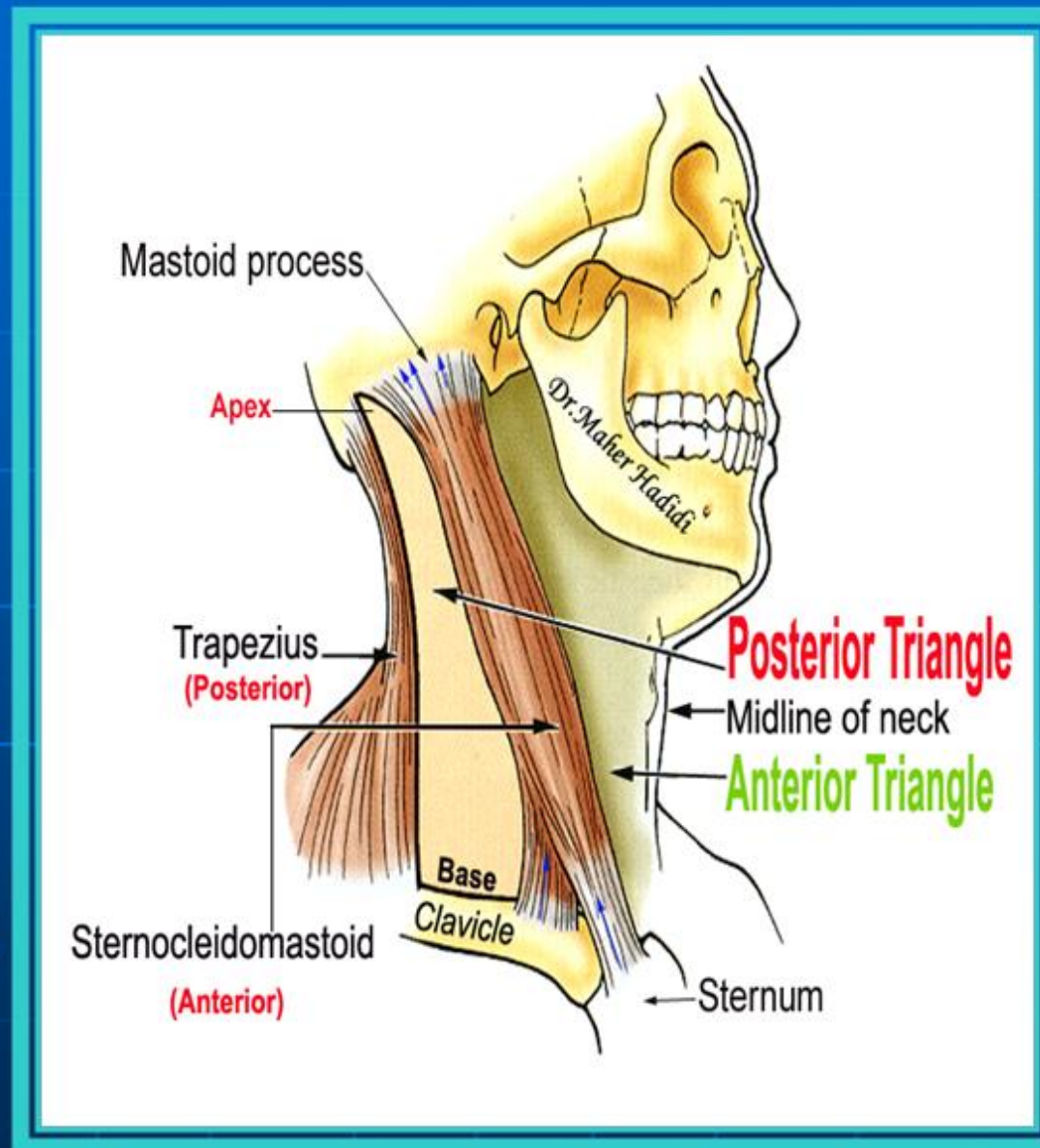
# Geniohyoid

- **Origin:** Inferior mental spine.
- **Insertion:** Body of hyoid.
- **Innervation:** C1 nerve via hypoglossal n.
- **Action:** Elevates hyoid and tongue.
- **Paired on either side of the midline.**



# Sternocleidomastoid muscle

- **Origin:**
  - Manubrium sterni.
  - Med. 1/3 of clavicle.
- **Insertion:**
  - Mastoid process.
  - Occipital bone.
- **Nerve Supply:**
  - Spinal accessory n.
- **Action:**
  - Two → Flex neck ant.
  - One → Flex neck to one side, so the ear touch shoulder.



# THE STERNOCLEIDOMASTOID MUSCLE

Divides the neck into:

Anterior triangle

Posterior triangle

**SUPERIORLY**

the inferior border  
of the mandible and

**ANTERIORLY**

by the posterior edge of the  
sternocleidomastoid muscle

**MEDIALY**

The midline of  
the neck

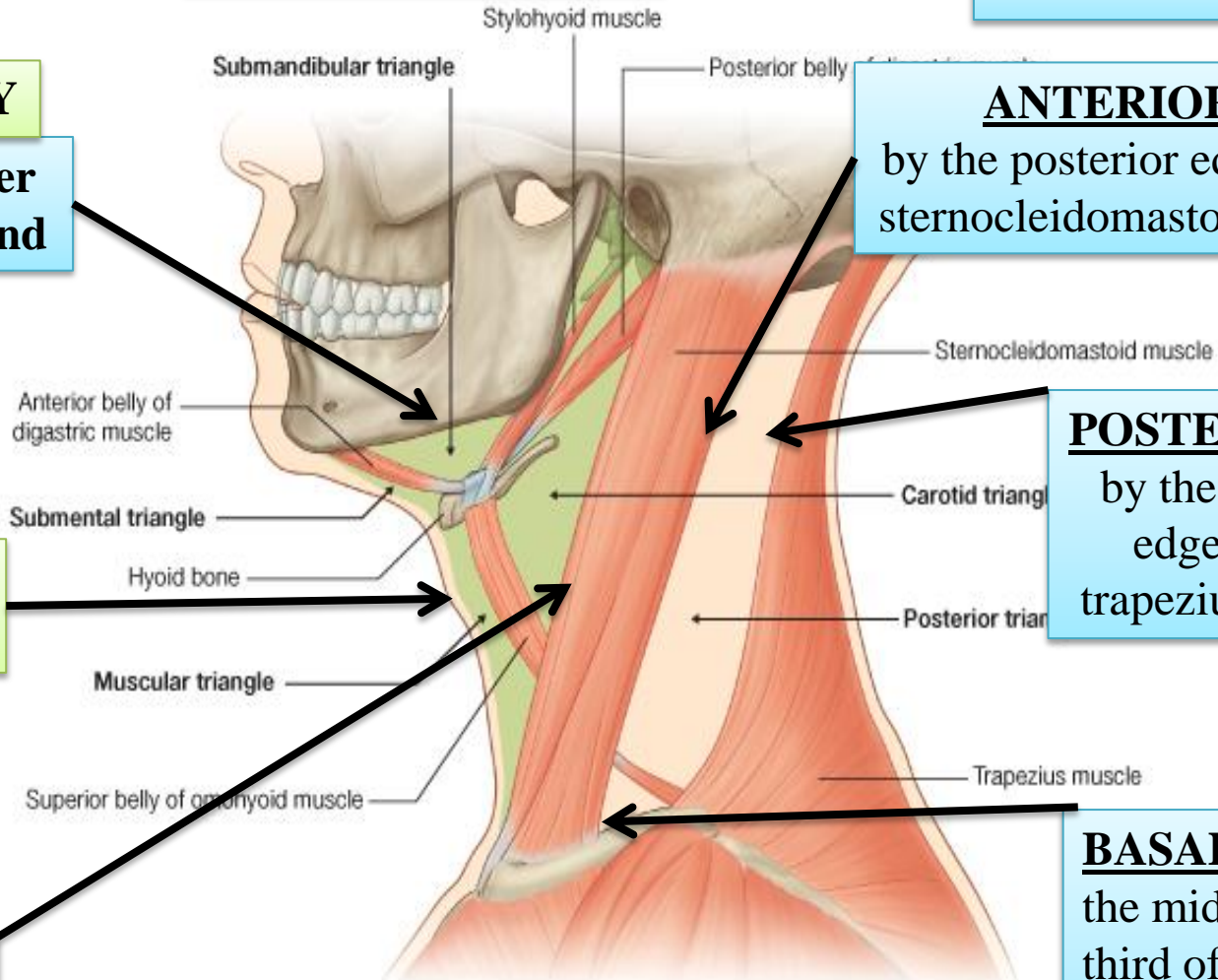
**POSTERIORLY**

by the anterior  
edge of the  
trapezius muscle

**LATERALLY**

the anterior border  
of the  
sternocleidomastoid  
muscle

**BASALLY** by  
the middle one-  
third of the  
clavicle

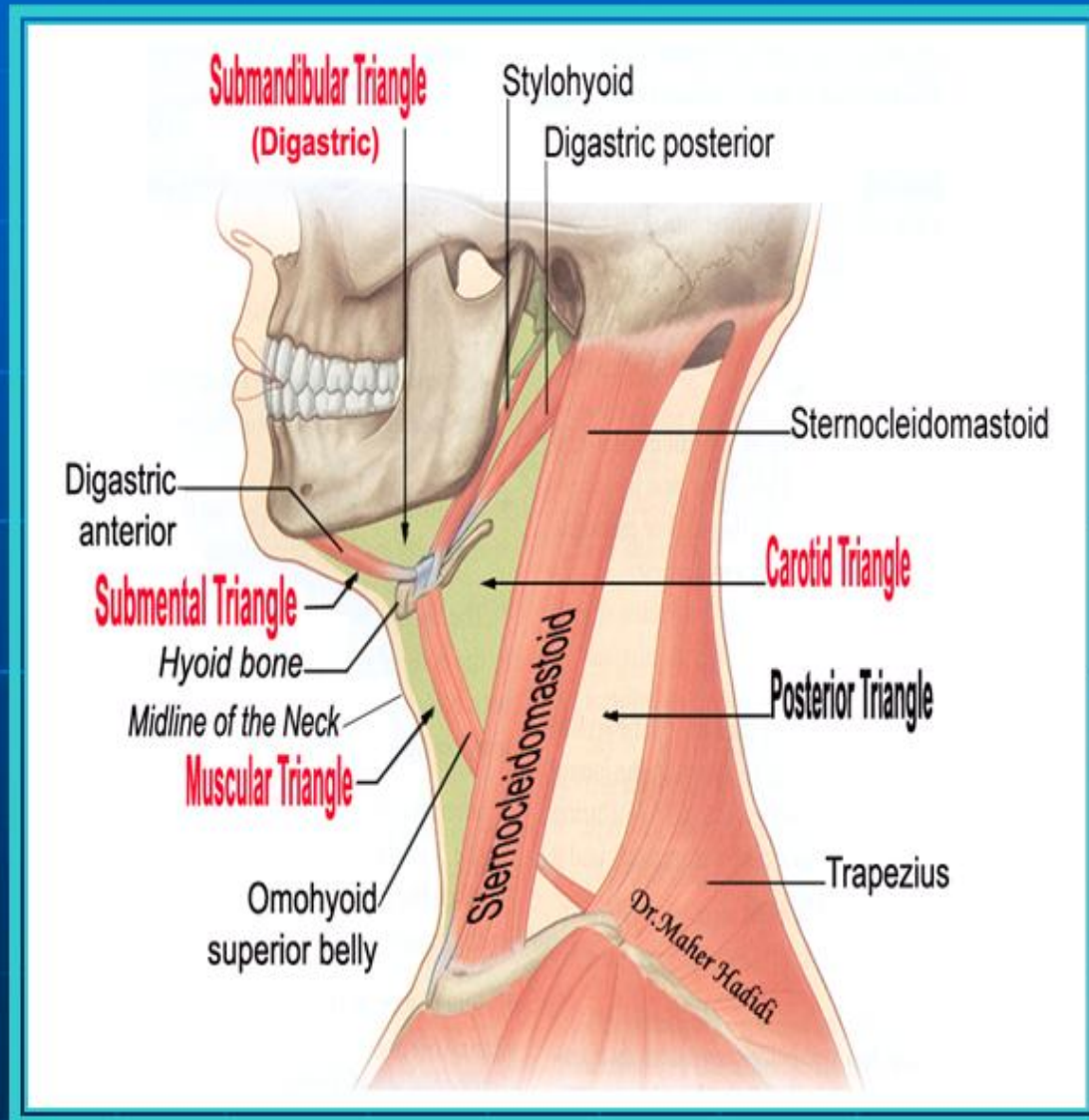


# **Anterior Triangle of the Neck**

- **Borders**
- **Subdivisions**
  - **Borders**
  - **Contents**

# Boundaries

- **Anterior:**  
Midline of the neck.
- **Posterior:**  
Anterior border of sternocleidomastoid muscle.
- **Superior:**  
Inferior border of mandible.
- **Roof:**
  - Platysma
  - Investing deep cervical fascia.



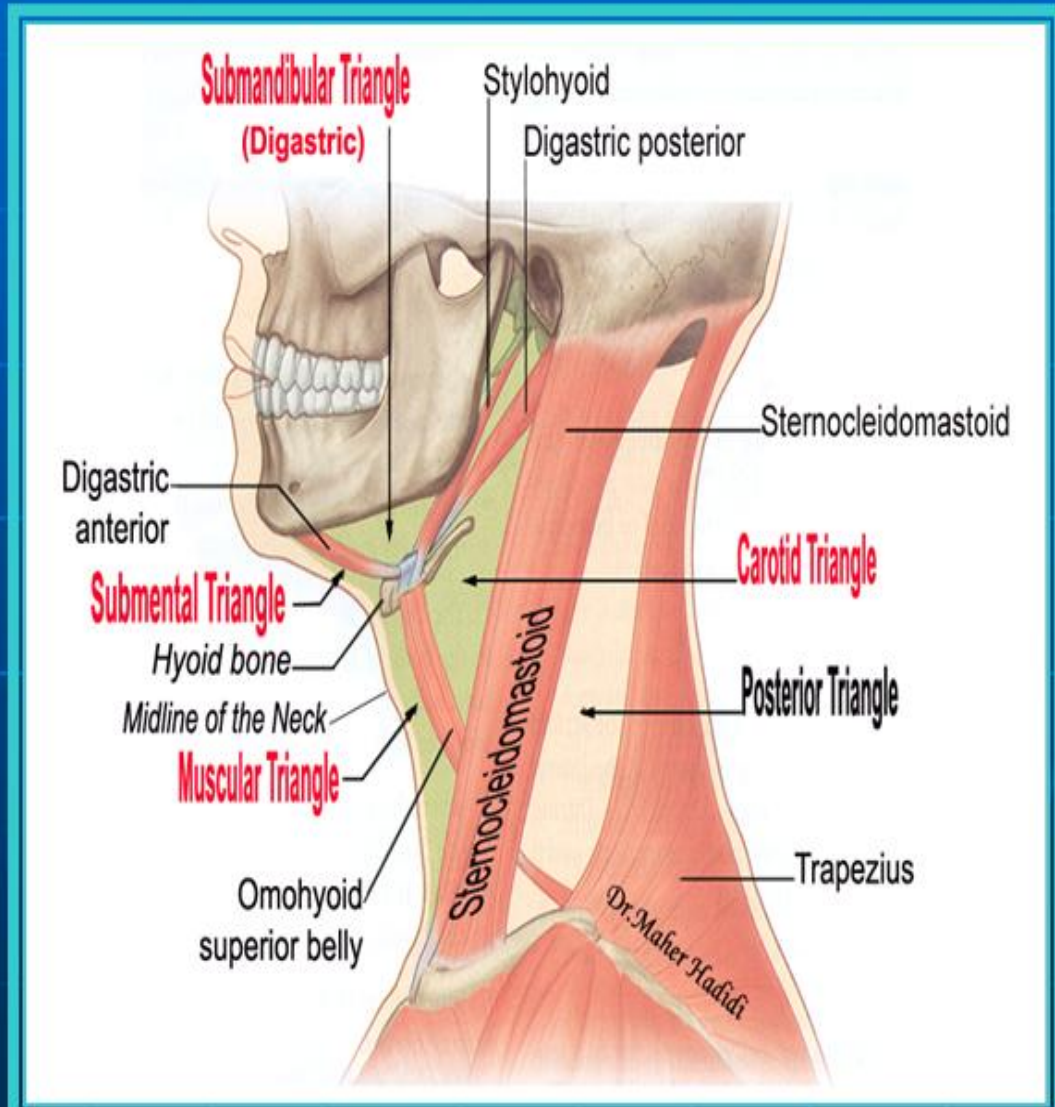
# Subdivisions

***The superior belly of Omohyoid, anterior and posterior belly of digastric muscle it divides it into:***

- Submental triangle
- Digastric triangle
- Carotid triangle
- Muscular triangle

**Each has its:**

- ***Borders***
- ***Floor***
- ***Contents***



# Submental triangle

## Borders:

- **Lateral:** Digastric anterior.
- **Inferior:** Hyoid body
- **Medial:** Median fibrous raphe.

## Roof:

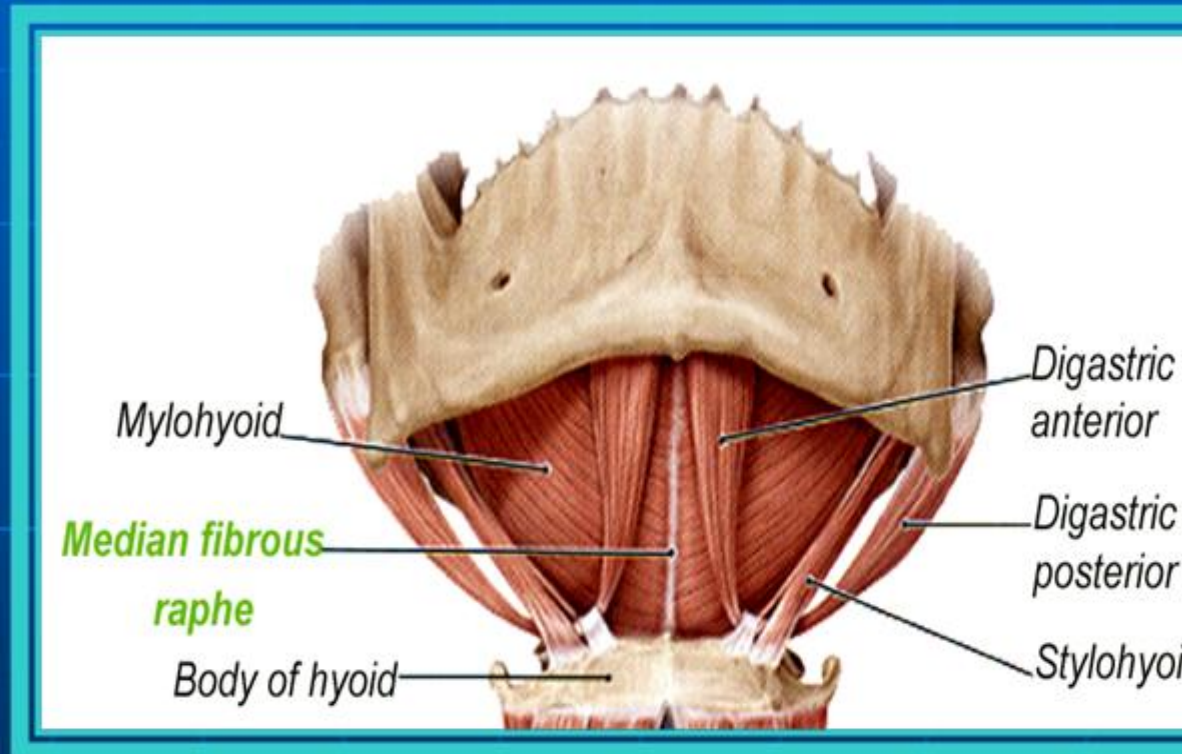
- Skin, Platysma.

## Floor:

- Mylohyoid muscle.

## Contents:

- Submental Lymph node.



# Submandibular Triangle -1

## ■ Borders:

## ■ Roof:

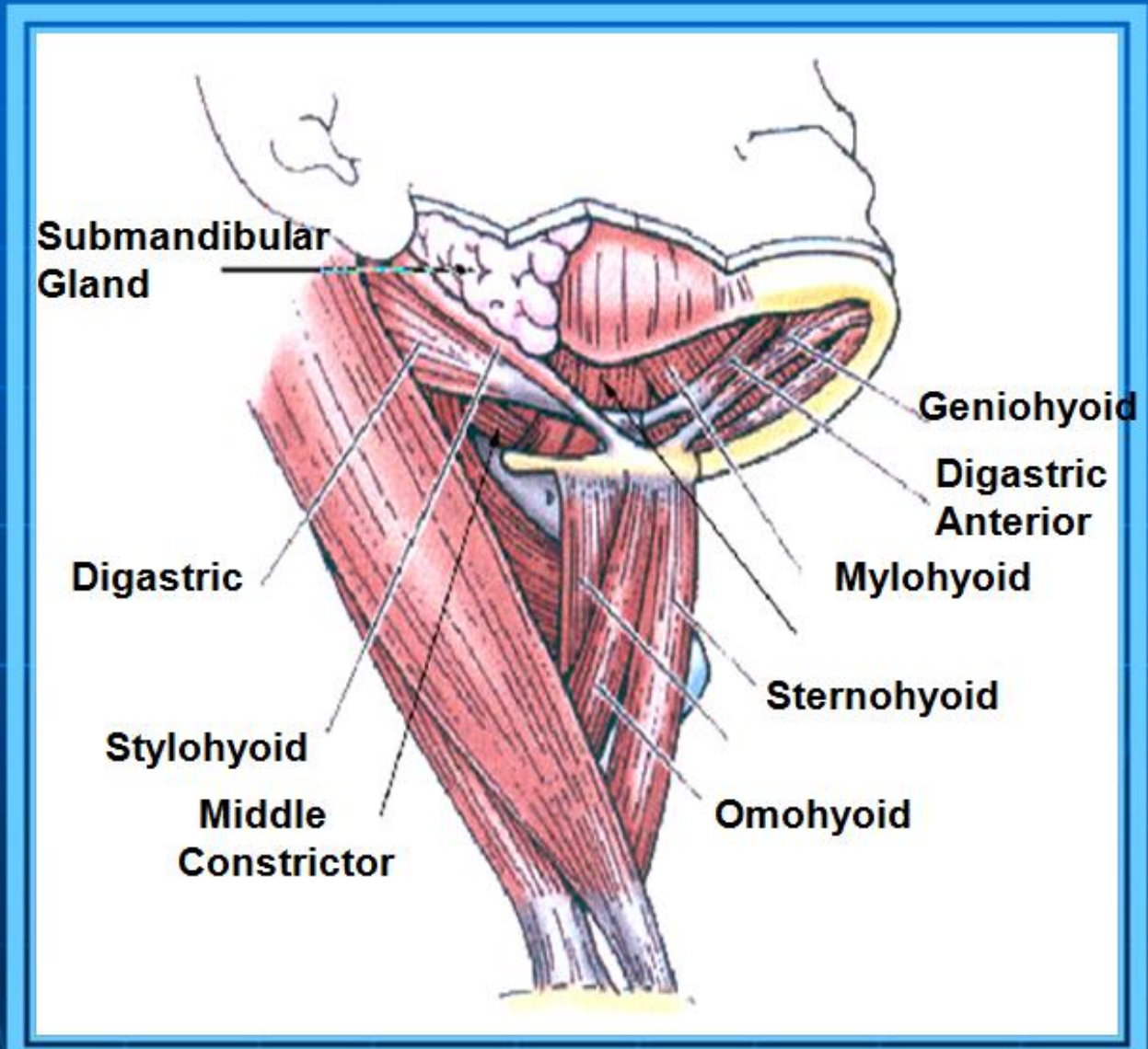
1. Skin
2. Fascia
3. Platysma
4. Mandibular branch of Facial nerve

## ■ Floor:

1. Mylohyoid
2. Hyoglossus
3. Middle constrictor muscle of the pharynx

## ■ Contents:

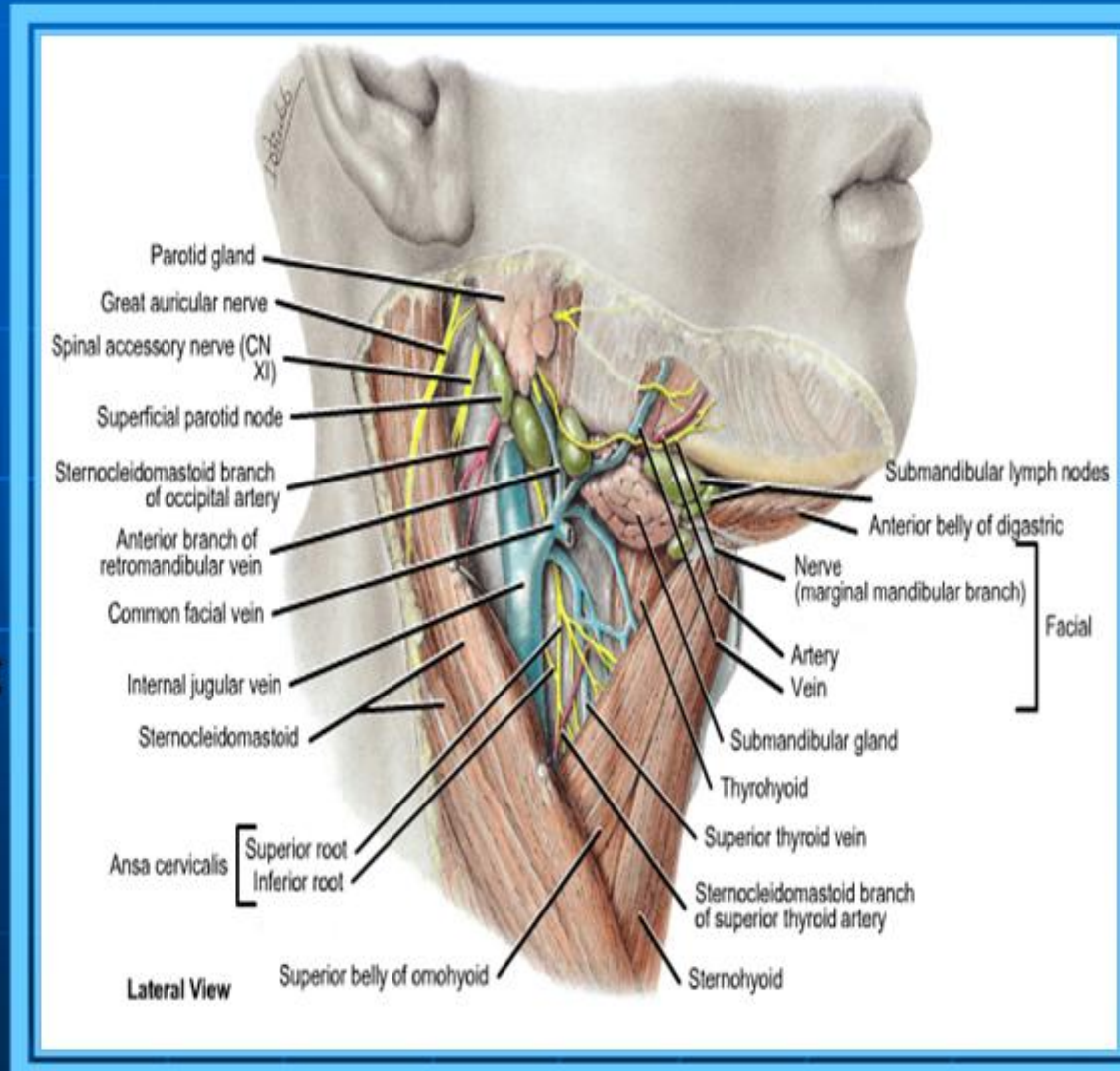
contd.



# Submandibular Triangle -2

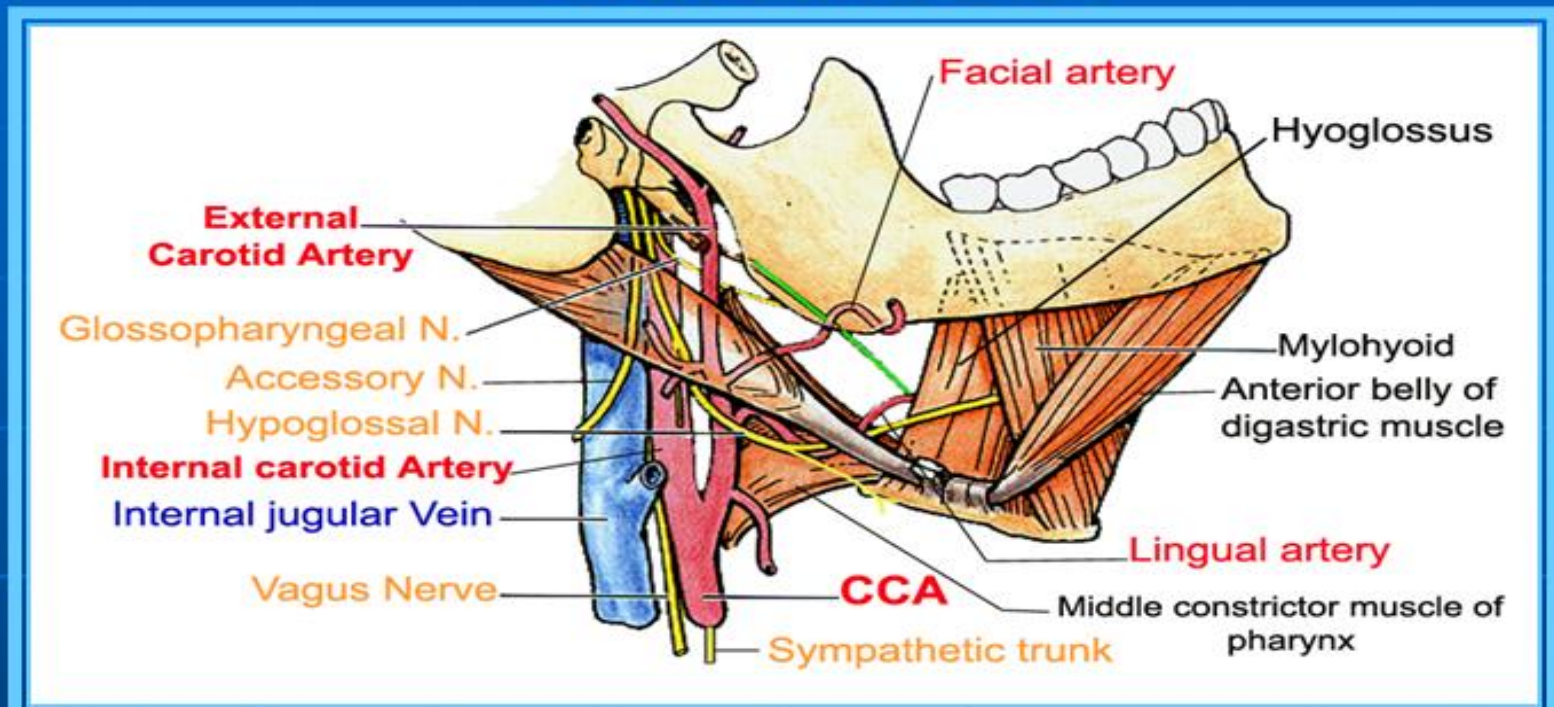
➤ **Contents:**  
**Occupied mostly by submandibular gland.**

- 1. Submandibular Gland**
- 2. Submand. Lymph Nods**
- 3. Submandibular duct**
- 4. Facial A,V**
- 5. N. to Mylohyoid**
- 6. Hypoglossal N.**
- 7. Accessory Nerve**



# Submandibular Triangle

## *Glandular area*



## ■ Boundaries:

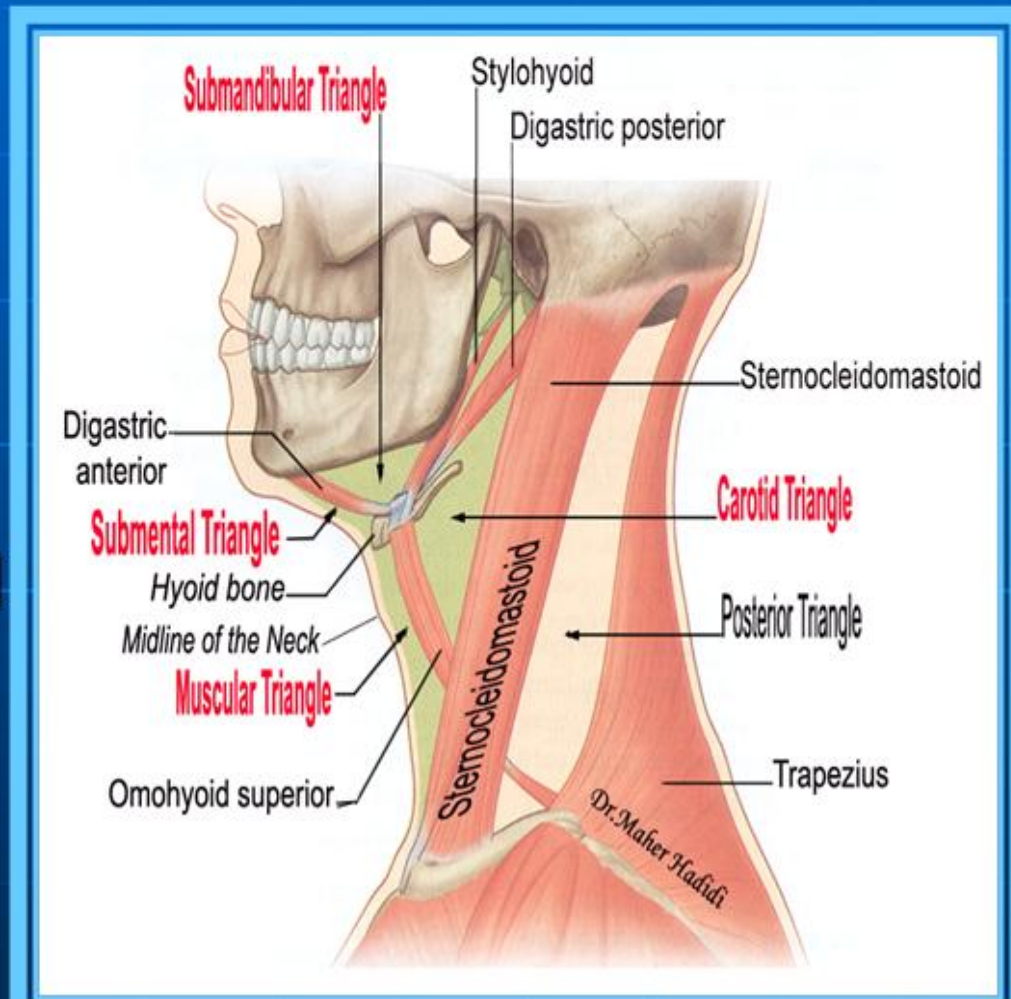
- Superior: inferior border of mandible
- Anterior: Digastric anterior
- Posterior: Digastric posterior

# Carotid triangle

## Vascular area

### ■ Boundaries

- Superior: digastric posterior
- Anterior: Superior belly of omohyoid
- Posterior: Sternocleidomastoid

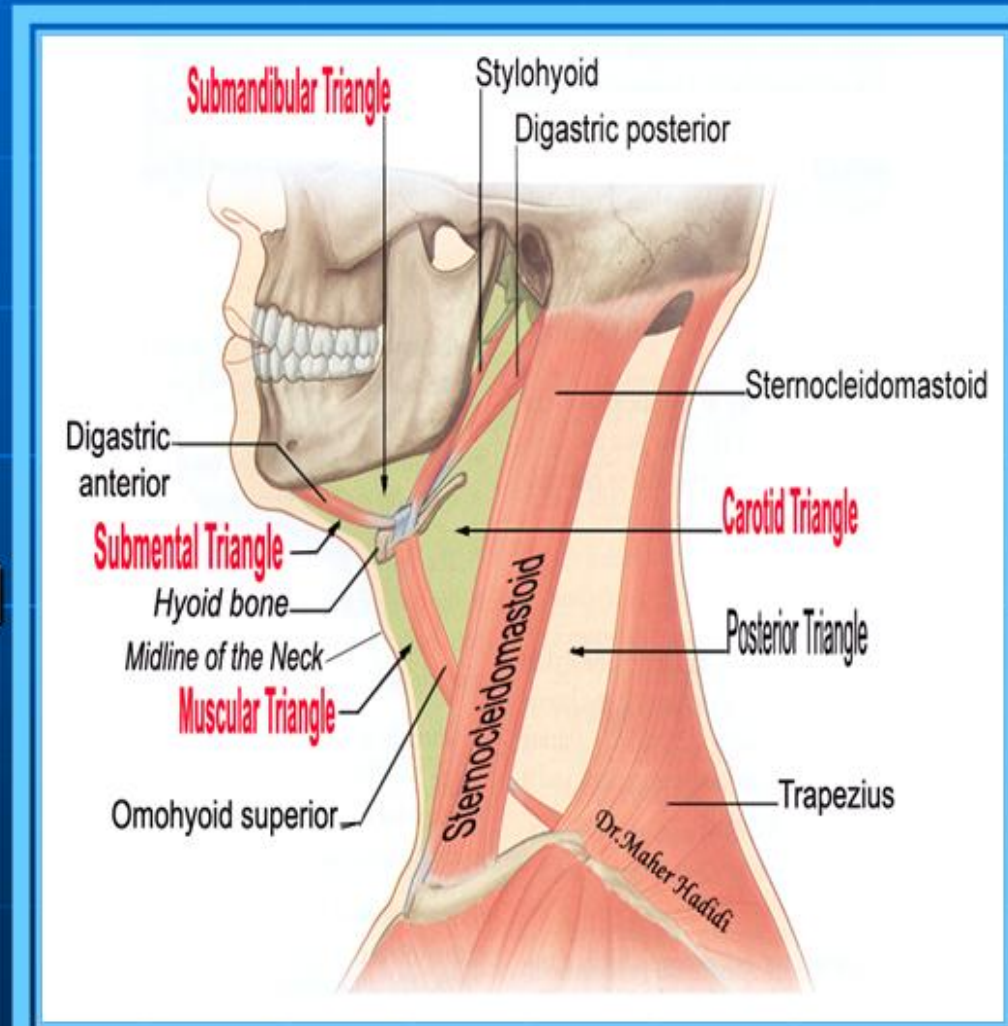


# Carotid triangle

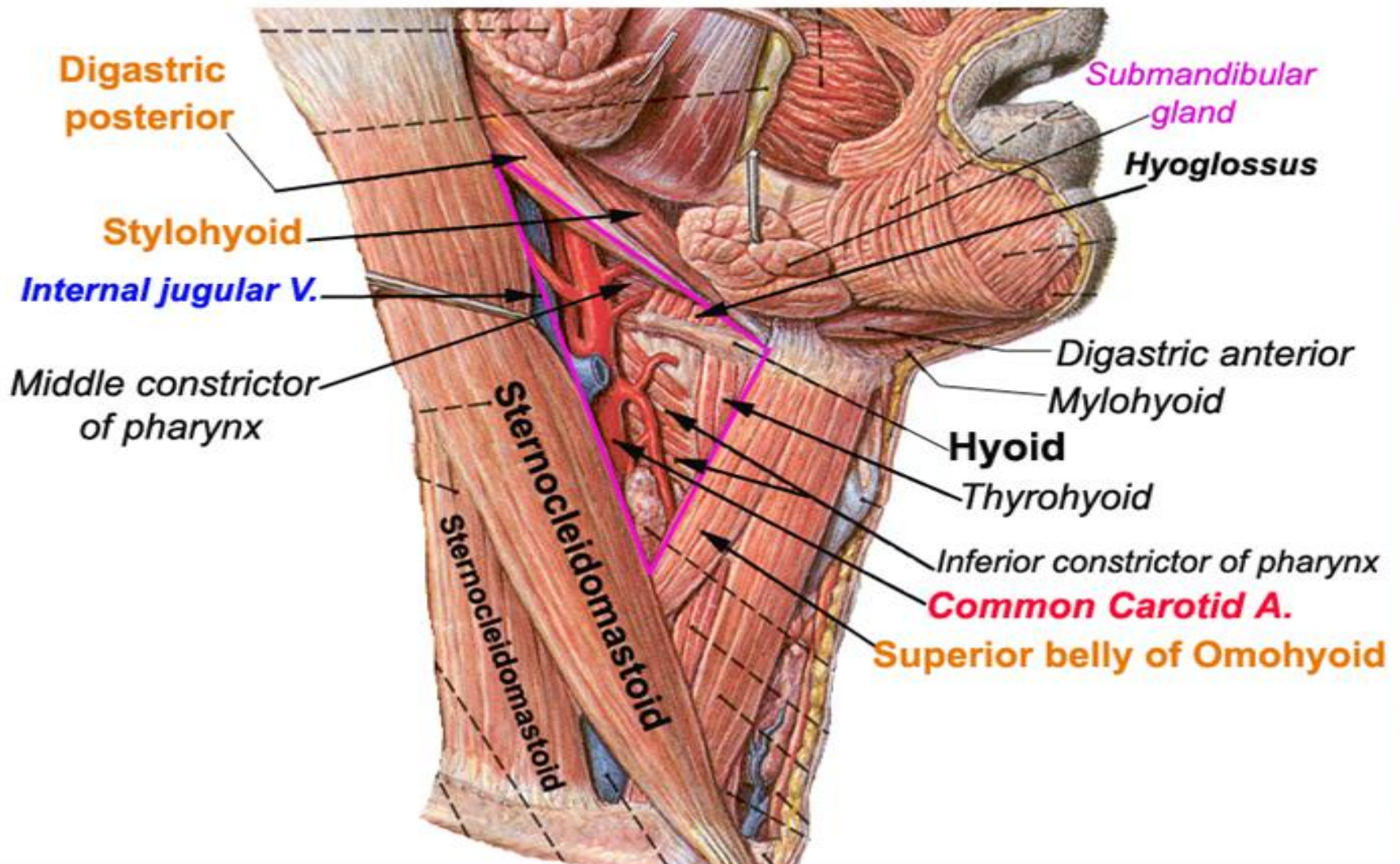
## Vascular area

### ■ Boundaries

- Superior: digastric posterior
- Anterior: Superior belly of omohyoid
- Posterior: Sternocleidomastoid



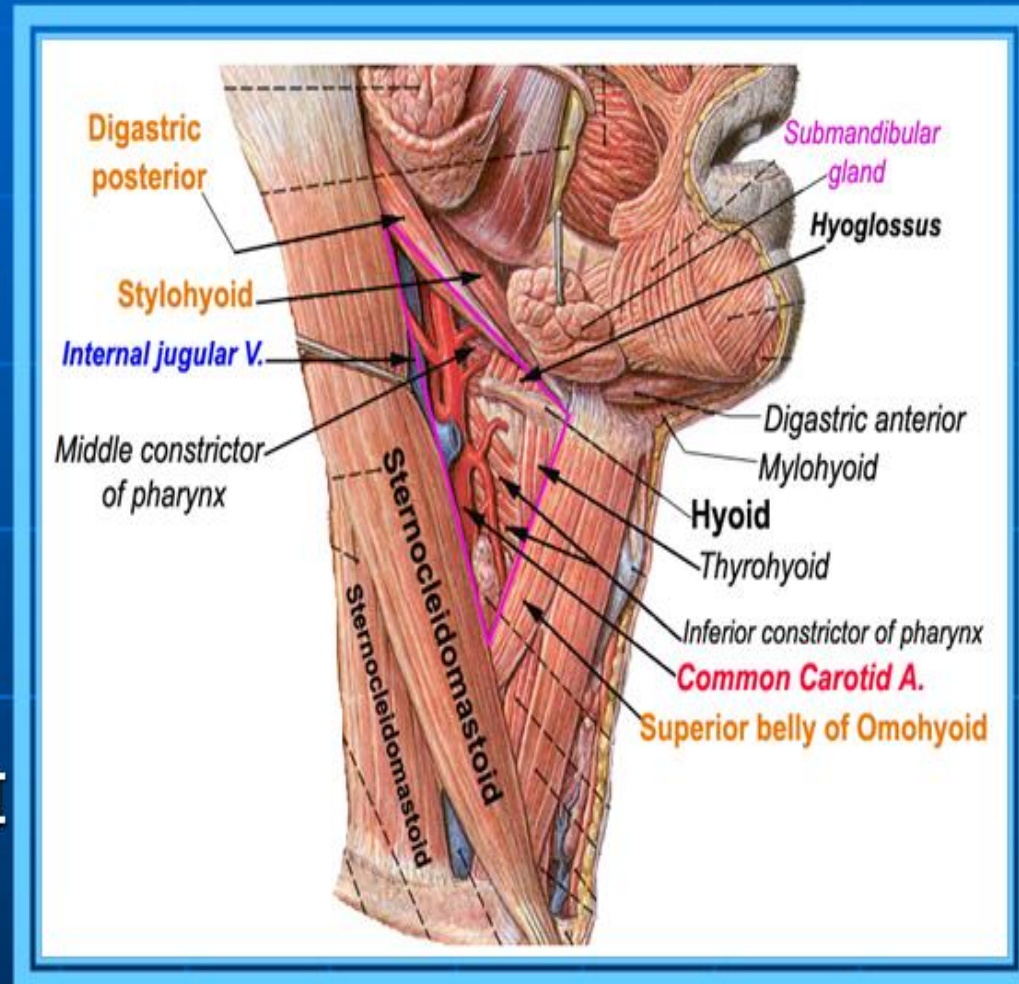
# Carotid Triangle



# Carotid Triangle

## ■ Contents:

- Common carotid A.
- External carotid A. & its lower 5 branches.
- Internal carotid A.
- Internal jugular Vein
- Vagus nerve CN X
- Accessory nerve CN XI
- Hypoglossal nerve CN XII

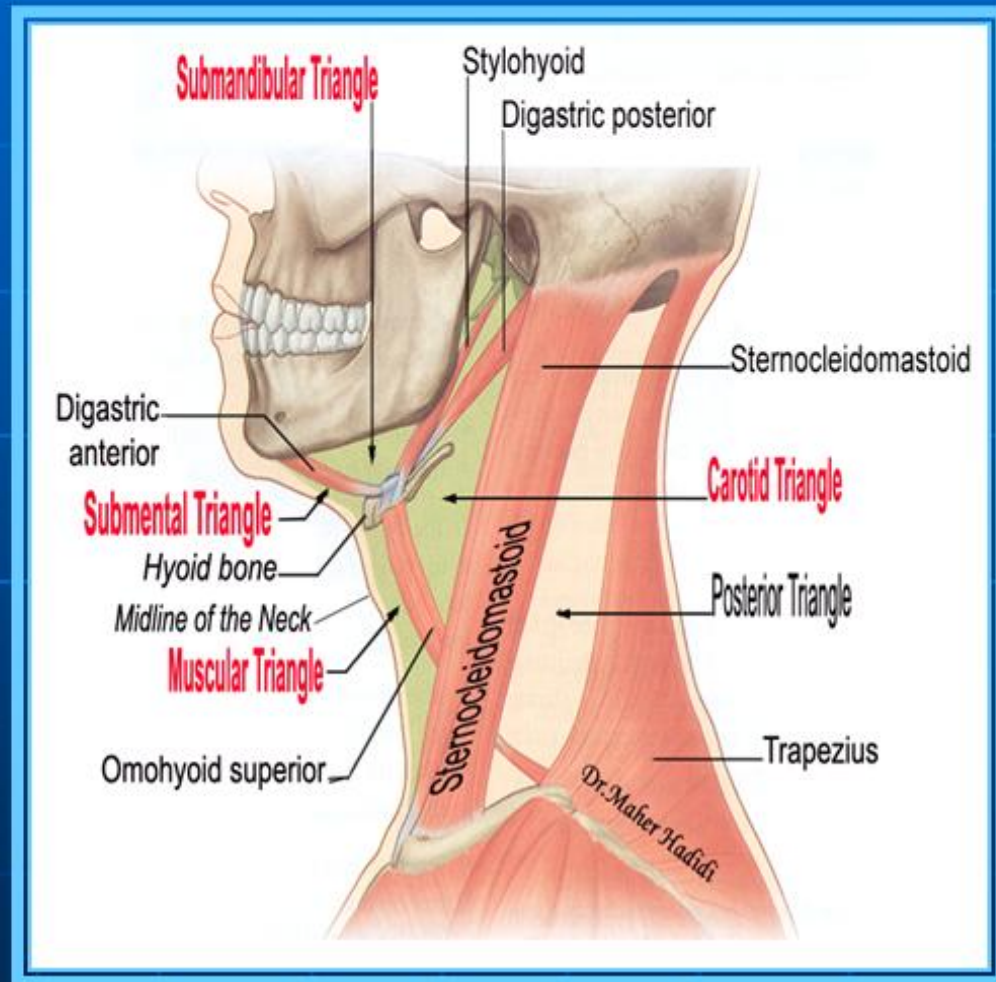


# Muscular Triangle

## Muscular area

### Borders:

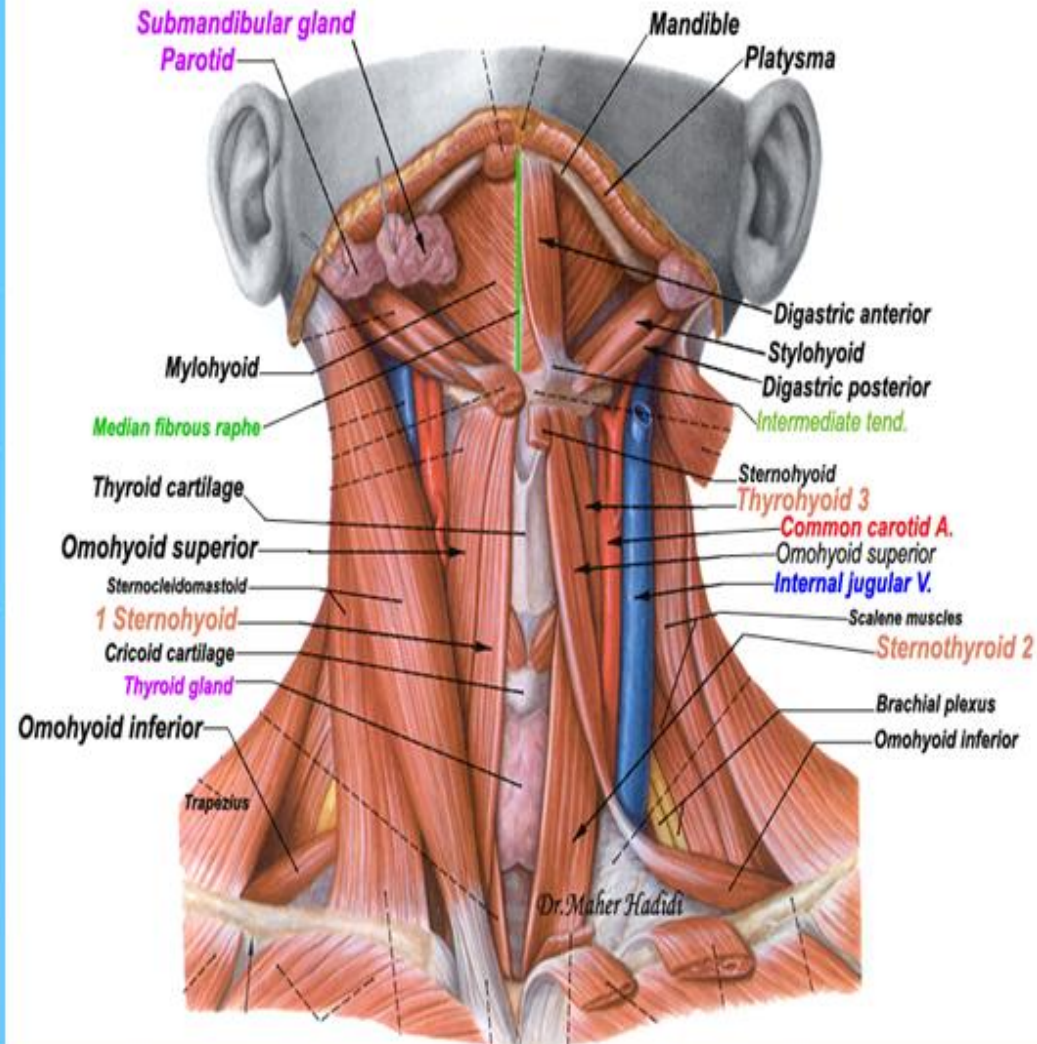
- Anterior: Midline of the neck
- Superior: Superior belly of omohyoid muscle
- Posterior: Sternocleidomastoid muscle



# Muscular Triangle

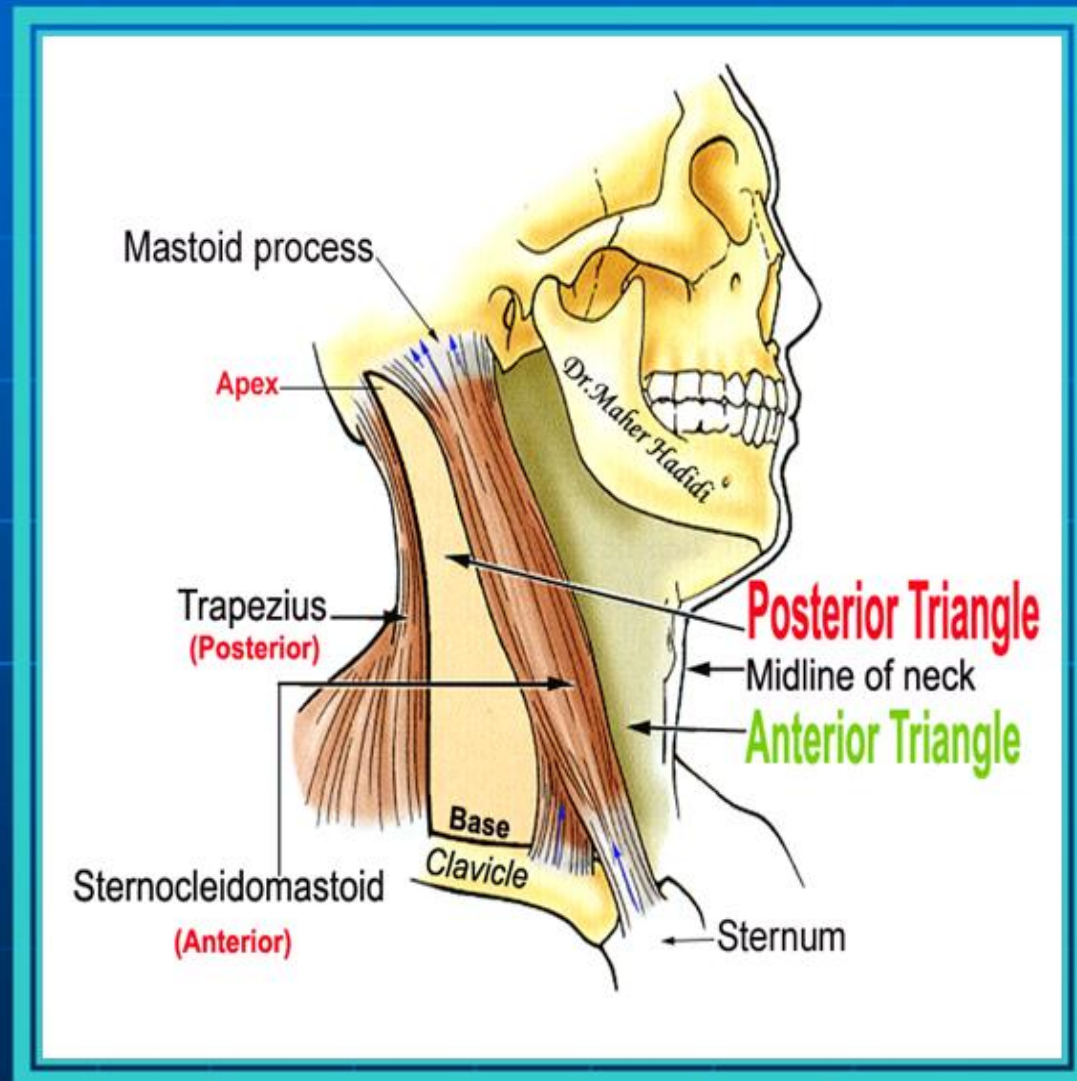
## Contents:

- Sternohyoid muscle
- Sternothyroid M
- Thyrohyoid M.
- Thyroid gland
- Parathyroid glands
- Larynx
- Trachea
- Pharynx
- Esophagus



# Posterior Triangle-1

- **Boundaries:**
  - **Anterior:** → Sternocleidomastoid Muscle
  - **Posterior:** → Trapezius
  - **Base:** → Clavicle
  - **Apex:** → Above at occipital bone.



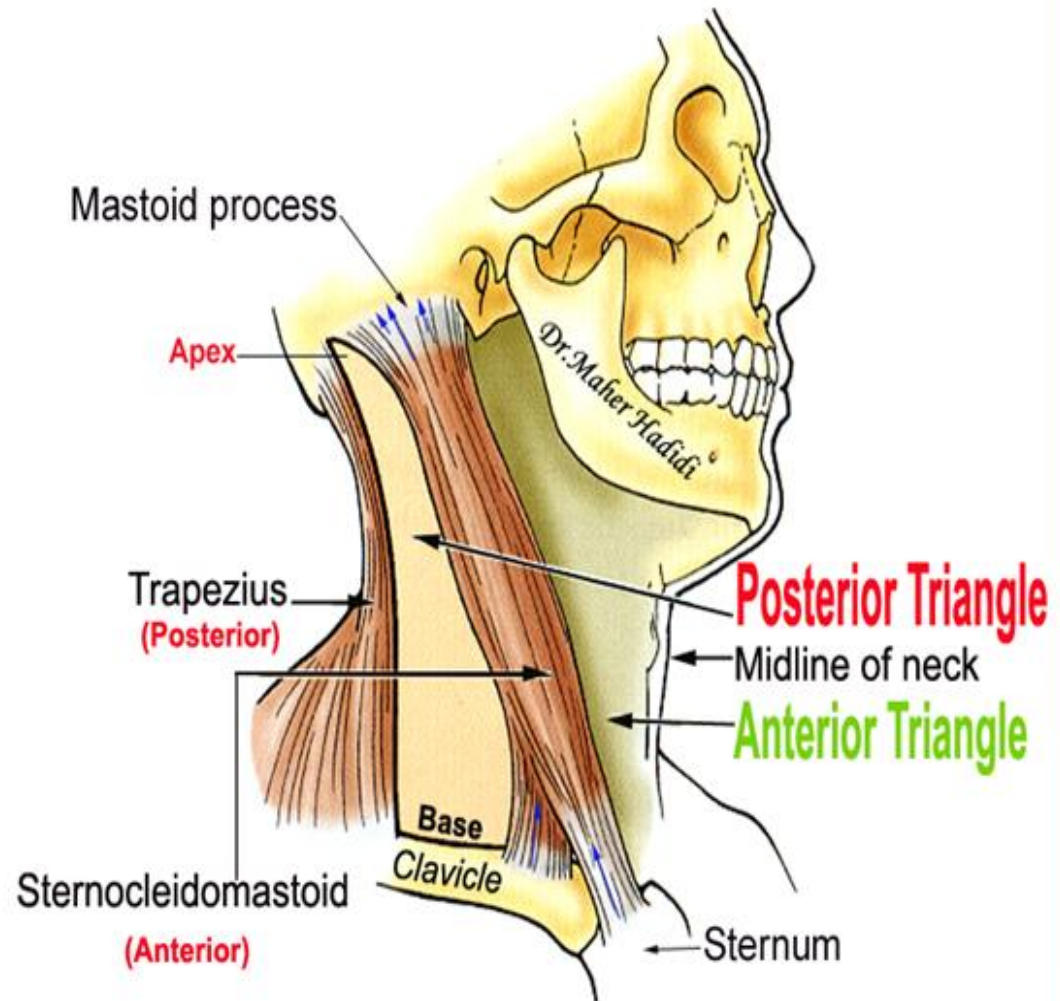
# Posterior Triangle-2

## ■ Roof:

Investing layer of deep cervical fascia.

## ■ Floor:

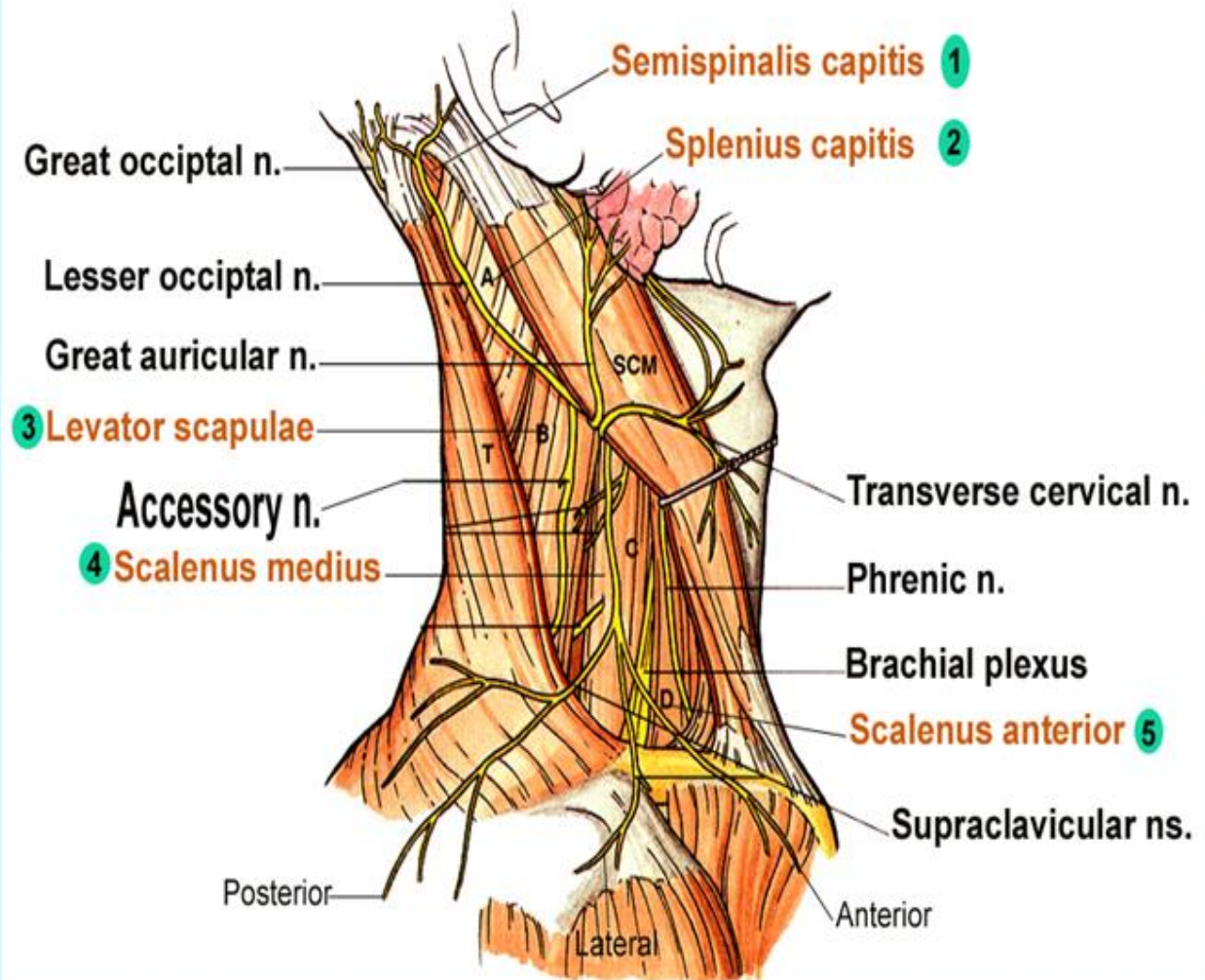
Muscles covered by prevertebral cervical fascia.



# Muscles forming the floor-3

From superior to inferior are:

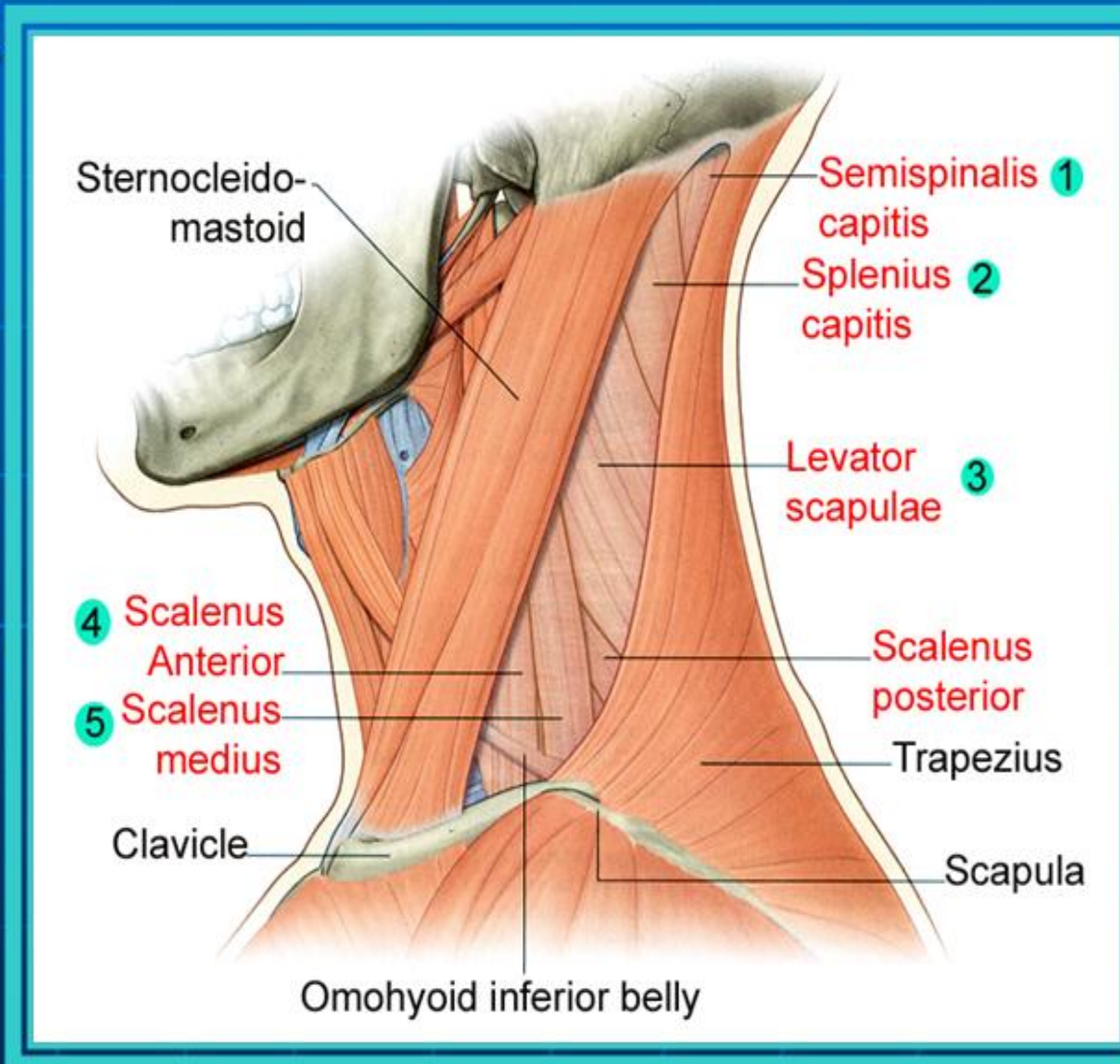
- Semispinalis capitis
- Splenius capitis
- Levator scapulae
- Scalenus medius
- Scalenus anterior



# Floor of Posterior Triangle

## Muscles forming the floor:

1. Semispinalis capitis
2. Splenius capitis
3. Levator scapulae
4. Scalenus medius
5. Scalenus anterior



# Contents of posterior triangle

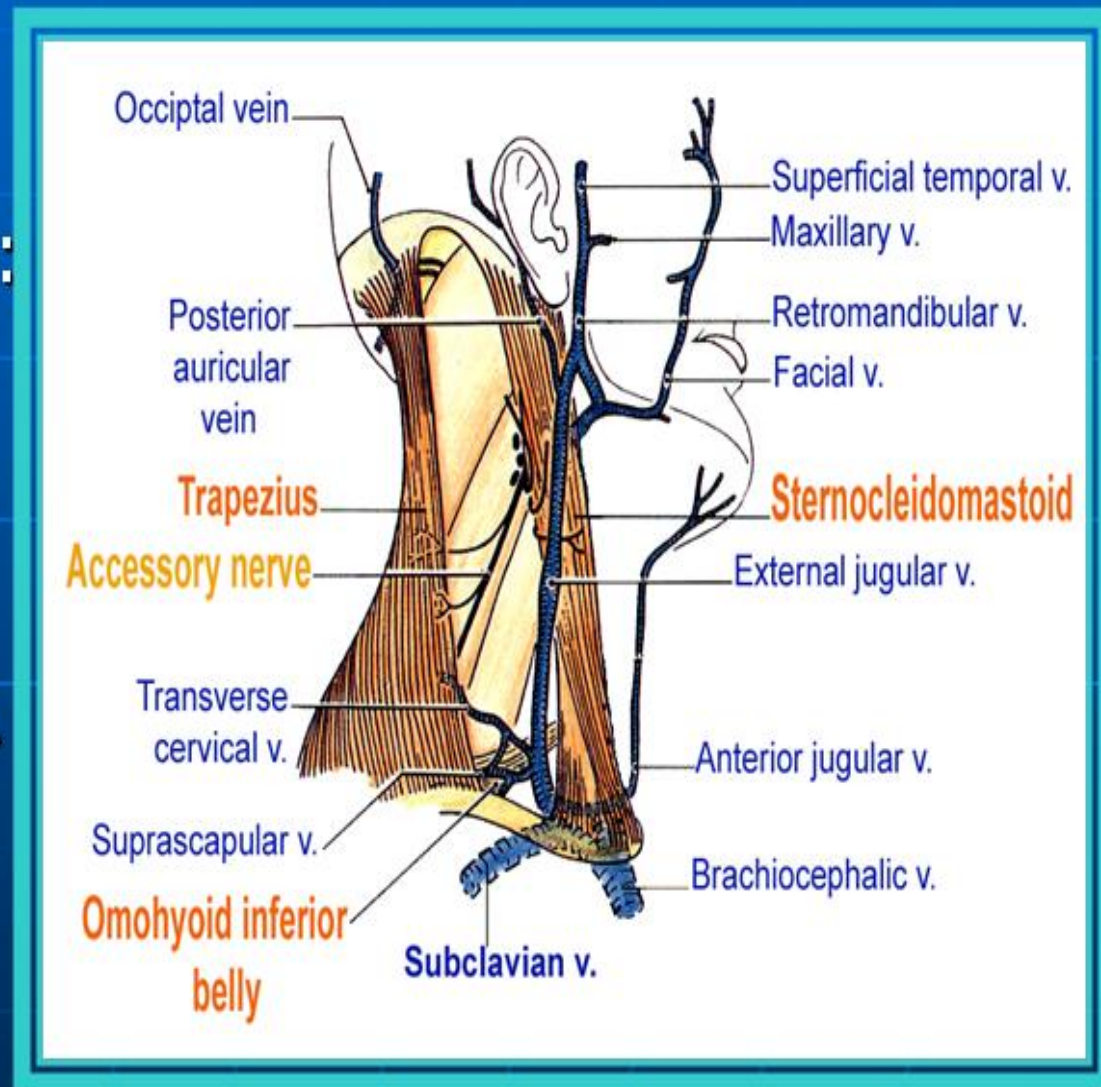
## Subdivisions:

Divided by inferior belly of omohyoid into:

- Supraclavicular  $\Delta$
- Occipital  $\Delta$

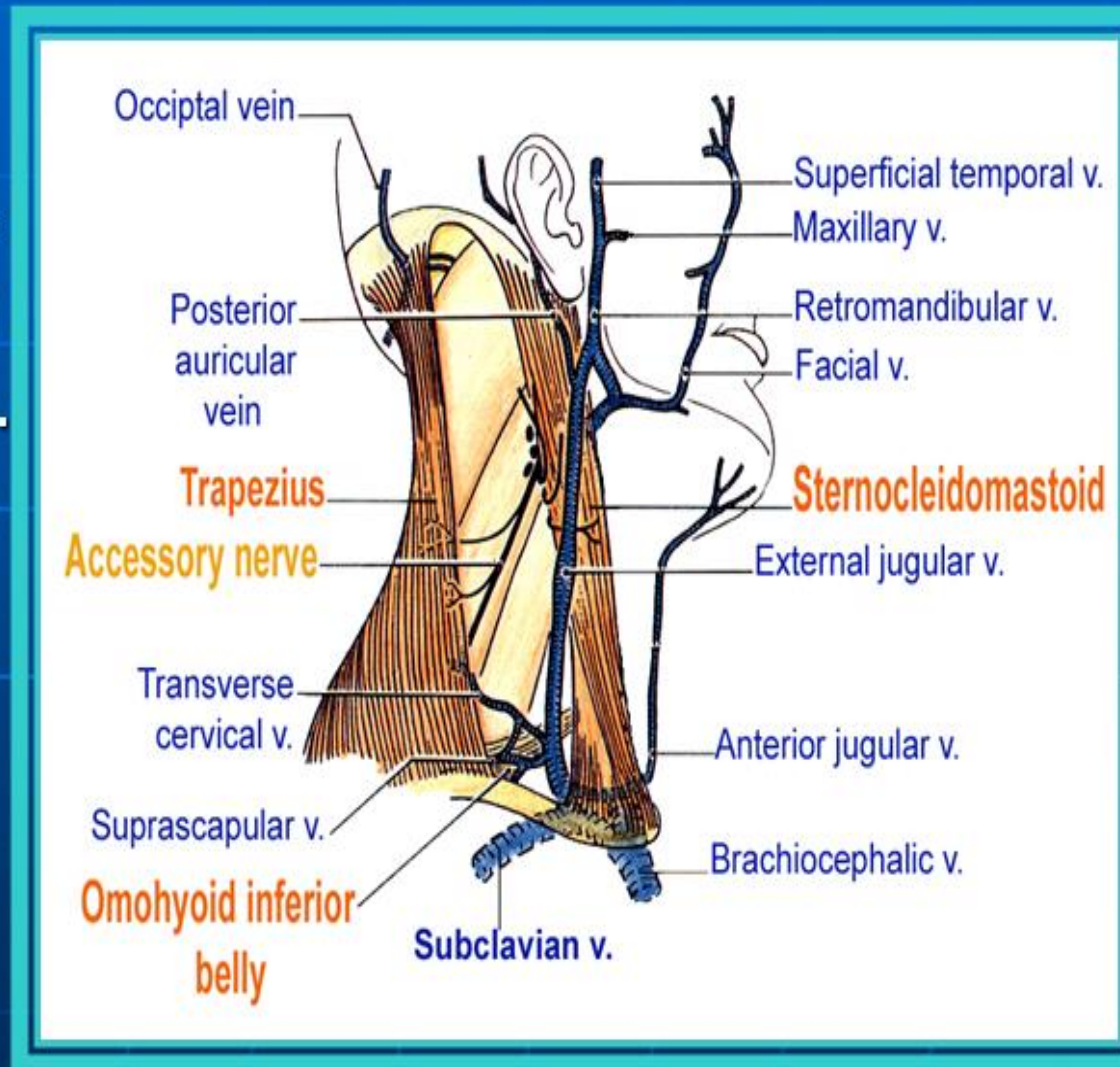
## CONTENTS:

- 1 muscle Omohyoid.
- 3 Veins.
- 3 Arteries.
- 4 Nerves.



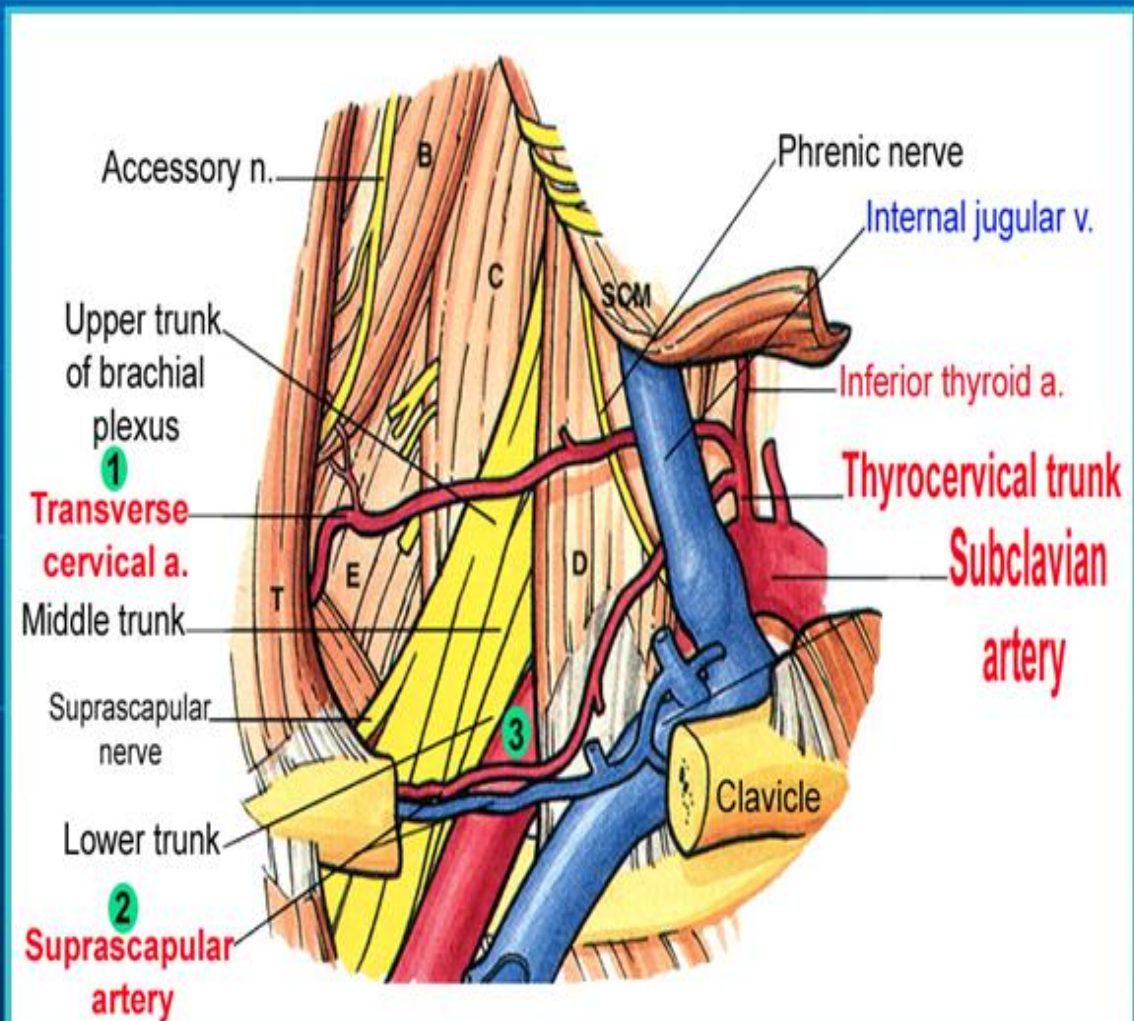
# Veins in posterior triangle

- External jugular v.
  - Formed by union of posterior auricular v. and anterior division of retromandibular v.
  - End: into subclavian v.
- Transverse cervical vein.
- Suprascapular vein.



# Arteries in posterior triangle

1. Transverse cervical artery.
  2. Suprascapular a.
  3. Subclavian a. (3rd part).
- (1 + 2) = Branches from thyrocervical trunk → from 1st part of subclavian artery.



# Nerves within posterior triangle

- Accessory nerve.
- Brachial plexus.
- Cervical plexus (C2,3,4) and its branches:
  - Greater occipital n.
  - Lesser occipital n.
  - Great auricular n.
  - Transverse cervical
  - Supraclavicular ns.
- Phrenic nerve.

