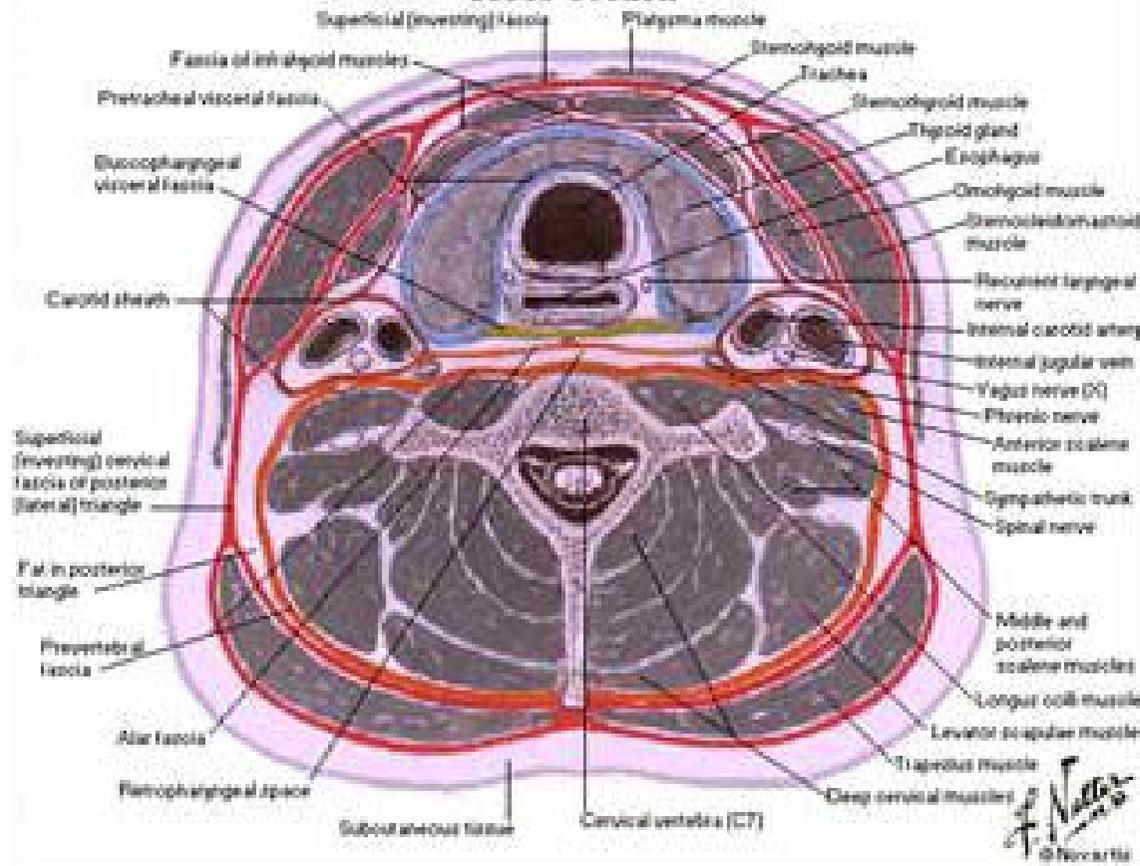


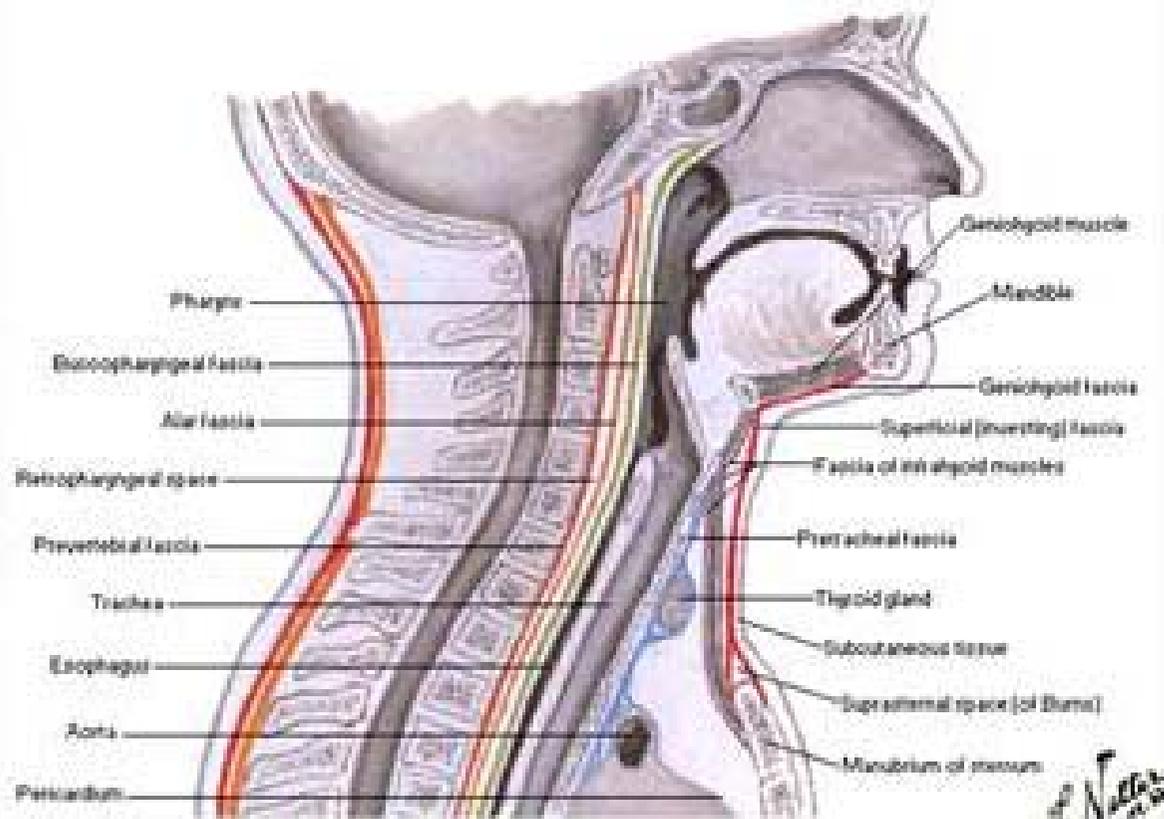
Neck

- Extent
- Compartments
 - Visceral
 - Vertebral
 - Neurovascular
- Fascial spaces
 - Pretracheal
 - Retropharyngeal

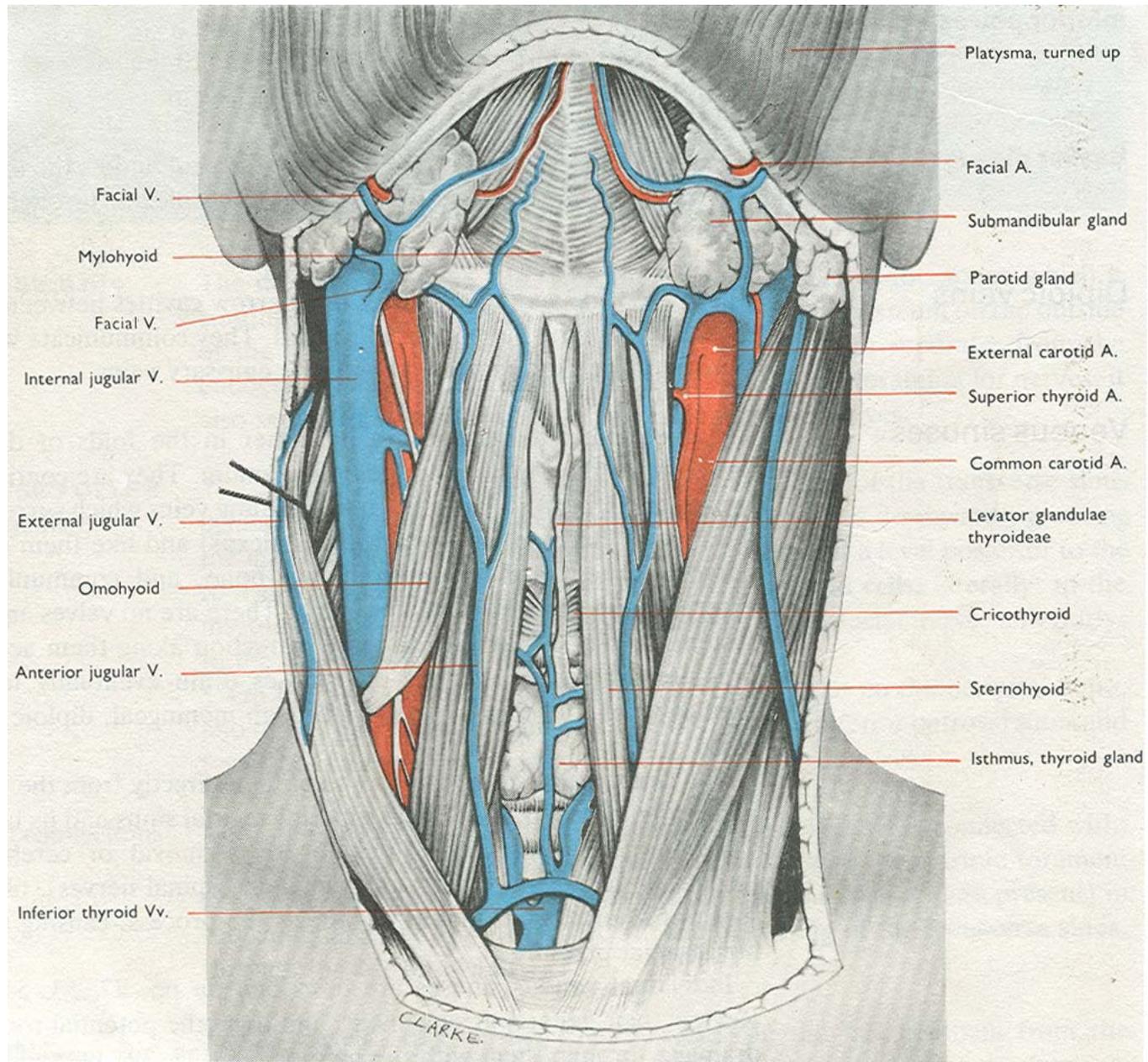
Fascial Layers of Neck Cross Section



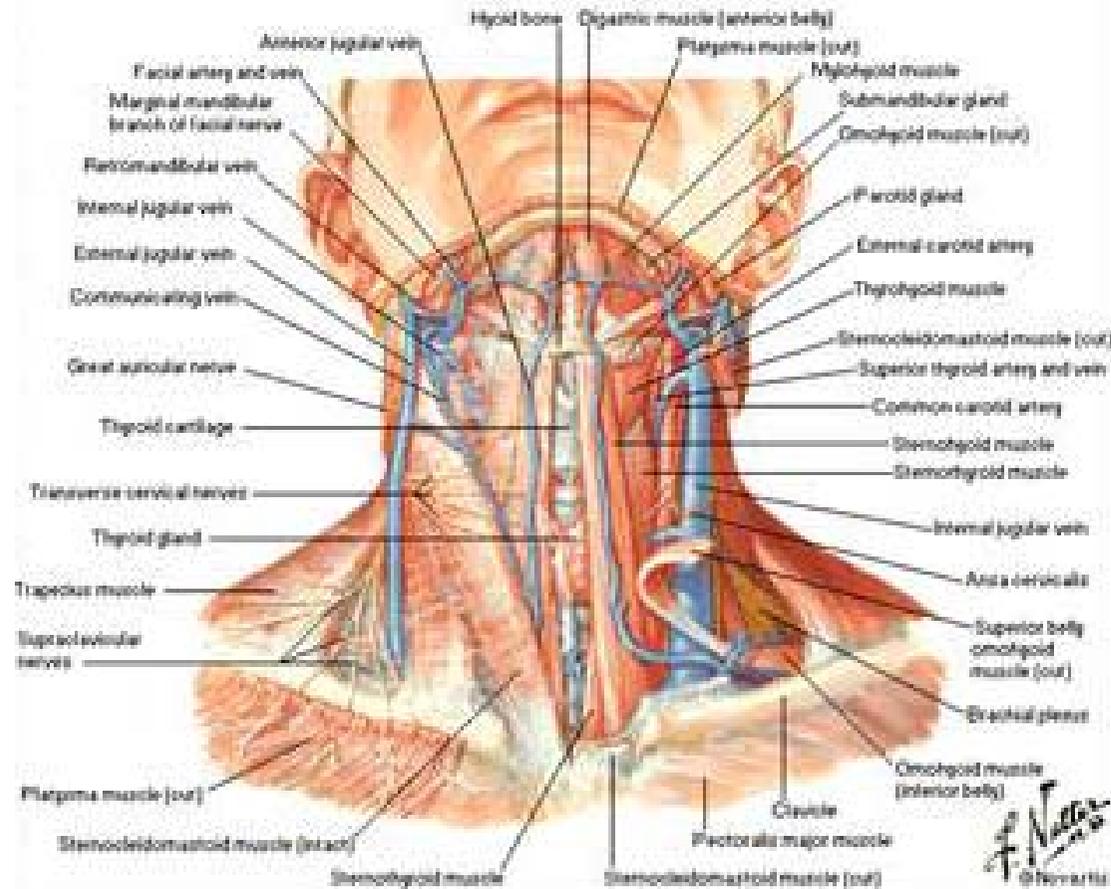
Fascial Layers of Neck Sagittal Section



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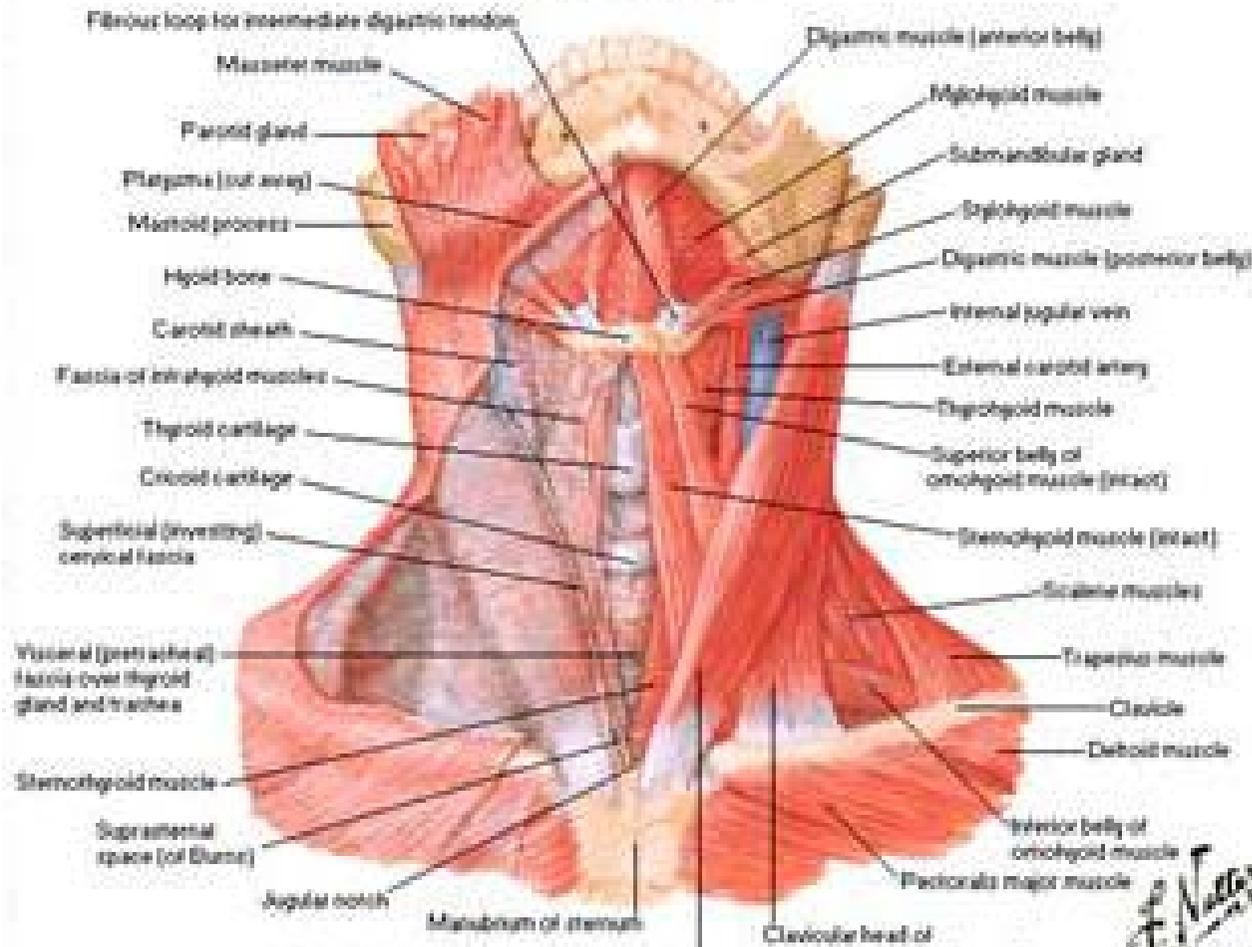


Superficial Veins and Cutaneous Nerves of Neck



Muscles of Neck

Anterior View



Deep dissection of neck- Muscles

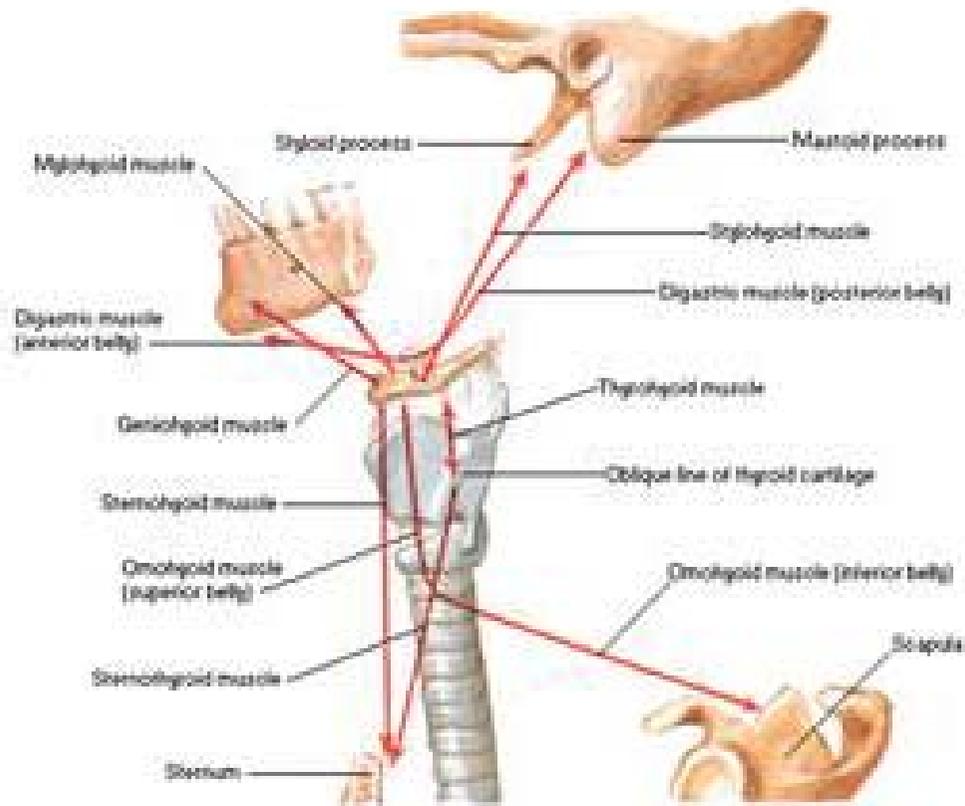
- **Suprahyoid muscles**

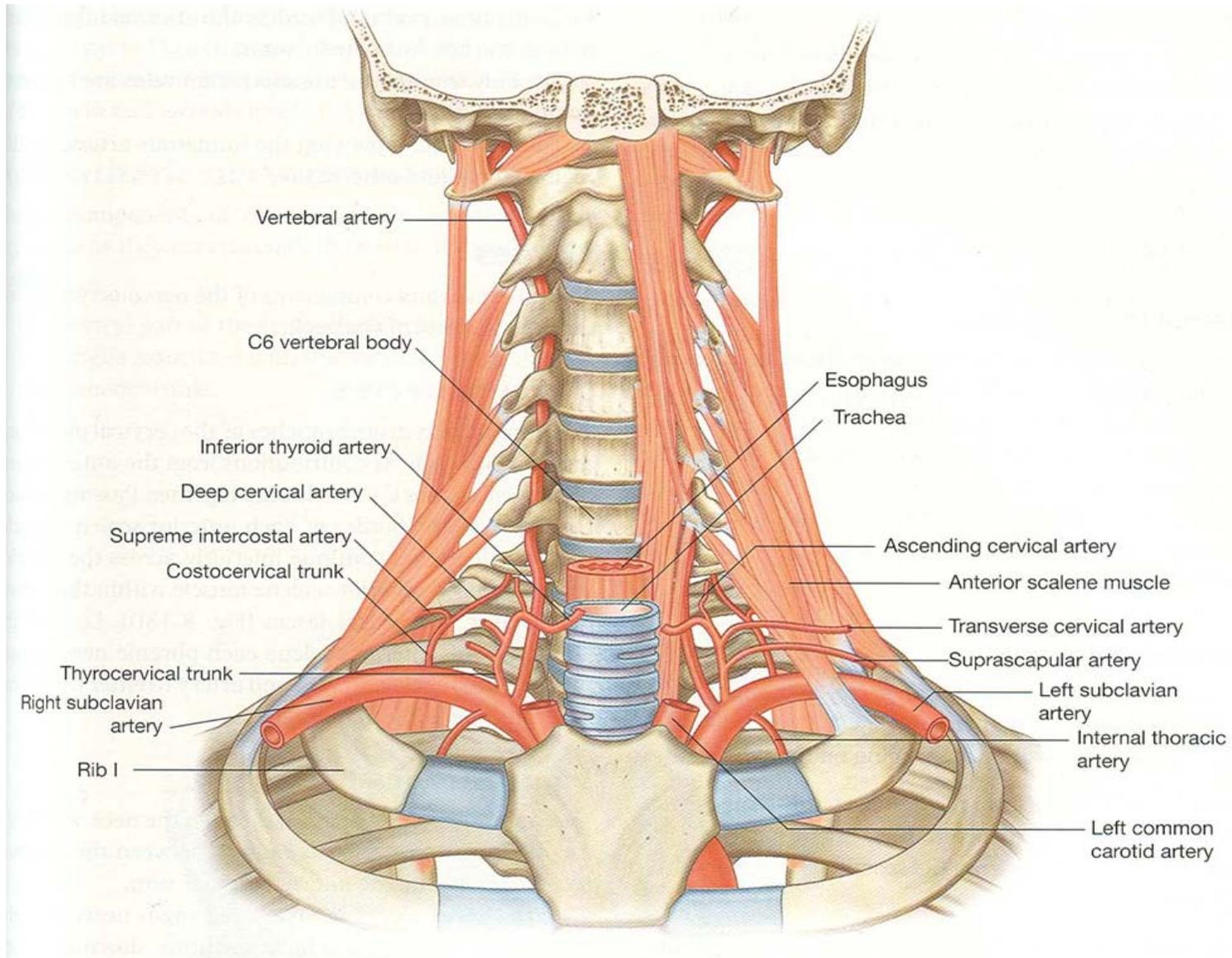
1. Stylohyoid
2. Digastric
3. Mylohyoid
4. Geniohyoid

- **Infrahyoid muscles**

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

Infrahyoid and Suprahyoid Muscles and their Action Schema





Scaleni Muscles

- Scalenus anterior

Origin: Anterior tubercles of transverse processes of 3rd to 6th cervical vertebrae

Insertion: Scalene tubercle on 1st rib

Relations: Lies between subclavian vein and artery; anteriorly crossed by IJV and phrenic nerve; posteriorly separated by scalenus medius by subclavian artery and roots of brachial plexus; medially thyrocervical trunk, pleura, suprapleural membrane; superiorly vertebral artery

Scalenus medius and posterior

- Origin: Posterior tubercles of all cervical transverse processes
- Insertion: Superior surface of 1st rib
- Relations: anterior to it are roots of cervical and brachial plexus, subclavian artery; post. to it is levator scapulae; pierced by dorsal scapular and two roots of long thoracic nerve; inferiorly cervical pleura.
- Scalenus posterior
Actually a part of scalenus medius but inserted to external surface of 2nd rib.

Deep dissection of neck- Arteries

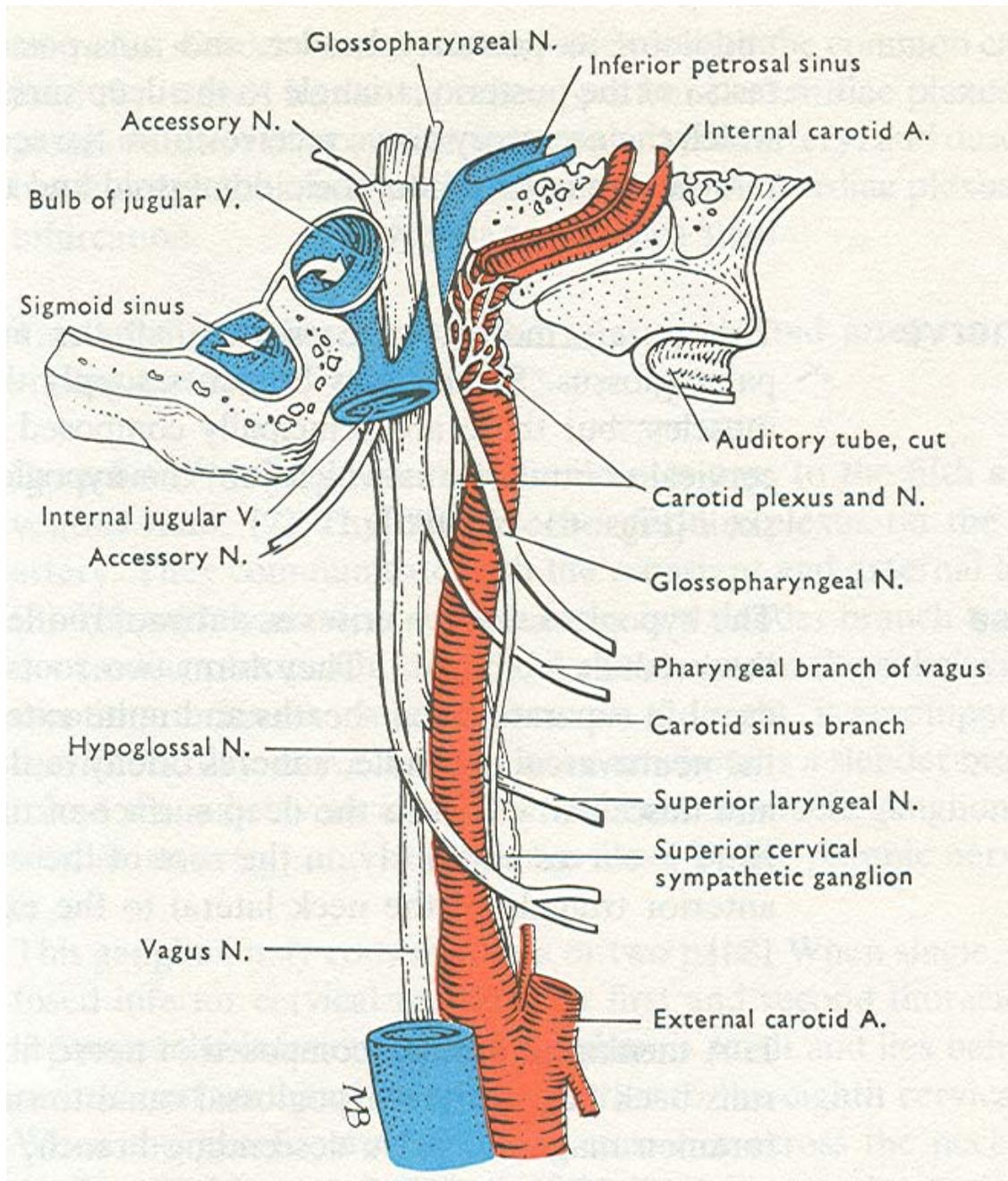
- CAROTID SYSTEM

 - Common carotid

 - Internal carotid

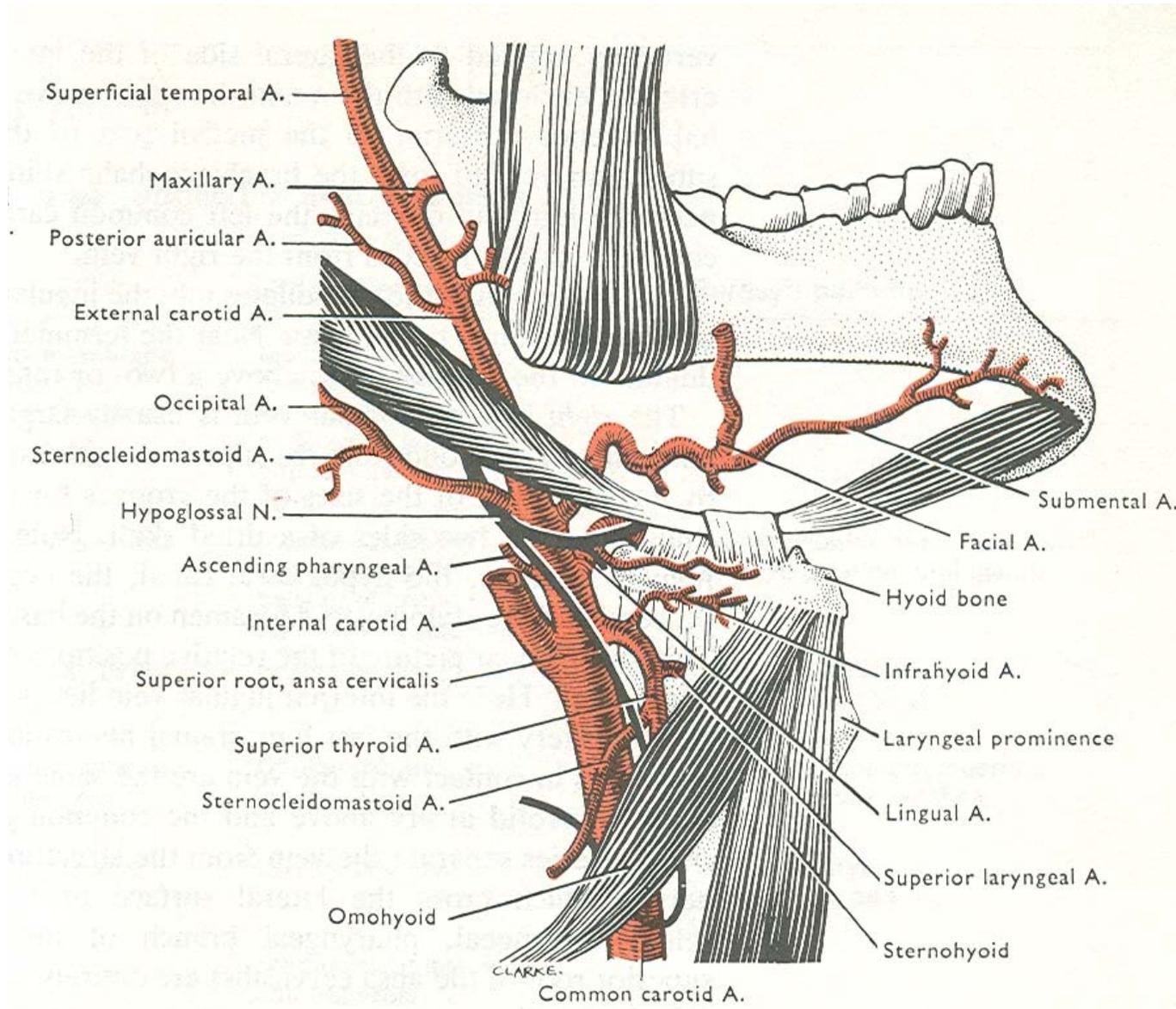
 - External carotid

- SUBCLAVIAN ARTERY

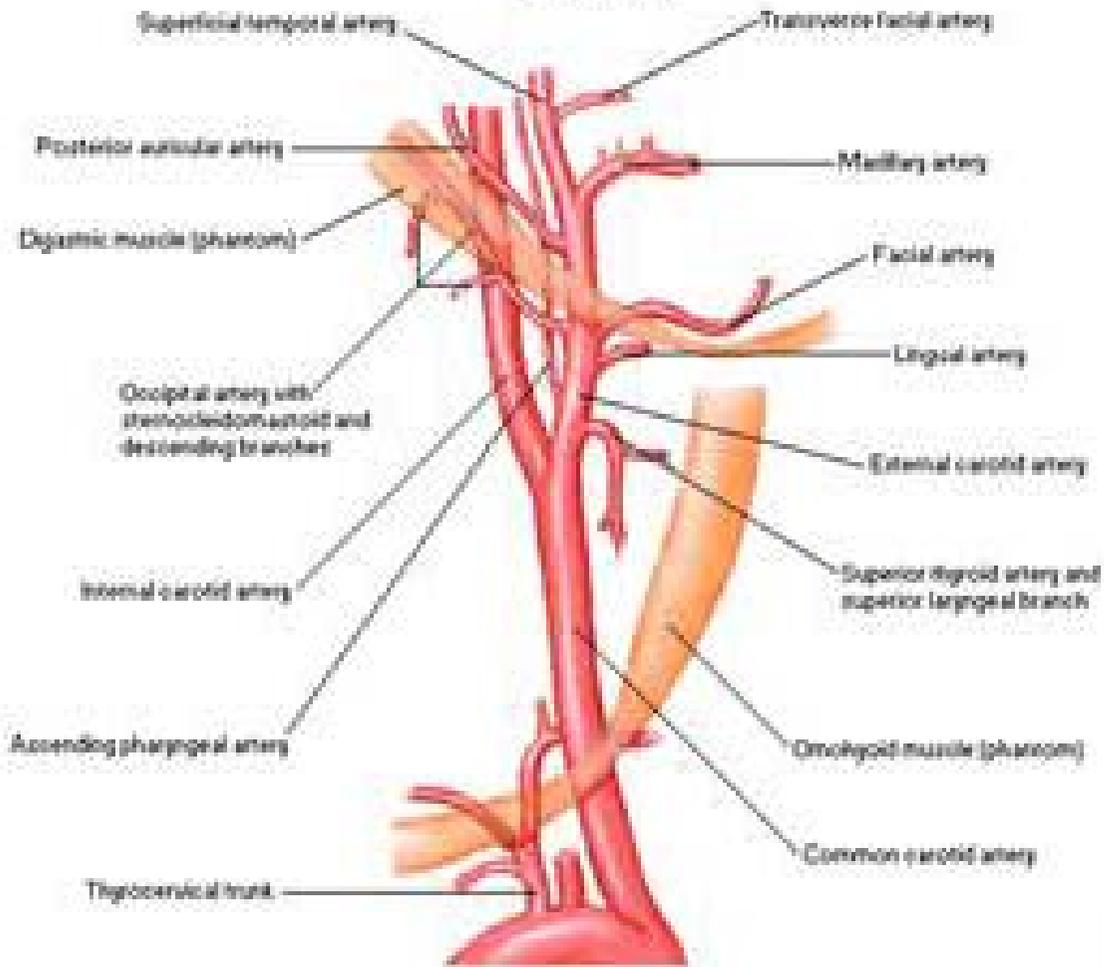


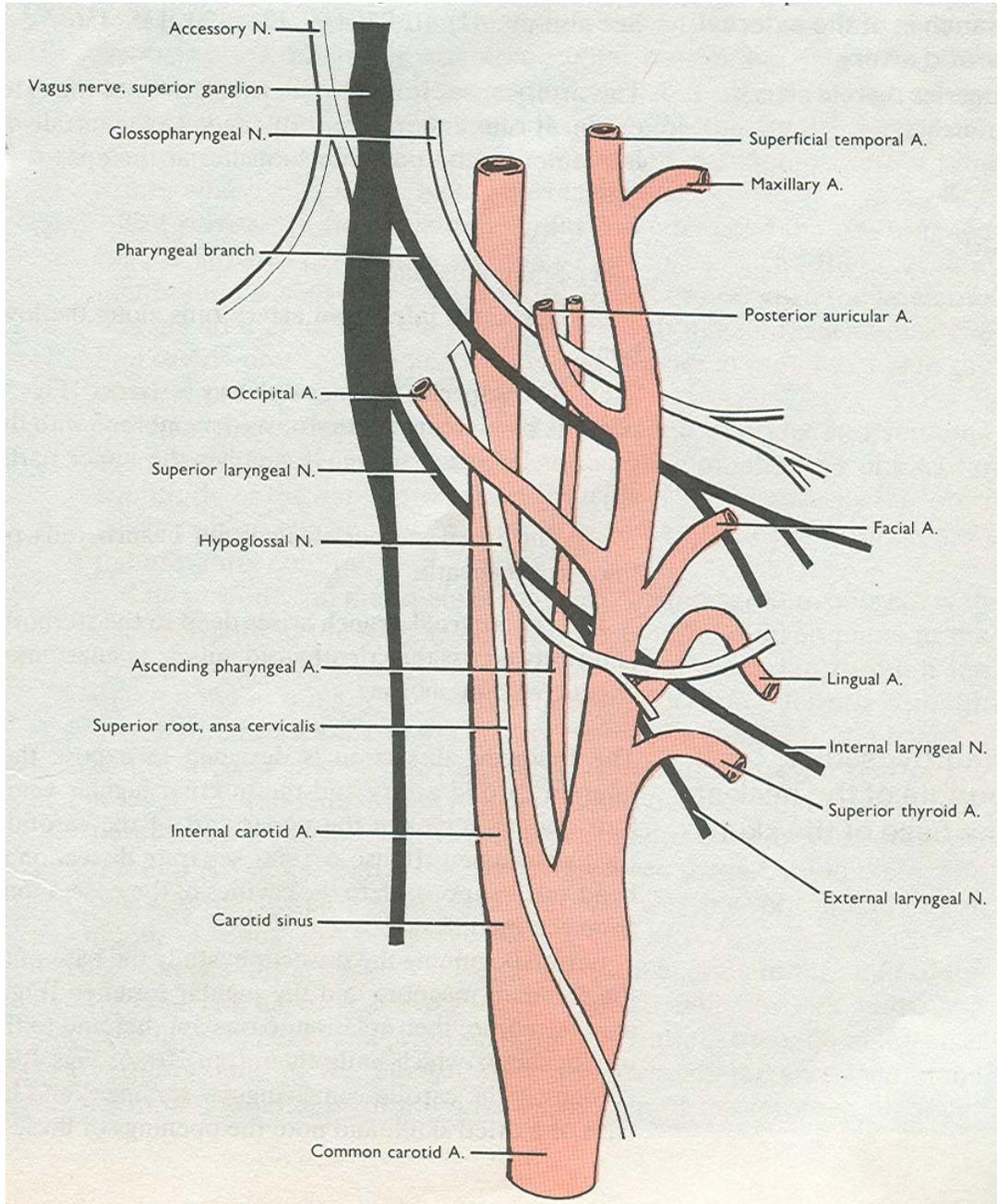
External carotid artery

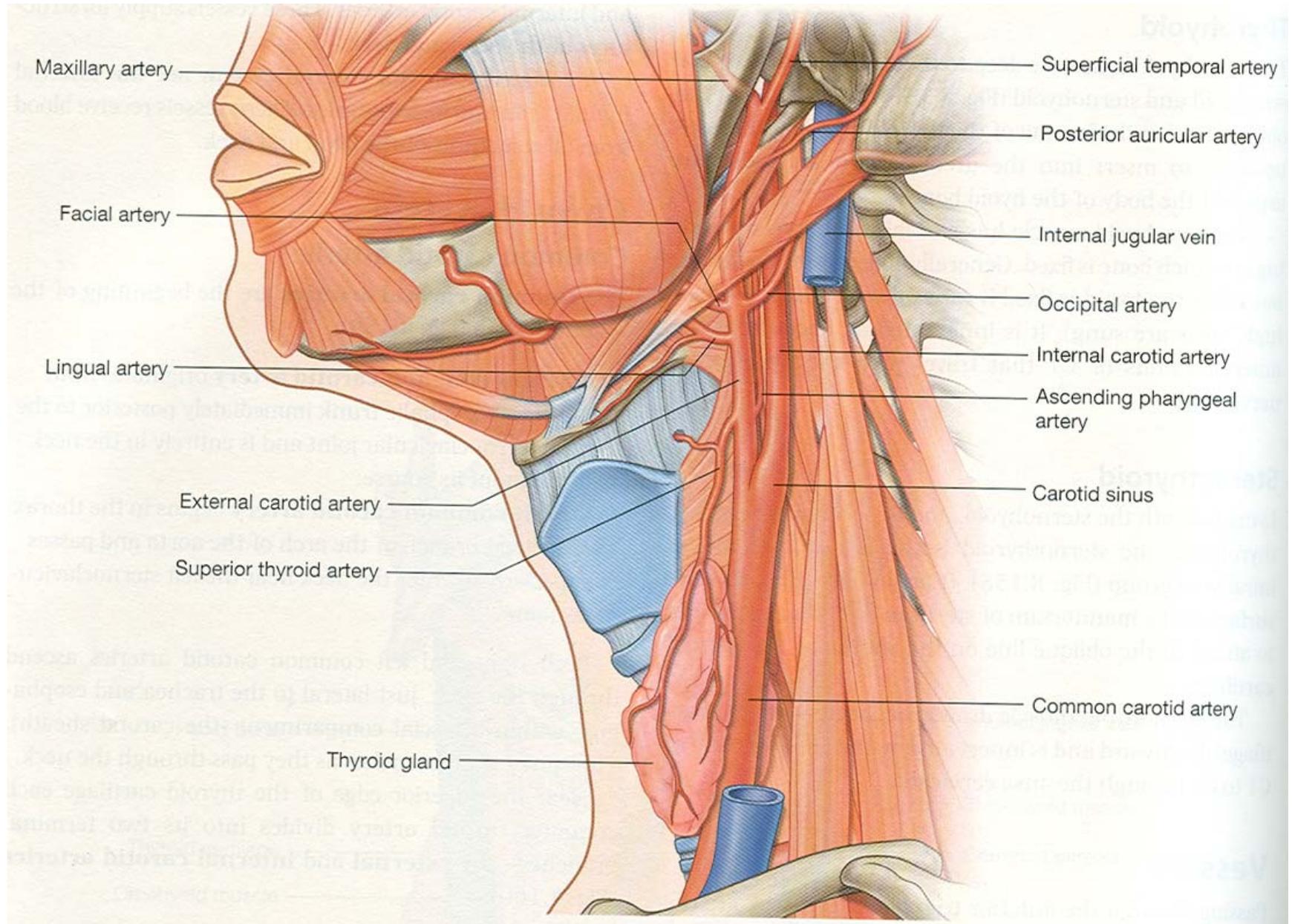
- Superior thyroid
- Ascending pharyngeal
- Lingual
- Facial
- Occipital
- Posterior auricular
- Superficial temporal
- Maxillary



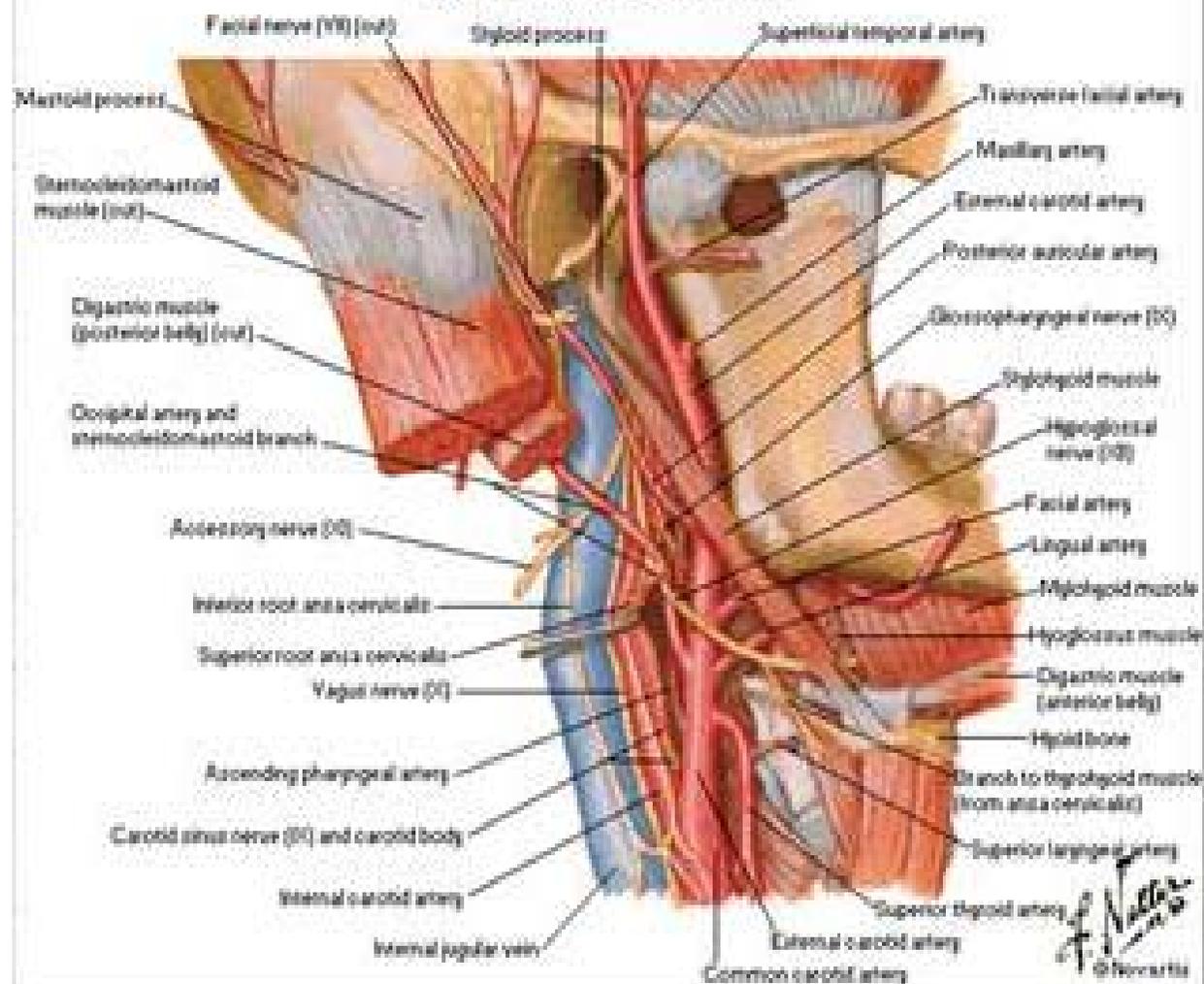
External Carotid Artery and Branches Schema







Carotid Arteries - Parotid Fossa Right Lateral Dissection

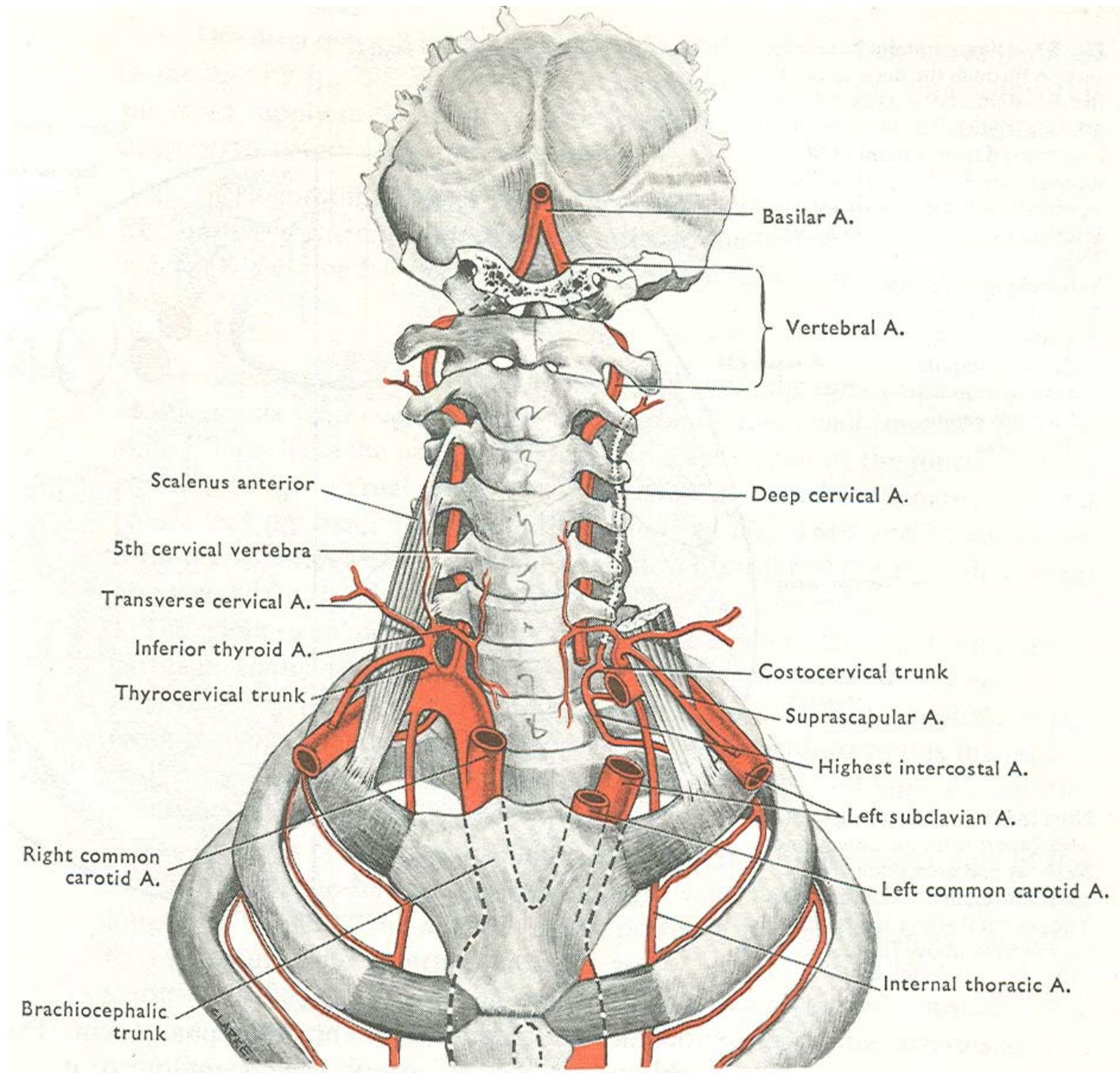


Subclavian Artery

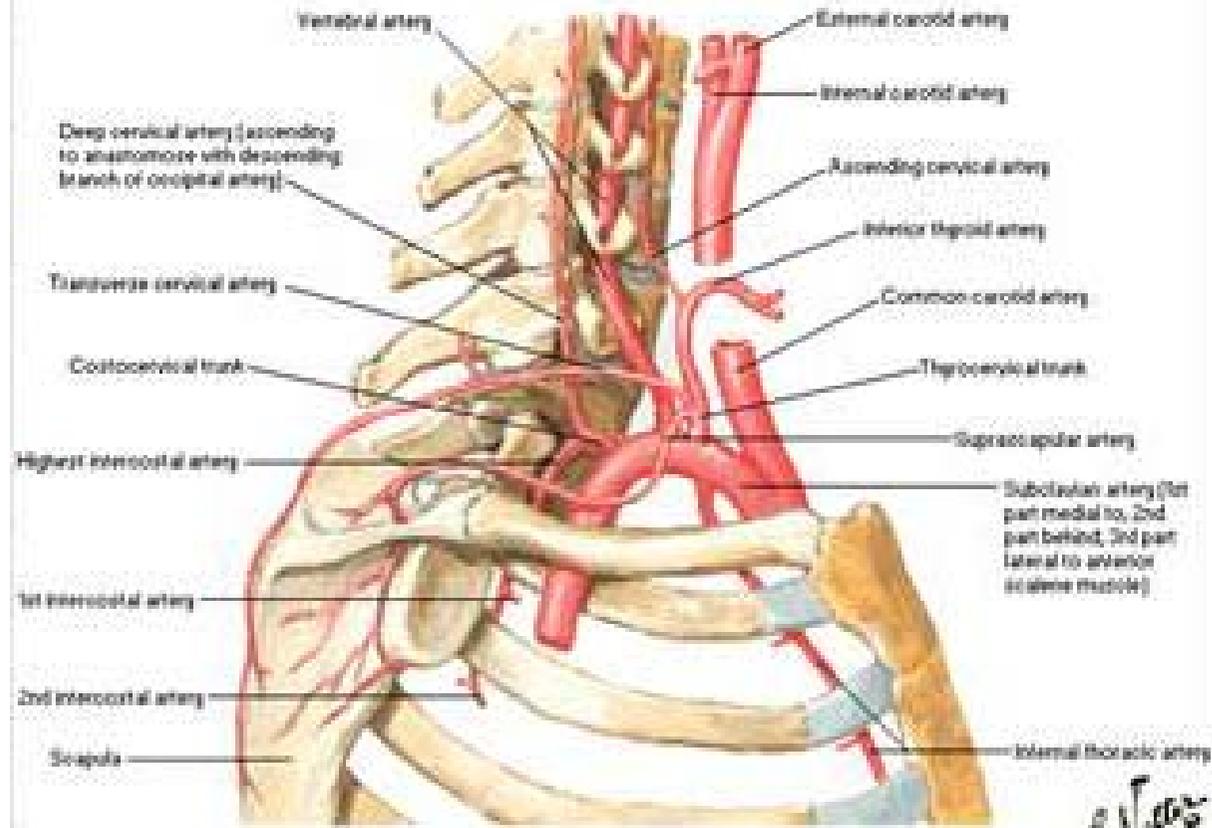
- Origin: Right- from brachiocephalic
Left- from arch of aorta
- Extent: From sternoclavicular joint to outer border of first rib
- Branches
- **First part** Vertebral
 Internal thoracic
 Thyrocervical Inf. Thyroid
 Transverse cervical
 Suprascapular
- **Second part** Costocervical Deep cervical
 Highest intercostal
- **Third part** Dorsal scapular?

Subclavian artery

- Relations
- Anterior: Phrenic nerve, vagus nerve, ansa subclavia, Thoracic duct, CCA, IJV, ant. Jugular vein
SCM, sternohyoid, sternothyroid, scalenous anterior
- Posterior: Lung, cervical pleura, suprapleural membrane, ansa subclavia, lower trunk of brachial plexus



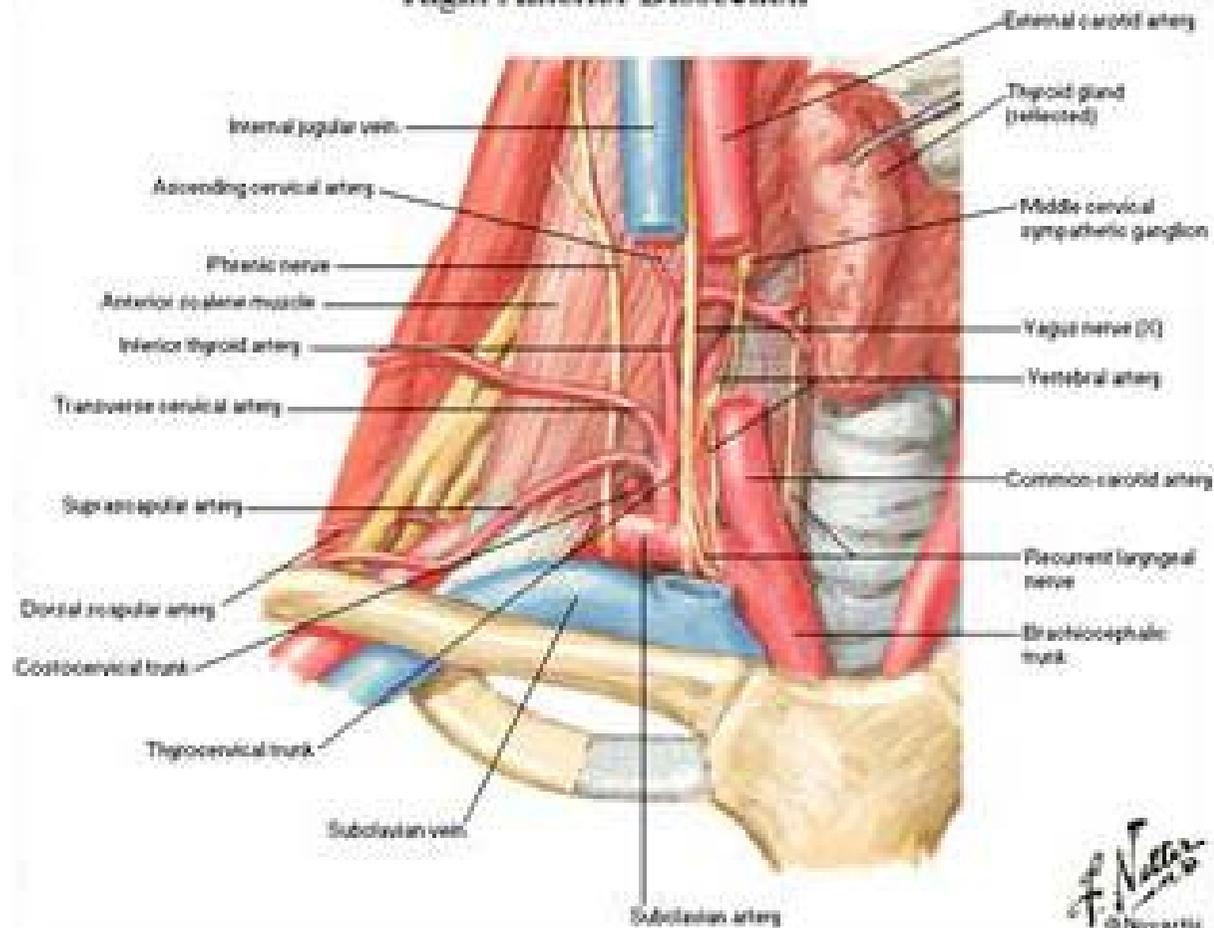
Subclavian Artery Right Lateral Schematic View



- Vertebral artery
- External carotid artery
- Internal carotid artery
- Ascending cervical artery
- Inferior thyroid artery
- Common carotid artery
- Thyrocervical trunk
- Suprascapular artery
- Subclavian artery (1st part medial to, 2nd part behind, 3rd part lateral to anterior scalene muscle)
- Internal thoracic artery
- Scapula
- 2nd intercostal artery
- 1st intercostal artery
- Highest intercostal artery
- Costocervical trunk
- Transverse cervical artery
- Deep cervical artery (ascending to anastomose with descending branch of occipital artery)

F. Netter
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Subclavian Artery Right Anterior Dissection



Deep dissection of neck- Veins

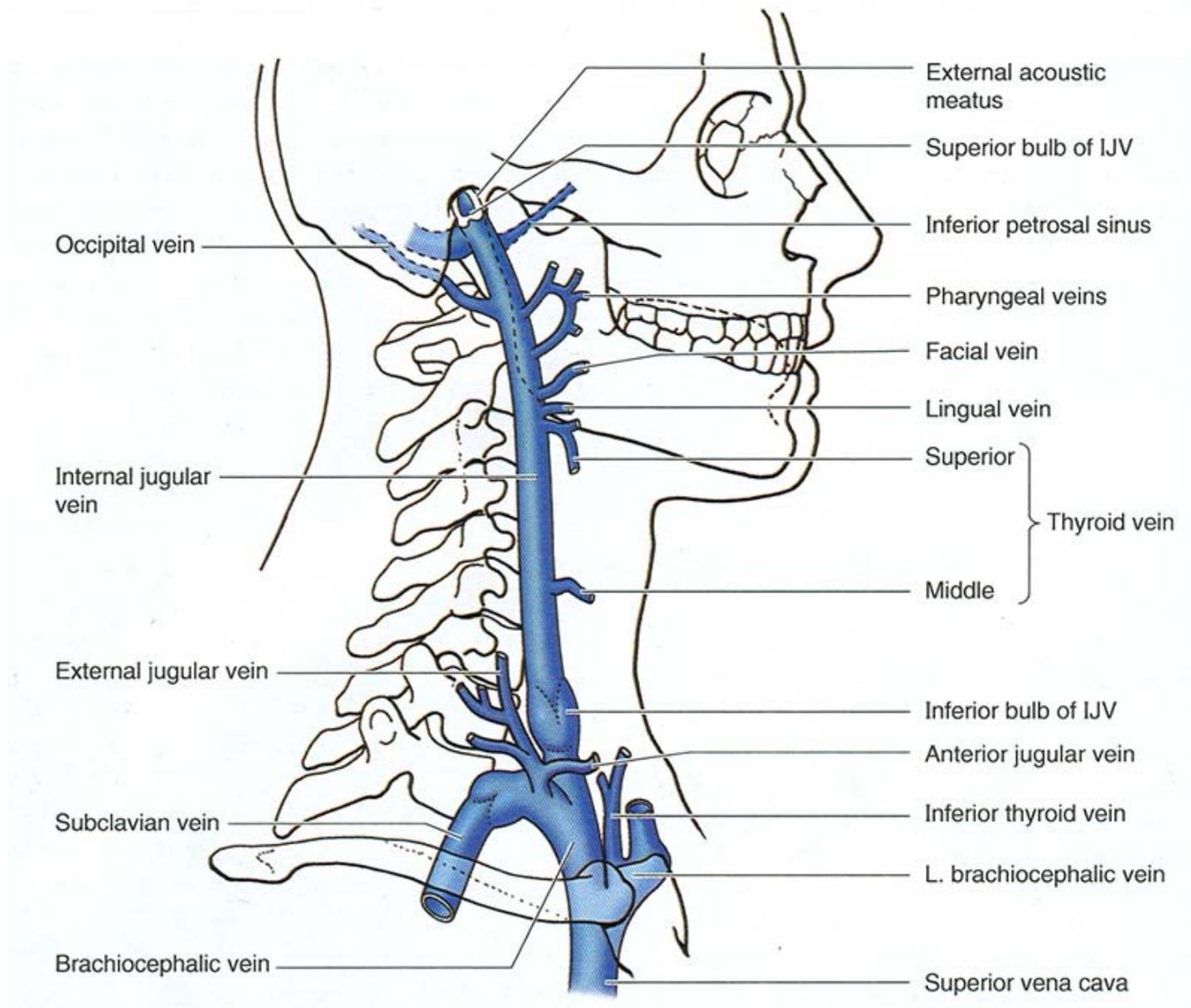
- **Anterior jugular:** Paired venous channels draining anterior aspect of neck, forms jugular venous arch, drains in to subclavian vein
- **External jugular:** forms by joining post. Auricular and retromandibular (post division) post to the angle of mandible, drains in to subclavian vein

tributaries: transverse cervical, suprascapular

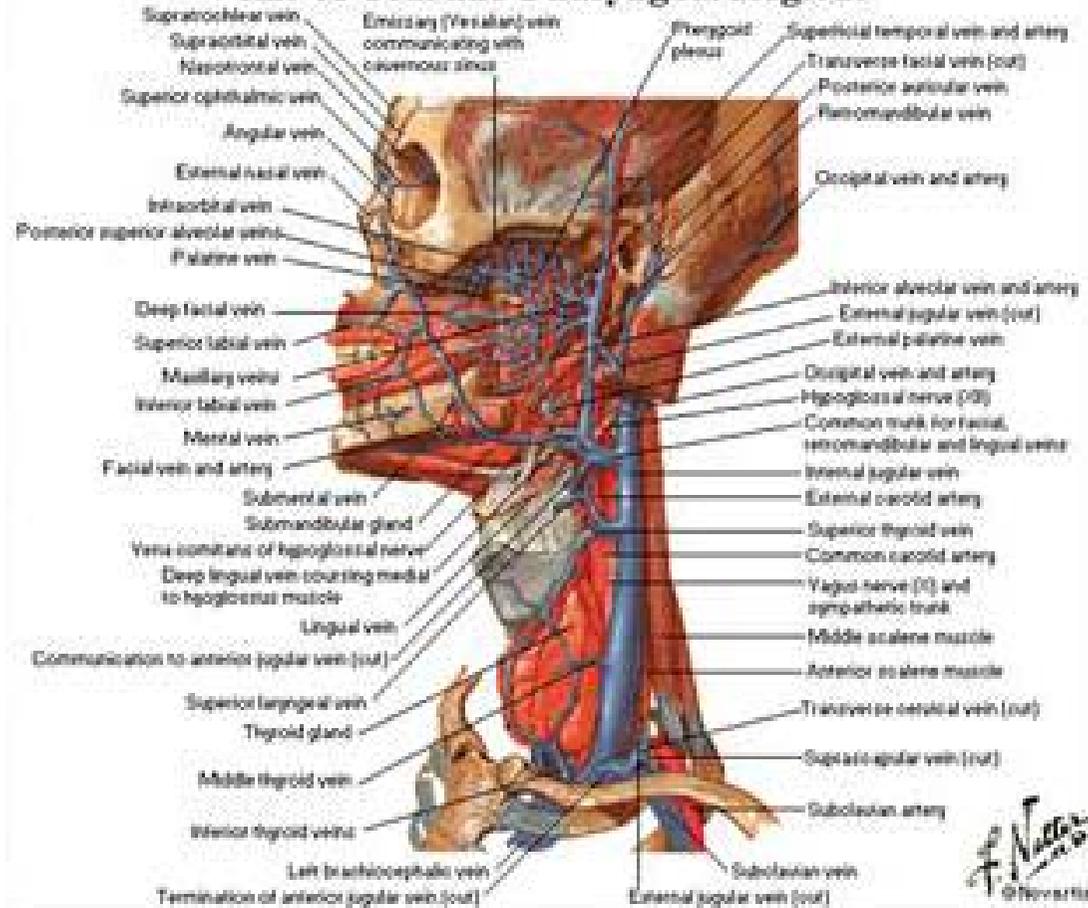
- Internal jugular
- Subclavian vein
- Brachiocephalic

Internal Jugular Vein

- Starts as a continuation of sigmoid sinus
- Exits the skull through jugular foramen
- Enters carotid sheath, lateral to CCA, anterior to vagus
- Joins subclavian veins to form brachiocephalic veins
- Tributaries
 - Inferior petrosal sinus
 - Facial
 - Lingual
 - Pharyngeal
 - Occipital
 - Superior thyroid
 - Middle thyroid



Veins of Oral and Pharyngeal Regions



Veins (contd.)

- **Subclavian veins**

Begins as a continuation of axillary vein at the outer border of 1^s rib. Runs antero-inferior to the artery, separated by scalenus anterior muscle.

Tributaries: External jugular, dorsal scapular

- **Brachiocephalic veins**

Begins by junction of internal jugular and subclavian veins between cervical pleura and medial end of clavicle.

The two veins join to form superior vena cava behind right 1st costal cartilage.

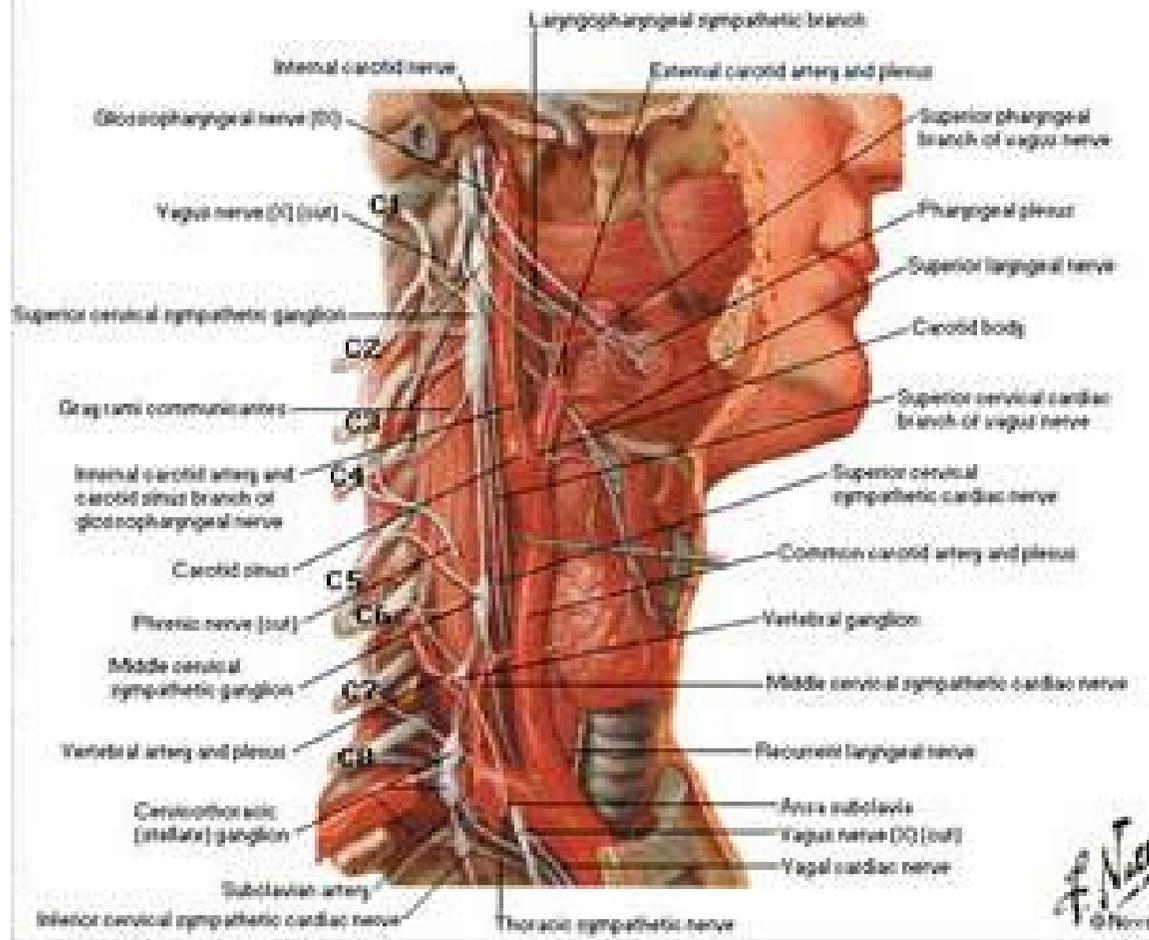
Tributaries: vertebral, highest intercostal, inferior thyroid; left sup. intercostal vein (in to left)

Thoracic duct drains at the junction of lt. Subclavian and lt. internal jugular veins

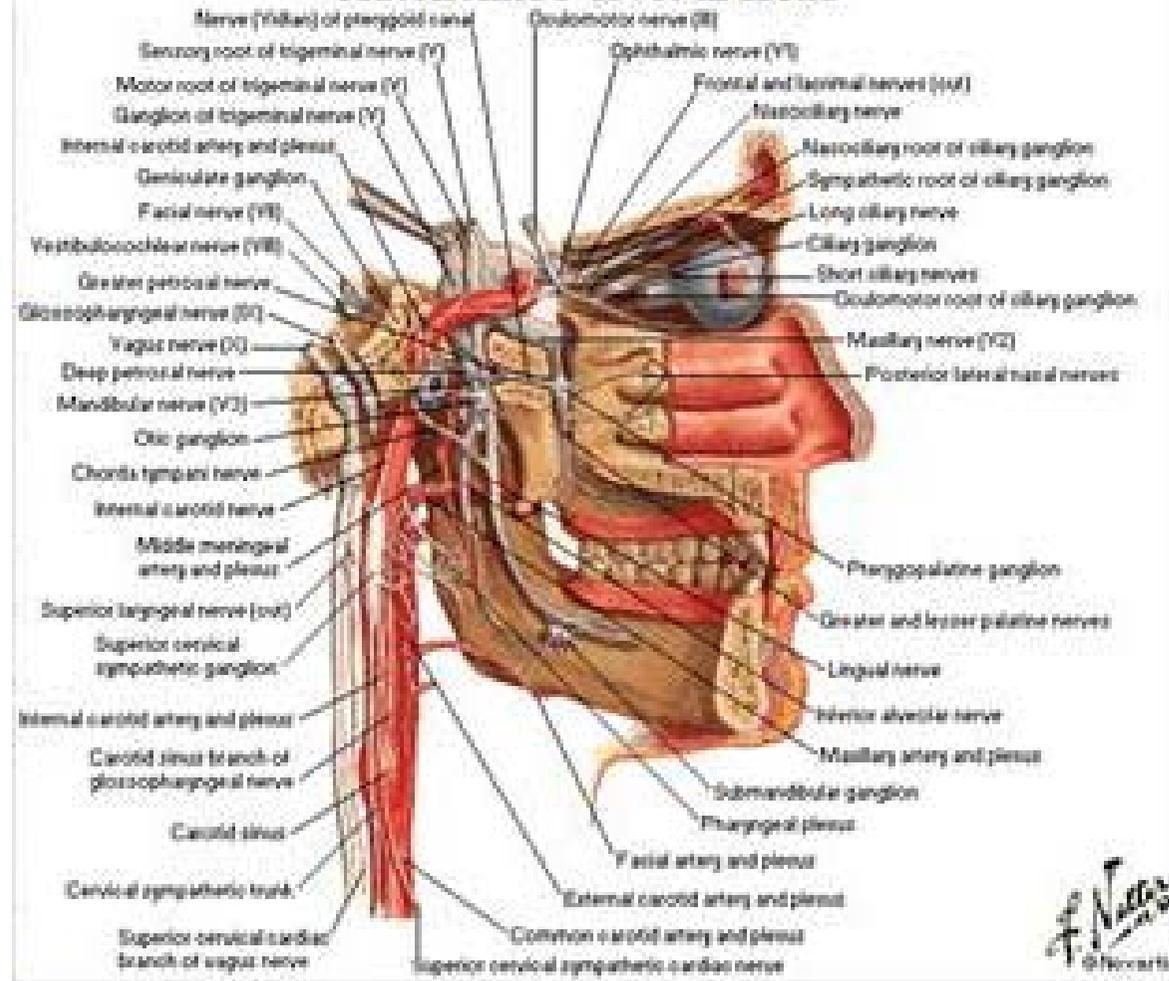
Deep dissection of neck- Nerves

- Cranial nerves
 - Facial
 - Glossopharyngeal
 - Vagus
 - Accessory
 - Hypoglossal
- Cervical plexus
- Brachial plexus
- Phrenic nerve
- Ansa cervicalis
- Transverse cervical nerve
- Cervical sympathetic chain

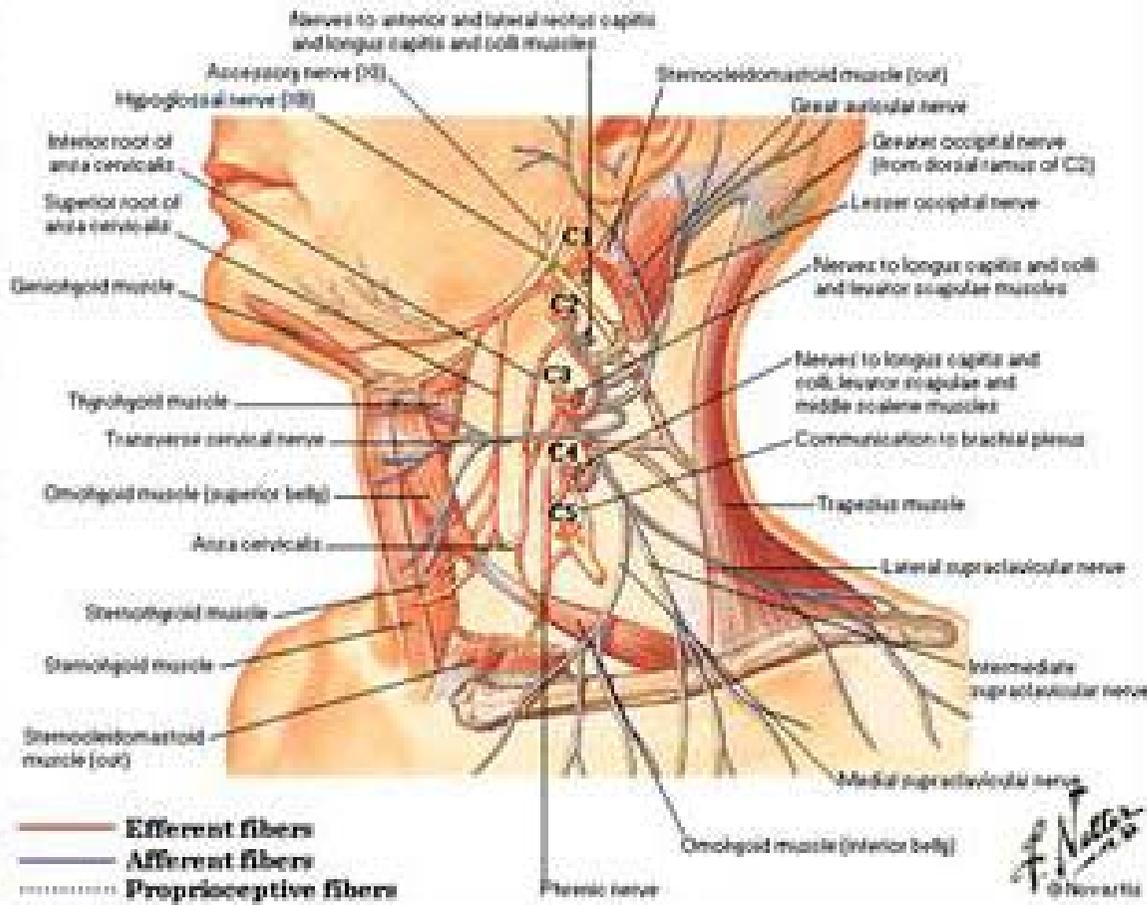
Autonomic Nerves in Neck



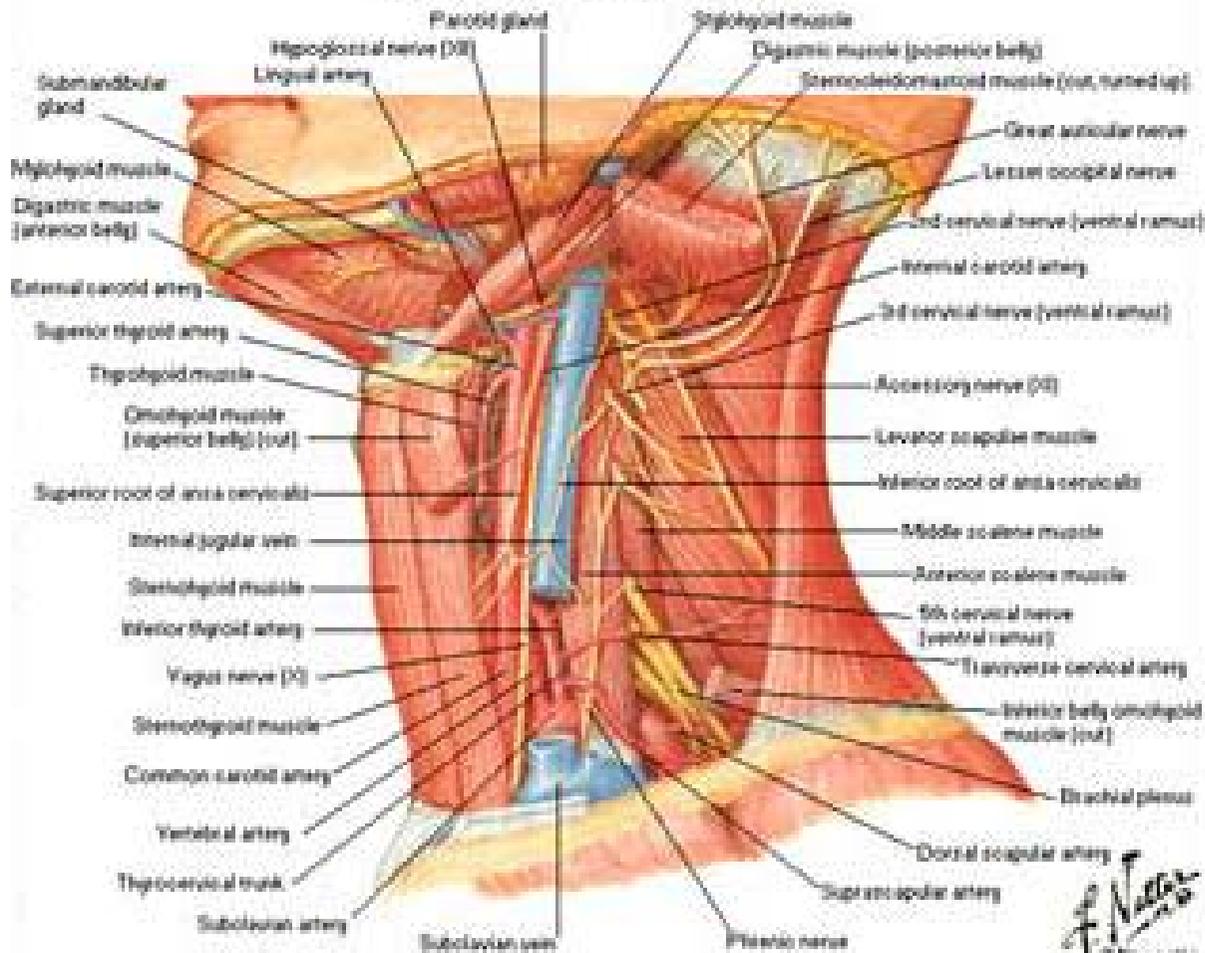
Autonomic Nerves in Head



Cervical Plexus Schema

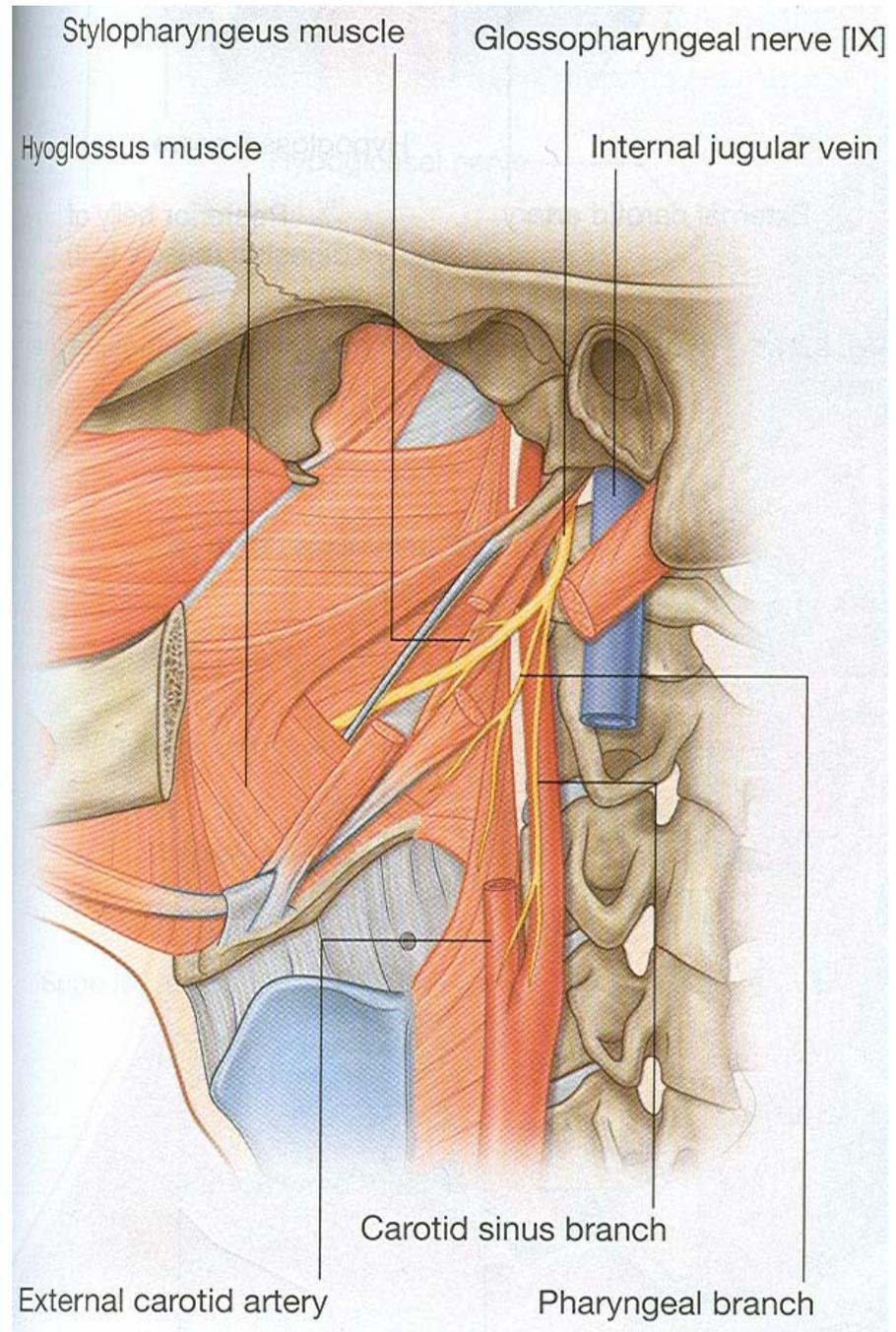


Cervical Plexus in Situ



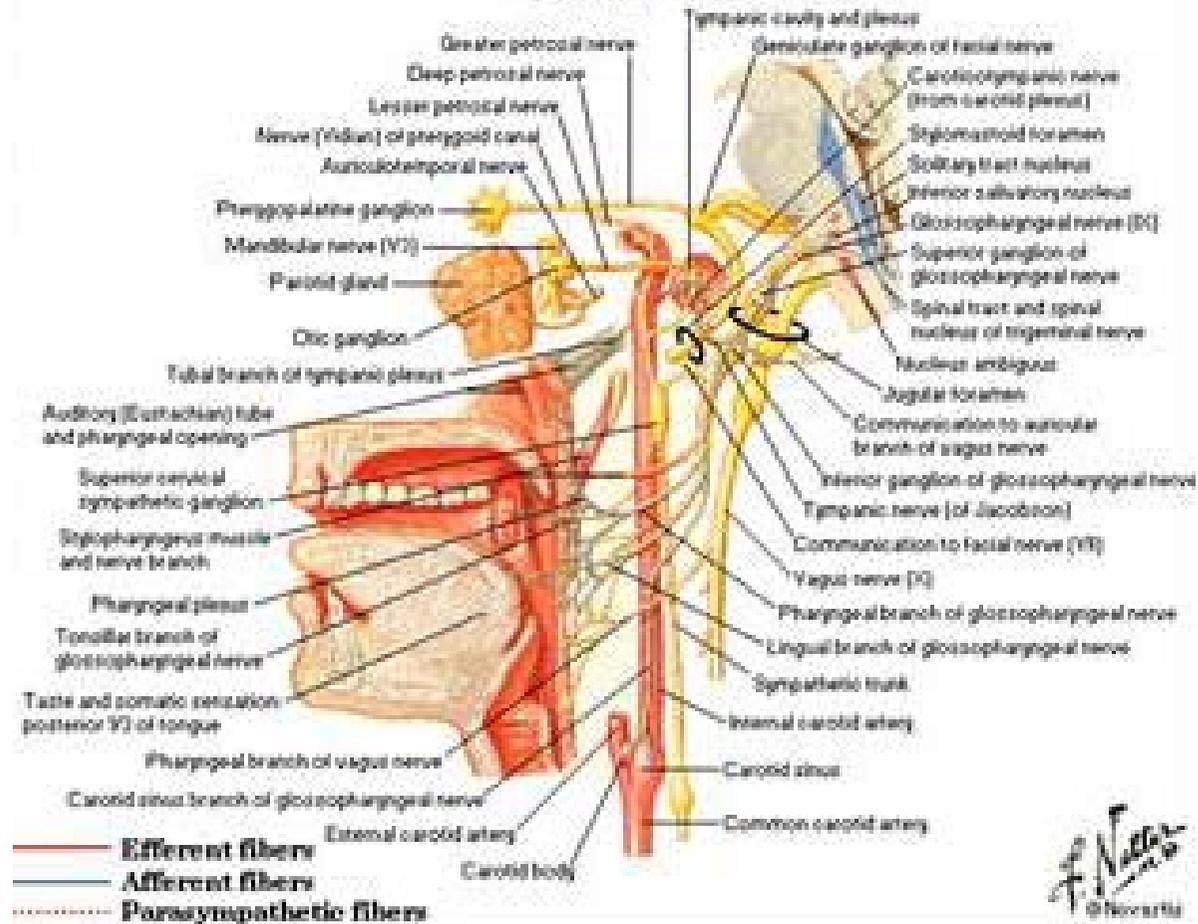
IXth Nerve

- Leaves cranial cavity through jugular foramen
- Passes forwards and laterally between IJV and ICA, deep to styloid apparatus.
- Descends, passes forwards between ICA ^ ECA, curves around stylopharyngeus
- Continues anteriorly, deep to hyoglossus to reach base of tongue
- Sends branches to pharynx, carotid sinus, stylopharyngeus muscle and to post 1/3 of tongue



Glossopharyngeal Nerve

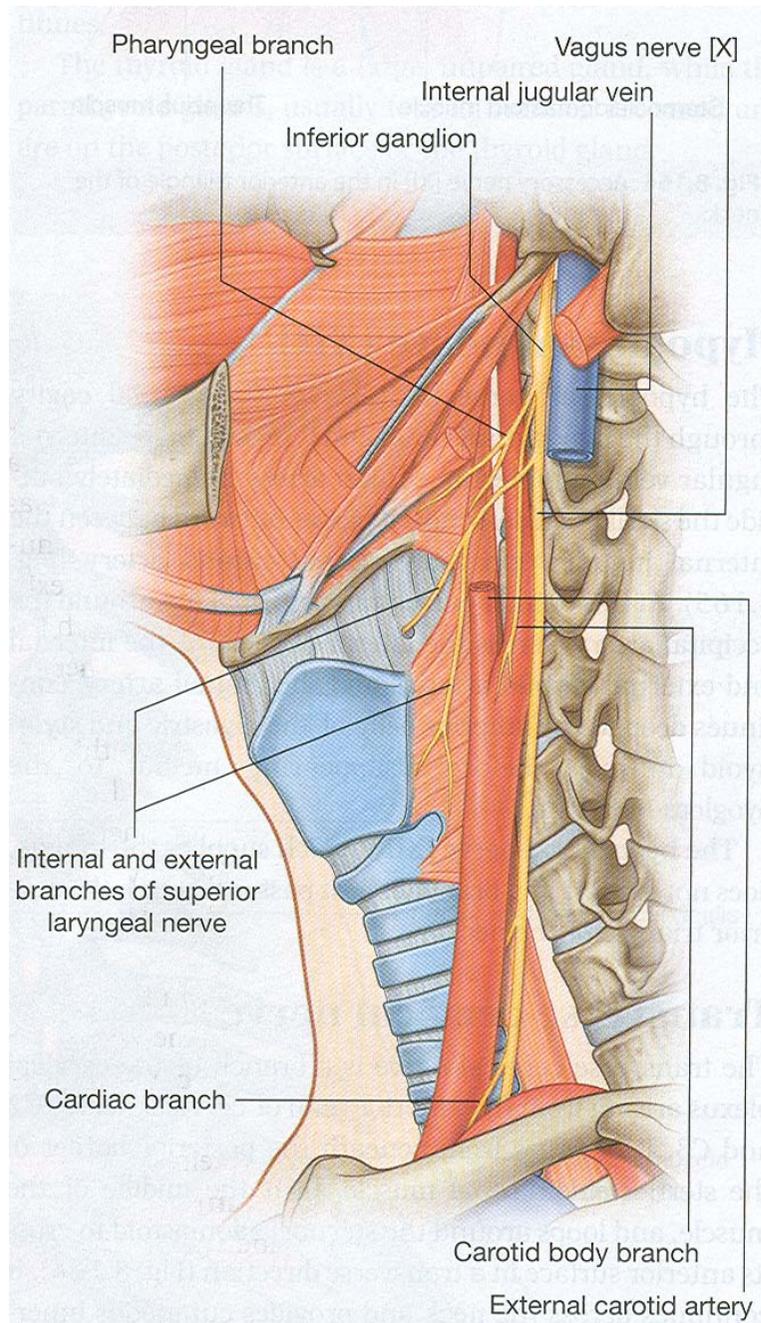
Schema



F. N. N. N.
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Vagus (Xth) Nerve

- Leaves cranial cavity through jugular foramen between IX and XI nerves
- Enters carotid sheath behind IJA & CCA and then ICA
- In the neck, gives branches to pharynx, carotid sinus, superior laryngeal nerve and a cardiac branch and right recurrent laryngeal nerve

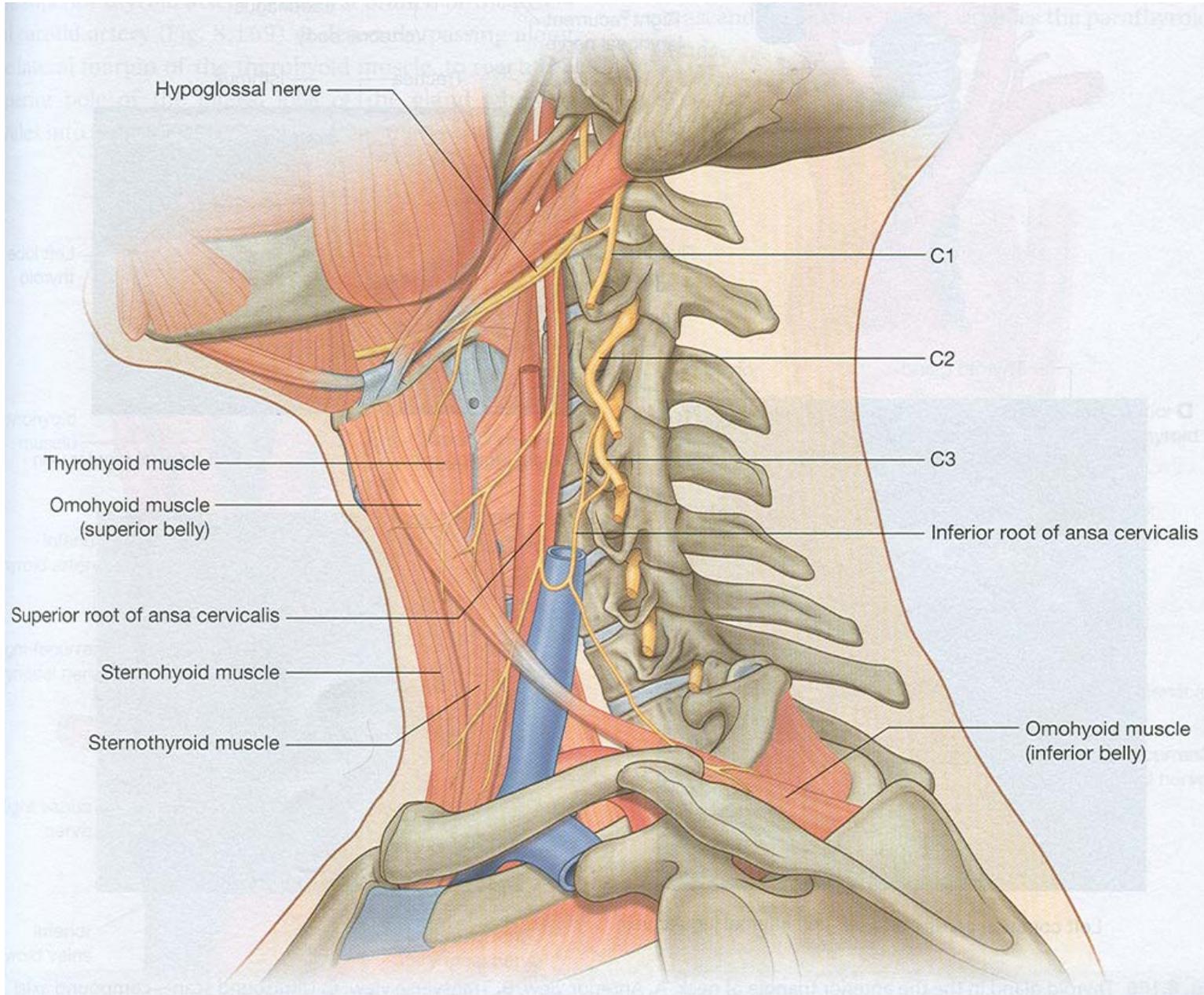


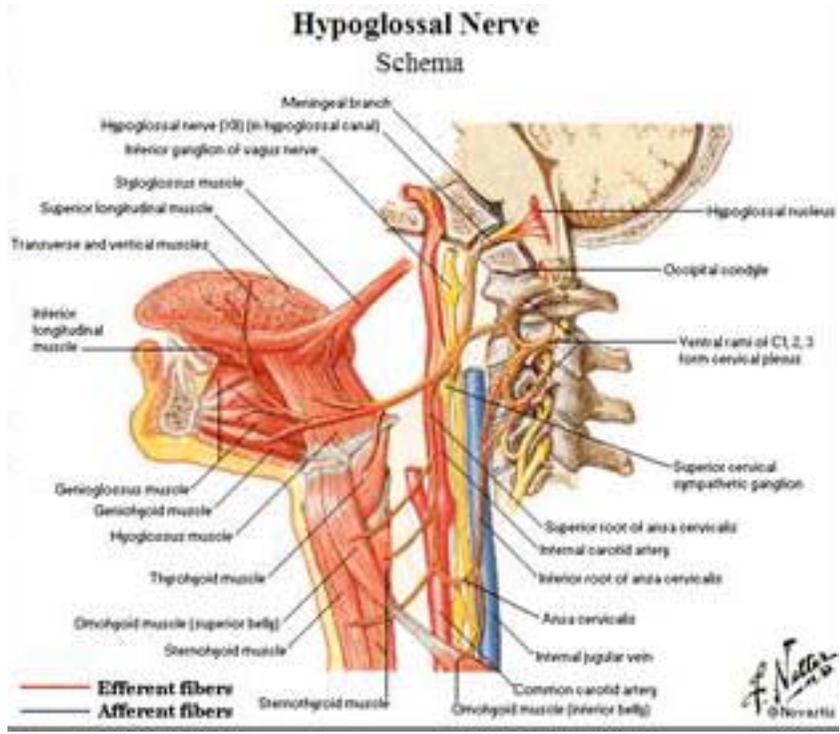
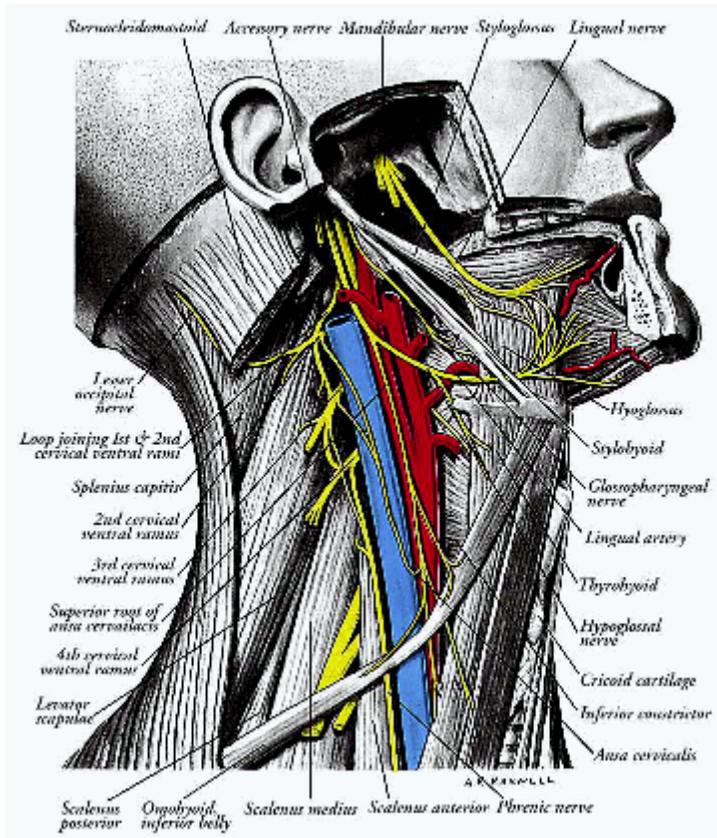
Hypoglossal (XII) nerve

- Leaves cranial cavity through hypoglossal canal, medial to IJV and ICA.
- Descends forwards and medially, deep to anterior belly of digastric and stylohyoid
- Disappears medial to hyoglossus muscle

Ansa Cervicalis

- Loop of nerve fibres from cervical nerves C1-C3.
- Begins as branches from the C join XIIth nerve soon after it leaves the skull
- These nerve fibres leave the hypoglossal nerve after some distance and form the **superior root**
- These innervate the superior belly of omohyoid, geniohyoid and thyrohyoid
- Loop is completed by a direct branch from the C2 and C3 forming **inferior root**
- Branches from this loop are to inferior belly of omohyoid, sternohyoid and sterno thyrohyoid muscles.

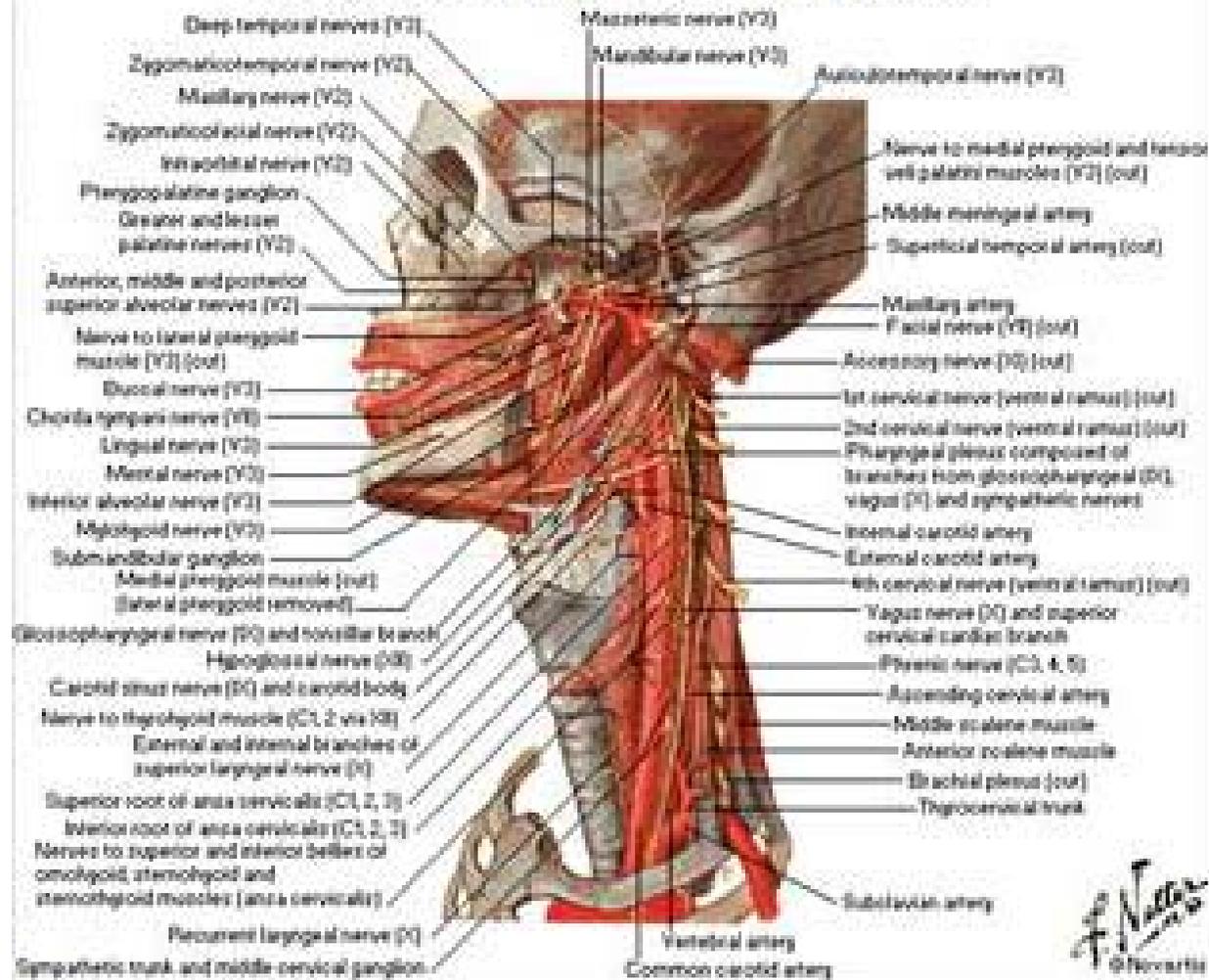




Phrenic Nerve

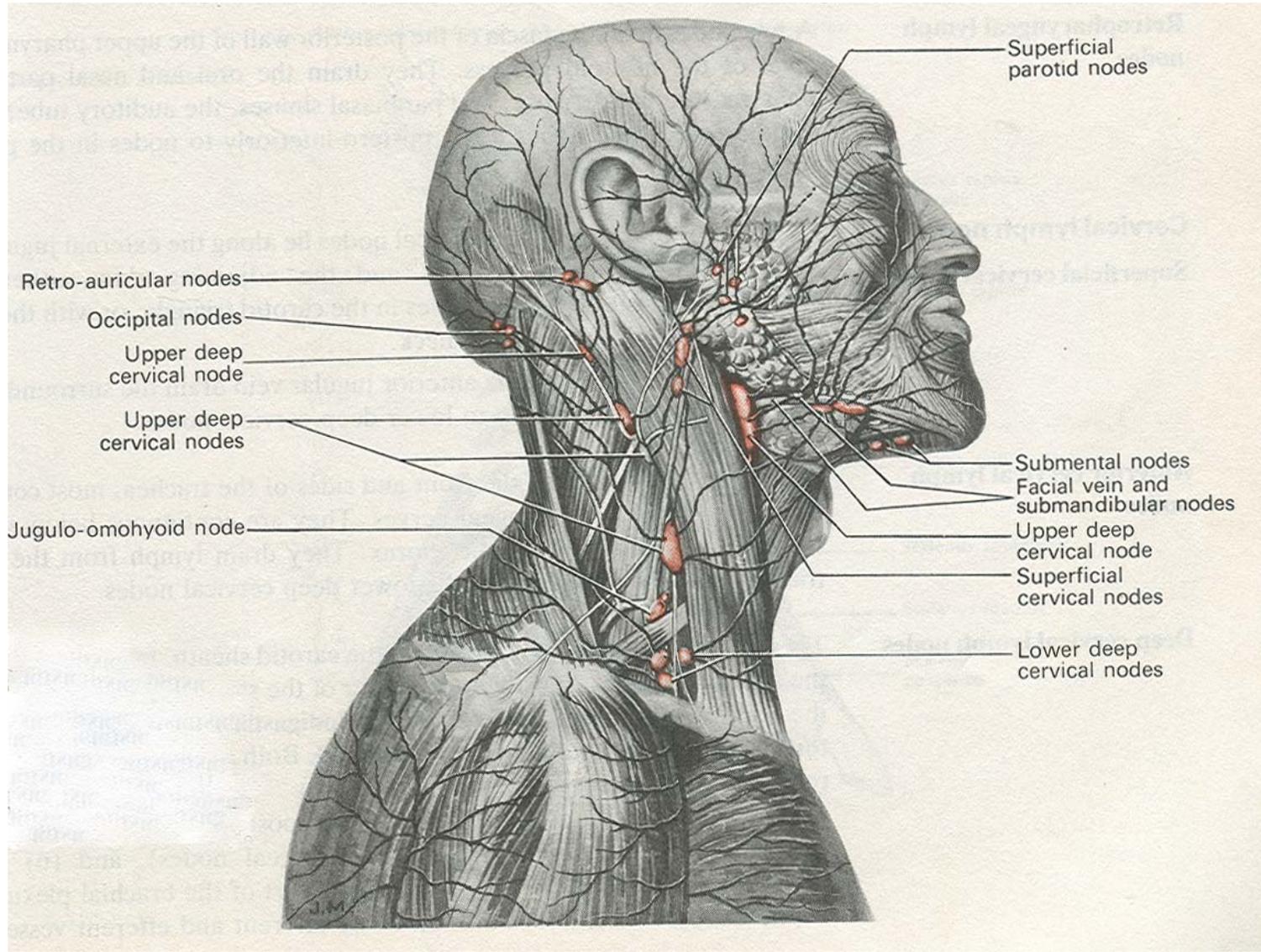
- From out rami of C3-C5 spinal nerves
- Passes around upper lateral border of scalenus anterior, continues out to it with in prevertebral layer of cervical fascia
- Leaving S. anterior, it passes between subcalvian vein and artery to enter thorax and continue to diaphragm

Nerves of Oral and Pharyngeal Regions

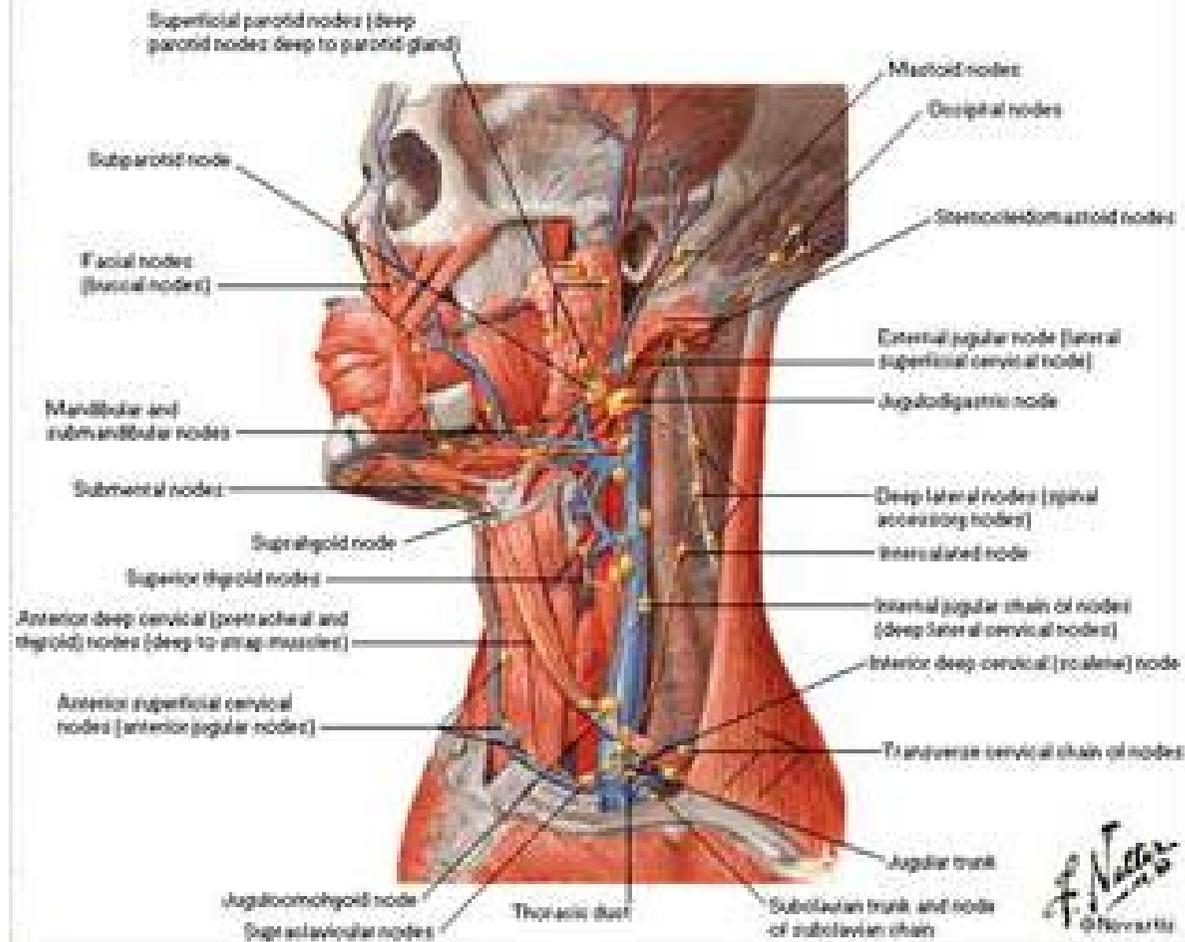


Lymphatics

- Superficial lymph nodes
 - Occipital
 - Mastoid/retro auricular/post auricular
 - Parotid
 - Submandibular
 - Submental
- Superficial cervical lymph nodes
 - Collection of Lymph nodes along external Jugular vein, superficial to SCM
- Deep cervical lymph nodes
 - Group of Lymph nodes that form a chain along IJV divided into upper and lower groups
 - Juguloduagastic
 - Jugulo-omohyoid
- They receive all lymph from other groups. Lymph vessels form right and left jugular trunks which empty in to right lymphatic duct or thoracic duct.

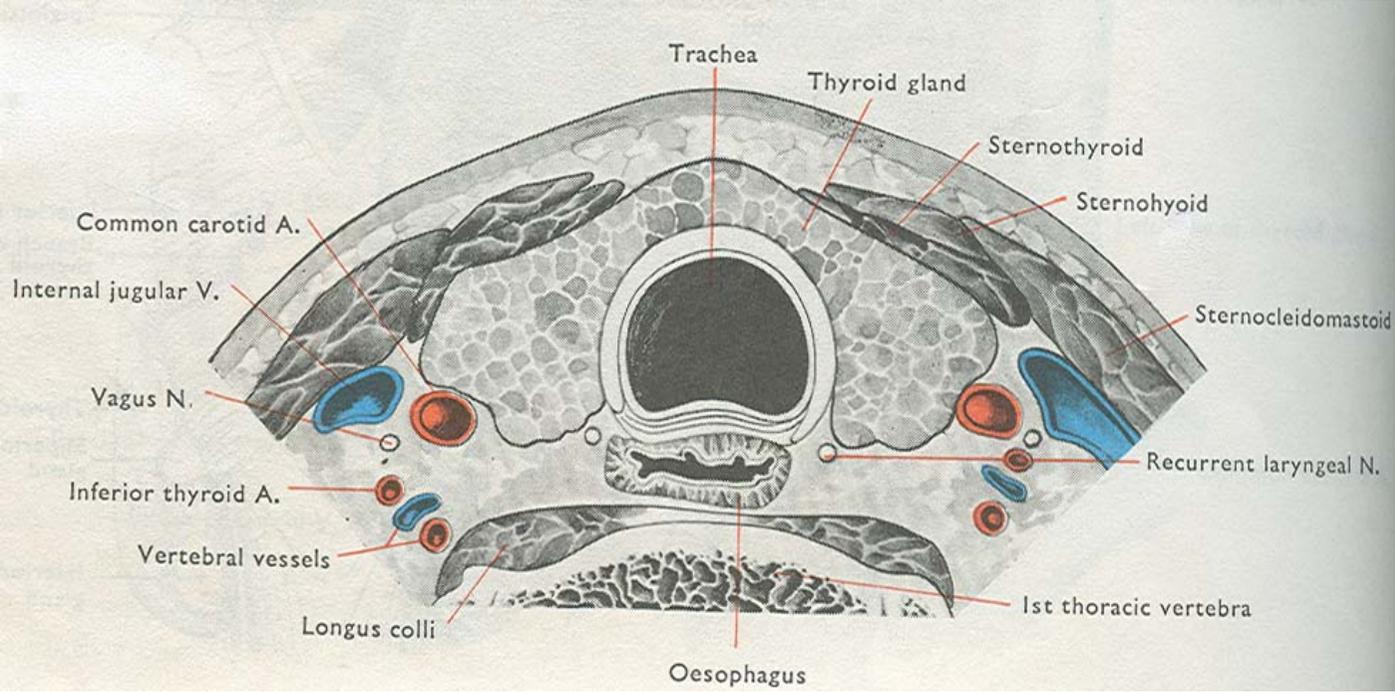


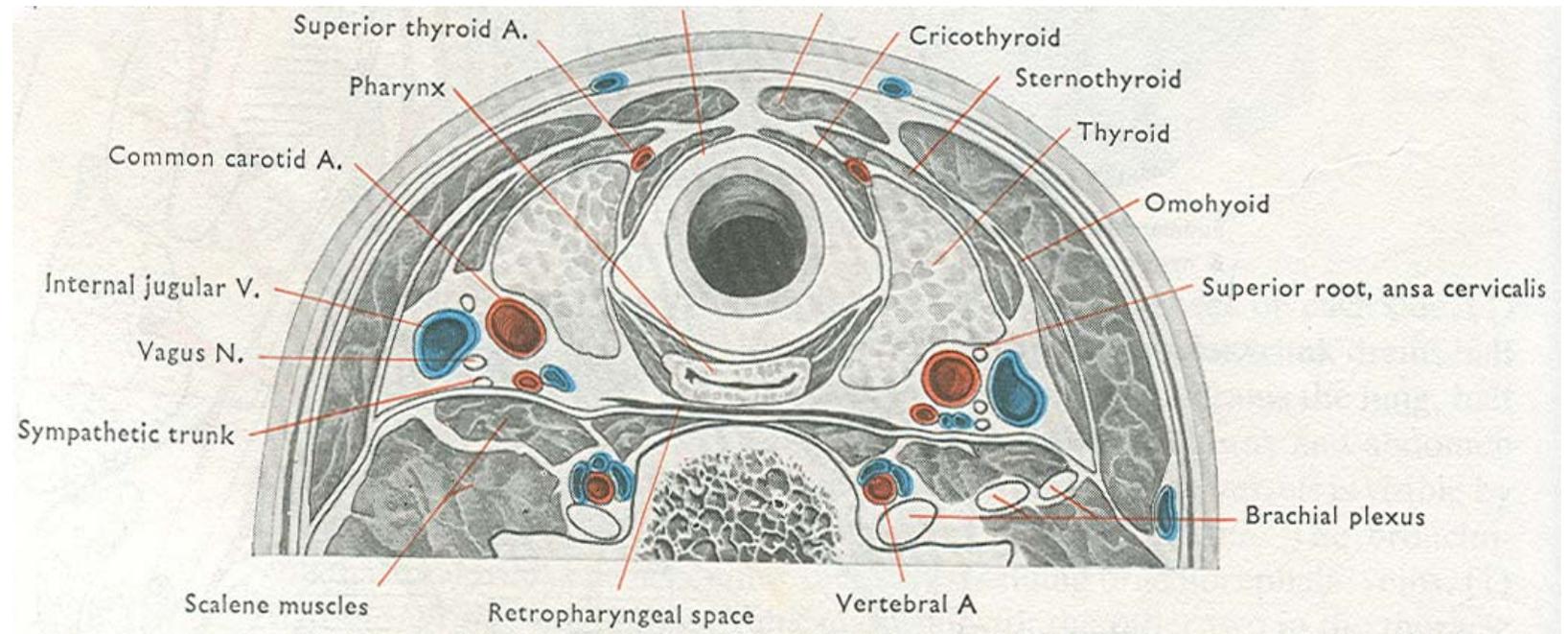
Lymph Vessels and Nodes of Oral and Pharyngeal Regions



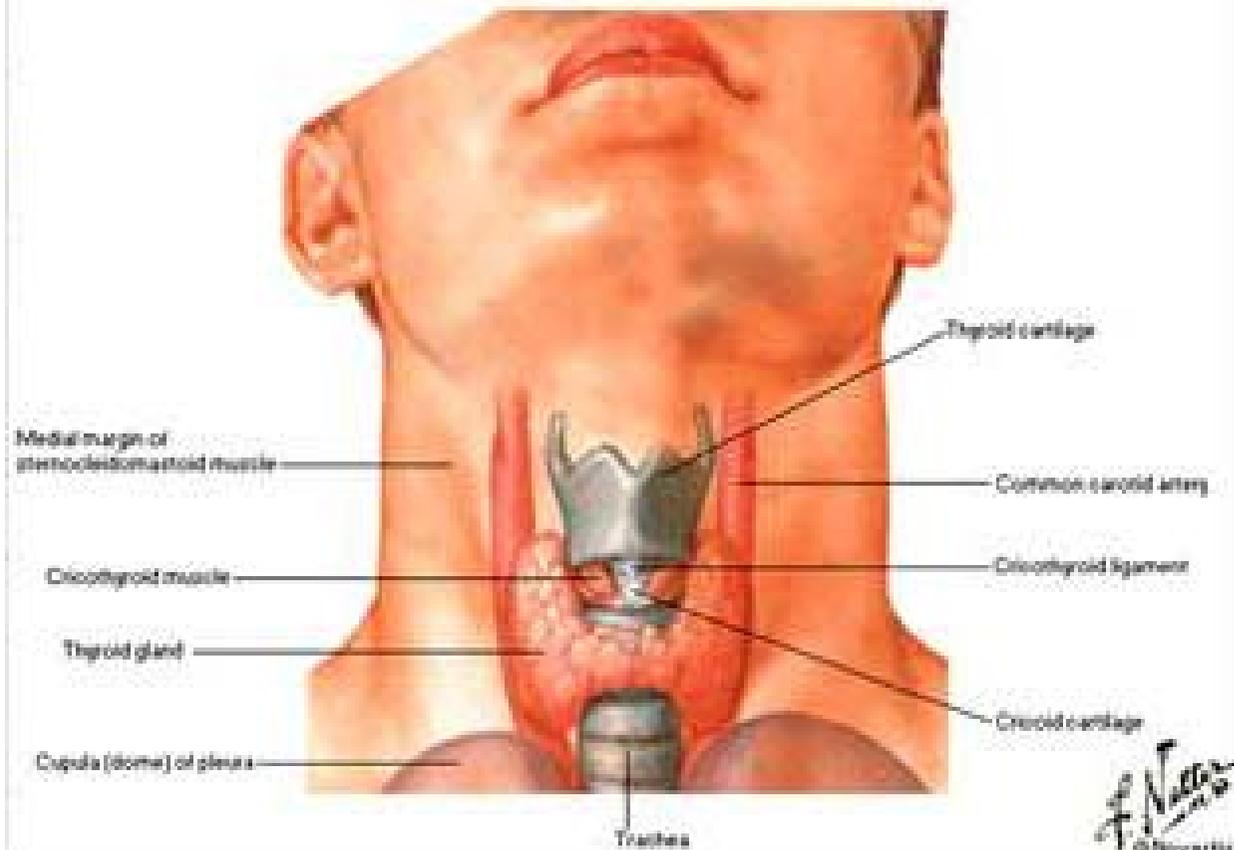
Deep dissection of neck-Viscera

- Thyroid gland
- Parathyroid gland
- Larynx and Trachea
- Pharynx and Oesophagus



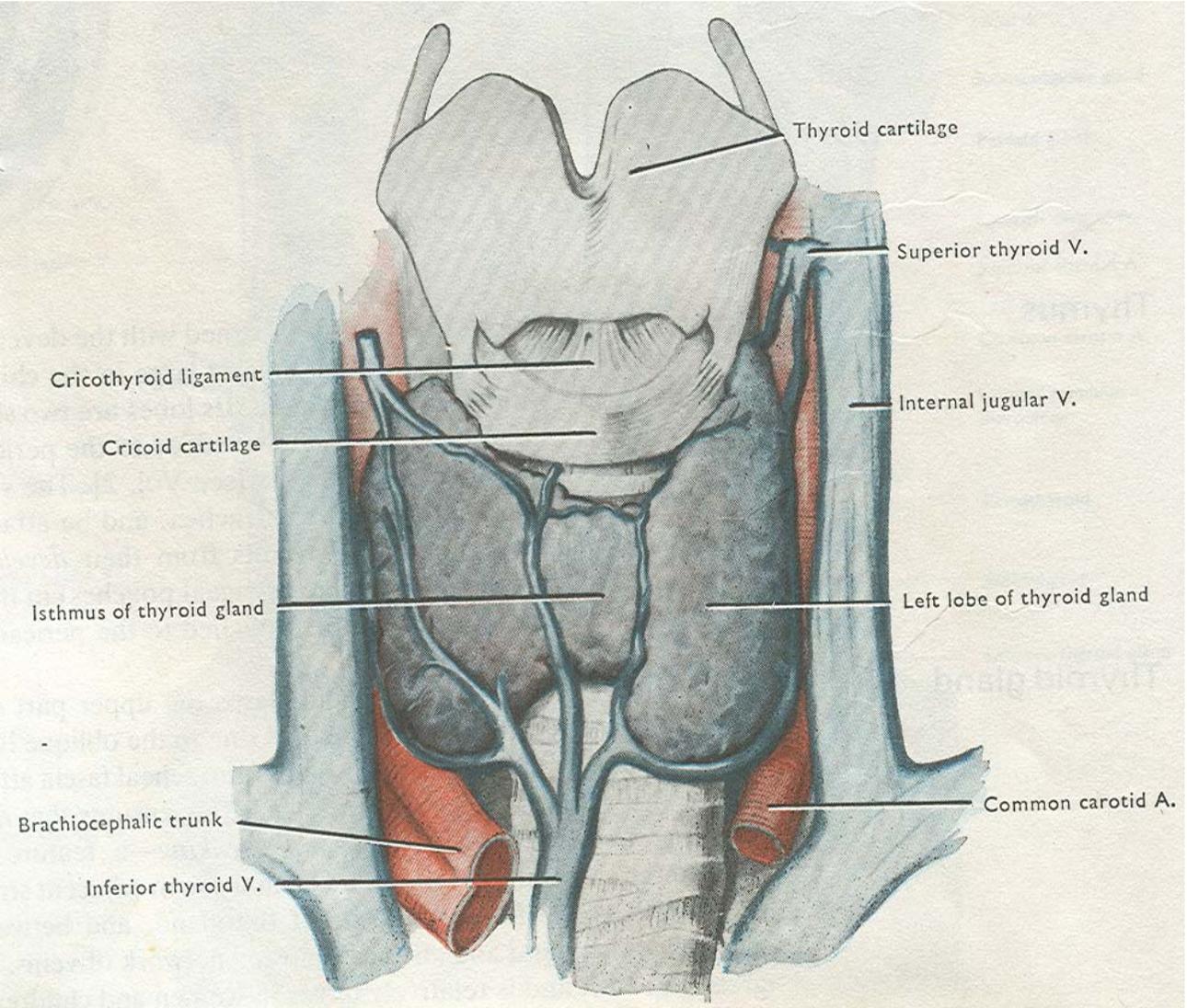


Thyroid Gland in Situ Anterior View



Thyroid Gland

- Lies in the visceral compartment of neck along with pharynx and oesophagus and is surrounded by the pretracheal layer of fascia.
- Arises as a median outgrowth from the floor of pharynx and foramen caecum of tongue and migrates downwards along the thyroglossal duct.
- Persistence of thyroglossal duct may be in the form of lingual thyroid/aberrant thyroid/pyramidal lobe.



Thyroid gland

- Dimensions: 5x2.5 x 2.5 cms. (Each lobe)
- Weight : 25 gms
- Location : Lies in front of lower part of larynx and upper part of trachea
C5, 6, 7,8 vertebral level
From the oblique line of thyroid cartilage up to upper 5-6 tracheal rings

- Coverings: Two
True capsule: Condensation of connective tissue around the gland
False capsule: covering of the pretracheal fascia along with other viscera of neck

Pretracheal fascia is attached to oblique line on thyroid cartilage and to arch of cricoid cartilage. This ensures the movement of thyroid with the larynx

Thyroid gland

- Composed of two pyramidal lobes joined by a narrow isthmus across the median plane
- Isthmus:
 - Lies on 2-4th tracheal rings near the lower end of the lobes
 - Pyramidal lobe
 - Levator glandulae thyroidae

Thyroid gland

- Lobes : Three surfaces
 - Superficial/lateral: covered by sternohyoid, sternothyroid, omohyoid, SCM
 - Medial: related to trachea and oesophagus
 - Cricoid and thyroid cartilages.
 - Superior and recurrent laryngeal nerves.
 - Cricothyroid and inferior constrictor muscles
 - Posterior: lies on prevertebral fascia anterior to longus colli.
 - Overlaps carotid sheath medially
 - parathyroid glands

Thyroid gland

- Blood supply

- Arterial - Superior thyroid

Anterior branch

Posterior branch

Inferior thyroid

Inferior branch

Ascending branch

Thyroidea Ima?

- Venous

Superior thyroid }
Middle thyroid }

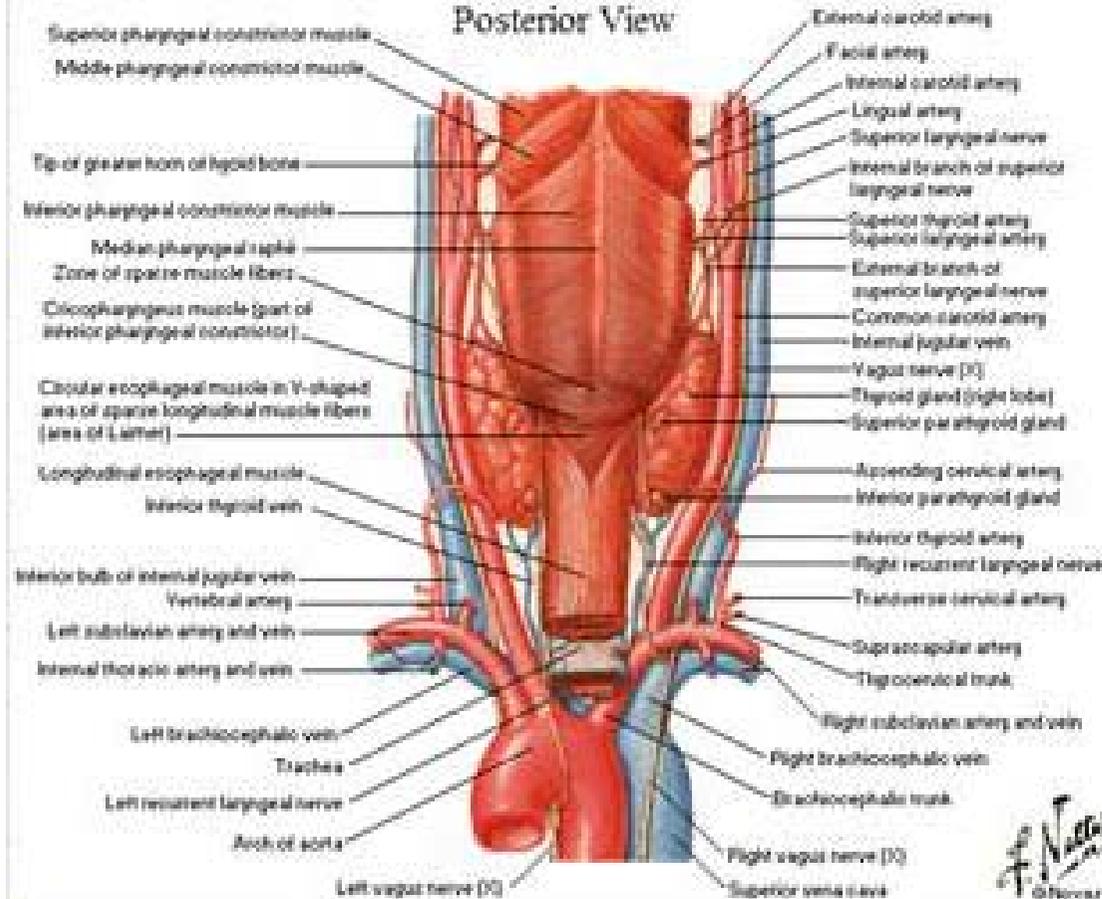
in to IJV

Inferior thyroid

in to branchiocephalic

Thyroid Gland and Pharynx

Posterior View



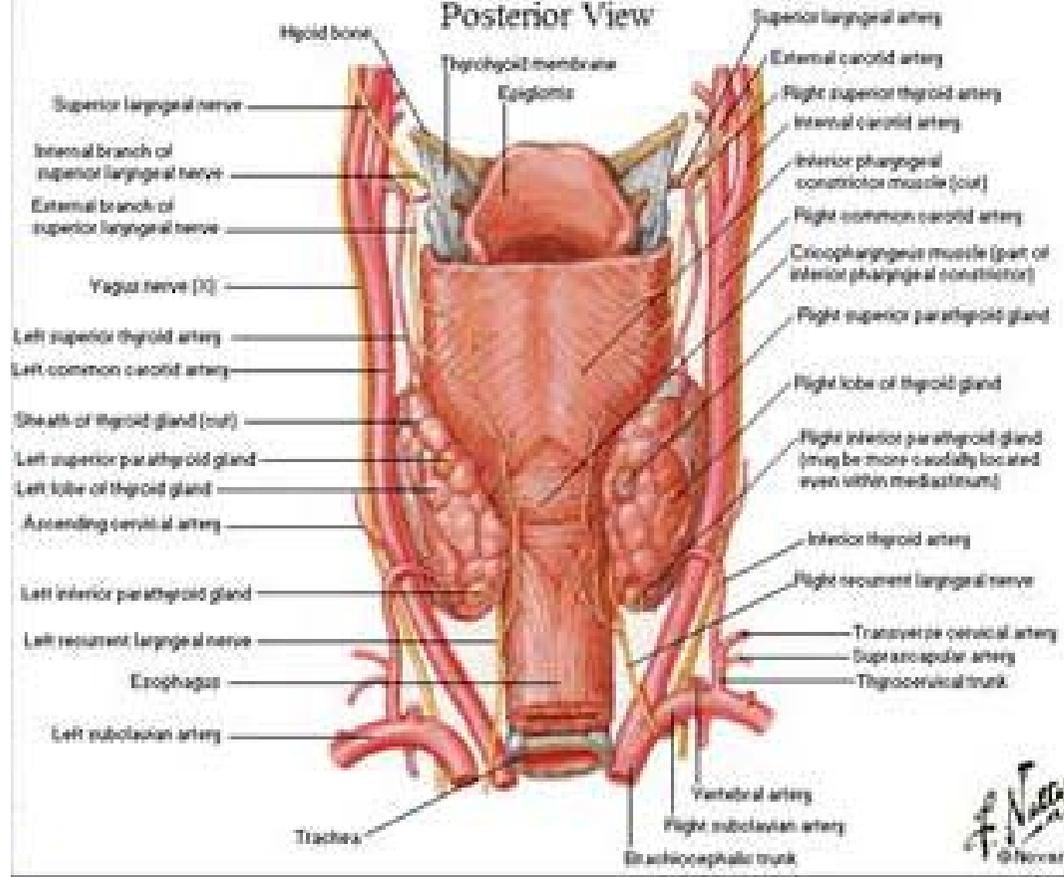
Handwritten signature
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Thyroid gland

- Nerve supply
 - Cervical sympathetic ganglia
 - Cardiac and laryngeal branches of vagus
- Lymphatic drainage
 - Pretracheal lymph nodes
 - Deep cervical lymph nodes

Parathyroid Glands

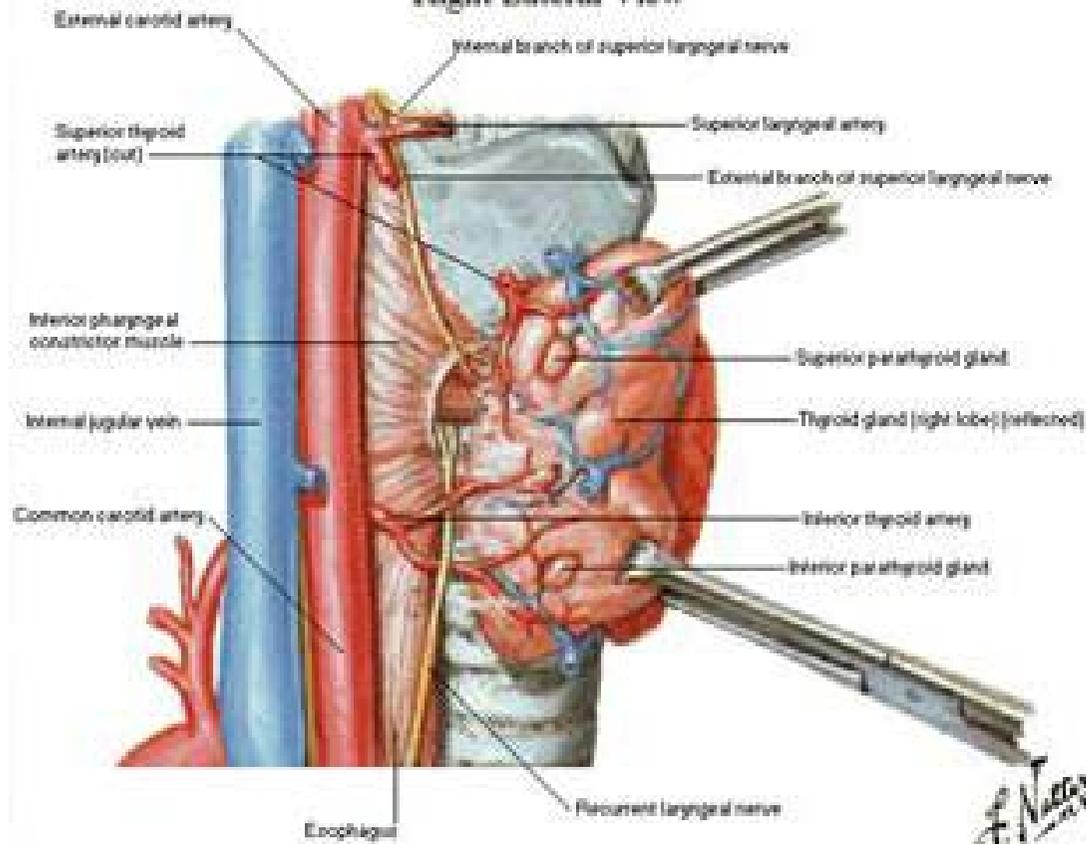
Posterior View



Parathyroid glands

- Two pairs of glands
- Lie adjacent to thyroid
- Each glands is roughly oval and weighs 50 mg
- Superior:
 - relatively constant
 - Lies near posterior border of thyroid
 - Blood supply from anastomotic branch
- Inferior:
 - Lies near the lower end of posterior border
 - Variable position
 - Blood supply from inferior thyroid artery

Parathyroid Glands Right Lateral View



Applied Anatomy

- Thyroidectomy
- Thyroglossal duct cysts
- Ectopic thyroid gland
- Accessory thyroid gland
- Injury to recurrent laryngeal nerve
- Injury to external laryngeal nerve
- Inadvertent removal of parathyroid glands (Tetany)
- Multinodular goiter
- Hypothyroidism (Myxedema)