

وَقُلْ رَبِّ زِدْنِي عِلْمًا



PERIPHERAL NERVOUS SYSTEM



SUBJECT : Anatomy

LEC NO. : 8

DONE BY : Batool Alzubaidi + Hashem Ata

#كَلِينِيكَال_إِلَا_شَحْطَة

How to test for integrity of Facial Nerve?

هاد الجزء هو ال upper part of the face فلو المريض ما كان قادر يحركه معناها
 عنده upper motor neuron lesion بين عشان يظهر لانم يكون ال bilateral lesion

راح يقدر يحس بالطعم لانه chorda tympani سليمة

Taste → by putting salt /sugar/vinegar on ant. 2/3 of tongue

Close the eyes tightly

Raise the eyebrows.

Smile & show the teeth

للتوضيح هون عشان
 يبين على ال upper
 ال part of the face
 LMNL يكون lesion
 ممكن يكون UMNL
 بحالة وحدة انه يكون
 bilateral lesion





Cranial nerves X, XI and XII.

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objects

1.IX-Follow up its course from its central connections, exit from the brain and down to its target organs.

2-Make a list of types of nerve modalities conveyed by this nerve.

3-Review structure of the pharynx. X Follow up its course from its central connections, exit from the brain and down to its target organs.

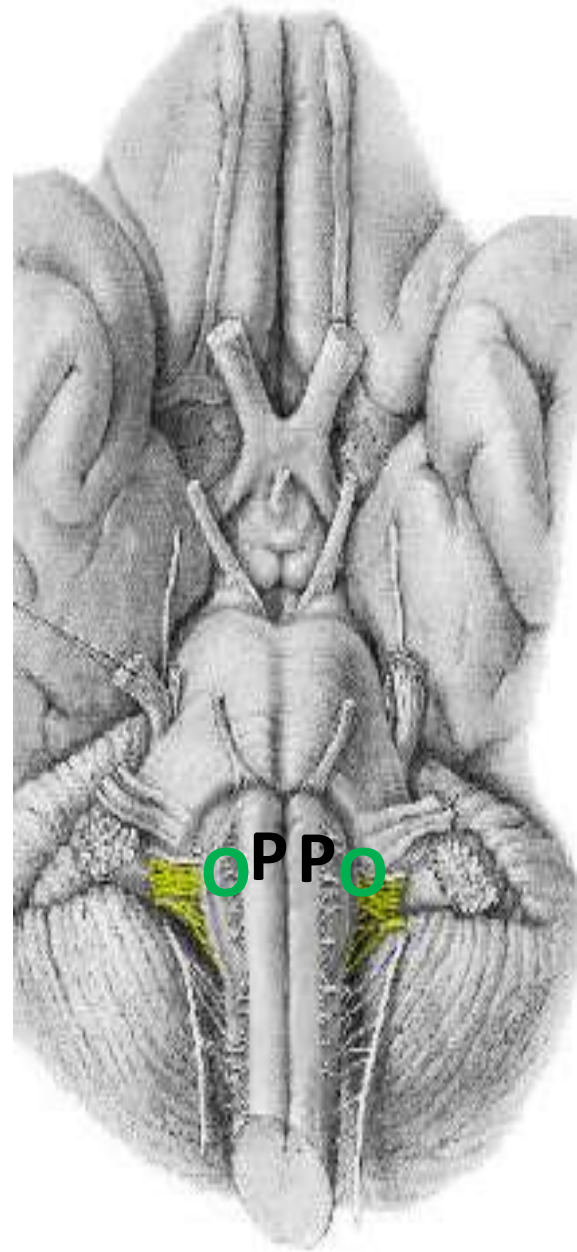
4-Make a list of types of nerve modalities it conveys.

5-Review the structure of the larynx.

6-Make note of plexuses it creates in the mediastinum.

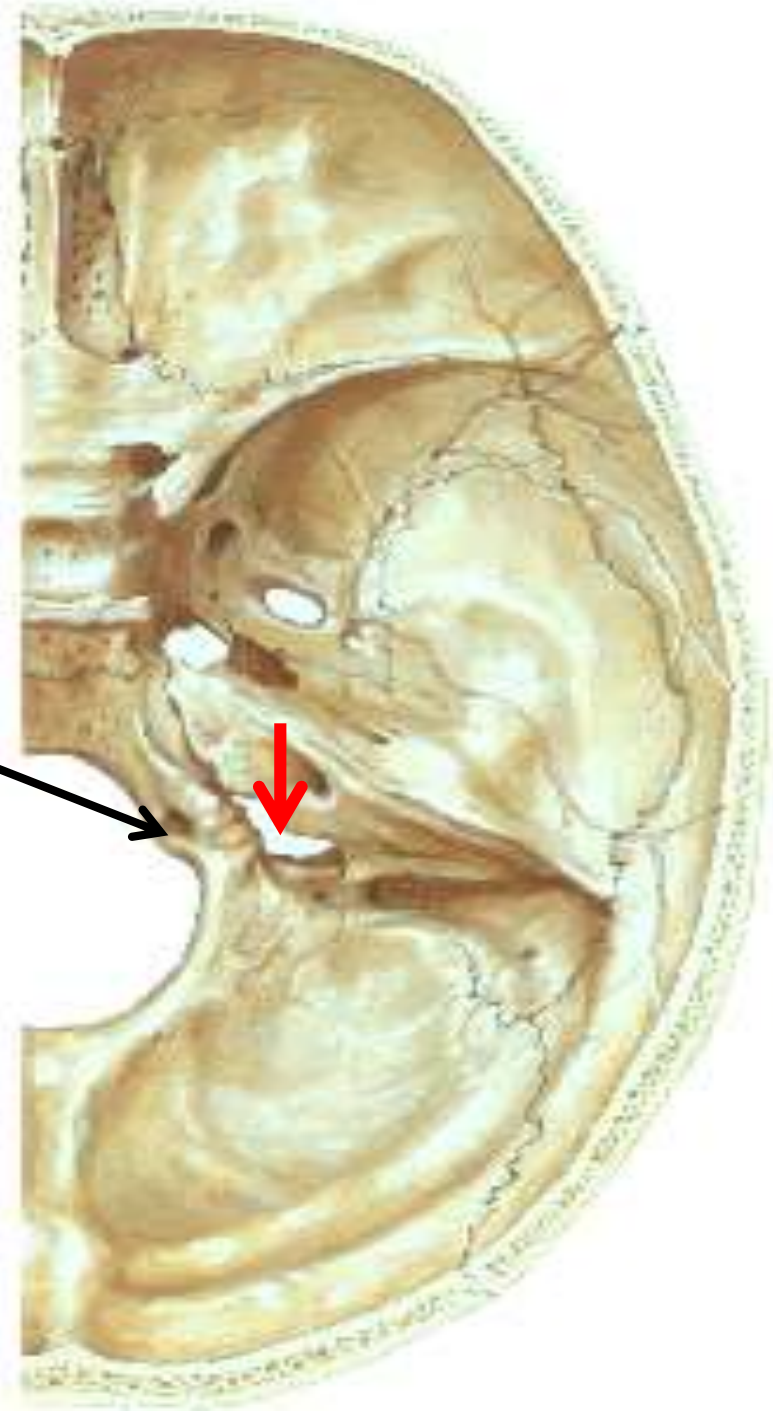
Attachment to brain stem

- Hypoglossal XII at groove between pyramid (P) & olive (O)
- IX, X, XI at groove between olive & inferior cerebellar peduncle

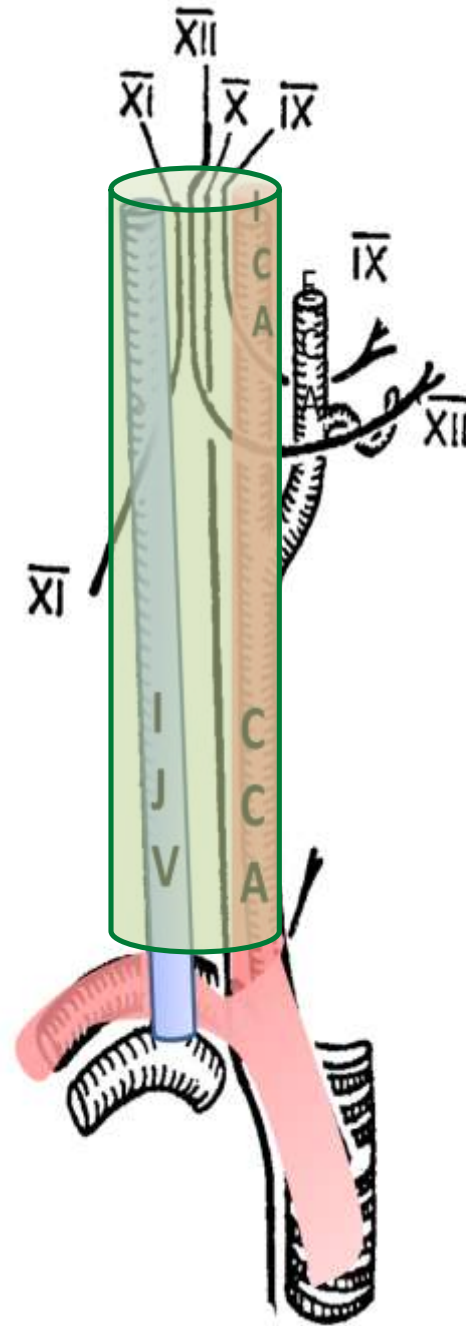


Exit from skull

- IX, X, XI through jugular foramen
 - XII through hypoglossal canal
- Its middle part



last 4 cranial nerves are enclosed in carotid sheath at base of skull

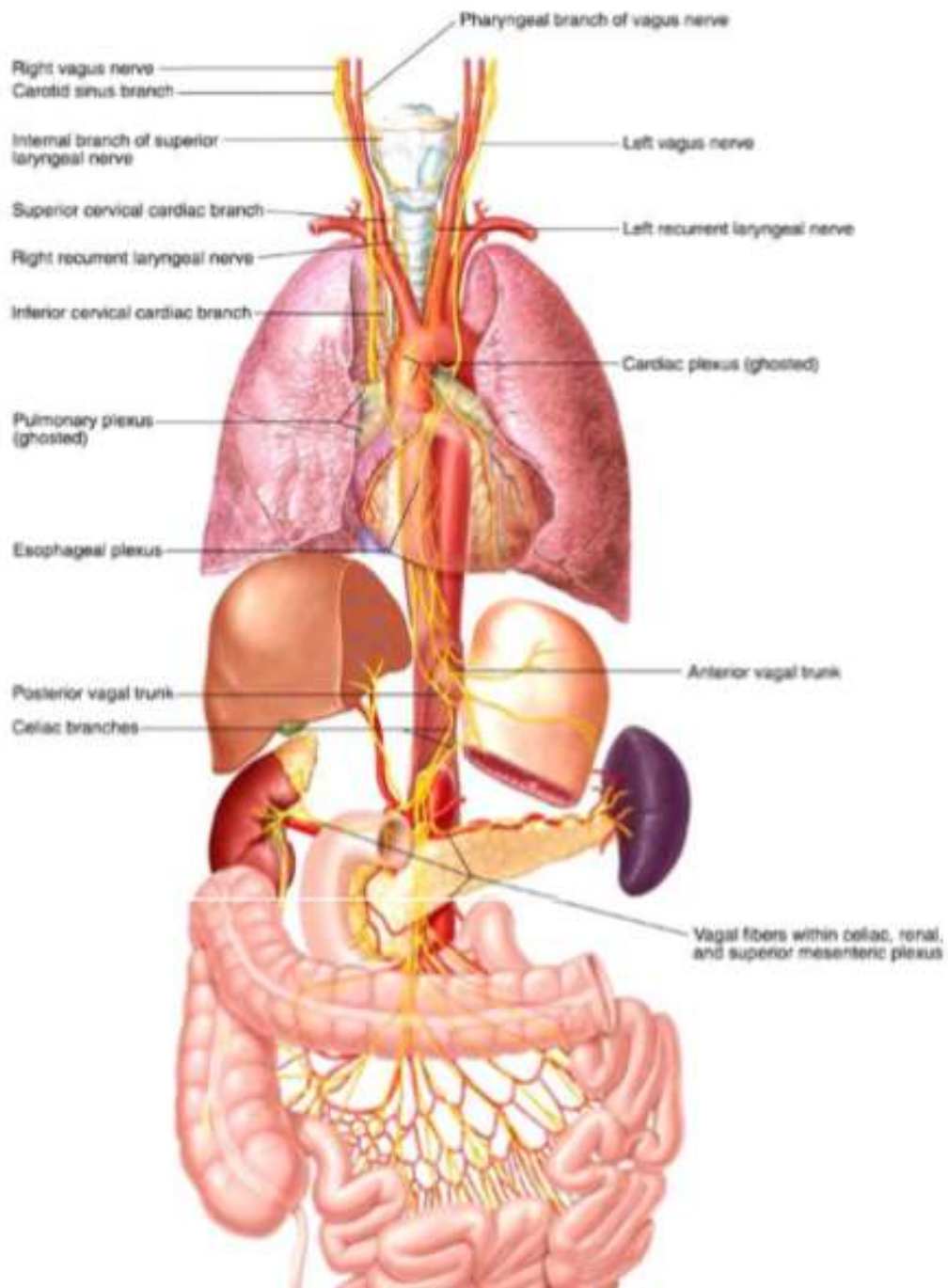


Vagus nerve X

- Longest cranial nerve
- Supplies structures in head & neck, thorax & abdomen.

Parasympathetic supply

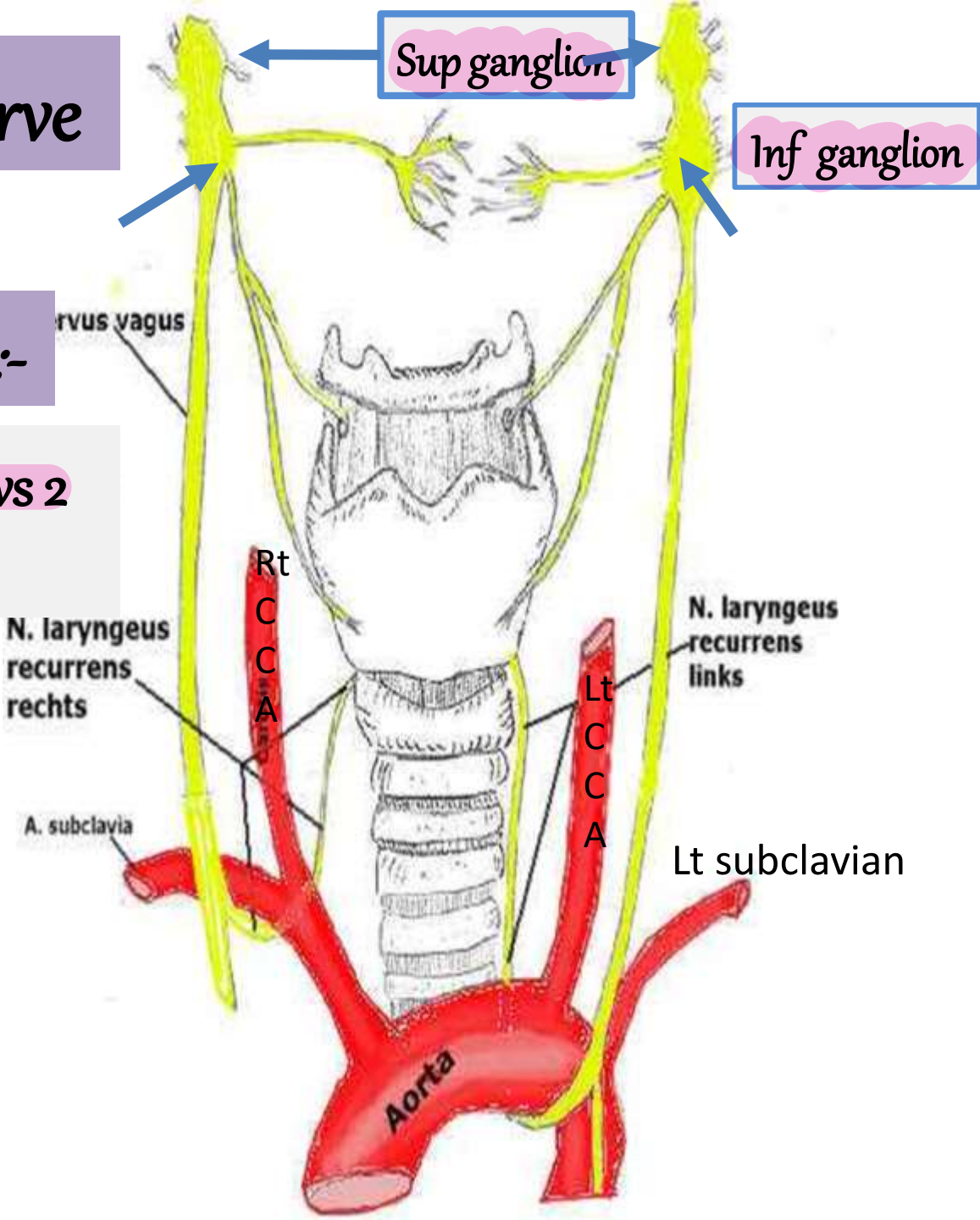
All small intestines and git to a junction between right 2/3 and left 1/3 of transverse colon



Vagus nerve

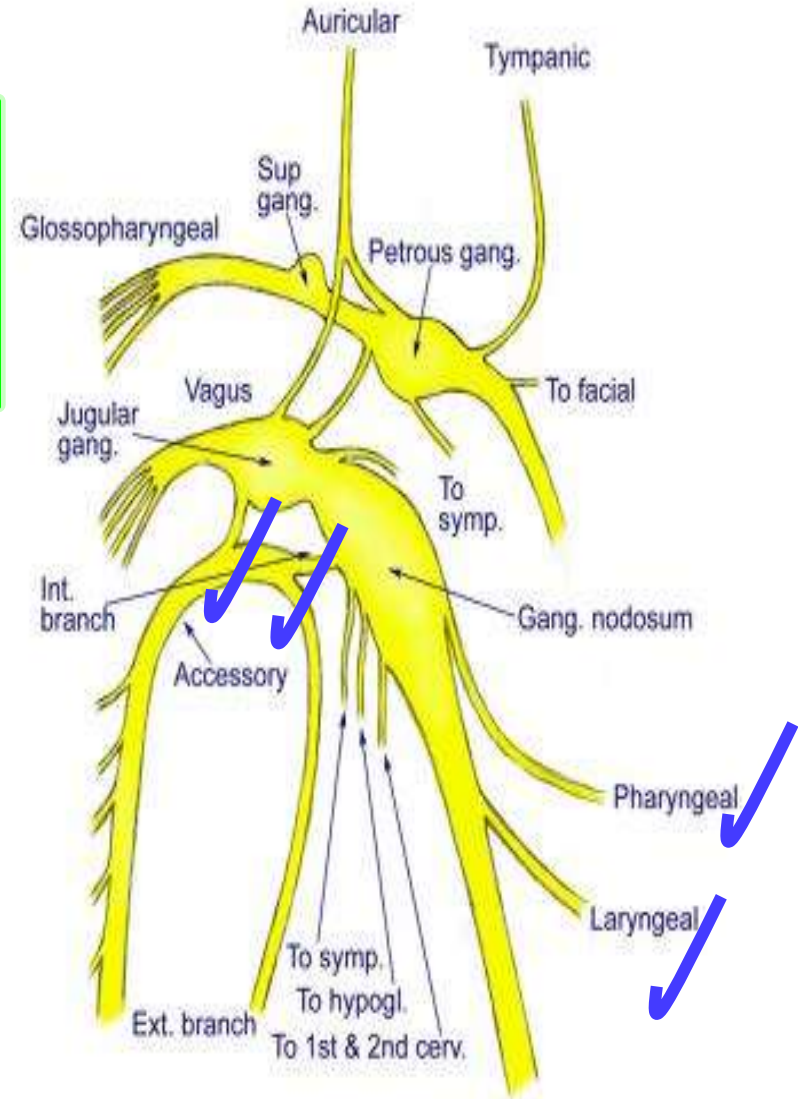
Extracranial course:-

Superiorly, vagus n shows 2 ganglia



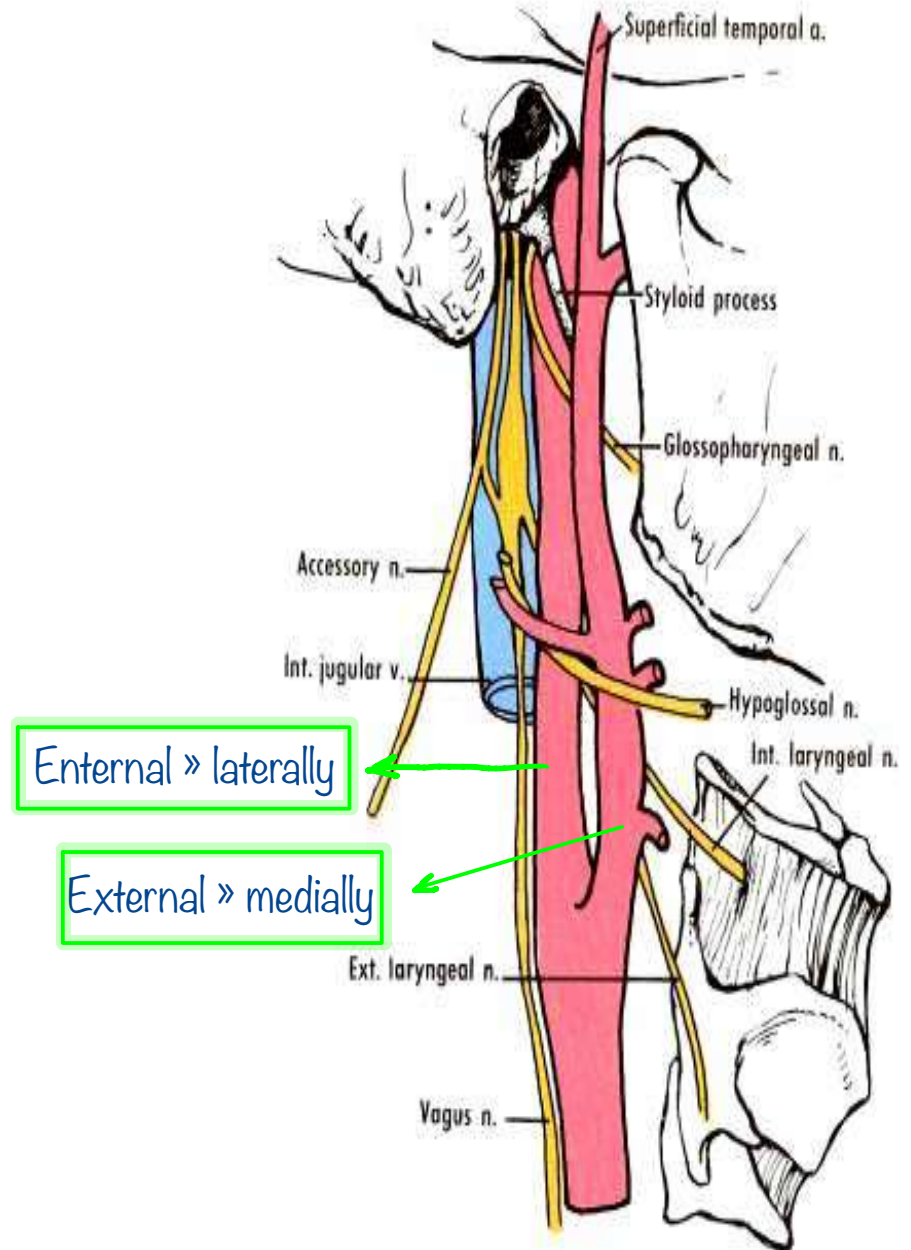
Vagus nerve is joined by cranial part of accessory nerve, which is distributed through its pharyngeal and recurrent laryngeal branches.

And glossopharyngeal to form cranio-vagal complex



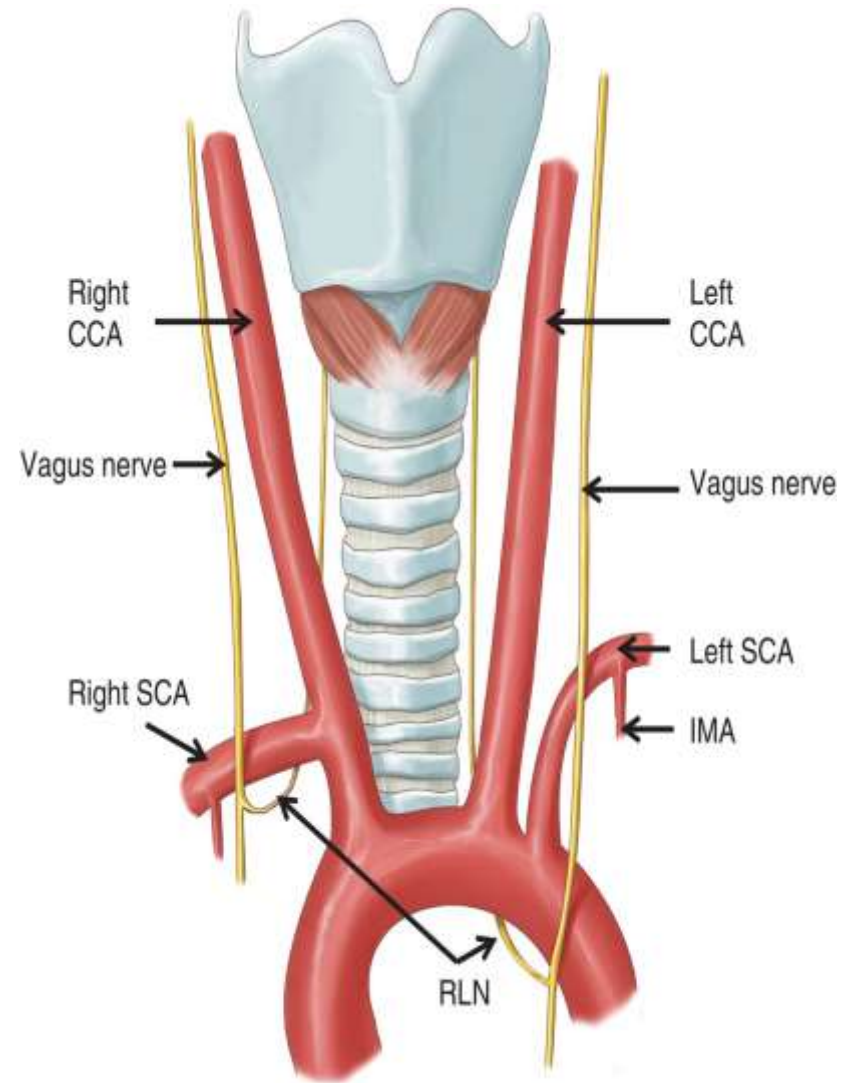
Vagus nerve

- Pass vertically down
- Between IJV & ICA
- Between IJV & CCA
- Inside the carotid sheath.



Vagus crosses **Rt subclavian** artery to enter thorax (on Rt. Side),
but (on left. side).
passes between
Lt. subclavian artery &
Lt. C.C.A. to enter thorax

Recurrent laryngeal between trachea and esophagus branch of right sabotarian



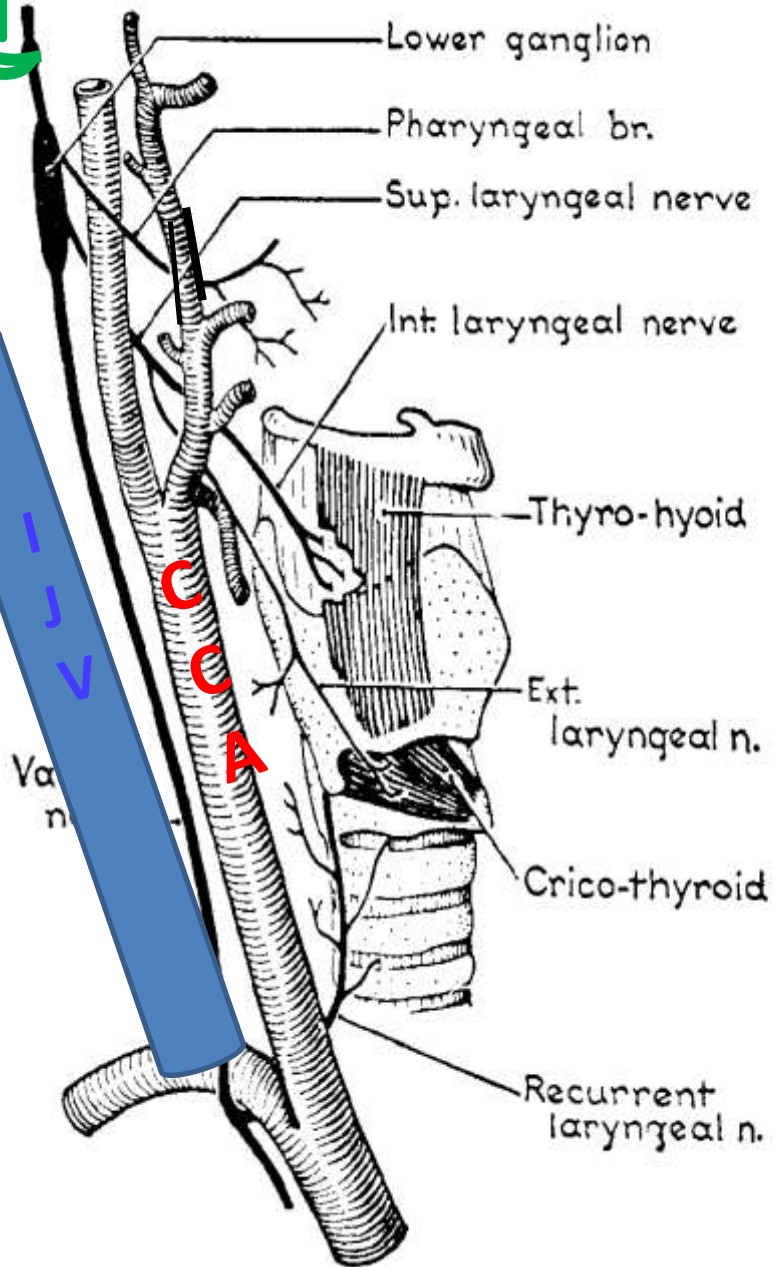
Concha
external canal
anterior part
of tympanic
membrane

Meningeal br

Auricular
br

Branches of vagus nerve:

- 1- Meningeal br.
- 2- Auricular br.



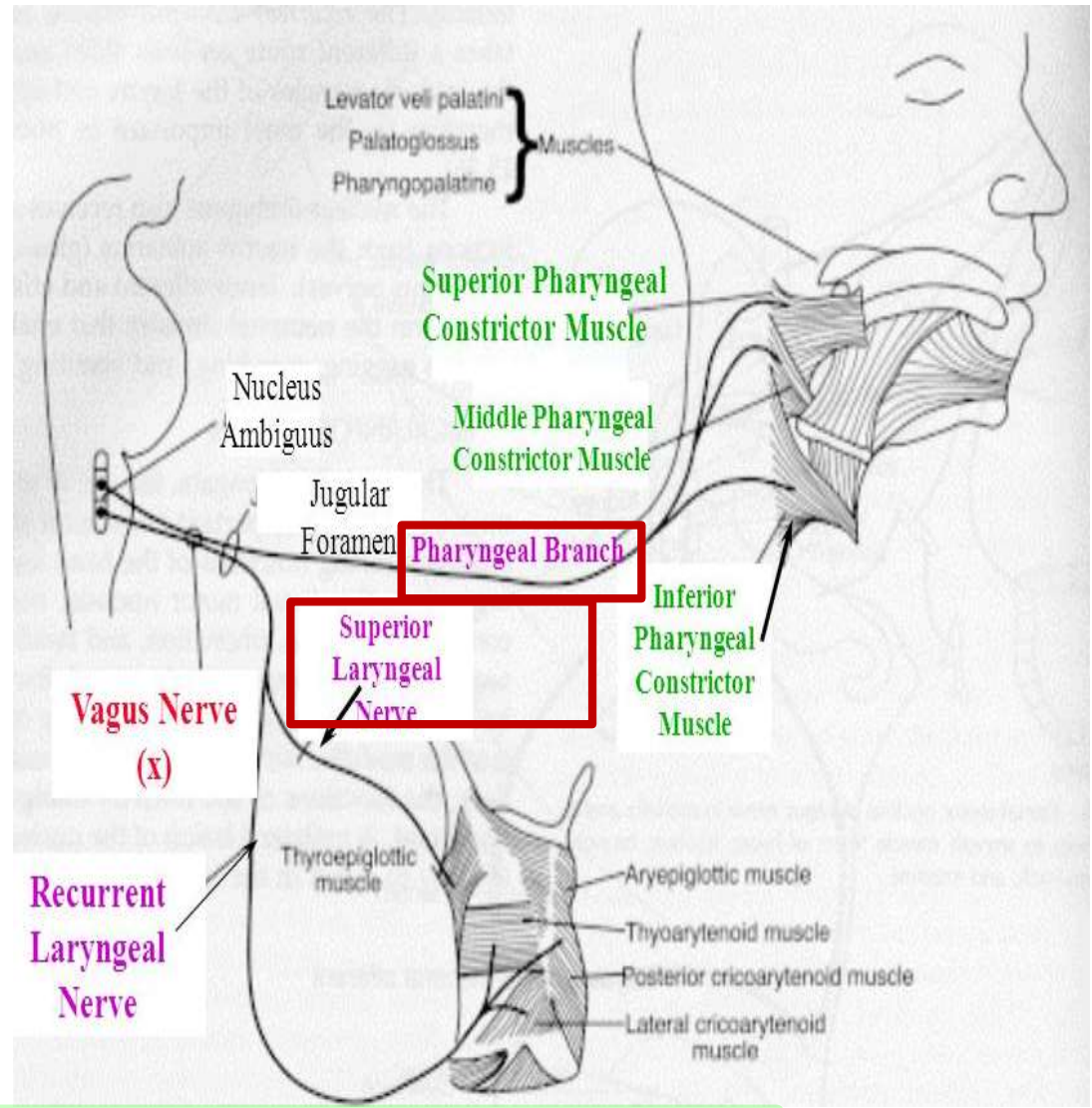
3-Pharyngeal nerve: reach middle constrictor to share in pharyngeal plexus.

4-Superior laryngeal nerve: it divides into 2 branches:

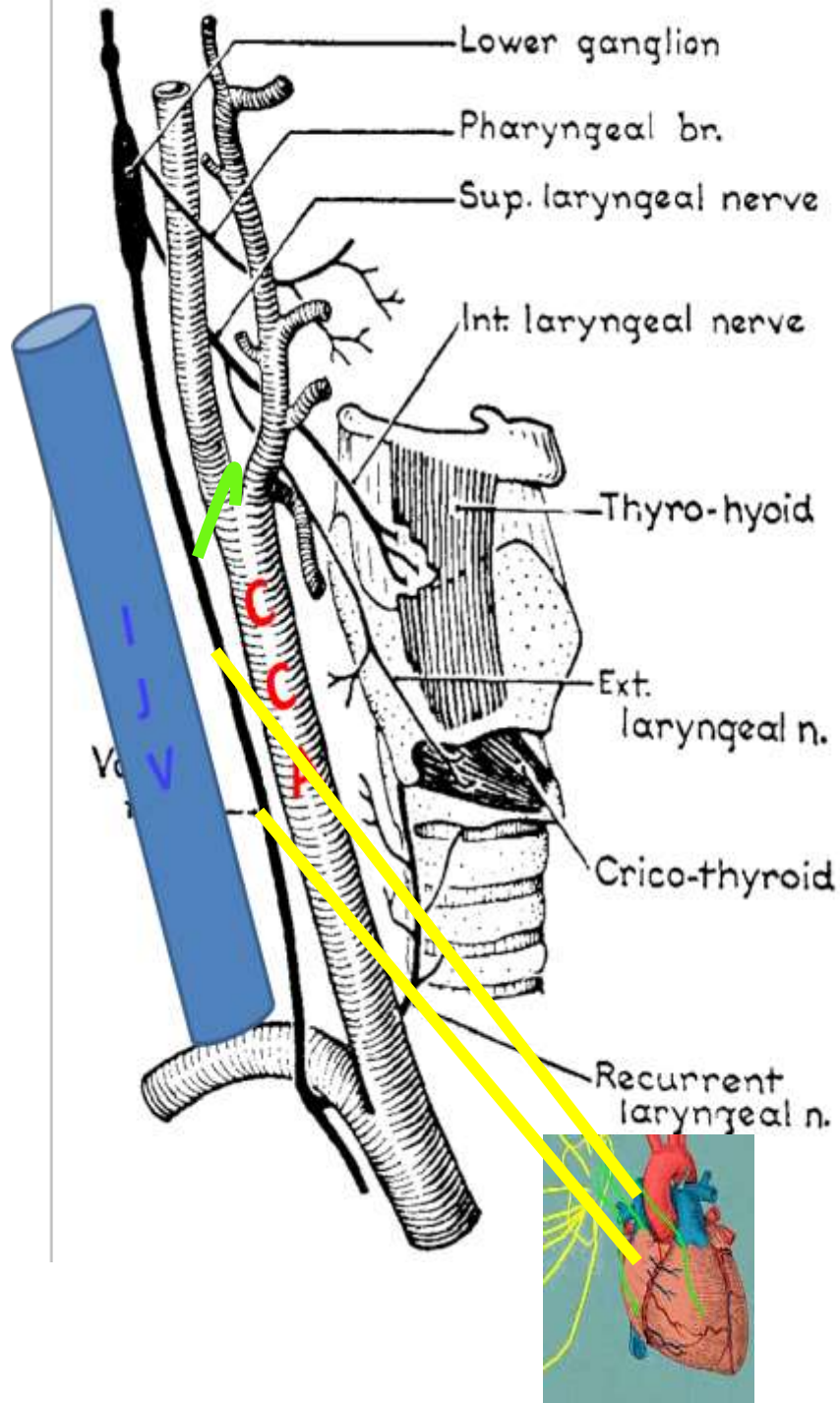
External laryngeal n. & Internal laryngeal n.,

Pure motor » crico-thyroid

Pure sensory » mucosa of larynx to vocal cords



Recurrent laryngeal supplies all muscles except crico-thyroid & sensation below vocal cords



5-2 cardiac
branches

Pacemaker

6-Br to carotid
body

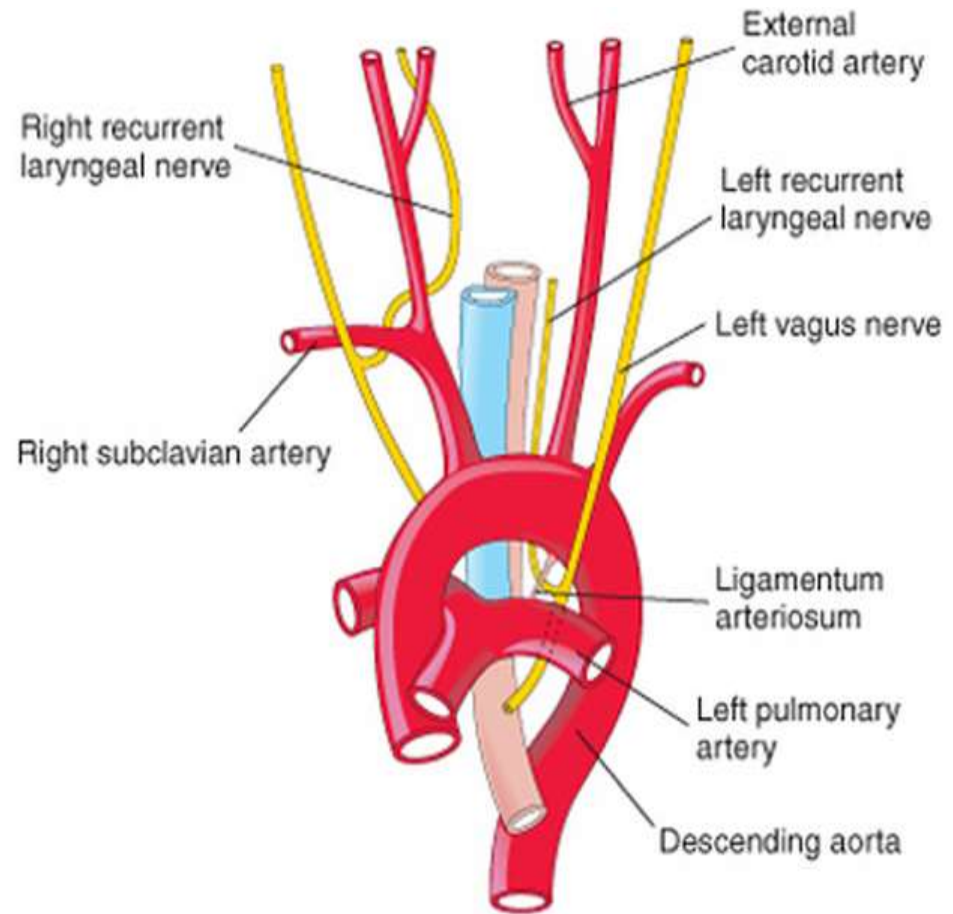
Vibration could lead to collapse
in case of hyper-sensitivity

Vagal stimulation » ice bag on
face » sympathetic overstimulation

- **Recurrent laryngeal nerves**

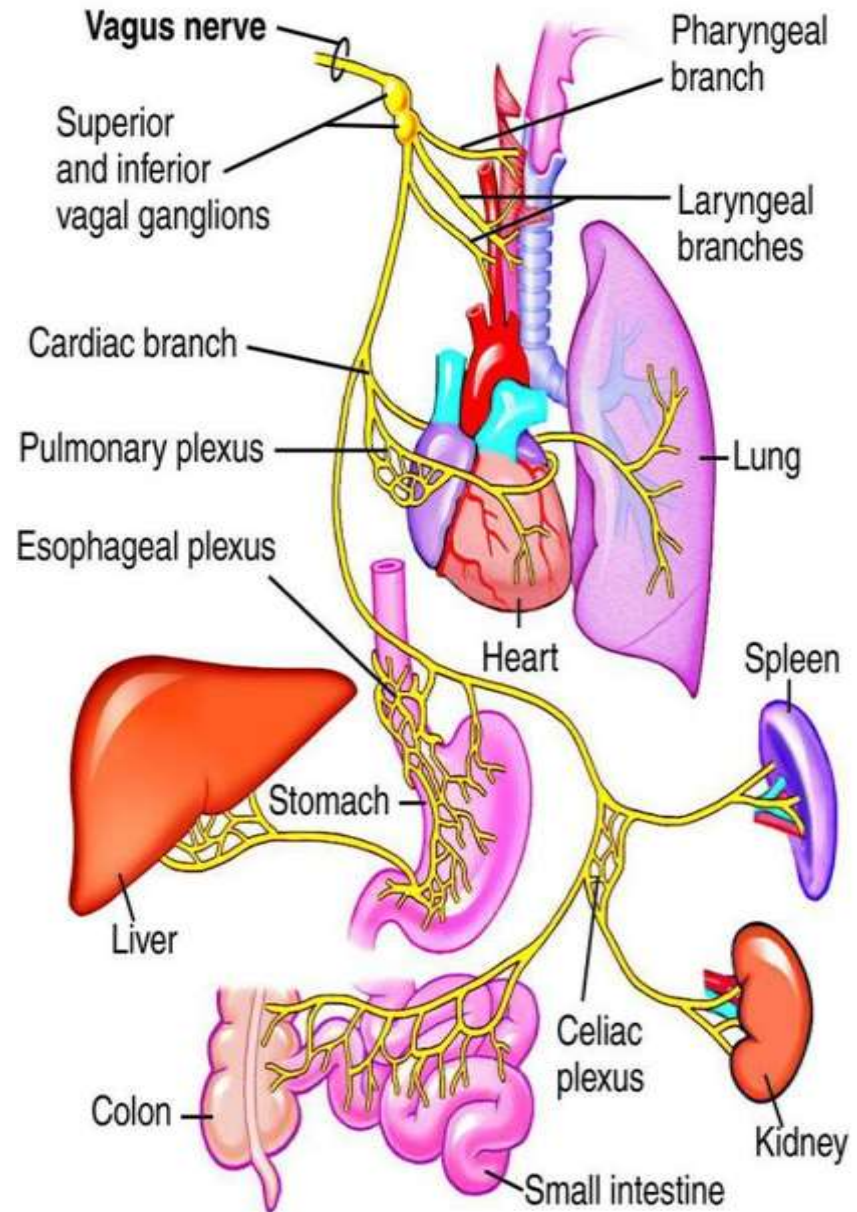
- Right one arise in neck & hooks around right subclavian artery, left one hooks around aortic arch
- Both ascend in tracheoesophageal groove
- Nerves enter larynx

- **Pulmonary & cardiac branches**



Vagus n enters abdomen to supply abdominal viscera till junction of right 2/3 with left 1/3 of transverse colon

Gives parasympathetic supply to celiac, superior and inferior mesenteric plexuses which supply gut



Quiz

If you ask a patient to protrude his tongue and it deviates to the left, this indicates injury of which of the following nerves?

- A. Left glossopharyngeal
- B. Right glossopharyngeal
- C. Left hypoglossal
- D. Right hypoglossal
- E. Left lingual

Accessory Nerve (XI):

formed of 2 separate parts spinal & cranial

Cranial Part of Accessory: - Exit from

brain: (Medulla) groove between olive and inferior cerebellar peduncle below vagus nerve.

- It runs to jugular foramen where it unites with spinal part.

- Exit from skull: Through jugular foramen with vagus and glossopharyngeal nerves.

- After its exit from jugular foramen, it separates from spinal part and unites with vagus.

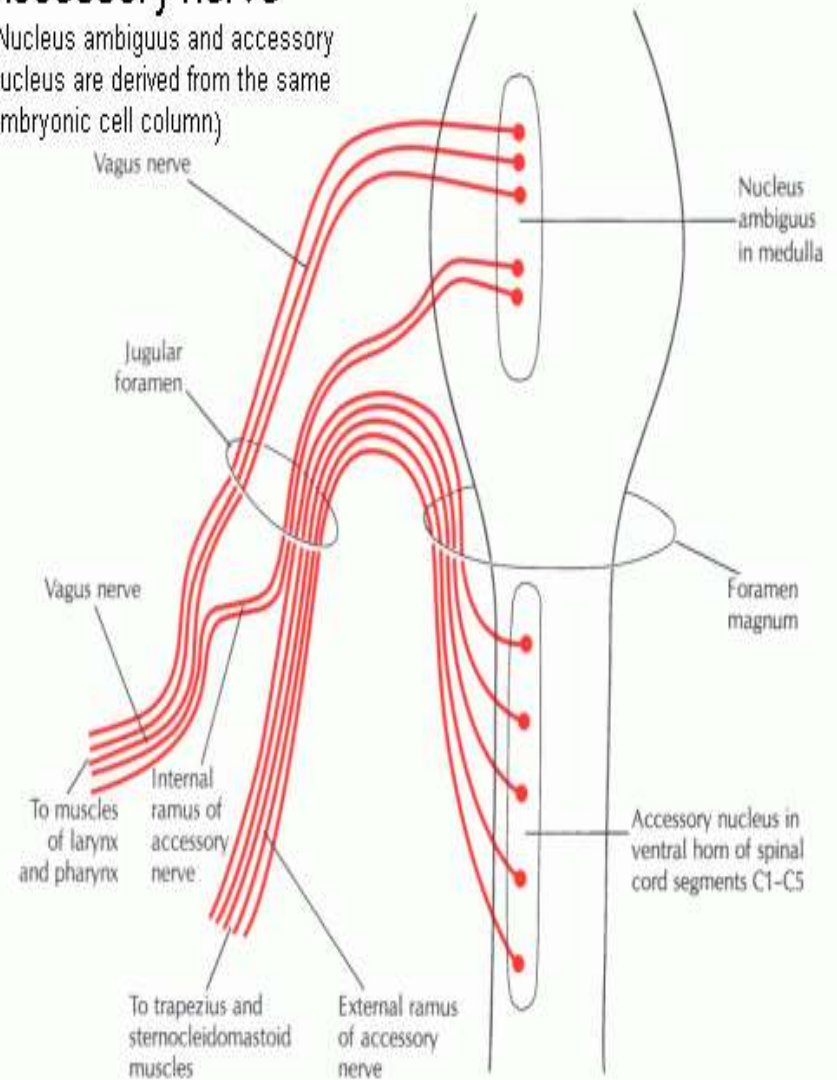
It is distributed to pharynx, palate and larynx through pharyngeal and recurrent laryngeal branches of vagus



palato-glossus

Accessory nerve

(Nucleus ambiguus and accessory nucleus are derived from the same embryonic cell column)

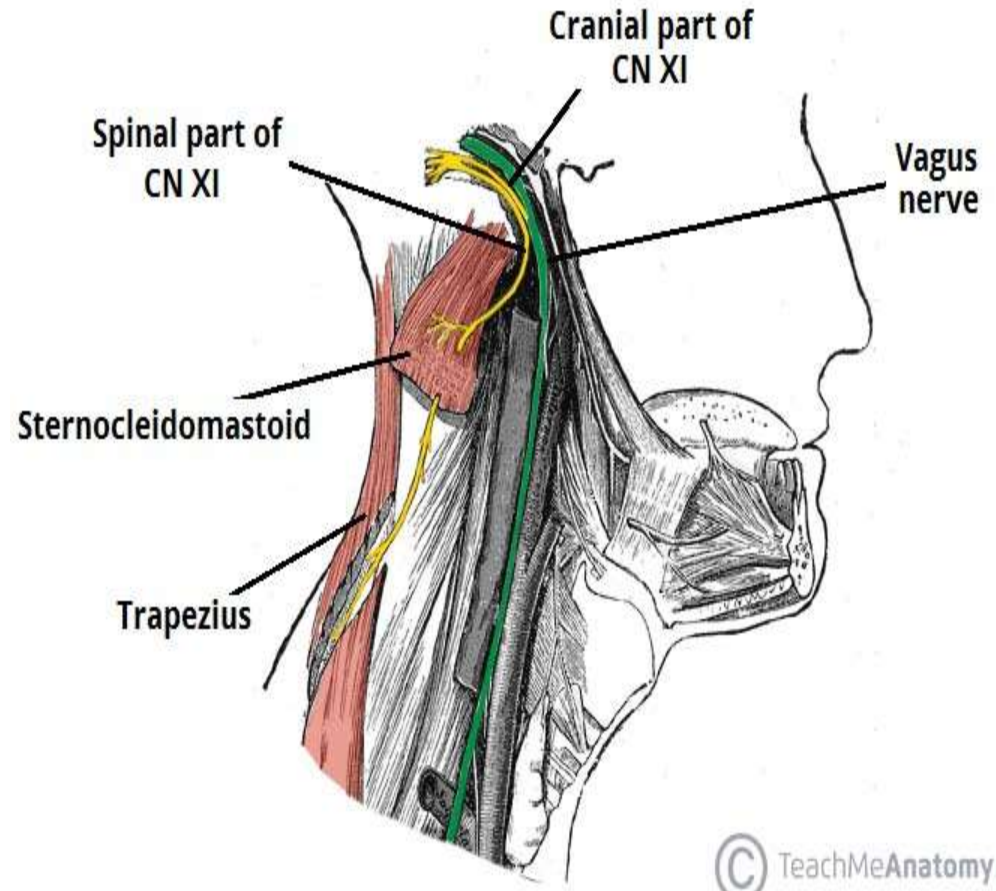


Spinal and cranial roots of the accessory nerve.

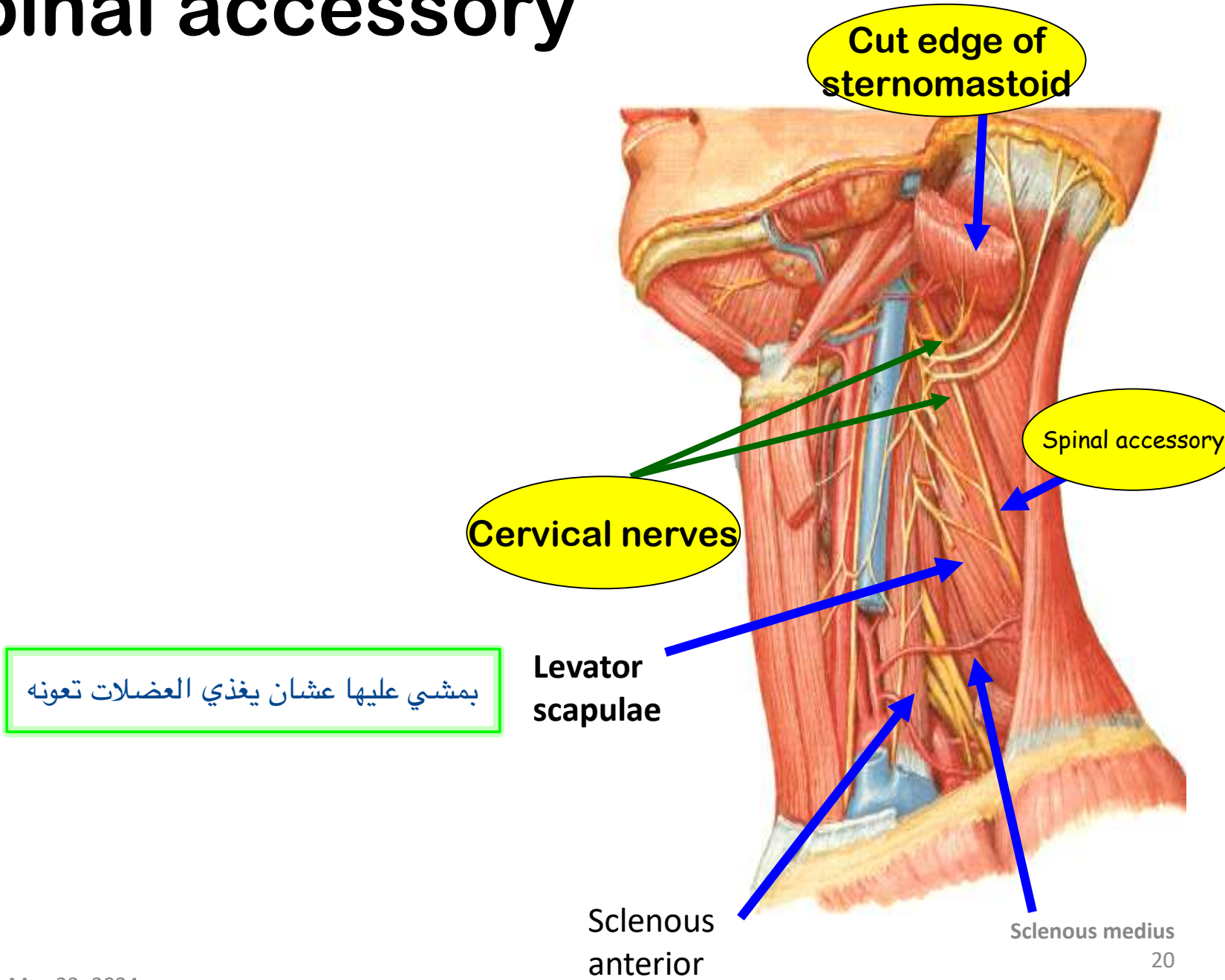
Spinal Part of

Accessory:

- Axons of nerve cells in spinal accessory nucleus (found in upper 5 cervical segments).
- Ascend and enter cranial cavity through foramen magnum.
- Joins cranial root as they pass to jugular foramen.
- Separates from cranial root run over the levator scapula and supplies sternomastoid and trapezius



Spinal accessory

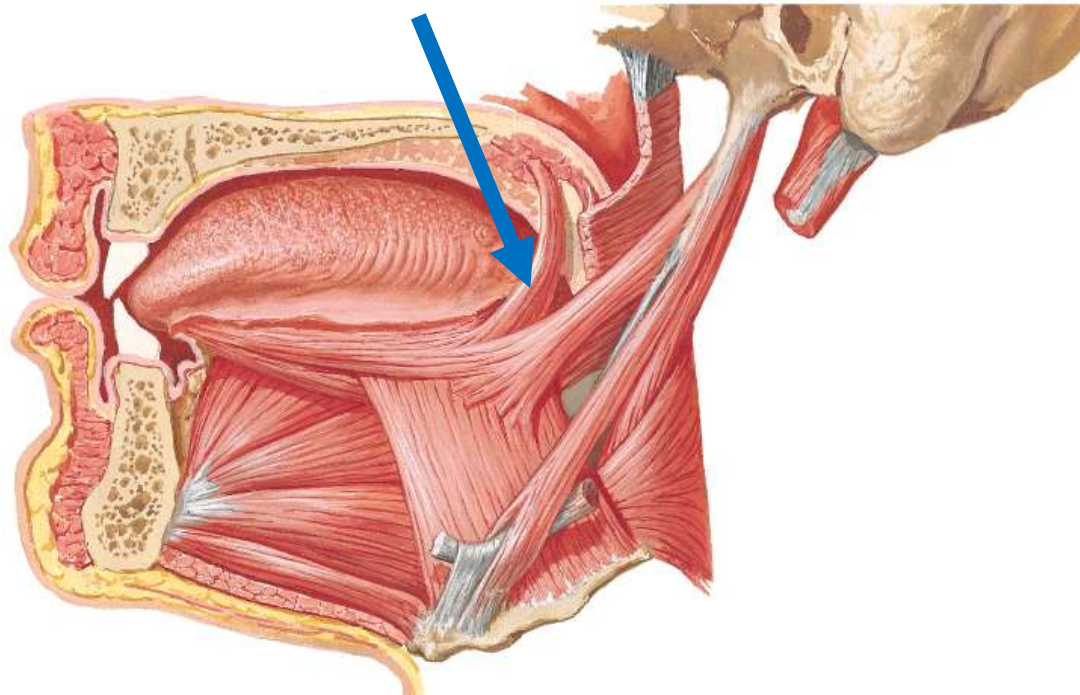


NERVE SUPPLY OF MUSCLES OF TONGUE

ALL intrinsic & extrinsic muscles of tongue are supplied by **HYPOGLOSSAL NERVE** (12th cranial nerve)

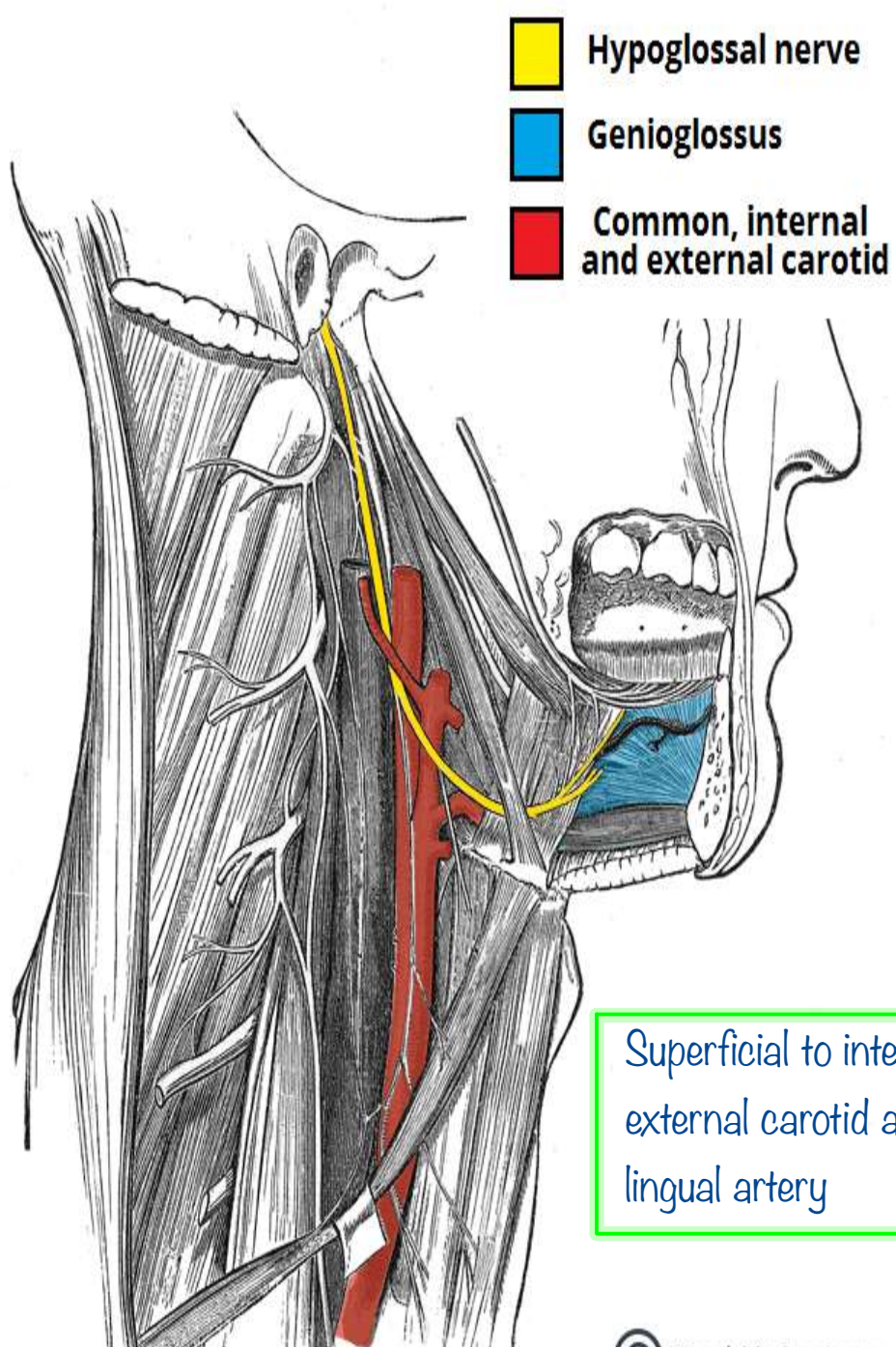
EXCEPT

PALATOGLOSSUS supplied by **CRANIAL ACCESSORY N** (11th cranial n) through **pharyngeal plexus** { like muscles of the palate }



Hypoglossal nerve

- Pass between IJV & ICA
- Crosses ICA, ECA, & lingual artery
- Descends till the lower border of post. belly of digastric & passes forward to enter digastric Δ , running over hyoglossus m. to pass to undersurface of the tongue.



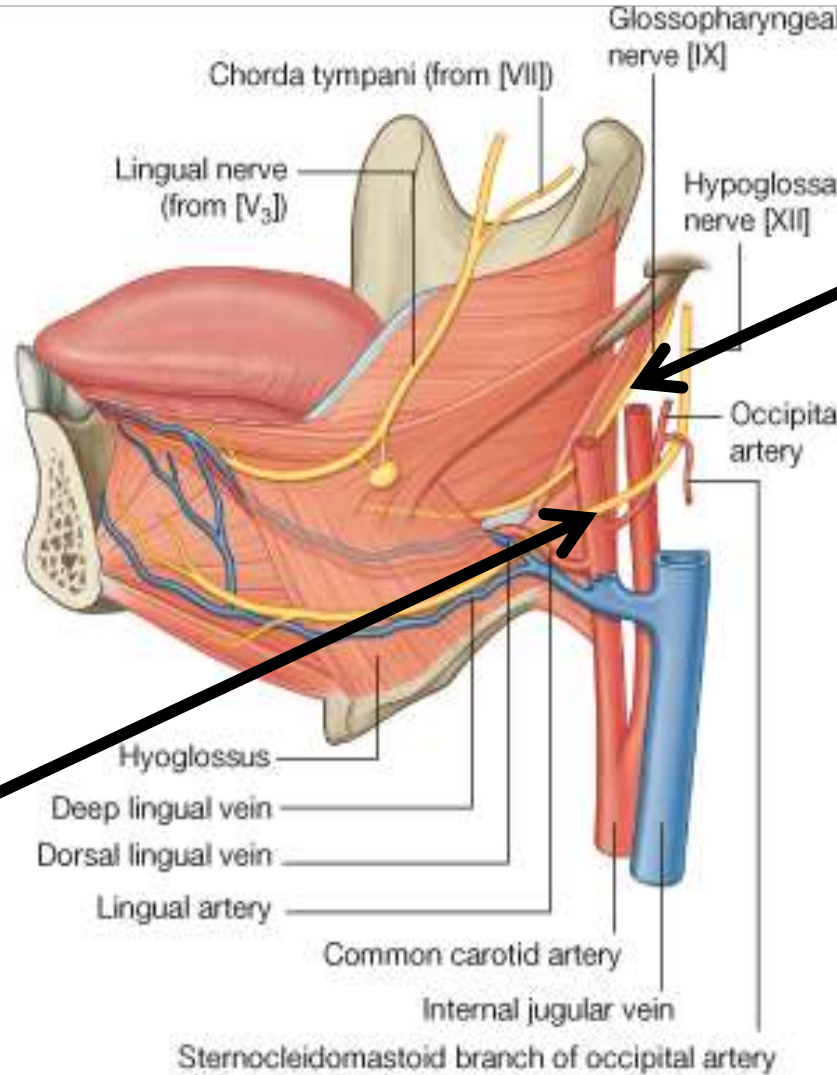


Note that IX is deep to hyoglossus muscle

XII is superficial to the muscle

Hypoglossal nerve

Glossopharyngeal nerve



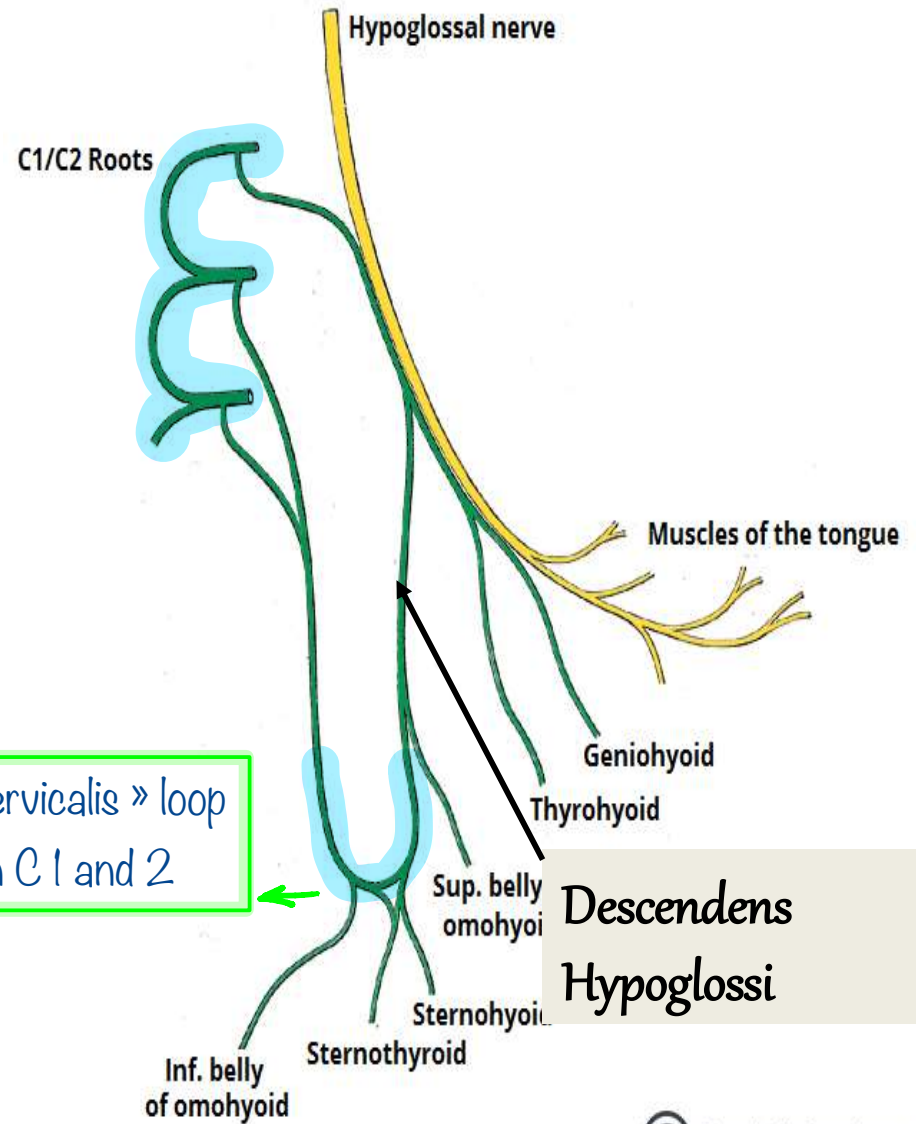
1-The first group :
fibres from C1"related
anatomically to hypoglossal".

a-Meningeal nerve.: contains
sensory & sympathetic fibres
supplying bone & meninges of
anterior part of posterior
cranial fossa.

b-Nerve to thyrohyoid.

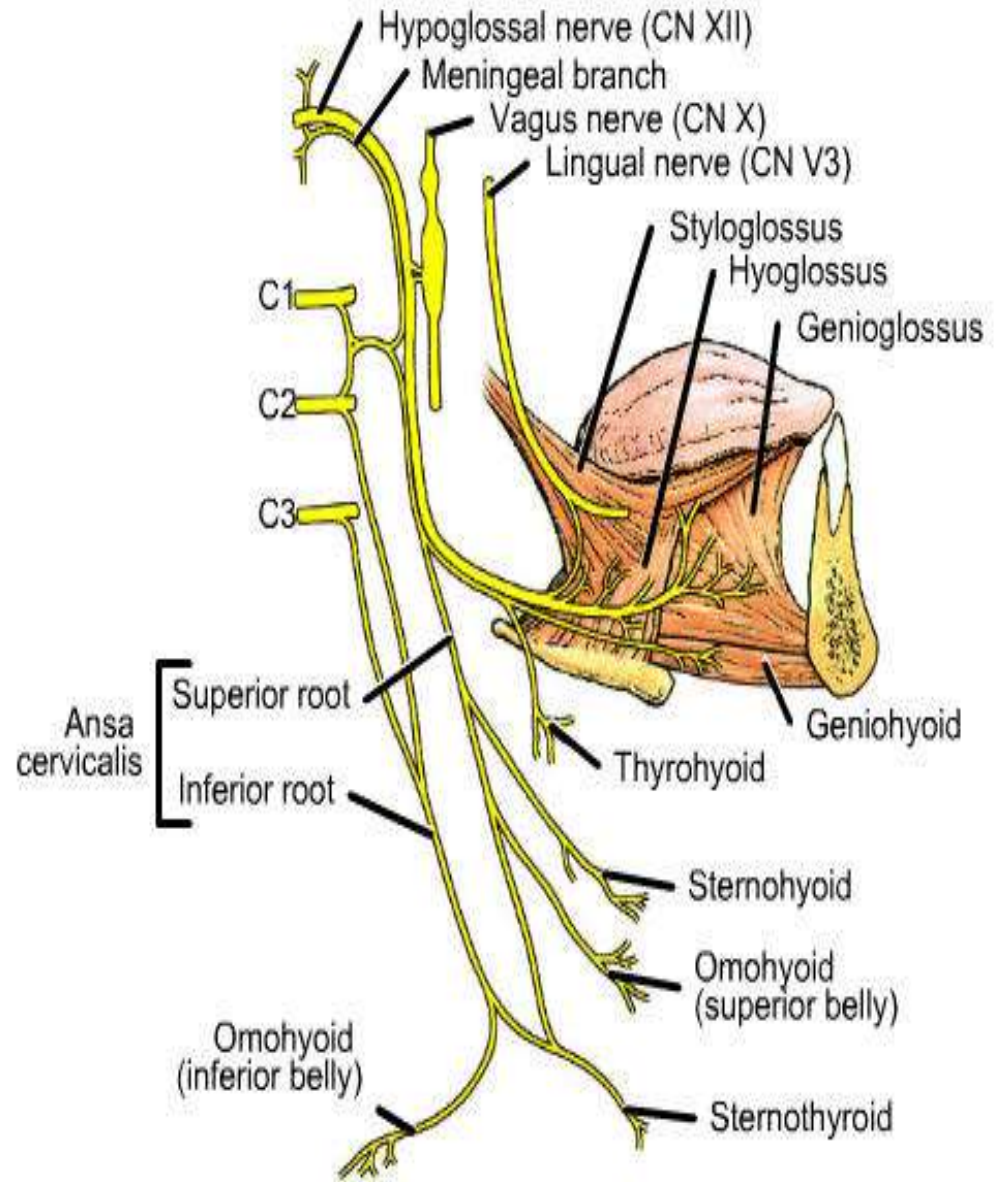
c-Nerve to geniohyoid.

d-Descending hypoglossi or
upper root of ansa cervicalis.



2-The second group "from hypoglossal itself": supplies the following:-

-Styloglossus, hyoglossus & genioglossus +All intrinsic muscles.



APPLIED ANATOMY

- ▶ Complete section of the hypoglossal nerve on one side → unilateral paralysis of tongue
- ▶ If for a long time → atrophy of muscles of the affected half of tongue
- ▶ If you ask the patient to protrude his tongue → tongue deviates towards the affected side due to the unopposed action of the normal half
- ▶ **TONGUE POINTS TOWARDS THE SIDE OF INJURY**

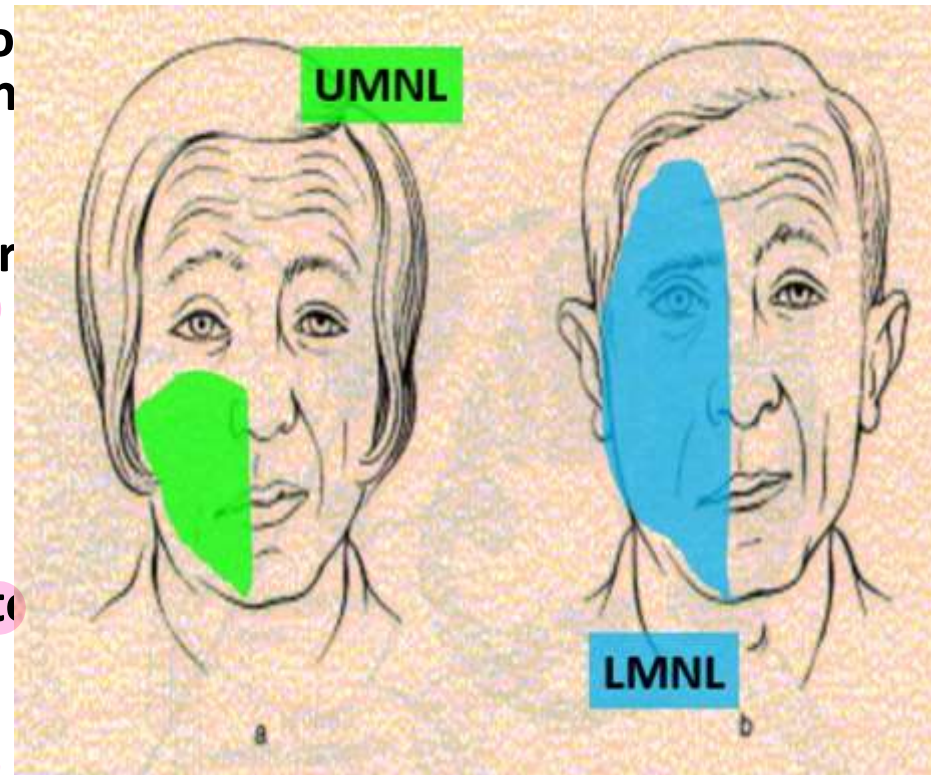


Does this patient have right or left hypoglossal nerve injury?

NOTE ON Facial nerve paralysis

it is worth mentioning in either case of UMNL OR LMNL of the facial nerve, the side of description is the side of the lesion that appears on the patient's face for example in the following figure both patient's face lesions are on the Right side. and describe it as right UMNL on the left picture and right LMNL on the right picture.

However, the cause of the lower motor neuron lesion is due to an ipsilateral lesion of the nerve or the neuron and the upper motor neuron lesion is due to a contralateral lesion on the cortex or corticonuclear tract



NERVE SUPPLY

By 10 nerves (5 pre-auricular & 5 are retro-auricular: 4 sensory & 1 motor)

من محاضرة ٤ عاها عشان شرحها اون لاین بس

In Front of the auricle

4 Sensory nerves: (branches of *trigeminal* nerve)

1. Supratrochlear n. (from *ophthalmic* n.) supplies skin of fore head
2. Supraorbital n. (from *ophthalmic* n.) supplies skin of forehead up to the vertex
3. Zygomaticotemporal n. (from *maxillary* n.) supplies non-hairy part of temporal region
4. Auriculotemporal n. (from *mandibular* n.) supplies the hairy

1 Motor nerve:

Temporal branch of facial nerve supplies frontal belly of occipito-frontalis.

Behind the auricle

4 Sensory nerves: (branches of *cervical* spinal nerves)

مش حفظ من اي ٥ طالعین

1. Great auricular n. (C 2,3) supplies skin of scalp behind auricle.
2. Lesser occipital n. (C 2) supplies skin of scalp behind auricle.
3. Greater occipital n. (C 2) supplies skin of scalp up to vertex.
4. Third occipital n. (C 2) supplies skin of lower part of occiput.

1 Motor nerve:

Posterior auricular branch of facial nerve supplies occipital belly of occipitofrontalis.



Thank you