

## NECK Part II

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I. **TRIANGLES OF NECK** - for purposes of description and location of structures, neck is divided by Sternocleidomastoid muscle into an **Anterior triangle** (anterior to muscle) containing structures related to Carotid arteries and a **Posterior triangle** (posterior to muscle), containing structures related to Subclavian artery, Cervical and Brachial Plexuses.

### A. Posterior triangle

1. Boundaries: Anterior: Sternocleidomastoid; Posterior: Trapezius; Inferior: Clavicle; Superficial cover: Superficial fascia, Platysma and Investing layer; Floor: covered by Prevertebral layer of deep fascia.

2. Contents - Arteries: Subclavian artery, Superficial (Transverse) Cervical and Suprascapular arteries (from Thyrocervical trunk), Occipital artery; Veins: External Jugular vein; Nerves: Roots and Trunks of Brachial plexus, Phrenic nerve, Accessory nerve (CN XI), branches of cervical plexus.

Clinical Note: **Accessory nerve is considered to divide the posterior triangle into a clinically 'careful' zone (inferior) and 'carefree' zone (superior); brachial plexus is in 'careful' zone.** (On the other hand, would a patient want to be operated on by a surgeon who thinks part of the neck is 'carefree'?)

Note: Subclavian vein is not within posterior triangle

### B. Anterior triangle of neck

1. Boundaries: anterior by midline of neck, posterior by Sternomastoid muscle, superiorly by lower margin of Mandible.

2. Contents - Arteries: Carotid sheath with Common Carotid dividing into Internal and External Carotid arteries, numerous branches of External Carotid; Veins: Internal Jugular vein; Nerves: Hypoglossal nerve and descending branch of Ansa Cervicalis, Accessory and Vagus nerves; Lymphatics: Deep Cervical chain of lymph nodes.

## II. DEEP STRUCTURES OF NECK

A. Thyroid gland: Composed of two lateral lobes and a central isthmus, which is located below cricoid cartilage; Lateral lobes cover Common Carotid artery; Pyramidal lobe sometimes present above isthmus; when present, it is connected to the hyoid bone via a fibrous strand (no clinical consequences).

**Pyramidal lobe – is normal variant;** recall that thyroid forms **embryologically as a mass in tongue** that migrates to neck; thyroid tissue can be found along the path of migration.

1. Arterial supply: Gland is very vascular.

a. Superior Thyroid artery (from External Carotid Artery) - accompanied by Superior Laryngeal nerve.

b. Inferior Thyroid artery (branch of Thyrocervical trunk); Inferior Thyroid artery courses near Recurrent Laryngeal nerves (located in groove between trachea and esophagus).

Clinical Note: **Care must be taken during thyroid surgery not to damage Recurrent Laryngeal nerves when ligating Inferior Thyroid artery**; can paralyze all muscles of larynx on one side (except Cricothyroid muscle); patient has only hoarse voice or whisper.

2. Veins: Superior Thyroid veins follows arteries; Middle Thyroid vein; both veins drain into Internal Jugular vein; Inferior Thyroid vein - Left and right veins can join together and enter Left Brachiocephalic vein.

Clinical Note: **Inferior Thyroid veins course anterior to trachea; if large, can cause extensive bleeding in Tracheotomy** (emergency access to trachea; this is avoided by Cricothyrotomy: see Larynx lecture).

3. Parathyroid glands - 4 very small bodies located posterior to thyroid gland or within gland; position very variable.

B. Sympathetic trunk - there are three cervical ganglia (Superior, Middle, Inferior); all 3 ganglia send gray rami to cervical spinal nerves. Most of head and neck is supplied by Superior Cervical ganglion; Superior Cervical ganglion sends postganglionic fibers via unnamed branches (e.g., joy to medical students) to form a plexus on Carotid arteries and their arterial branches.

C. Thoracic duct at root of neck - follows left margin of esophagus, enters Left Brachiocephalic vein (at junction of Internal Jugular and Subclavian veins)

D. Recurrent laryngeal nerve - Right recurrent laryngeal nerve courses under Subclavian artery; Left recurrent laryngeal under Aorta; both ascend in groove between trachea and esophagus.