

PERIPHERAL NERVOUS SYSTEM

CERVICAL PLEXUS

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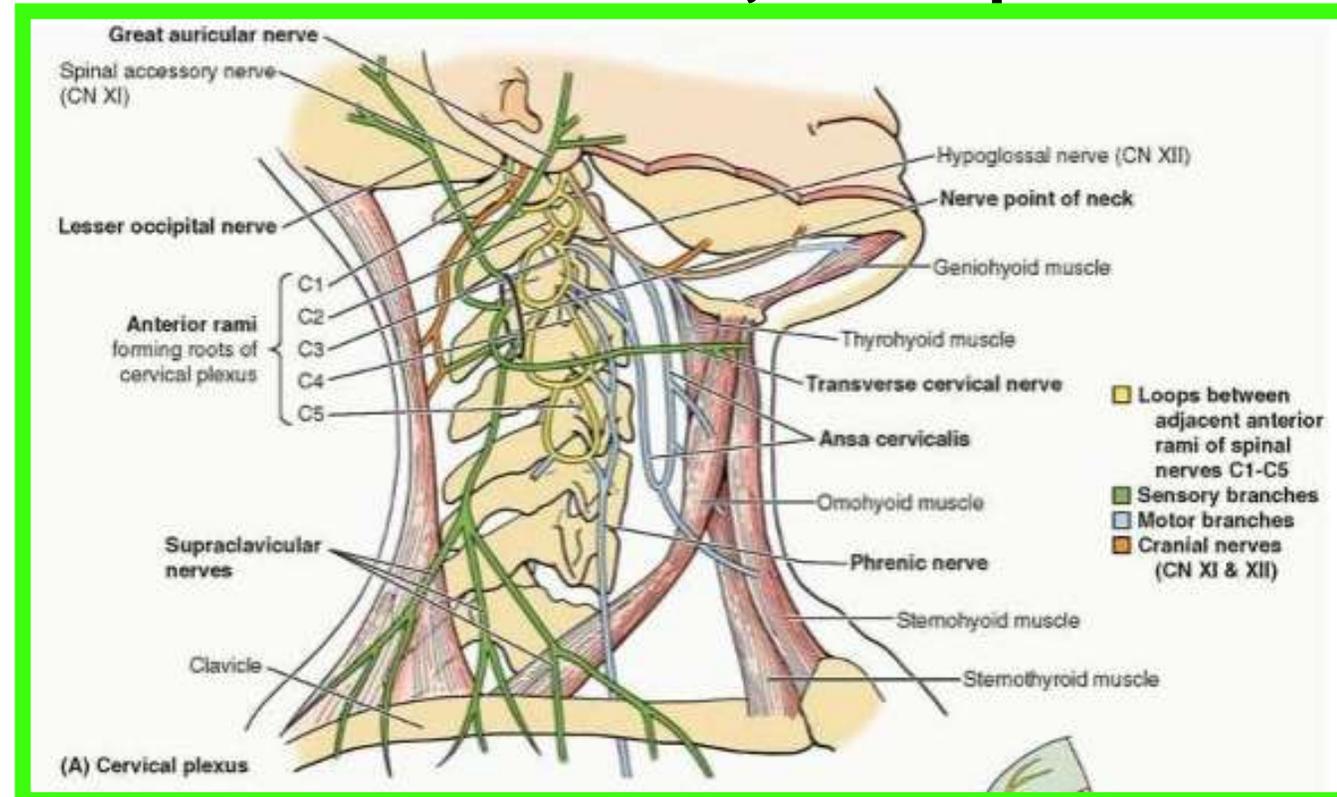
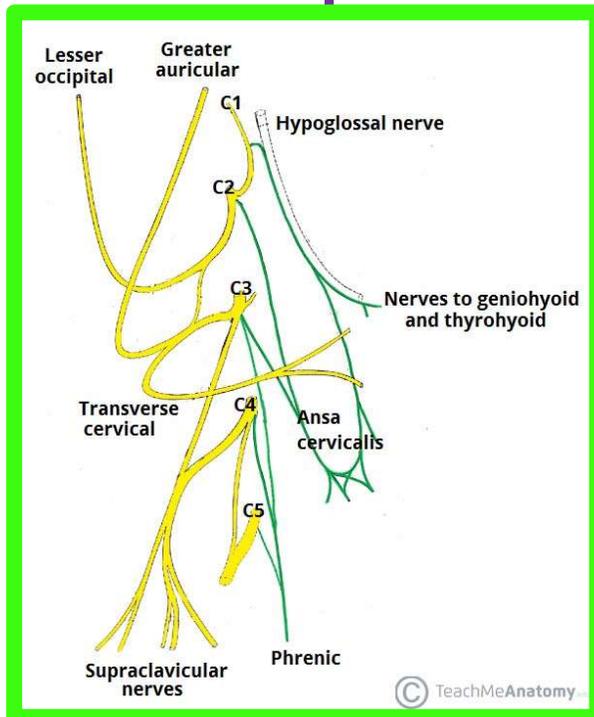
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Cervical plexus

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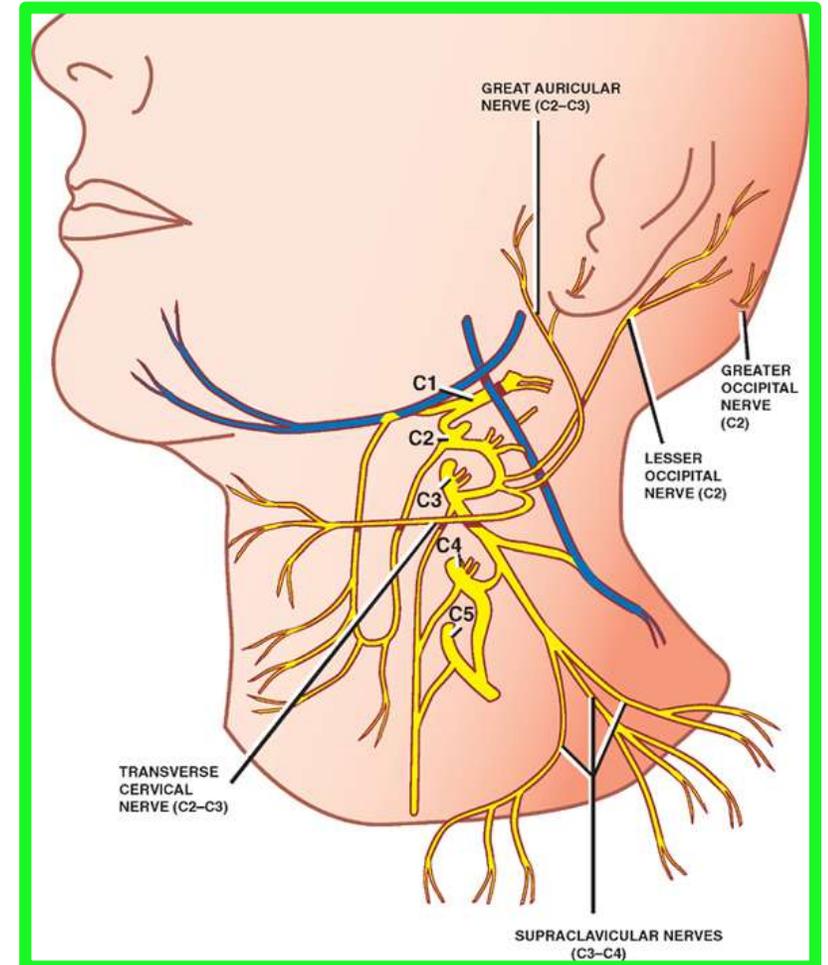
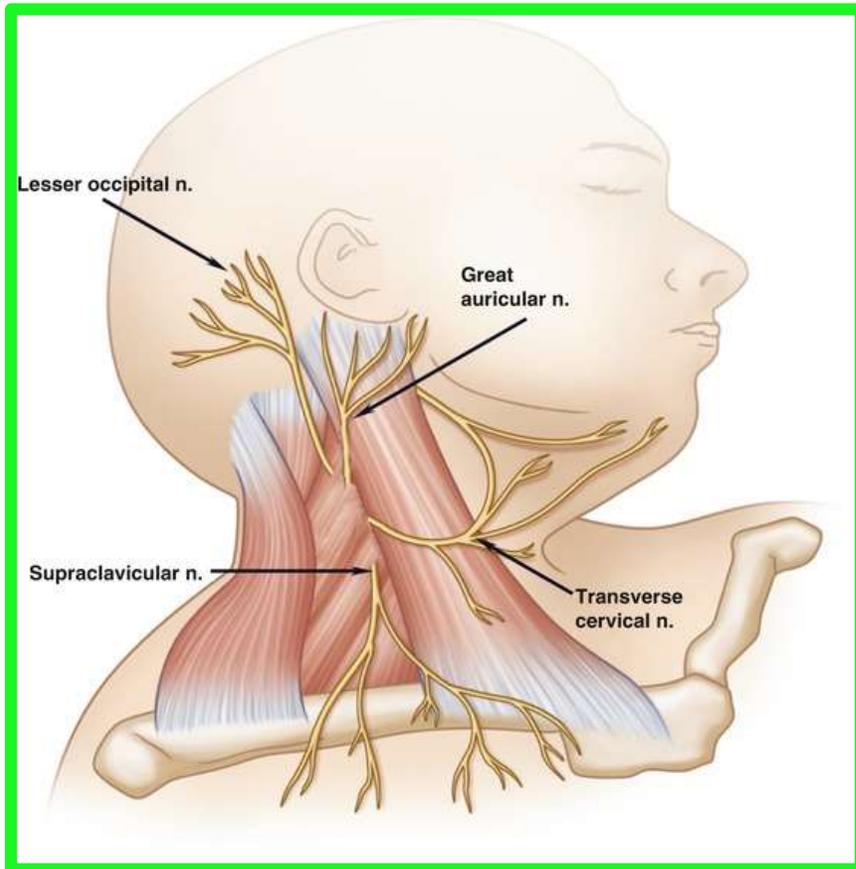
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- ❖ The anterior rami of C1-C4 make up **the roots of the cervical plexus**
- ❖ **The cervical plexus** consists of an **irregular series of (primary) nerve loops** and the **branches that arise from the loops**.
- ❖ Each participating ramus, **except the first**, divides into **ascending** and **descending** branches that unite with the branches of the adjacent spinal nerve to form **the loops**.



Cervical plexus

- ❖ The cervical plexus lies Anteromedial to **the levator scapulae** and **middle scalene muscles** and deep to **the SCM**.
- ❖ The superficial branches of the plexus that initially pass posteriorly are **cutaneous (sensory) branches**

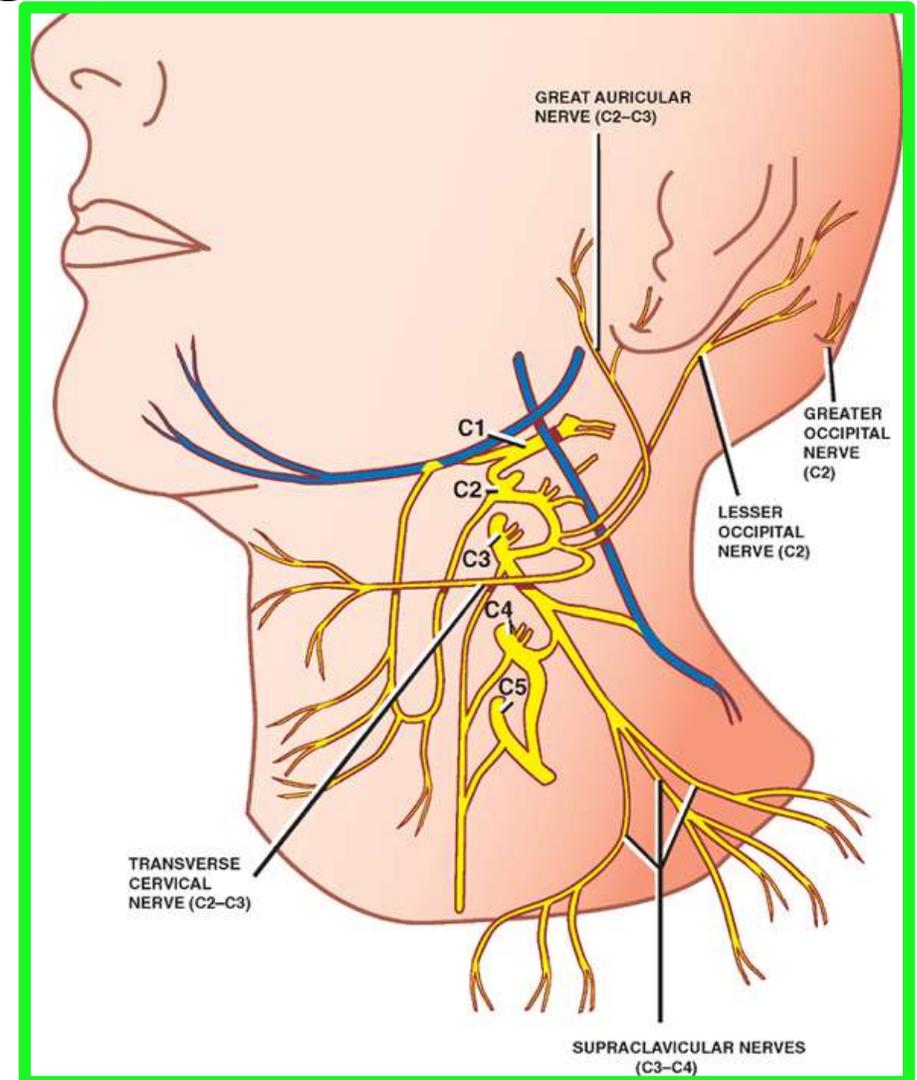
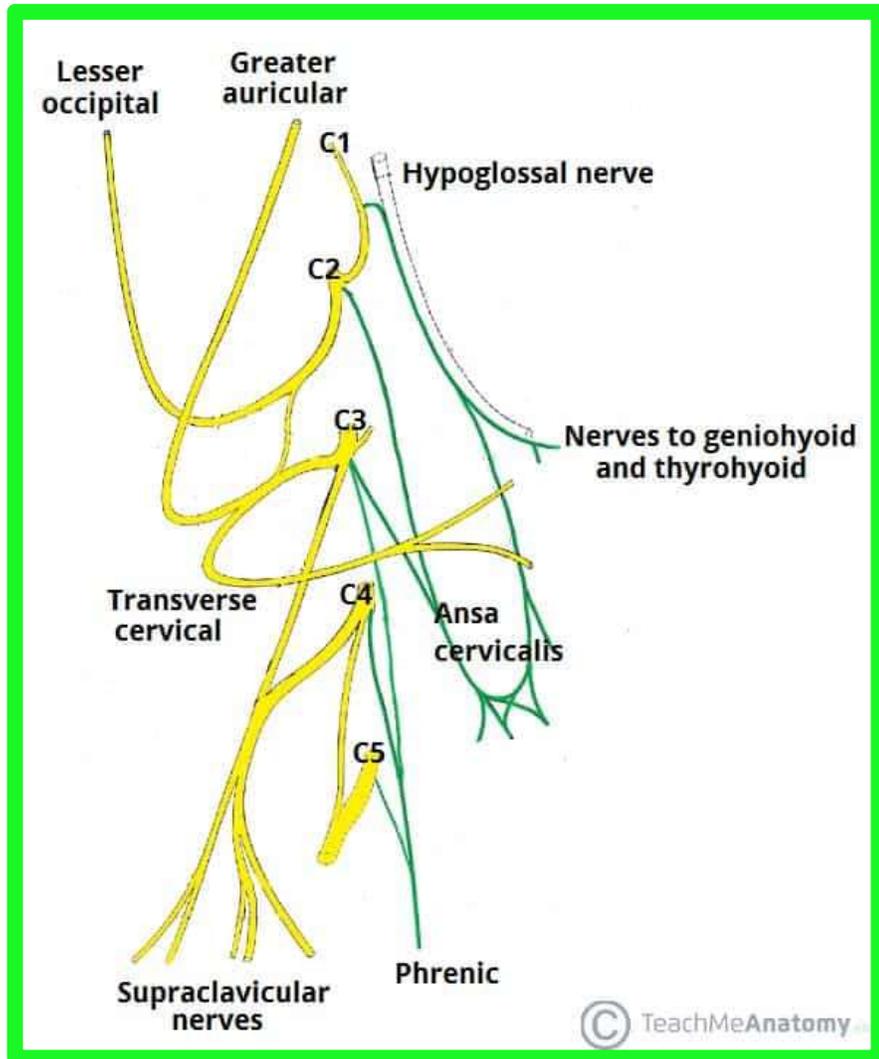


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Cervical plexus

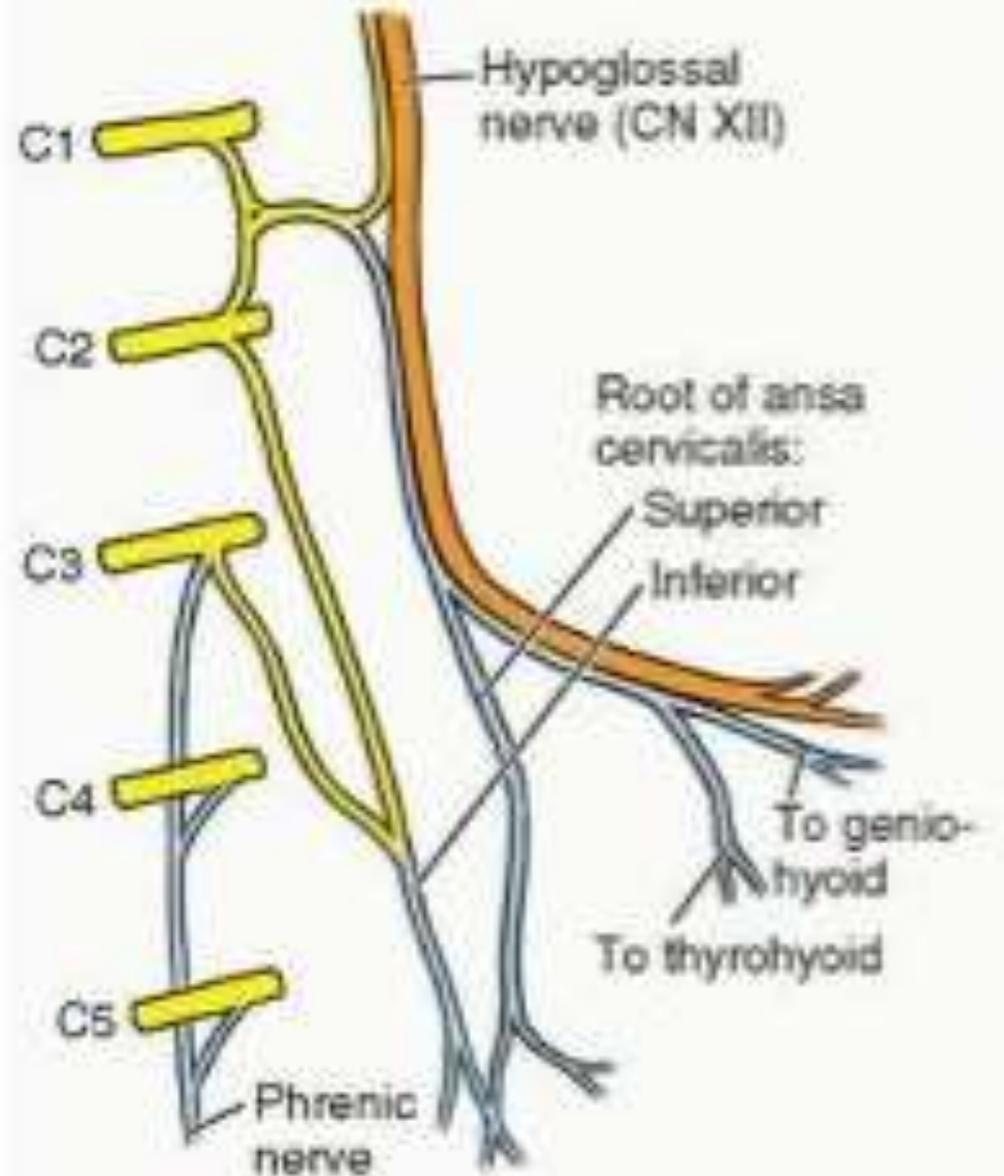
❖ The deep branches passing anteromedially are **motor branches**, including the roots of **the phrenic nerve** (to the diaphragm) and **the ansa cervicalis**



Cervical plexus

❖ The superior root of the ansa cervicalis, conveying fibers from spinal nerves C1 and C2, briefly joins and then descends from the hypoglossal nerve (CN XII) as it traverses the lateral cervical region

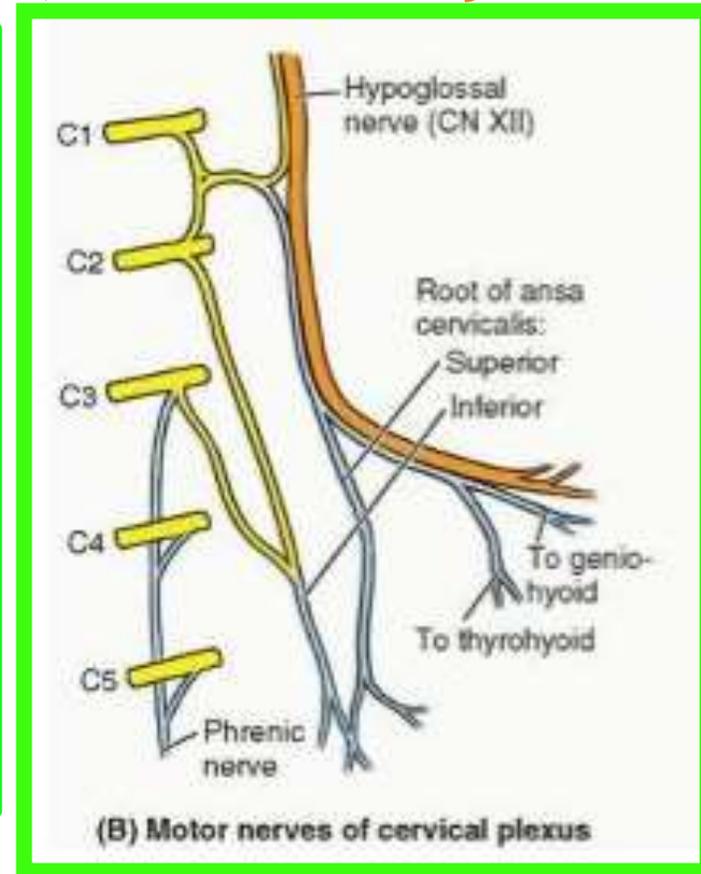
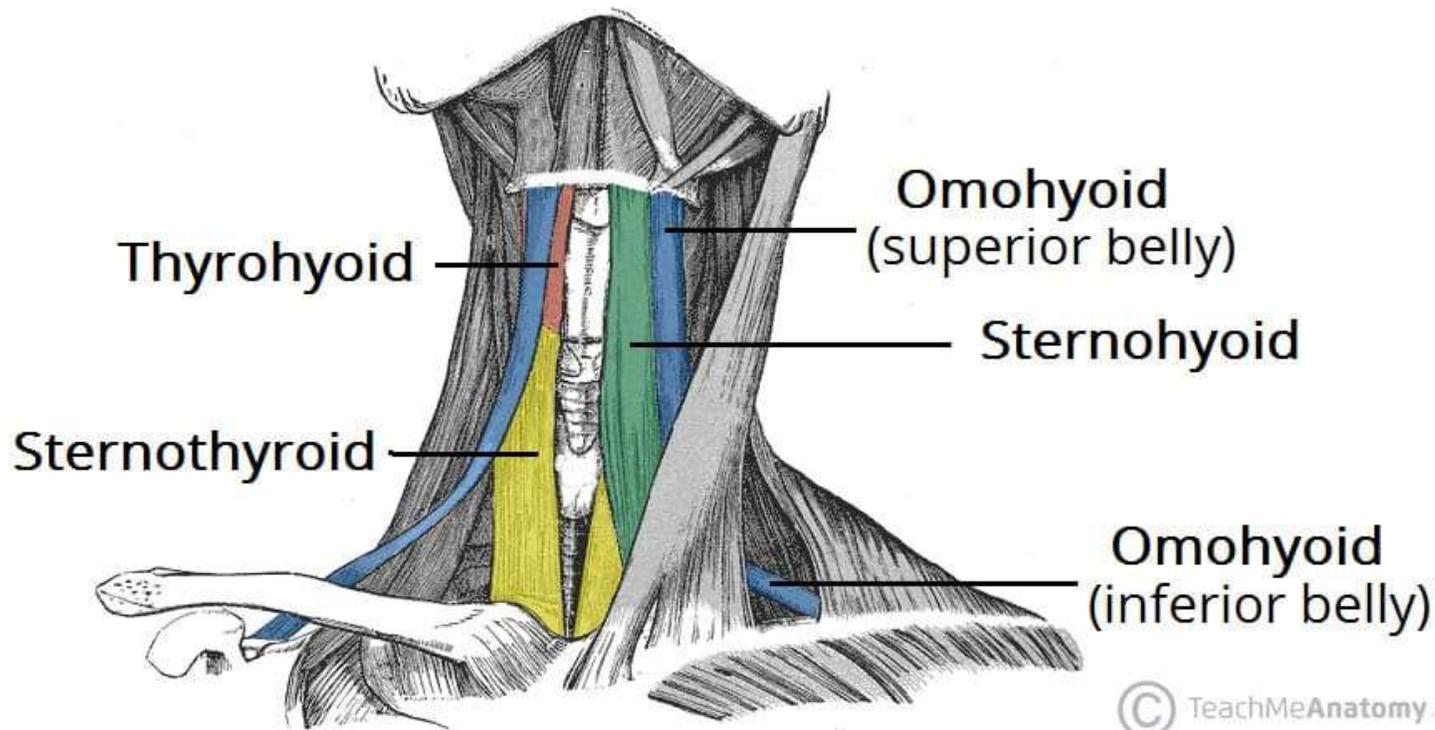
❖ The inferior root of the ansa cervicalis arises from a loop between spinal nerves C2 and C3.



(B) Motor nerves of cervical plexus

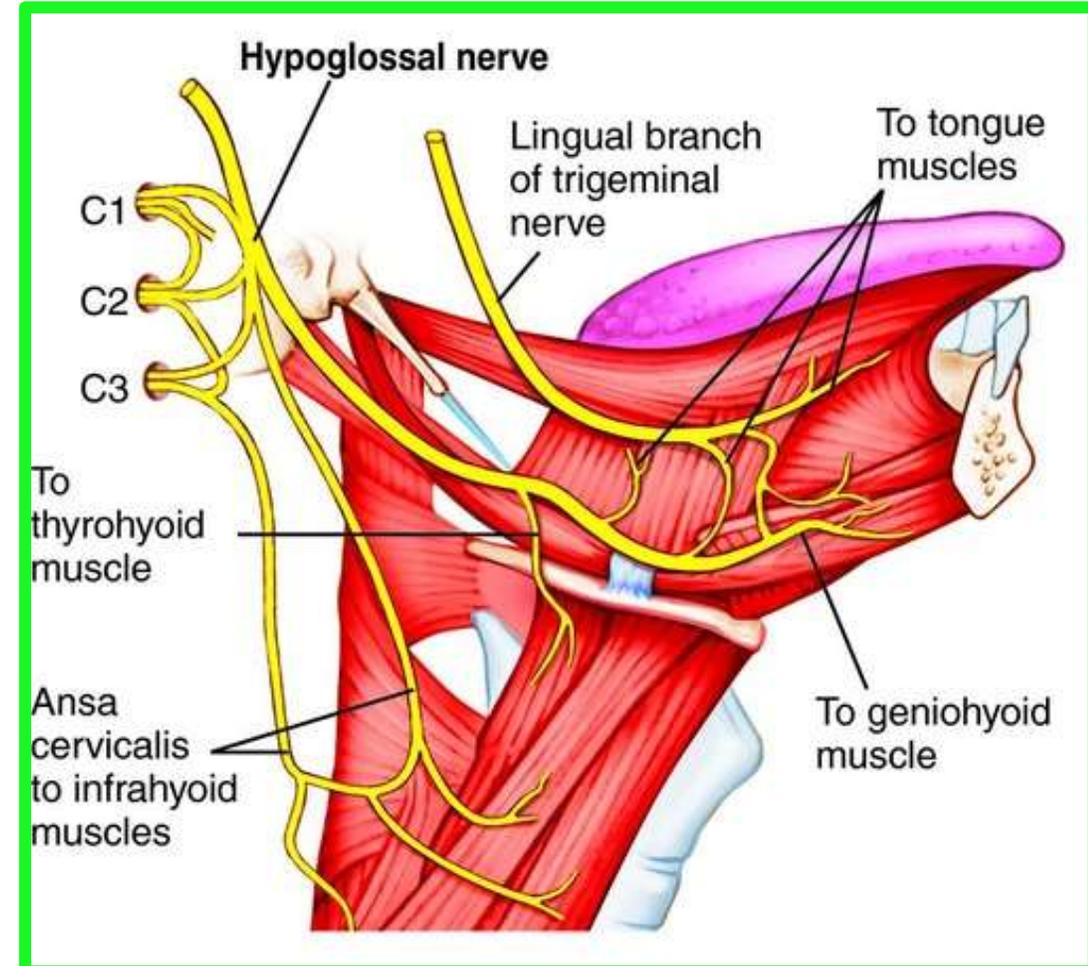
Cervical plexus

□ The superior and inferior roots of the ansa cervicalis unite, forming a secondary loop, **the ansa cervicalis**, consisting of fibers from the **C1-C3 spinal nerves**, which branch from the secondary loop to supply the infrahyoid muscles, including **the omohyoid, sternothyroid, and sternohyoid**



Cervical plexus

□ The fourth Infrahyoid muscle, **the thyrohyoid**, receives **C1 fibers**, which descend independently from **the hypoglossal nerve**, distal to the superior root of the ansa cervicalis (**nerve to thyrohyoid**)

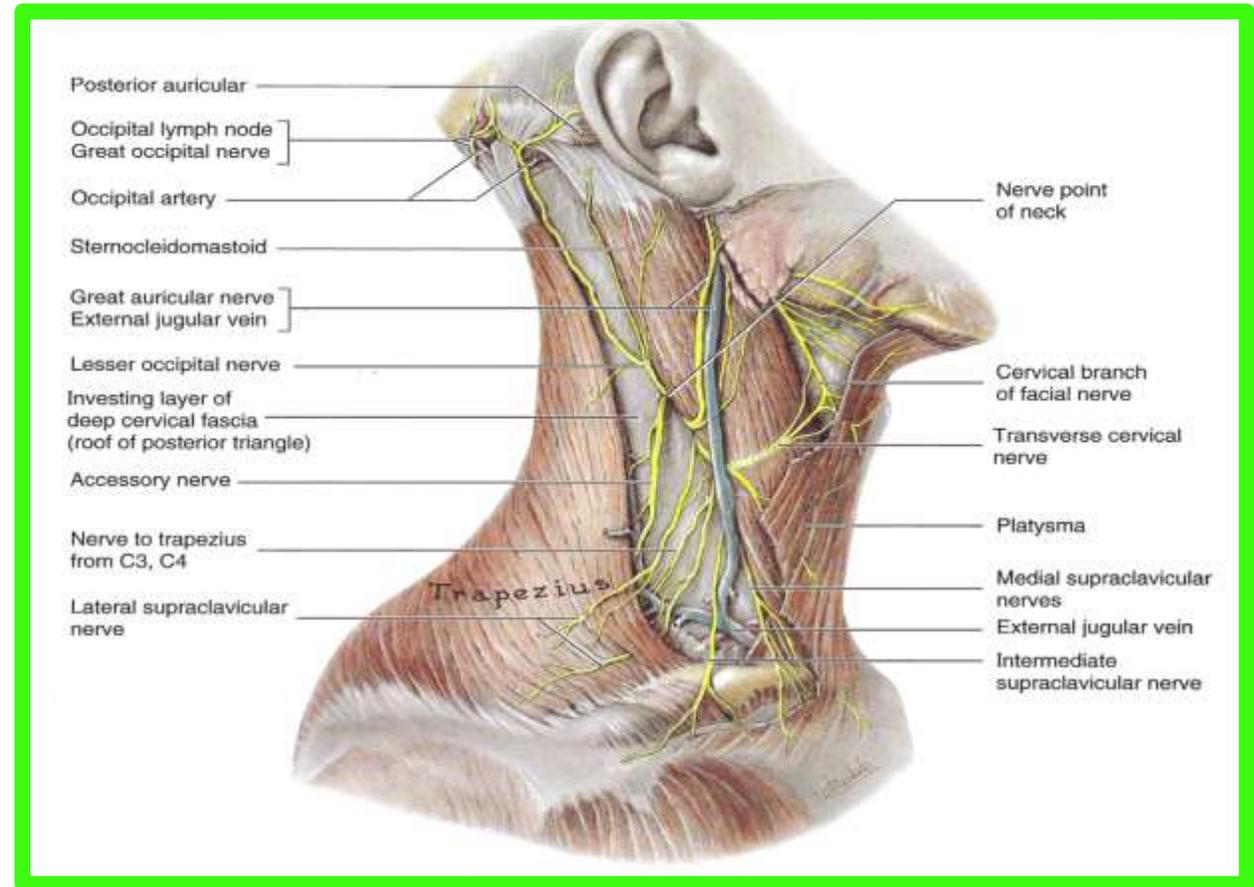
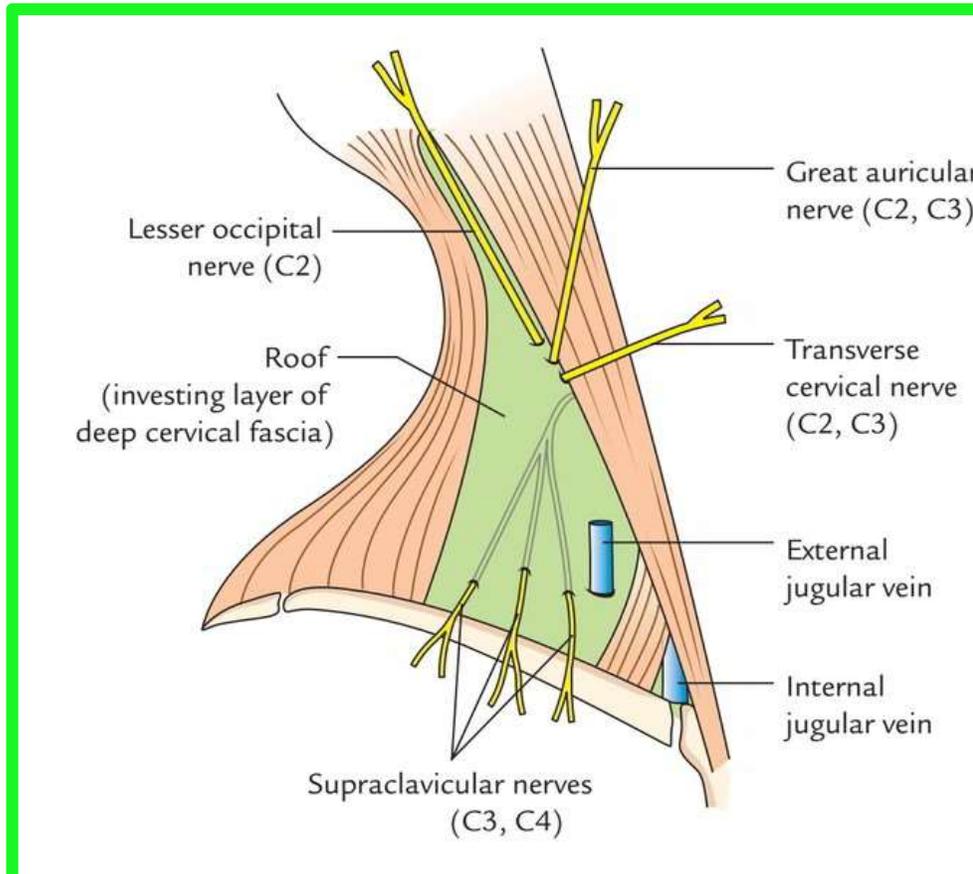


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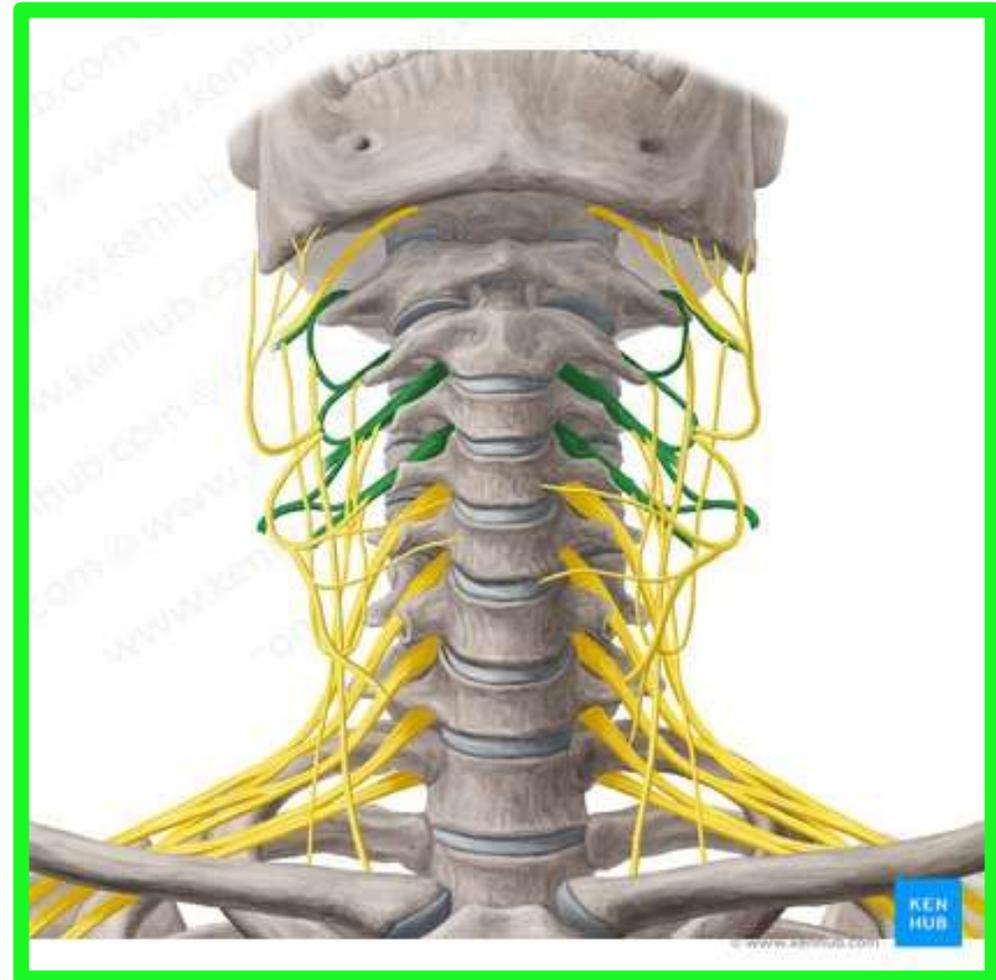
❖ Cutaneous branches of the cervical plexus emerge around the middle of the posterior border of the SCM, often called **the nerve point of the neck** and supply the skin of the neck, superolateral thoracic wall, and scalp between the auricle and the external occipital protuberance



Cervical plexus

Close to their origin, the roots of the cervical plexus receive **gray rami communicantes**, most of which descend from the **large superior cervical ganglion** in the superior part of the neck.

These communicating fibers are the contributions from the sympathetic trunk (**sympathetic nervous system**) to the cervical plexus



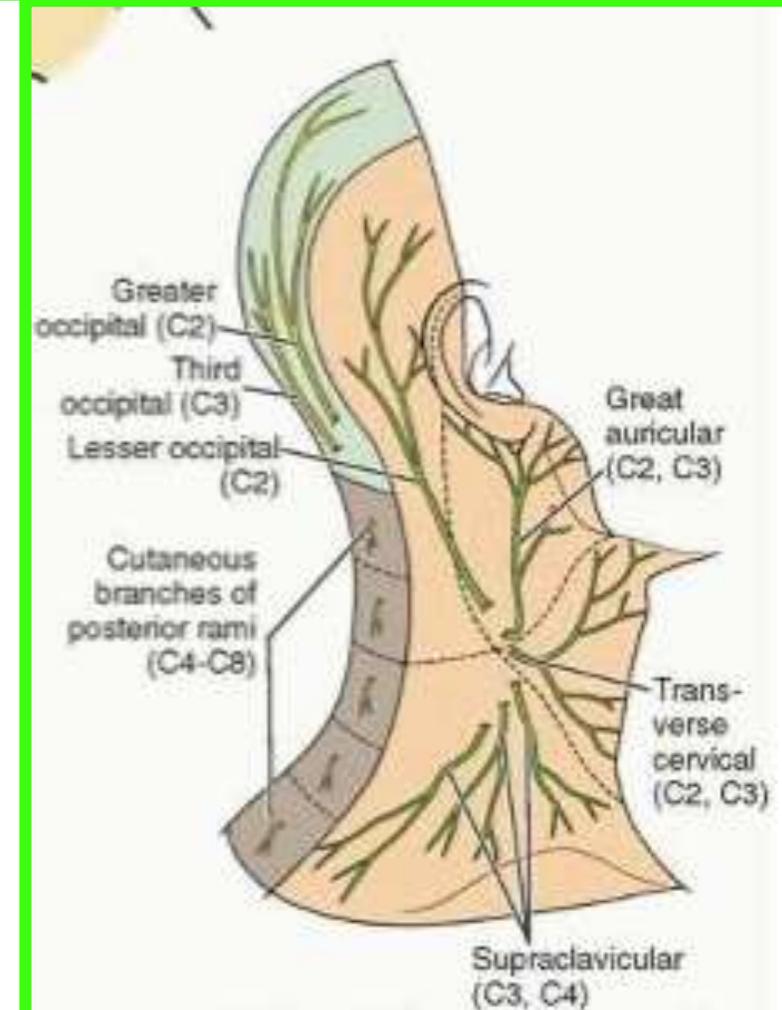
Cervical plexus

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Branches of cervical plexus arising from the nerve loop between the anterior rami of C2 and C3 are the:

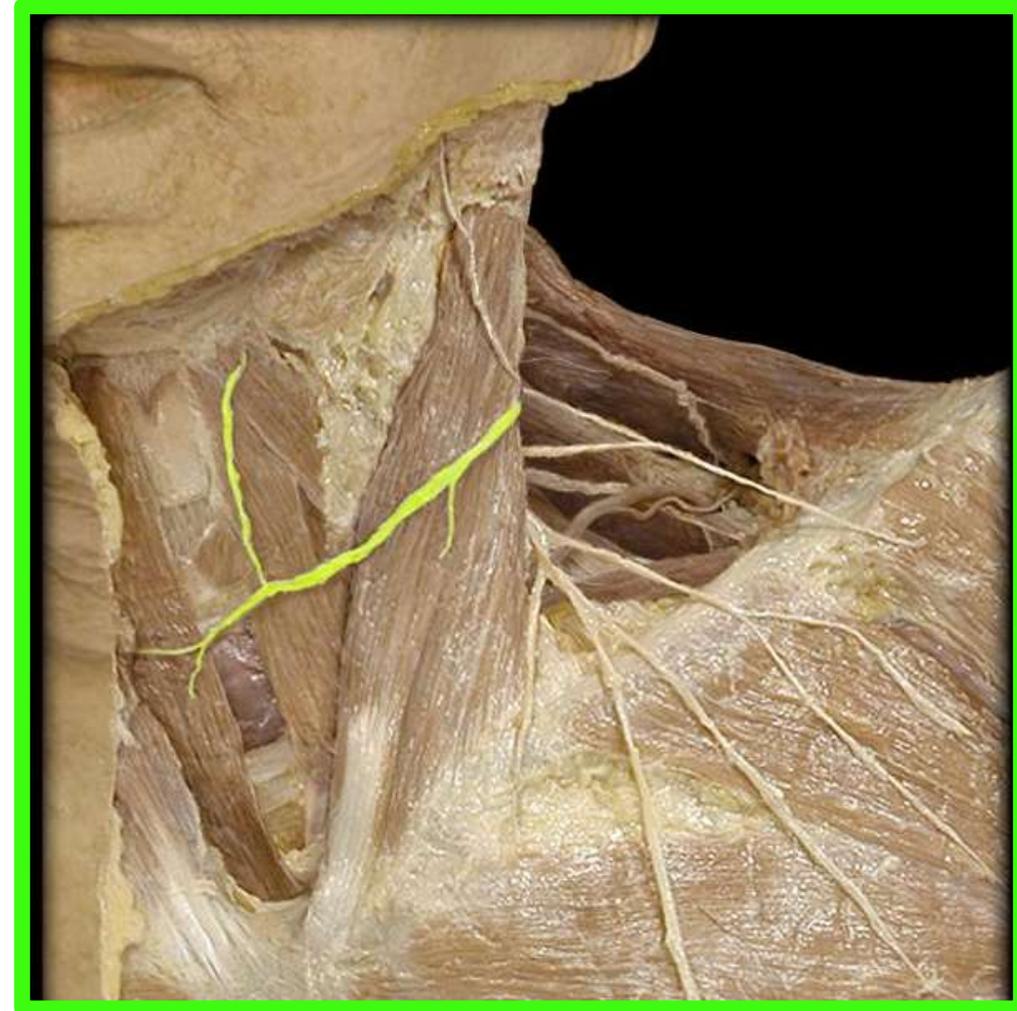
- ✓ **Lesser occipital nerve (C2):** supplies the skin of the neck and scalp posterosuperior to the auricle.
- ✓ **Great auricular nerve (C2 and C3):** ascends vertically across the **oblique SCM** to the **inferior pole of the parotid gland**, where it divides to supply the skin over—and the sheath surrounding—the gland, the mastoid process, and both surfaces of the auricle and an area of skin extending from the angle of the mandible to the mastoid process.



Branches of cervical plexus arising from the nerve loop between the anterior rami of C2 and C3 are the:

✓ **Transverse cervical nerve (C2 and C3):** supplies the skin covering the anterior cervical region.

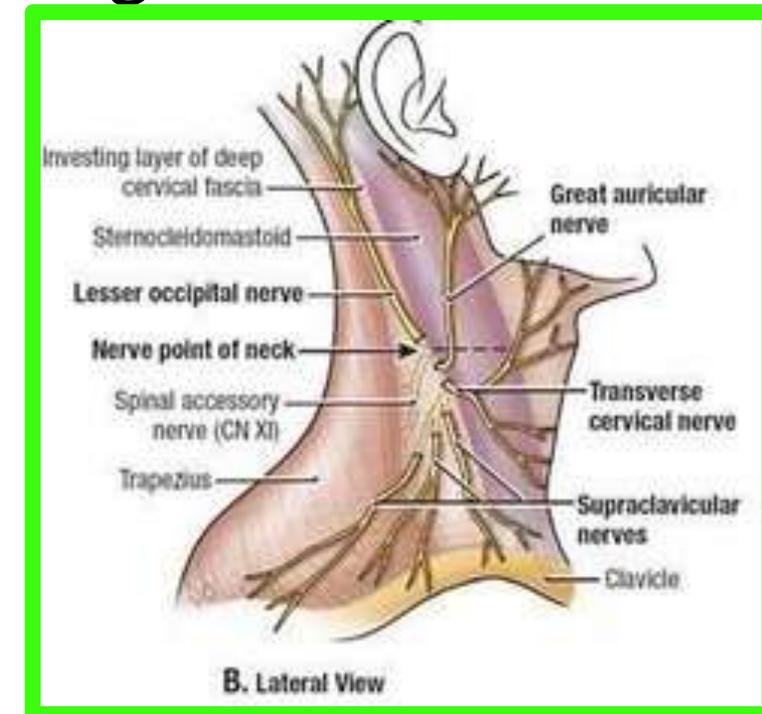
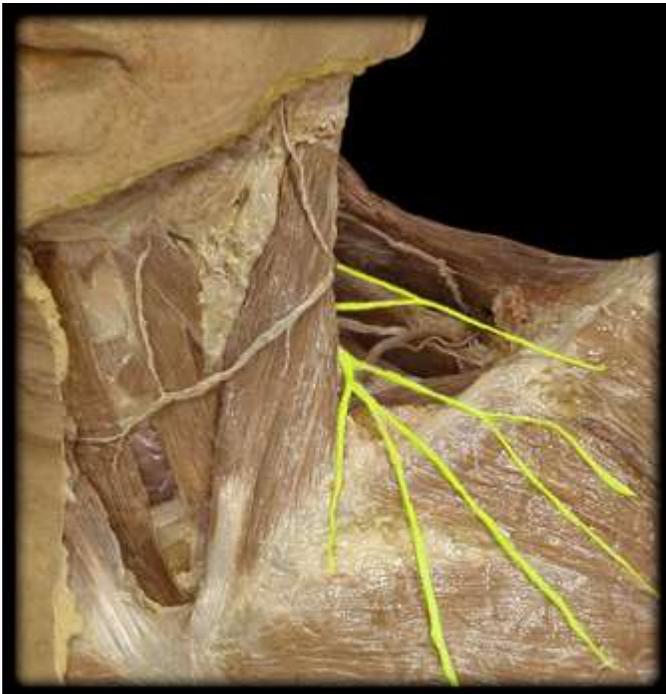
It curves around the middle of the posterior border of **the SCM** inferior to **the great auricular nerve** and passes anteriorly and horizontally across it deep **to the EJV and platysma**, dividing into superior and inferior branches.



The branches of the cervical plexus arising from the nerve loop formed between the anterior rami of C3-C4 are the:

Supraclavicular nerves (C3 and C4): emerge as a common trunk **under cover of the SCM**, sending small branches to the skin of the neck that cross the clavicle supplying,

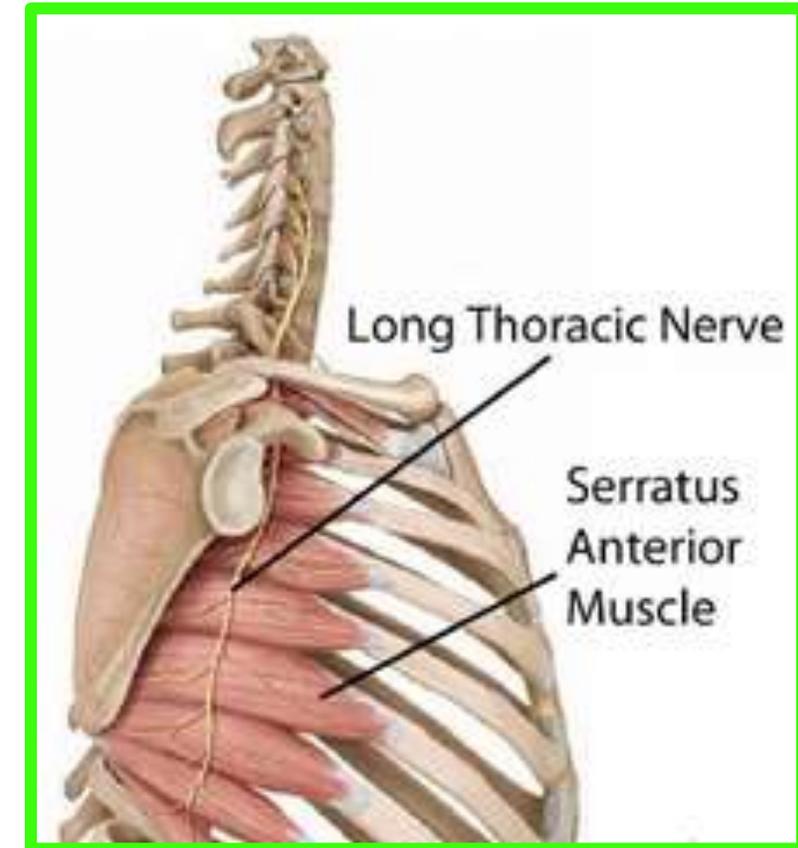
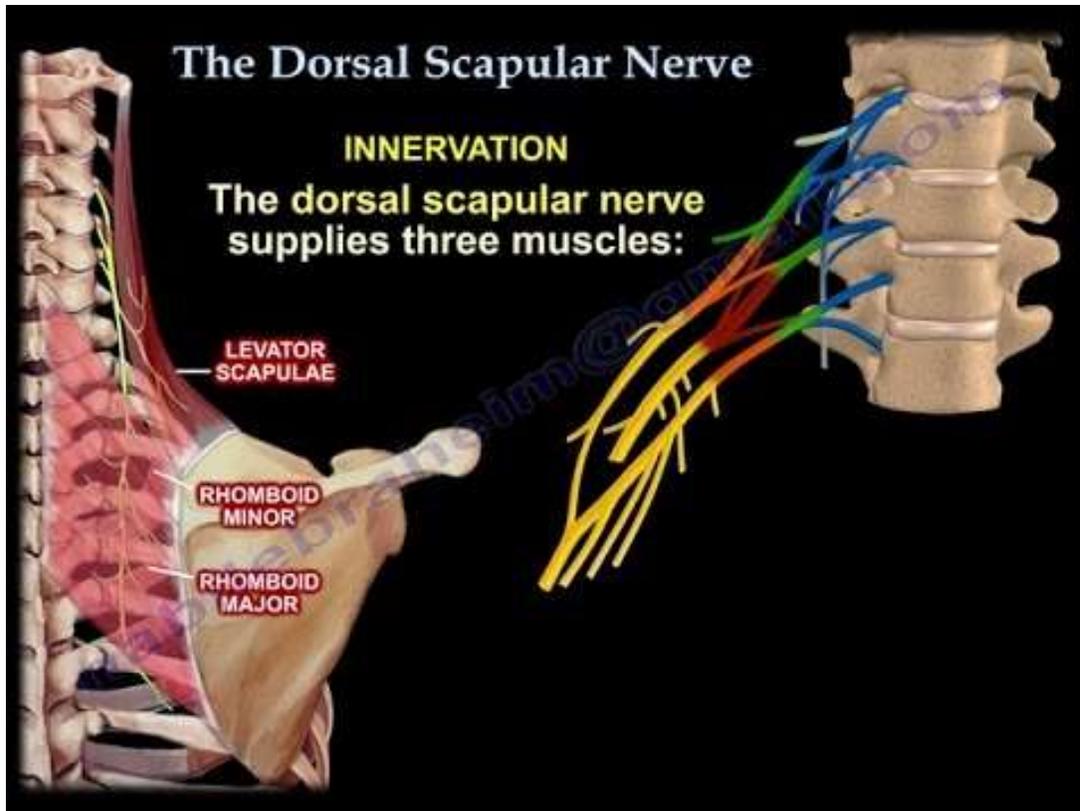
- 1) Skin over the upper half of the deltoid muscle.
- 2) Skin of the pectoral region above the level of sternal angle.



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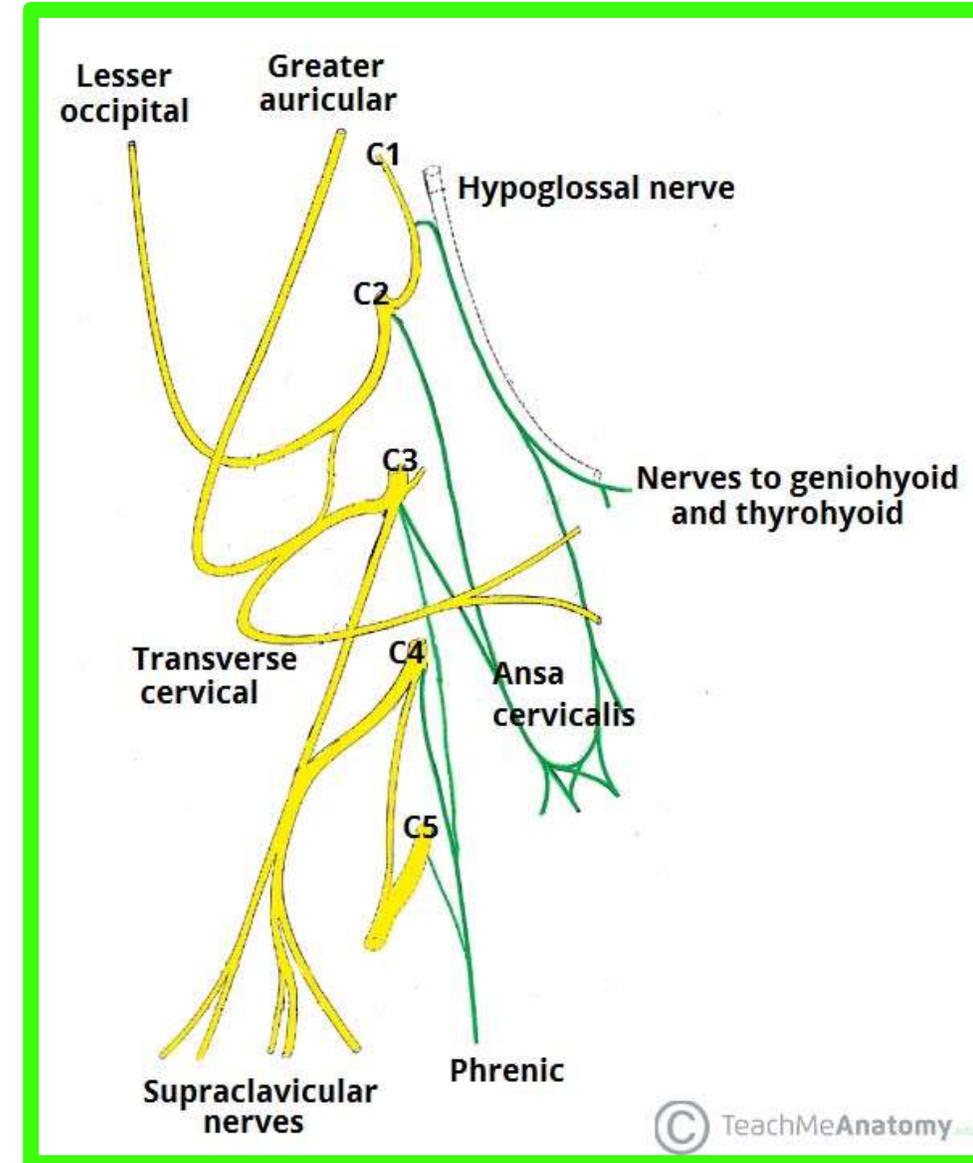
Cervical plexus

In addition to the **ansa cervicalis** and **phrenic nerves** arising from the loops of the plexus, deep motor branches of the cervical plexus include branches arising from the roots that supply **the rhomboids (dorsal scapular nerve; C4 and C5)**, **serratus anterior (long thoracic nerve; C5-C7)**, and nearby prevertebral muscles



The phrenic nerves

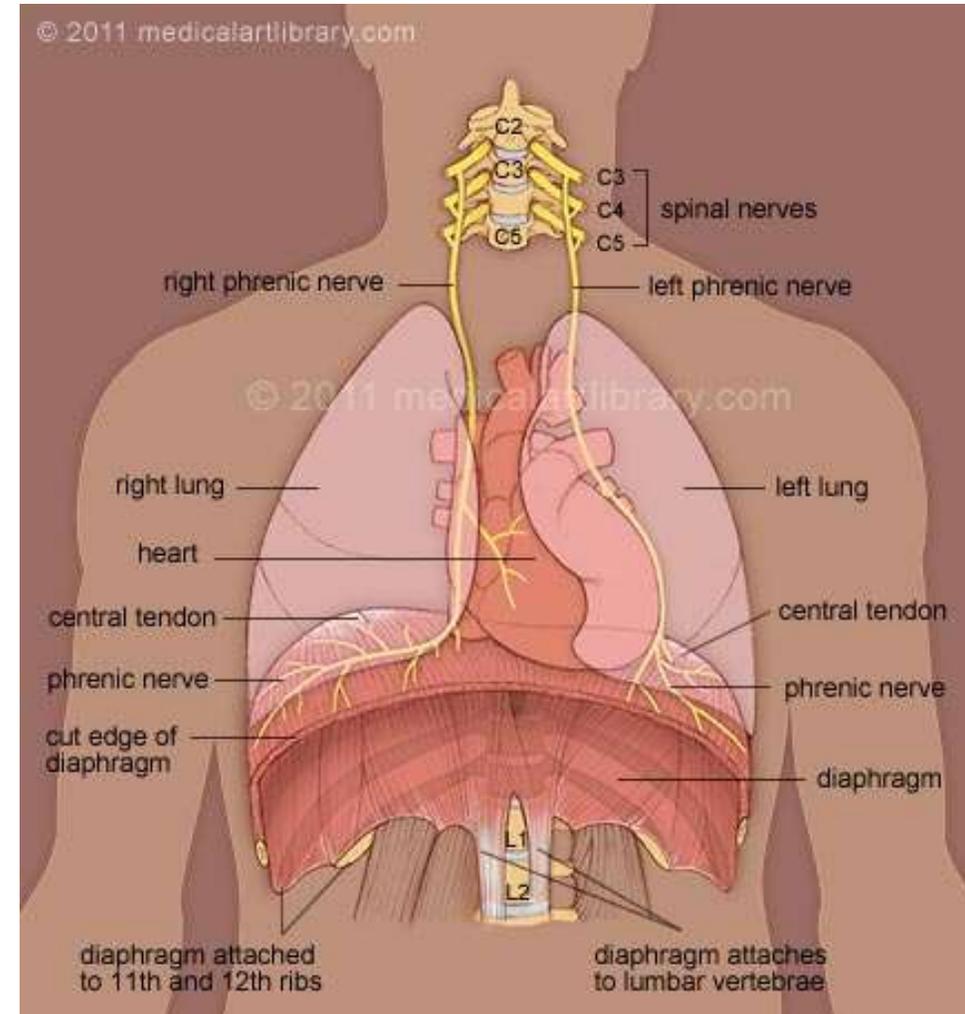
- ✓ Originate chiefly from **the C4** nerve but receive contributions from **the C3 and C5** nerves
- ✓ The phrenic nerves contain **motor, sensory,** and **sympathetic nerve fibers.**
- ✓ These nerves provide the sole motor supply to the diaphragm as well as sensation to its central part.
- ✓ In the thorax, each phrenic nerve supplies the mediastinal pleura and pericardium



The phrenic nerves

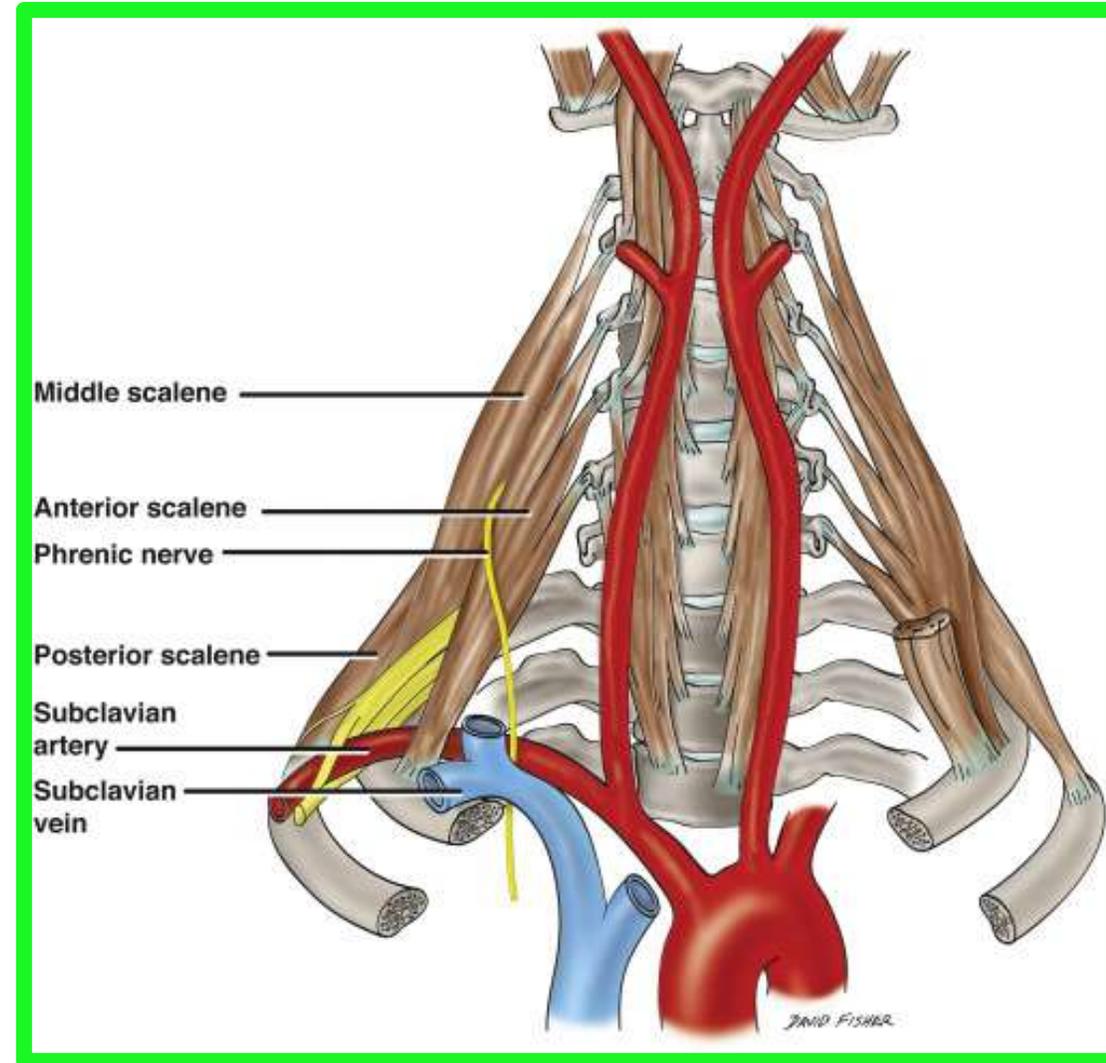
Receiving variable communicating fibers in the neck from **the cervical sympathetic ganglia** or their branches, each phrenic nerve forms at the superior part of the lateral border of the anterior scalene muscle at the level of the superior border of the thyroid cartilage.

The phrenic nerve descends obliquely with **the IJV** across **the anterior scalene**, deep to the prevertebral layer of deep cervical fascia and **the transverse cervical and suprascapular arteries**.



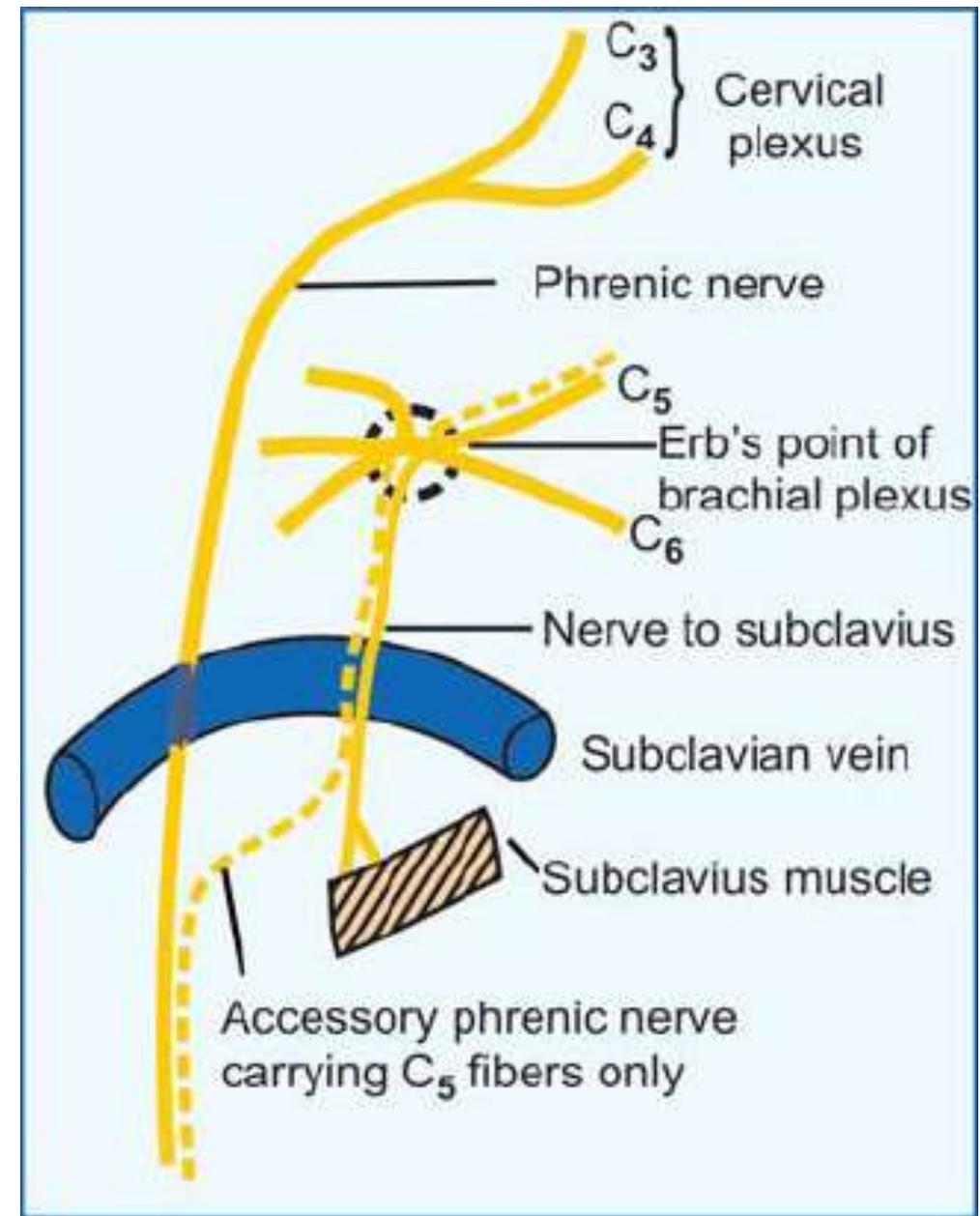
The phrenic nerves

- ❑ On the left, the phrenic nerve crosses anterior to the first part of the subclavian artery;
- ❑ On the right, it lies on the anterior scalene muscle and crosses anterior to the second part of the subclavian artery.
- ❑ On both sides, the phrenic nerve runs posterior to the subclavian vein and anterior to the internal thoracic artery as it enters the thorax.



The phrenic nerves

- ✓ The contribution of **the C₅** nerve to the phrenic nerve may be derived from an **accessory phrenic nerve**
- ✓ Frequently, it is a branch **of the nerve to the subclavius**.
- ✓ If present, **the accessory phrenic nerve** lies lateral to **the main nerve** and descends posterior and sometimes anterior to **the subclavian vein**.
- ✓ **The accessory phrenic nerve joins the phrenic nerve either in the root of the neck or in the thorax.**



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