

# *Anatomy*

## *Triangles of the neck*

The side of the neck is divided into anterior and posterior triangles by the sternocleidomastoid muscle.

### Posterior triangle of the neck

It is a triangular space on the side of the neck, lies behind the sternocleidomastoid muscle.

#### Boundaries

Anterior: posterior border of the sternocleidomastoid muscle

Posterior: anterior border of trapezius

Base [inferior]: middle third of the clavicle

Apex: lies on the superior nuchal line where the trapezius and the sternocleidomastoid muscles meet.

#### The roof

Skin, superficial fascia, platysma, and the investing layer of the deep fascia.

External jugular vein and posterior external jugular vein.

Parts of the supraclavicular, great auricular and lesser occipital nerves.

#### Floor

It is formed by the prevertebral layer of deep cervical fascia covering the following muscles:

- semispinalis capitis.
- splenius capitis.
- levator scapulae.
- scalenus medius.
- scalenus anterior [small part].

#### Division of the posterior triangle

It is subdivided by the inferior belly of the omohyoid muscle into:

- Large upper part called the occipital triangle.
- Smaller lower part called the supraclavicular triangle.

#### Contents of the posterior triangle

##### **1. nerves**

- spinal part of the accessory nerve
- four cutaneous branches of the cervical plexus [Lesser occipital nerve C2, Great auricular nerve C2,C3 , Transverse cutaneous nerve C2,C3 and , Supraclavicular nerves C3,C4 ].
- Brachial plexus [the roots, trunks, and divisions].
- Nerves from the roots of the brachial plexus [Long thoracic nerve and dorsal scapular nerve].

- Nerves from the upper trunk of the brachial plexus [nerve to subclavius and suprascapular nerve].

## 2. Arteries

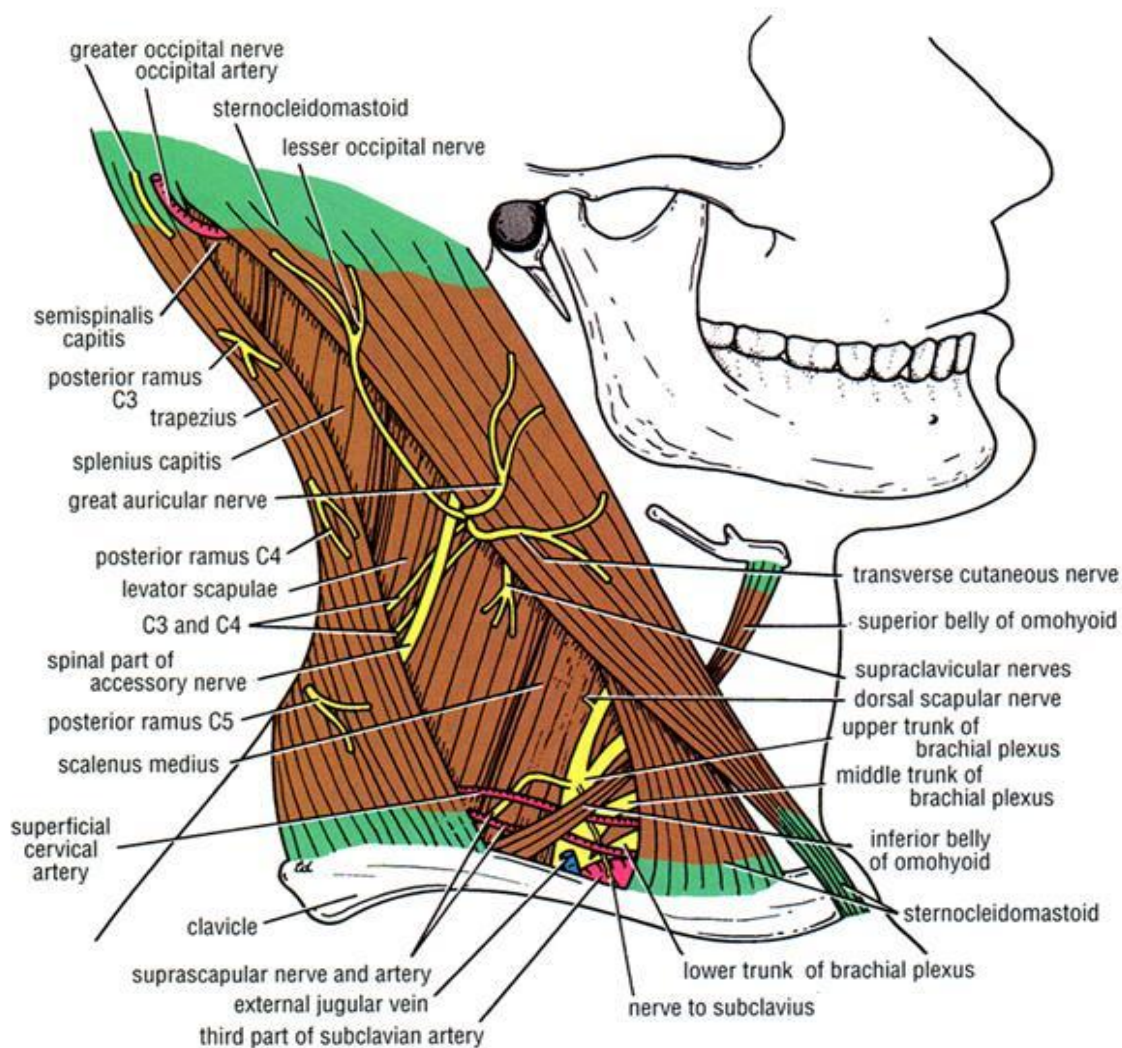
- Third part of subclavian artery.
- Occipital artery.
- Suprascapular artery.
- Transverse cervical artery.

## 3. Veins

- External jugular vein and its tributaries.
- Subclavian vein.

## 4. Lymph nodes

- Supraclavicular nodes and occipital nodes.



## Cervical plexus

It is formed by the ventral rami of the upper four cervical nerves. The rami are connected with one another to form a series of three loops.

### Relation of the plexus

Posterior: levator scapulae and scalenus medius muscles

Anterior: internal jugular vein within the carotid sheath, sternocleidomastoid, and prevertebral fascia.

### Branches

#### 1. Cutaneous branches

- Lesser occipital nerve [C2].
- Great auricular nerve [C2, C3].
- Transverse cutaneous nerve [C2, C3].
- Supraclavicular nerves [C3, C4].

#### 2. Communicating branch:

- Fibers from [C1] join the hypoglossal nerve. Some of these [C1] fibers leave the hypoglossal nerve as the descending branch [also called the superior root of the ansa cervicalis], which unites descending cervical nerve [also called the inferior root of the ansa cervicalis and contain fibers from C2 and C3], to form the ansa cervicalis. Other C1 fibers within the hypoglossal nerve leave it as the nerve to the thyrohyoid and nerve to geniohyoid.
- Grey ramus communicans: from the superior cervical ganglion to all the four cervical anterior rami.
- Sensory branches from C2, C3, and C4 to the accessory nerve for sternocephaloid and trapezius

#### 3. Nerve supply to the diaphragm: the phrenic nerve.

#### 4. Muscular branches to the neck muscles:

- Levator scapulae [C3 and C4]
- Scalenus medius
- Infrahyoid muscles [via the ansa cervicalis]
- Prevertebral muscles [rectus capitis lateralis, rectus capitis anterior, longus capitis, and longus colli]
- Sternocleidomastoid [C2, C3] and trapezius [C3, C4]: Sensory in nature.

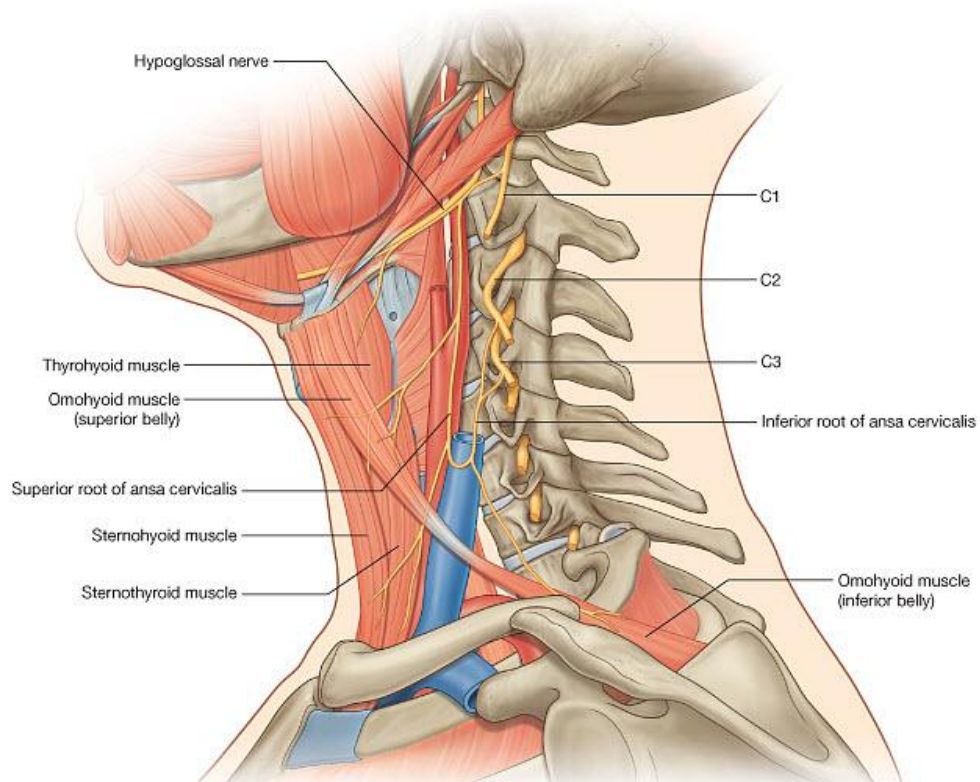
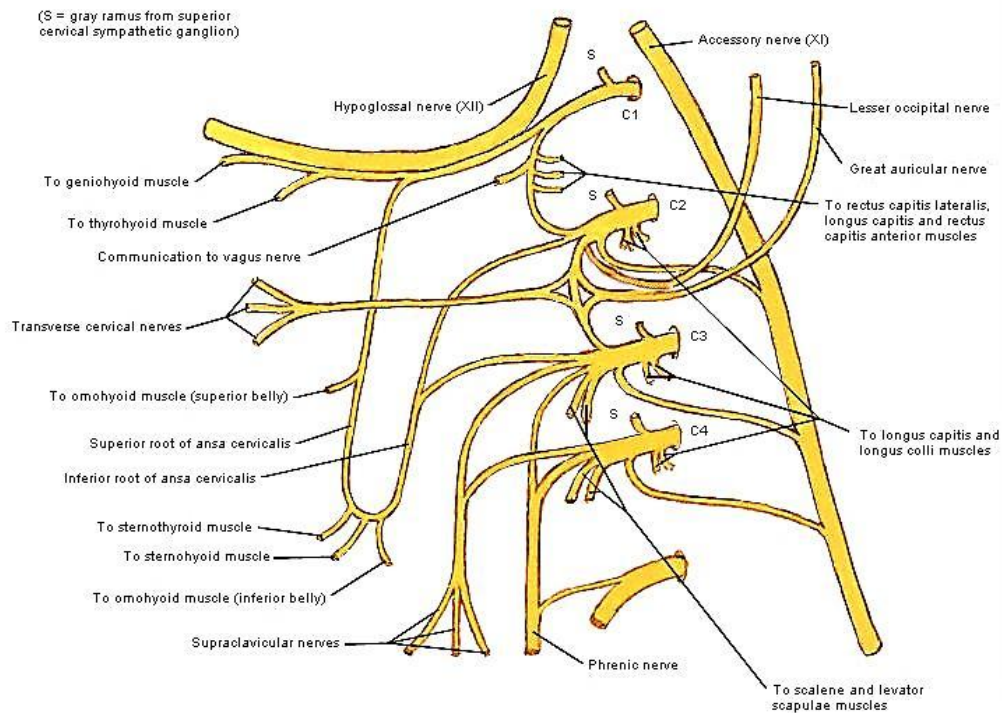
## Ansa cervicalis

It is a thin loop of nerve contains fibers from ventral rami of the C1, C2, and C3 cervical nerves. It is embedded in the anterior wall of the carotid sheath, and supplies the infrahyoid muscles [omohyoid, sternohyoid, and sternothyroid muscles].

### **Formation**

1. The superior root [descending branch of the hypoglossal nerve]: it is a branch from hypoglossal nerve, contain fibers from ventral ramus of the C1, and descends on the internal and common carotid arteries.

2. Inferior root [descending cervical nerve]: it arises from ventral rami of the C2 and C3 behind the internal jugular vein. It curved forward, on the lateral surface of this vein, runs on the common carotid artery and here it joins the superior root [at level of lower part of larynx] to form a loop called the ansa cervicalis.



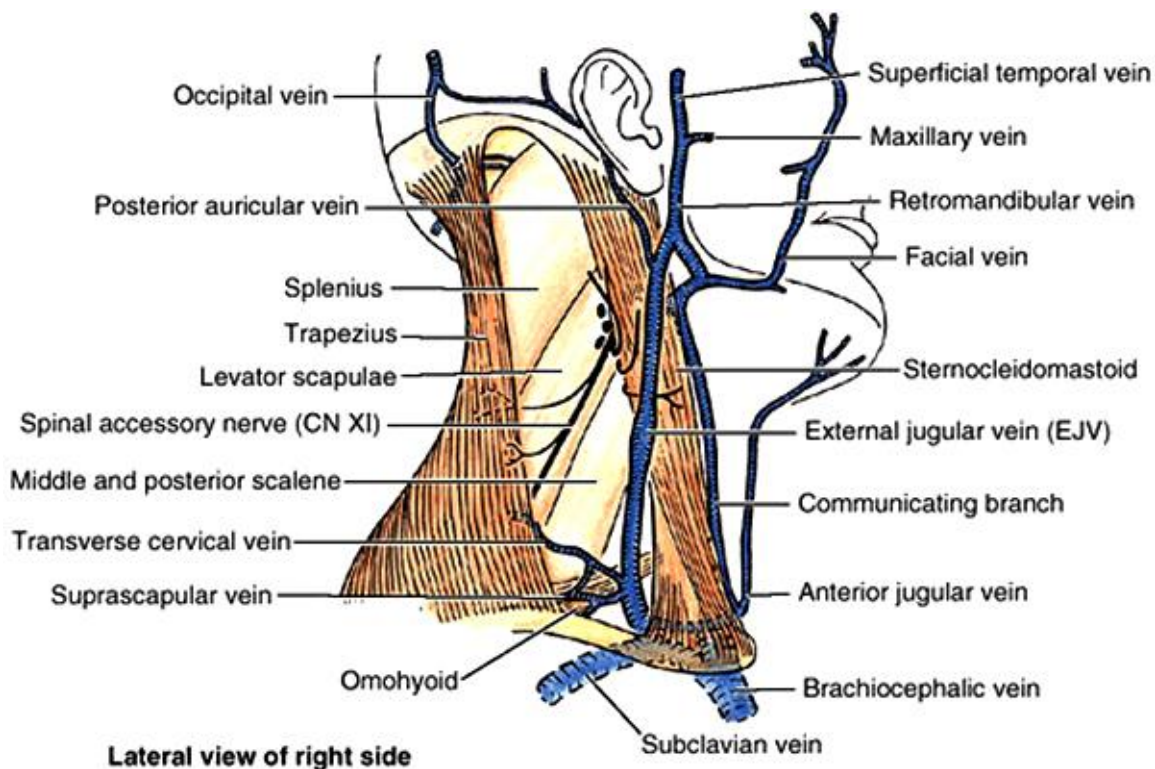
### External jugular vein

It begins behind the angle of the mandible by the union of the posterior auricular vein and the posterior division of the retromandibular vein. It descends obliquely across the sternocleidomastoid [in the superficial fascia] to reach the posterior triangle.

In the posterior triangle, it descends beside the sternocleidomastoid and pierces the deep fascia 2-3 cm above the clavicle to enter the subclavian vein behind the clavicle.

Tributaries:

1. Posterior auricular vein.
2. Posterior division of the retromandibular vein.
3. Transverse cervical vein.
4. Suprascapular vein.
5. Posterior external jugular vein: small vein that's drains the posterior part of the scalp and neck.
6. Anterior jugular vein: it is small vein formed just below the chin by union of several small veins. It runs down the neck [1cm] from the midline and about [2cm] above the sternum, it pierces the deep fascia and enters the suprasternal space. In the suprasternal space, it is connected to its fellow of the opposite side by the transverse trunk called the jugular arch. The vein then turns sharply laterally and passes deep to the sternocleidomastoid to drain into the external jugular vein.



## **Sternocleidomastoid**

### Origin:

- Sternal head arises from upper part of the manubrium sterni.
- Clavicular head arises from the medial third of the superior surface of clavicle.

### Insertion

The two heads join one another and the muscle is inserted into the mastoid process of the temporal bone and the lateral part of the superior nuchal line of the occipital bone.

### Nerve supply

- Spinal accessory nerve [motor].
- Branches from cervical plexus C2, C3 [sensory].

### Action

- When one muscle contract: it turns the face to the opposite side and also pulls the ear down to the tip of the shoulder on the same side.
- When both muscles contract together : it extend the head at the atlanto-occipital joint and flex the cervical part of the vertebral column

**The infrahyoid muscles**: are the chief contents of the muscular triangle, and arranged in two layers

- Superficial [sternohyoid and omohyoid]
- Deep [thyrohyoid and sternothyroid]

### **Sternohyoid**

Origin: posterior surface of the manubrium sterni.

Insertion: the muscle runs upward and is inserted into the lower border of the body of the hyoid bone.

Nerve supply: ansa cervicalis.

Action: depress the hyoid bone.

### **The omohyoid**

It has an inferior belly, an intermediate tendon, and a superior belly.

Origin and insertion:

The inferior belly arises from the upper margin of the scapula and the suprascapular ligament. It passes upward and forward across the lower part of the posterior triangle of the neck then it passes deep to the Sternocleidomastoid to end in the intermediate tendon.

The intermediate tendon is held in position by a loop of deep fascia that slings the tendon to the clavicle and the first rib.

*The superior belly* ascends vertically in the anterior triangle of the neck and is inserted into the lower border of the body of the hyoid bone.

Nerve supply: ansa cervicalis.

Action: depress the hyoid bone.

### **Sternthyroid**

Origin: posterior surface of the manubrium sterni.

Insertion: the muscle runs upward deep to sternohyoid, covering the lateral lobe of the thyroid gland. It is inserted into the oblique line on the lamina of the thyroid cartilage.

Nerve supply: ansa cervicalis.

Action: depress the larynx.

### **Thyrohyoid**

Origin: from the oblique line on the lamina of the thyroid cartilage.

Insertion: the muscle runs upward over the thyrohyoid membrane and is inserted into the lower border of the body of the hyoid bone.

Nerve supply: the first cervical nerve via a branch of the hypoglossal nerve.

Action: depress the hyoid bone or elevates the larynx.

