



Al-Mustaqbal University

College of Engineering & Technology

Biomedical Engineering Department

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2nd Class, Second Semester

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Lecture No.: -5

Lecture Title: [Pharynx / Thyroid

gland /Trachea / Esophagus]



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ANATOMY/ 2nd Stage

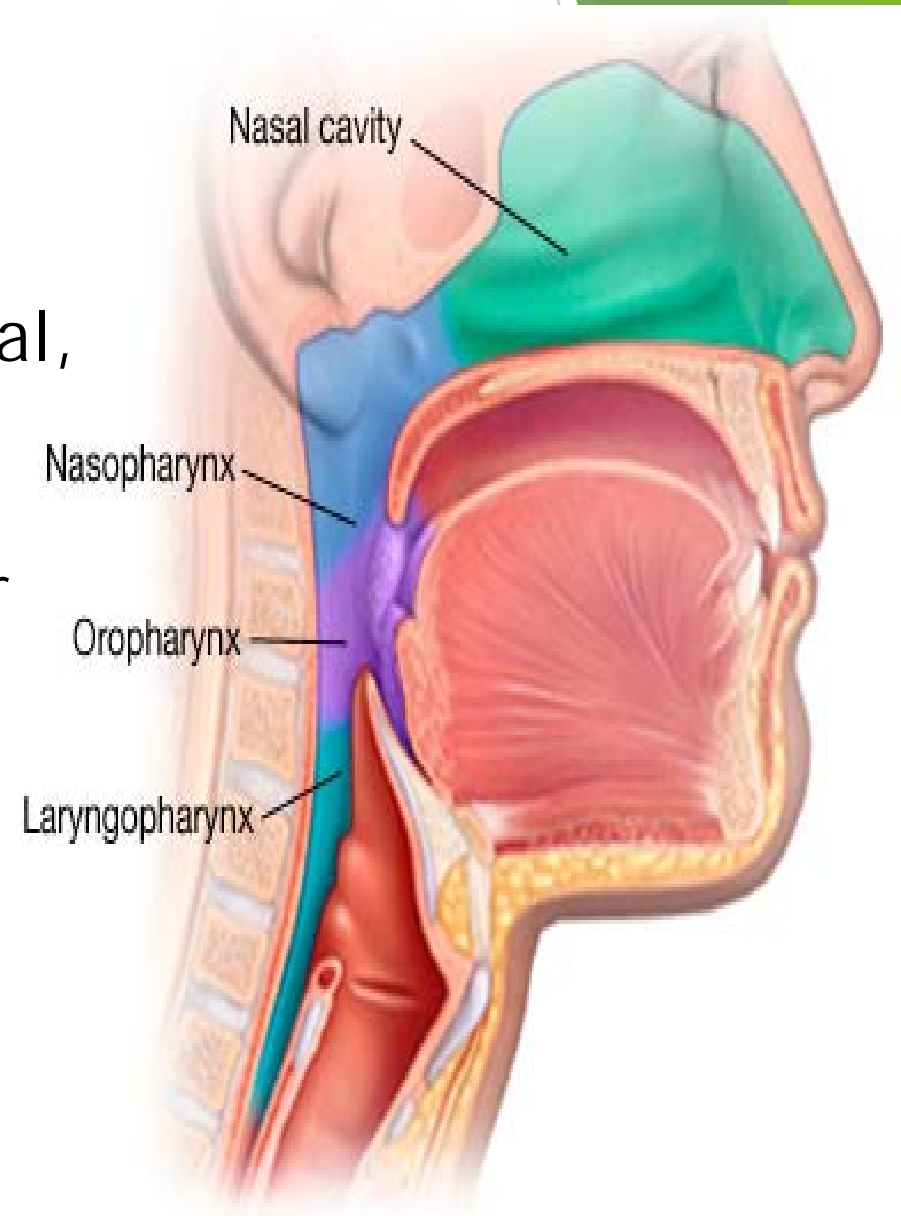
Head and Neck

Lec.5

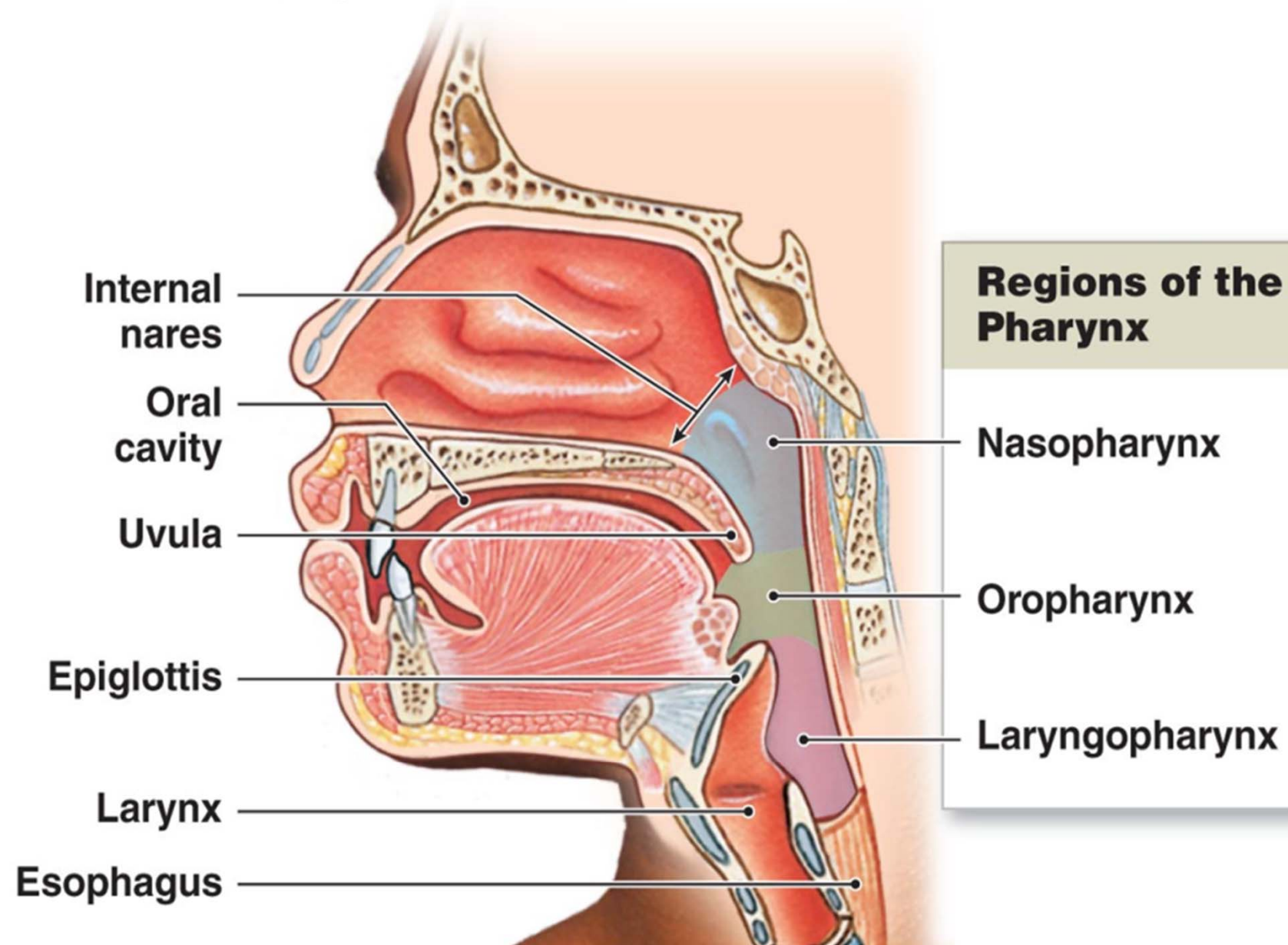
(Pharynx, Thyroid gland, Trachea,
Esophagus)

Pharynx

- * Muscular tube lying behind the nose, oral cavity and larynx.
- * It may be divided into nasal, oral, and laryngeal parts.
- * Its upper, wider end lying under the skull.
- * Its lower, narrow end becoming continuous with the esophagus opposite to the sixth cervical vertebra.



**The pharynx, a common passageway
for solid food, liquids, and air**



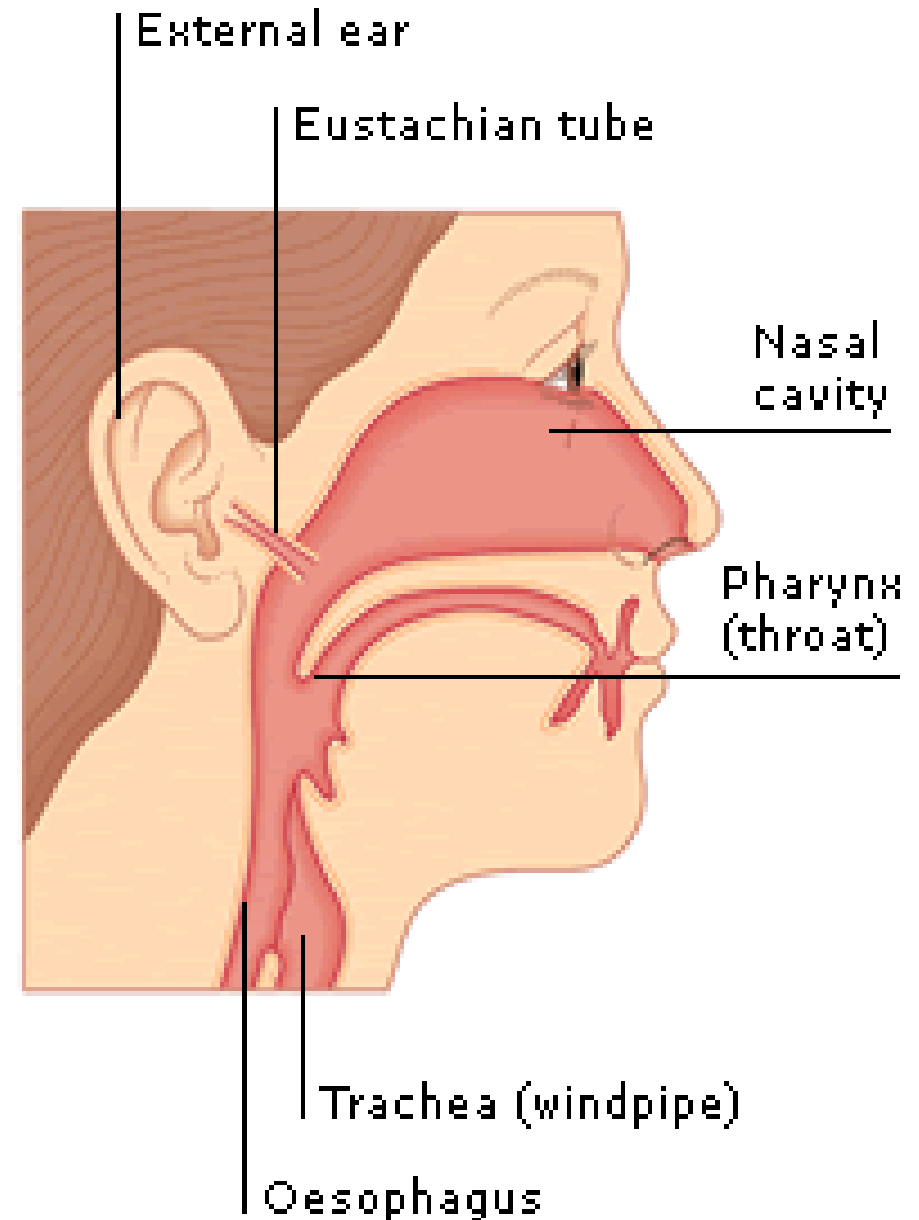
* The pharynx has a musculomembranous wall, which is deficient anteriorly it is replaced by:

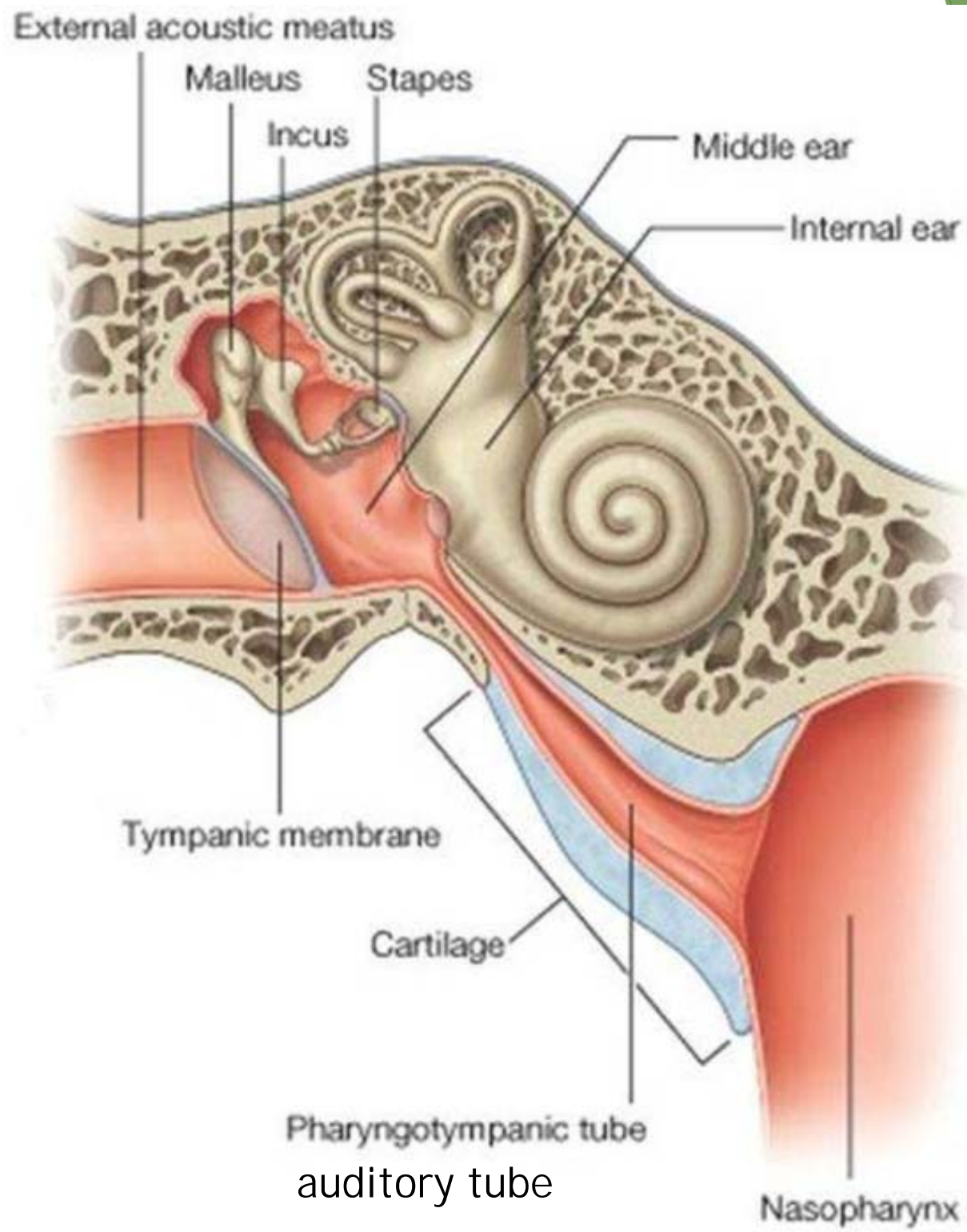
1-Posterior openings into the nose.

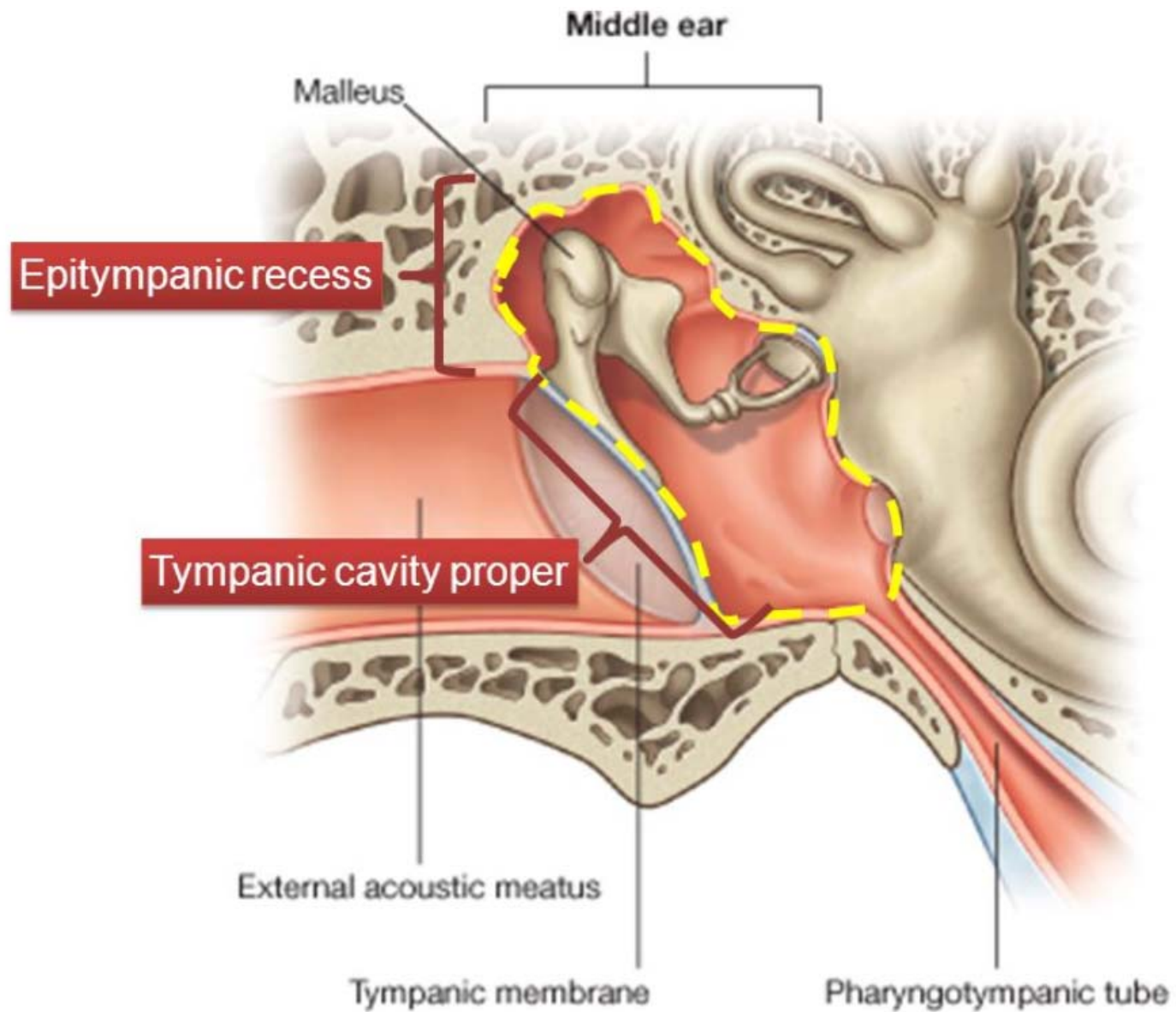
2-Opening into the mouth.

3-Inlet of the larynx.

* By means of the auditory tube (pharyngotympanic tube), the mucous membrane is also continuous with that of the tympanic cavity





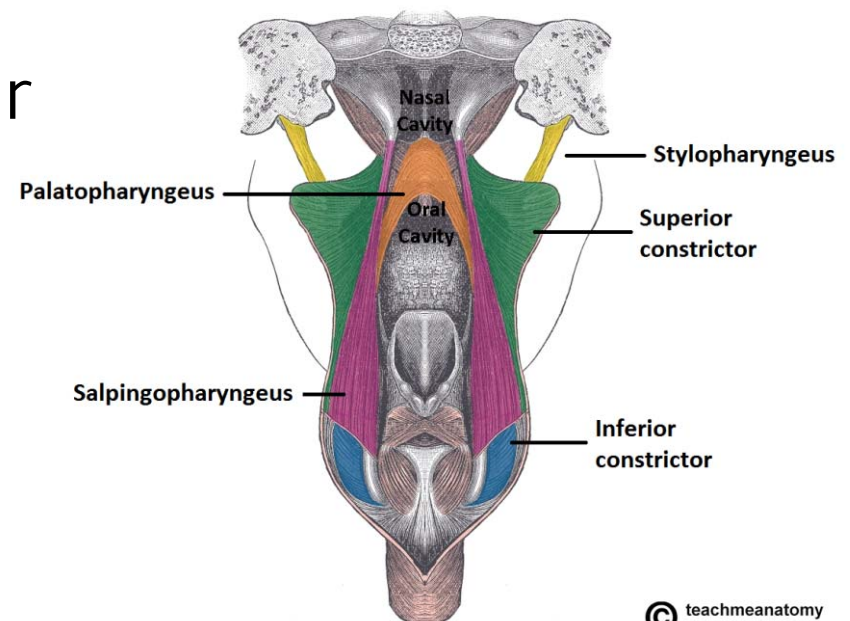
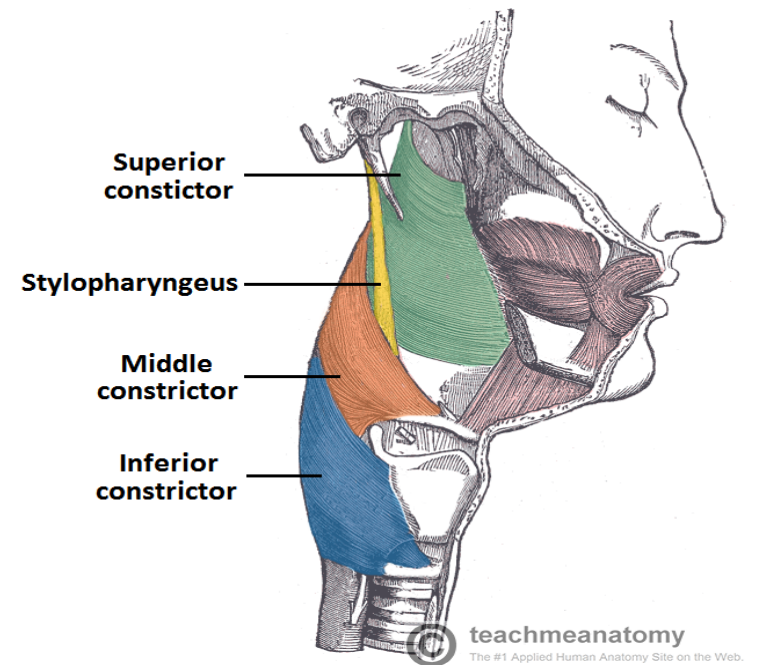


Muscles of the Pharynx

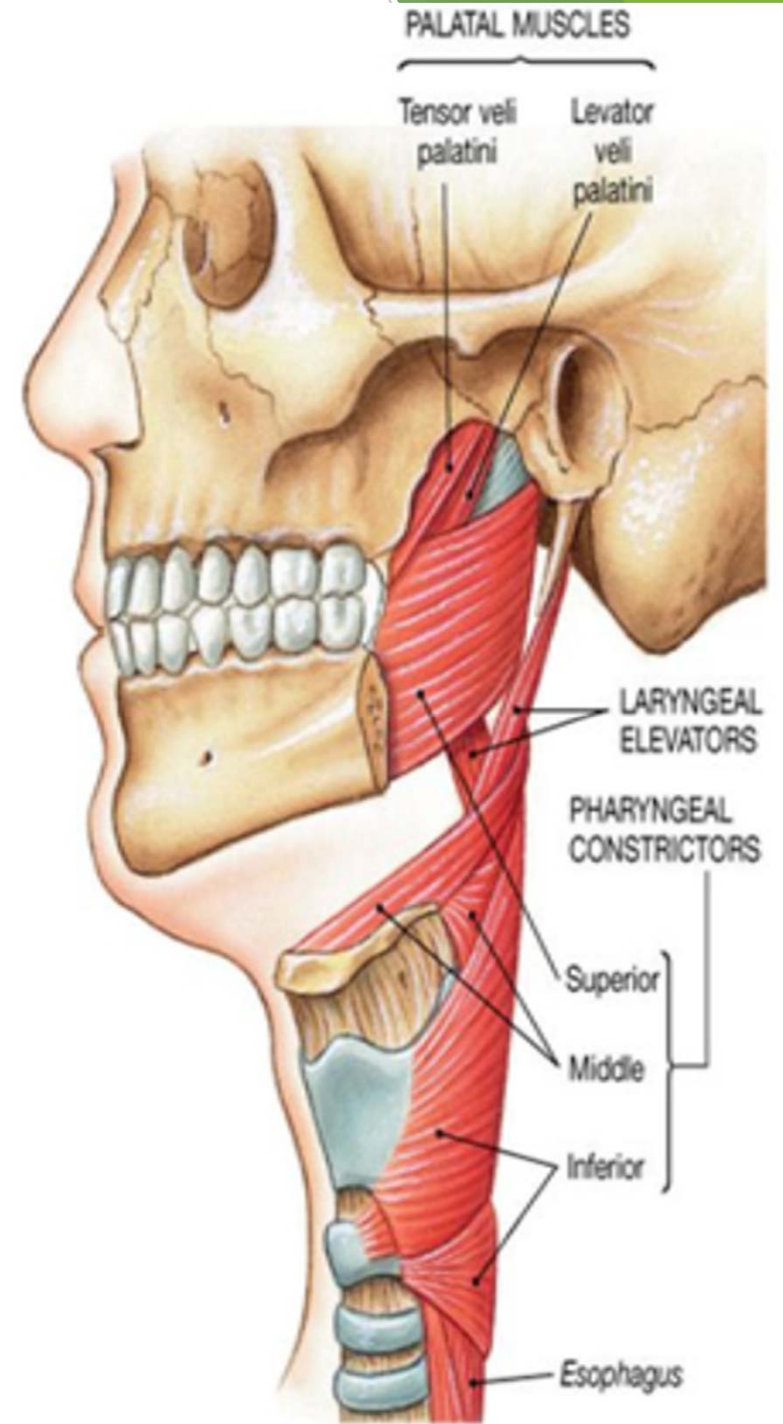
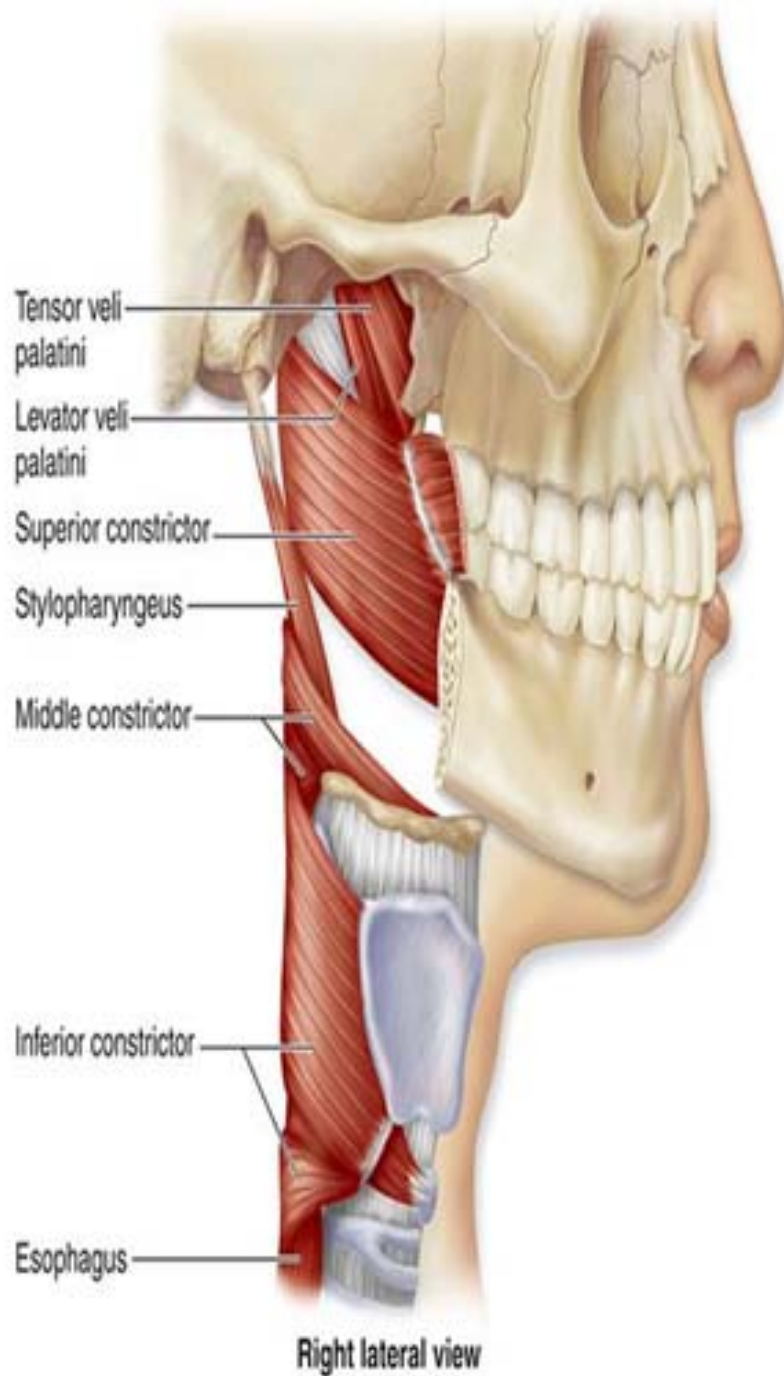
Wall of the pharynx consist of the:

- * Superior, middle, and inferior constrictor muscles, fibers of these muscles run in a somewhat circular direction

- * Stylopharyngeus and Salpingopharyngeus muscles, their fibers run in a somewhat longitudinal direction



Muscles of the Pharynx



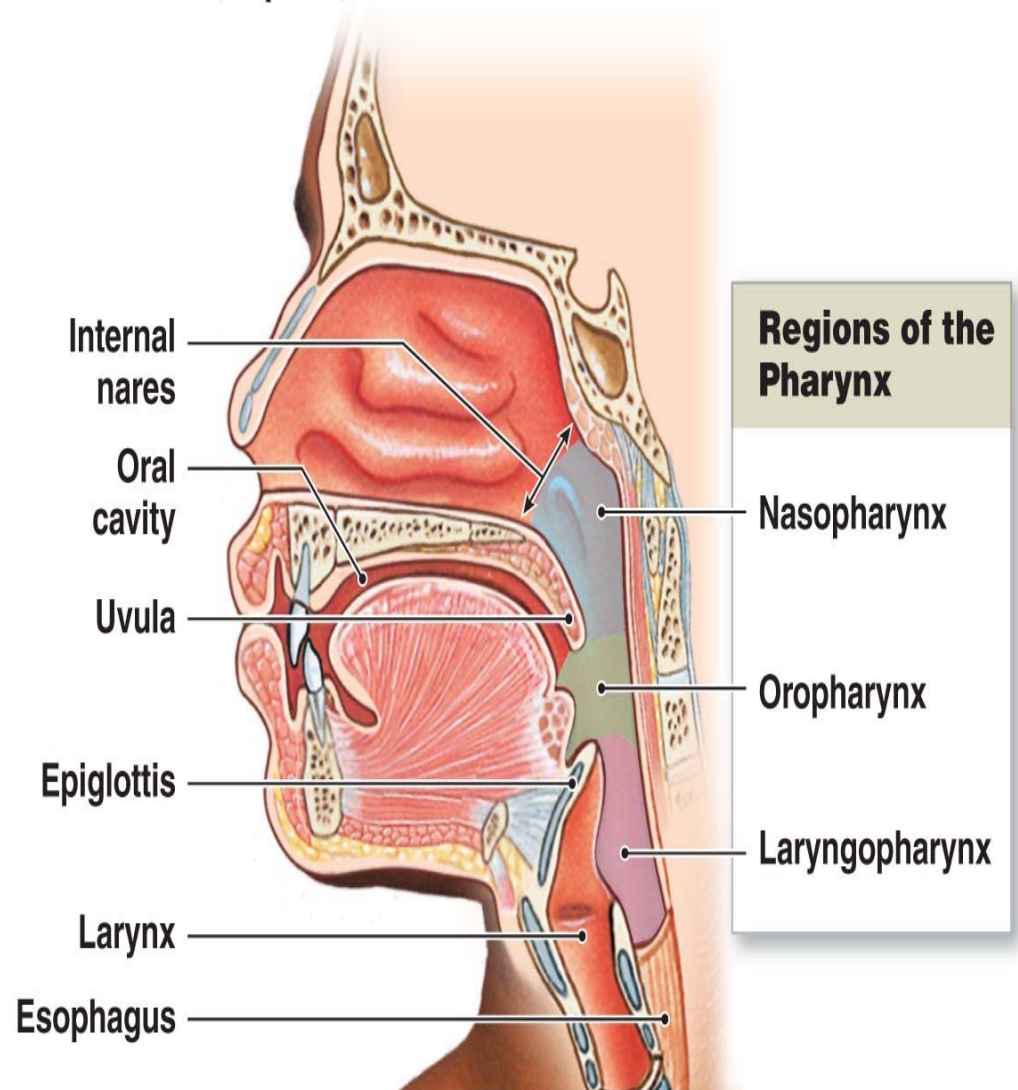
The Pharynx is divided into three parts:

1-Nasal Pharynx.

2-Oral Pharynx.

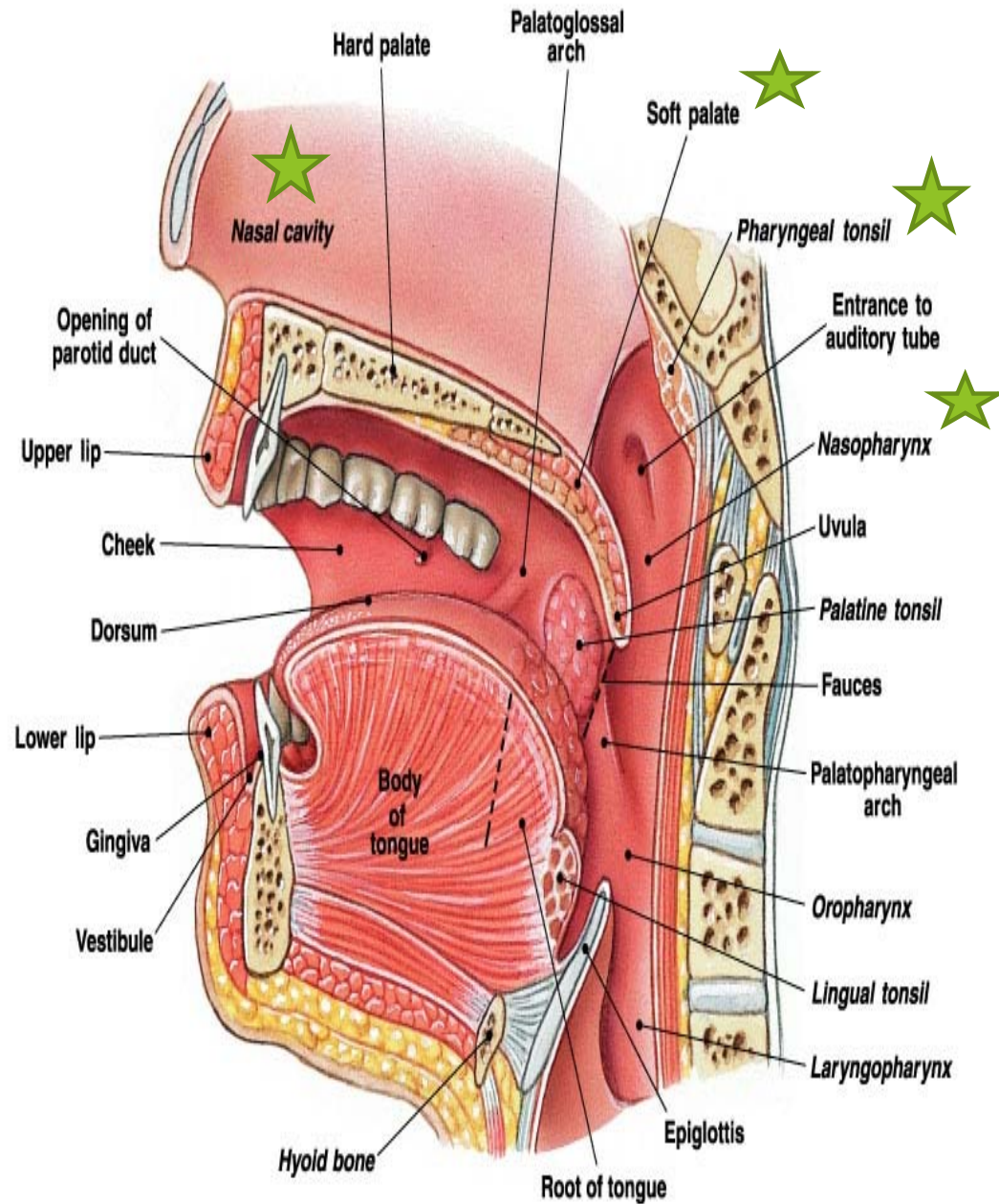
3-Laryngeal Pharynx.

The pharynx, a common passageway for solid food, liquids, and air



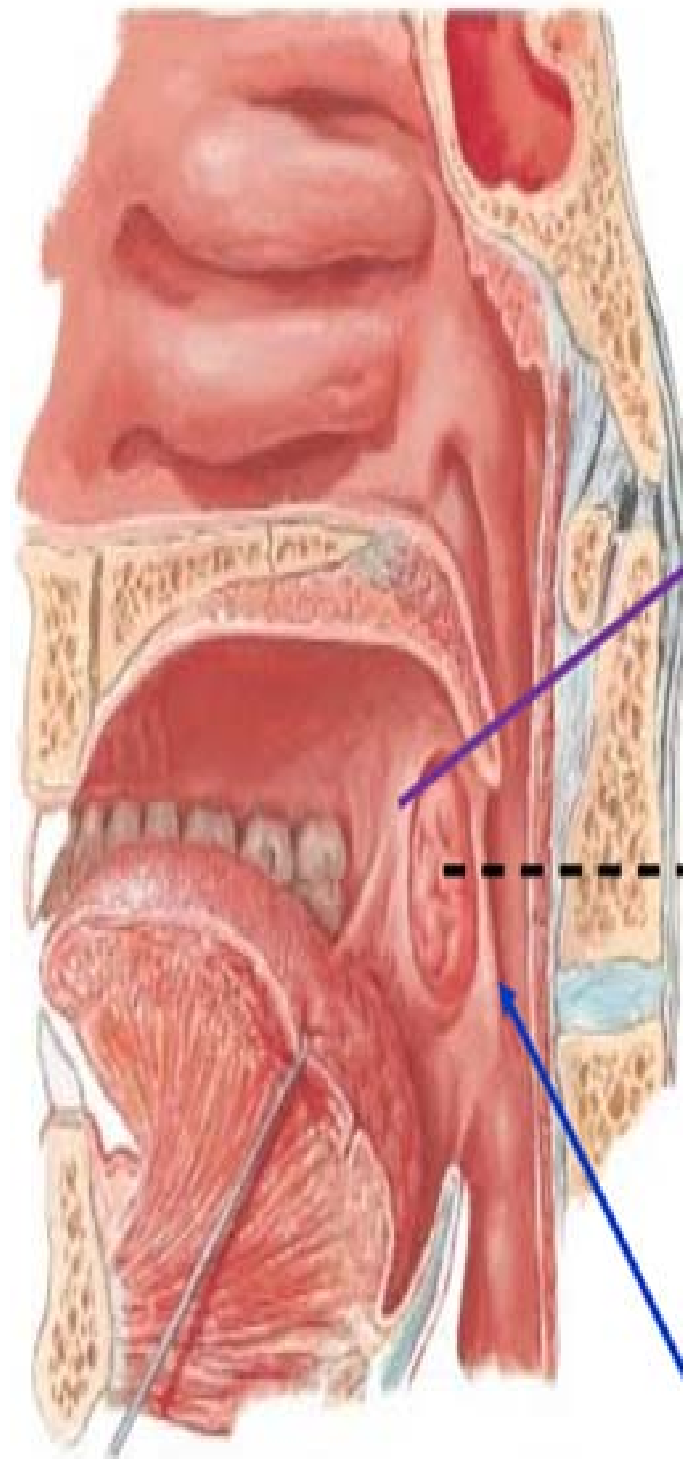
Nasal Pharynx

- * This lies above the soft palate and behind the nasal cavity
- * At the roof there is a collection of lymphoid tissue called the pharyngeal tonsil
- * On the lateral wall is the opening of the auditory tube.



Oral Pharynx

- * This lies behind the oral cavity
- * Laterally on each side are the **Palatoglossal** and **Palatopharyngeal folds** and the Palatine tonsils between them.



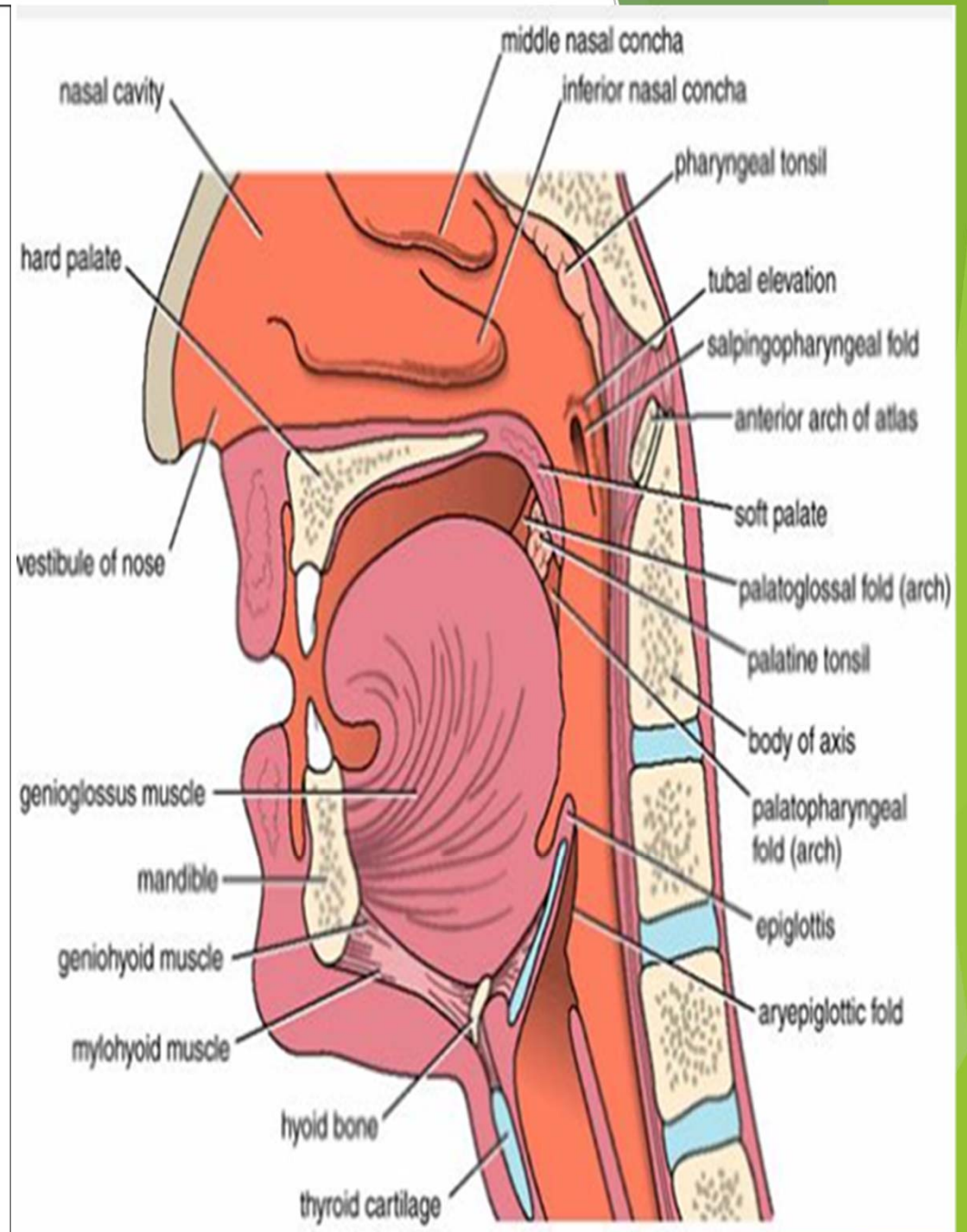
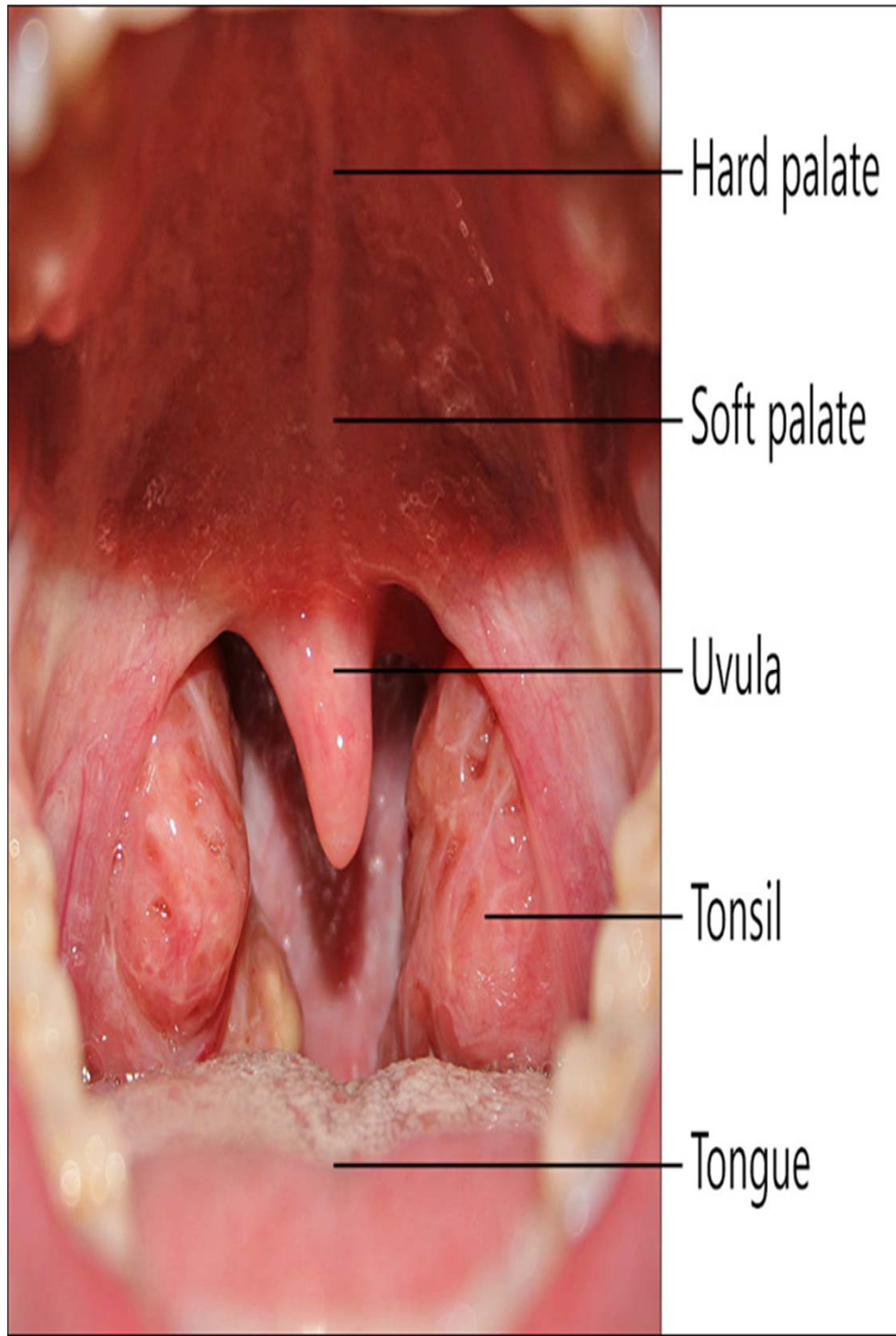
Laterally, the soft palate is Continuous with the wall of the pharynx

Palatoglossal Fold

Palatine Tonsil

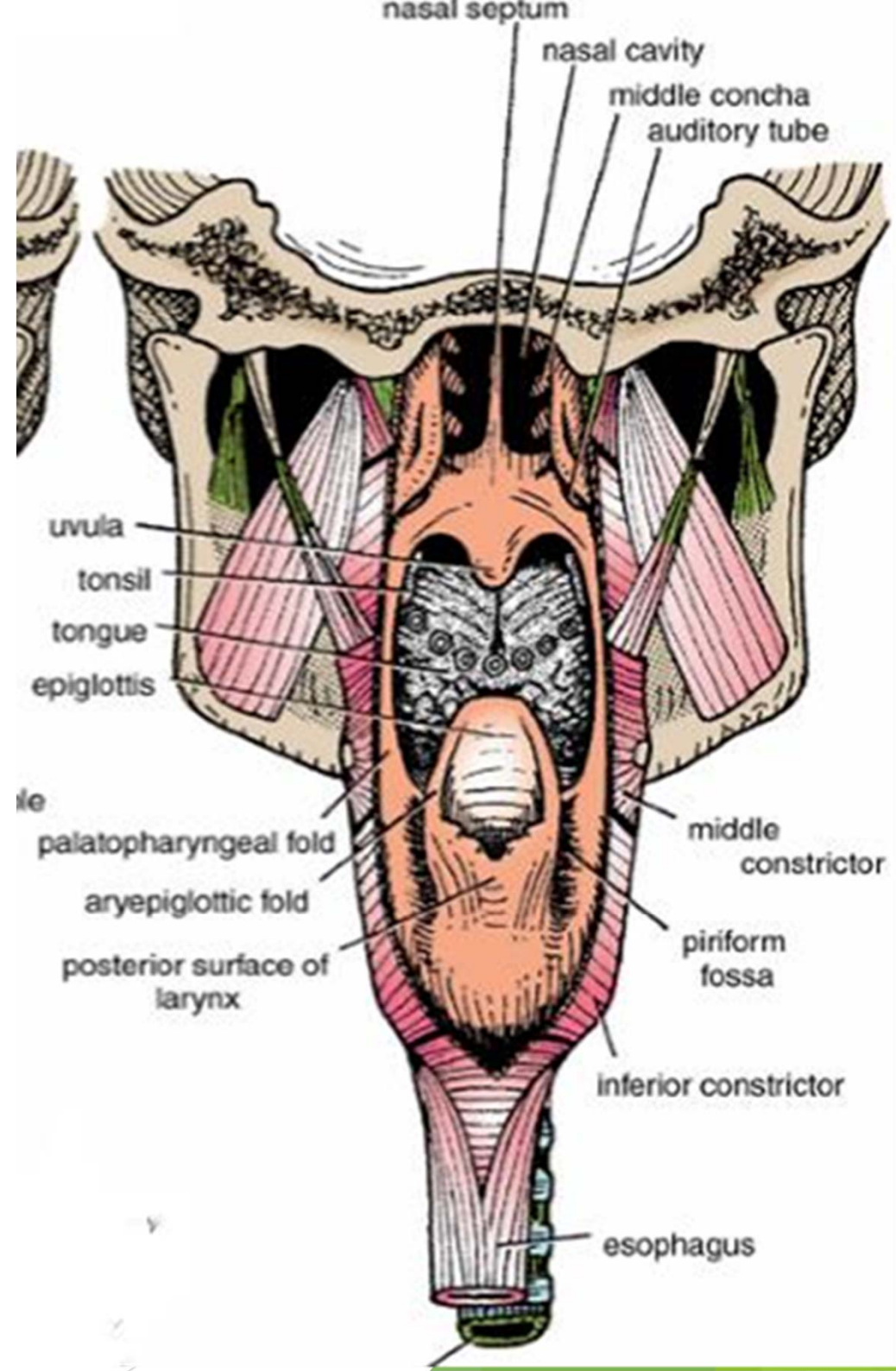
Consists of lymphocytes that invade the 2nd endodermal pouch

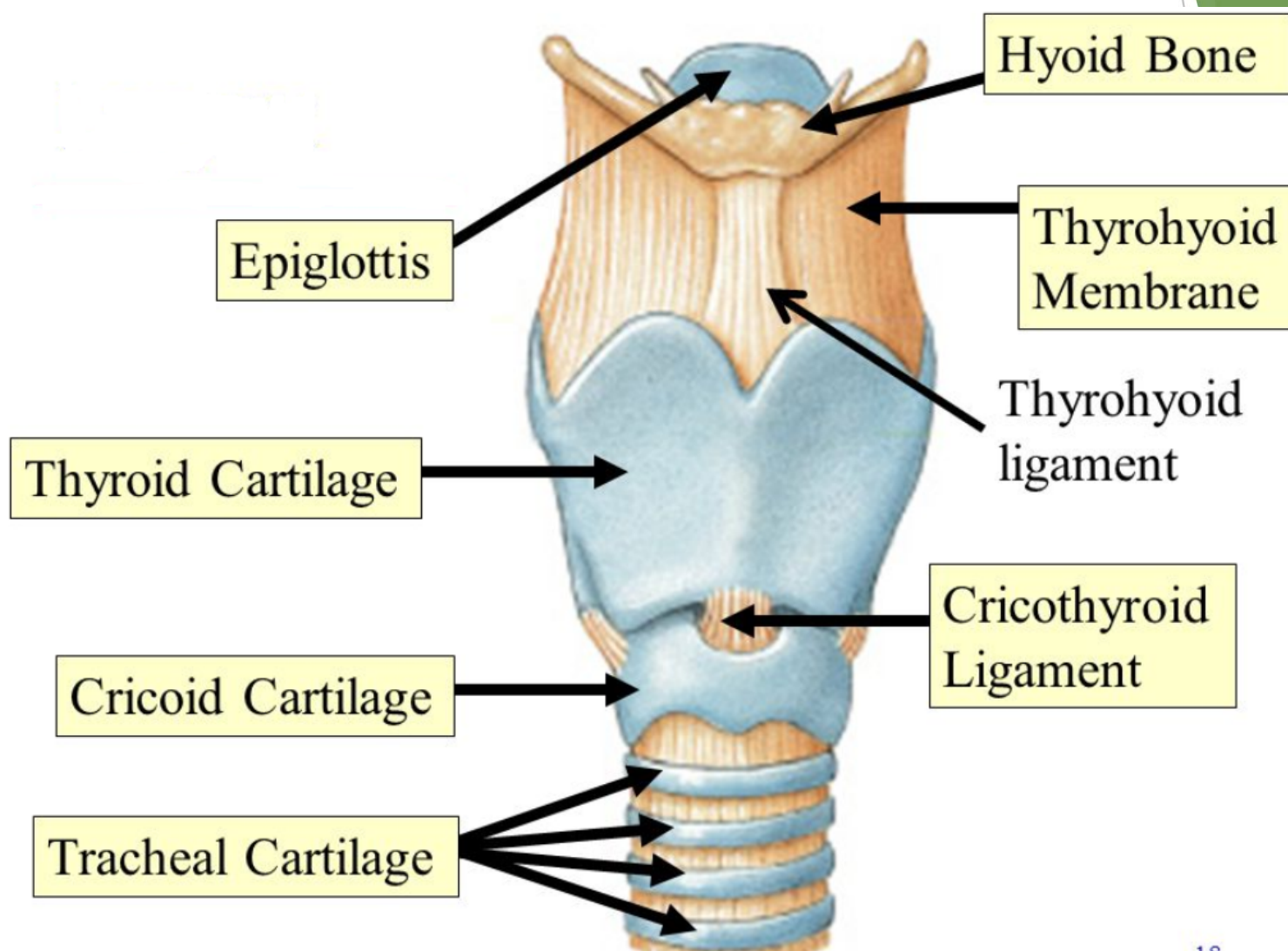
Palatopharyngeal Fold

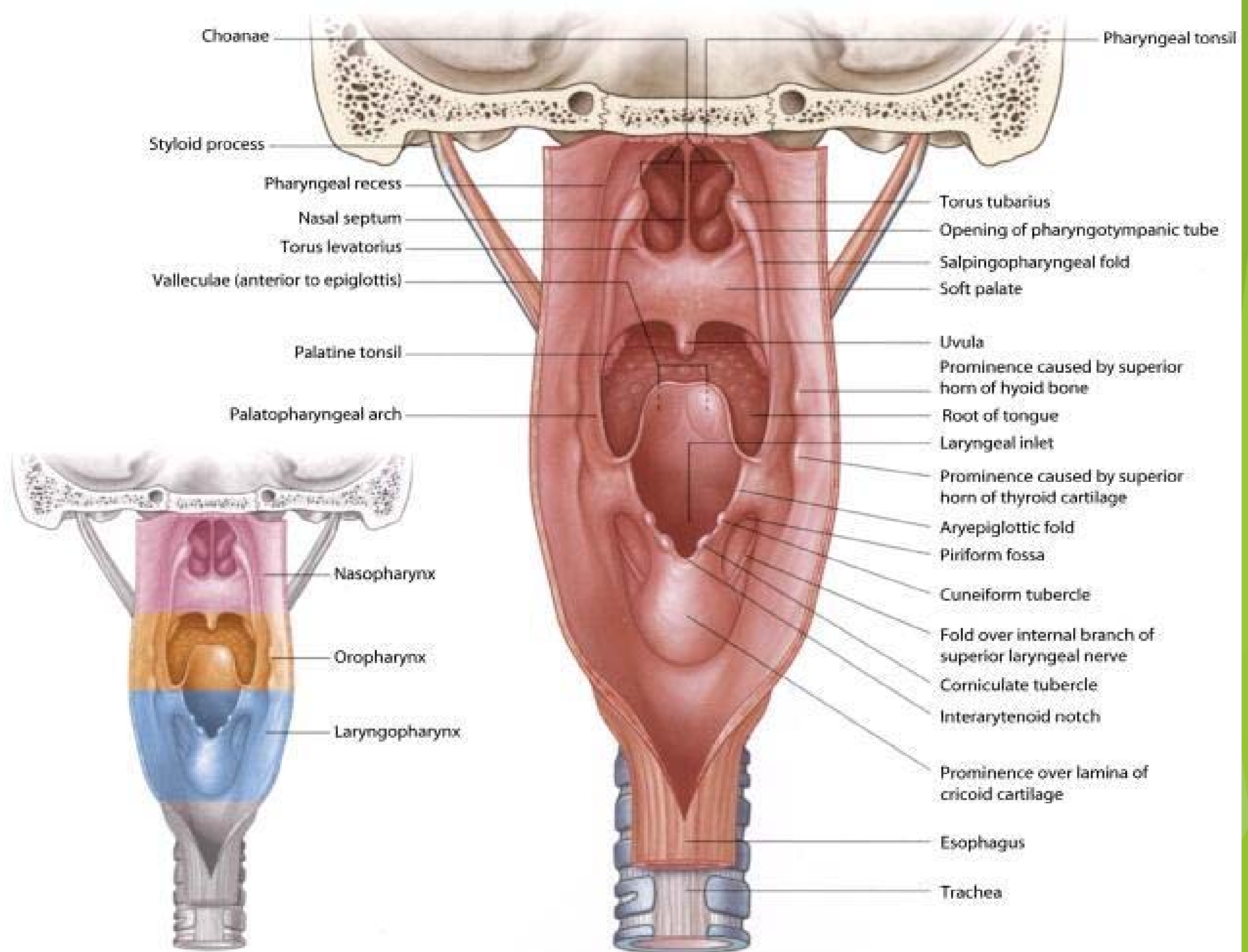


Laryngeal Pharynx

- * This **lies behind** the opening into the larynx
- * **The lateral wall** is formed by the thyroid cartilage and the thyrohyoid membrane
- * **The piriform fossa** is a depression in the mucous membrane on each side of the laryngeal inlet





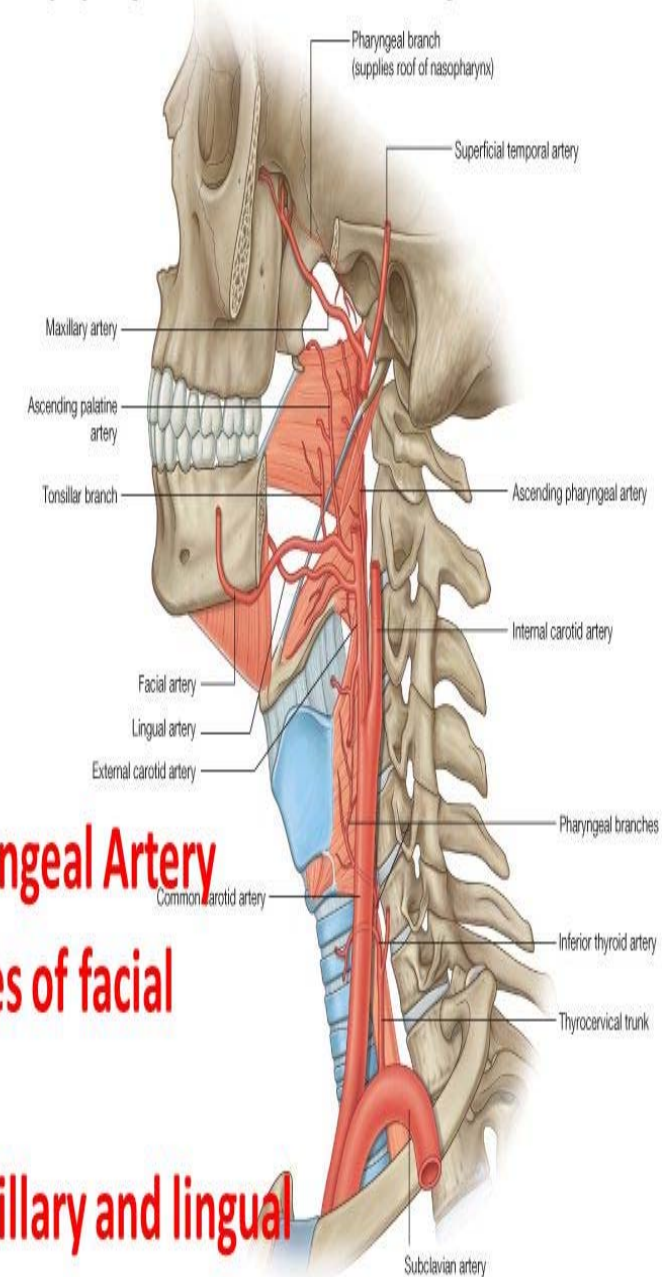


Features of the pharynx
(posterior view with the pharyngeal wall opened)

Blood Supply of the Pharynx

- 1-Ascending pharyngeal artery.
- 2-Tonsillar branches of facial arteries.
- 3-Branches of maxillary and lingual arteries.

Blood Supply of the Pharynx



Ascending pharyngeal Artery

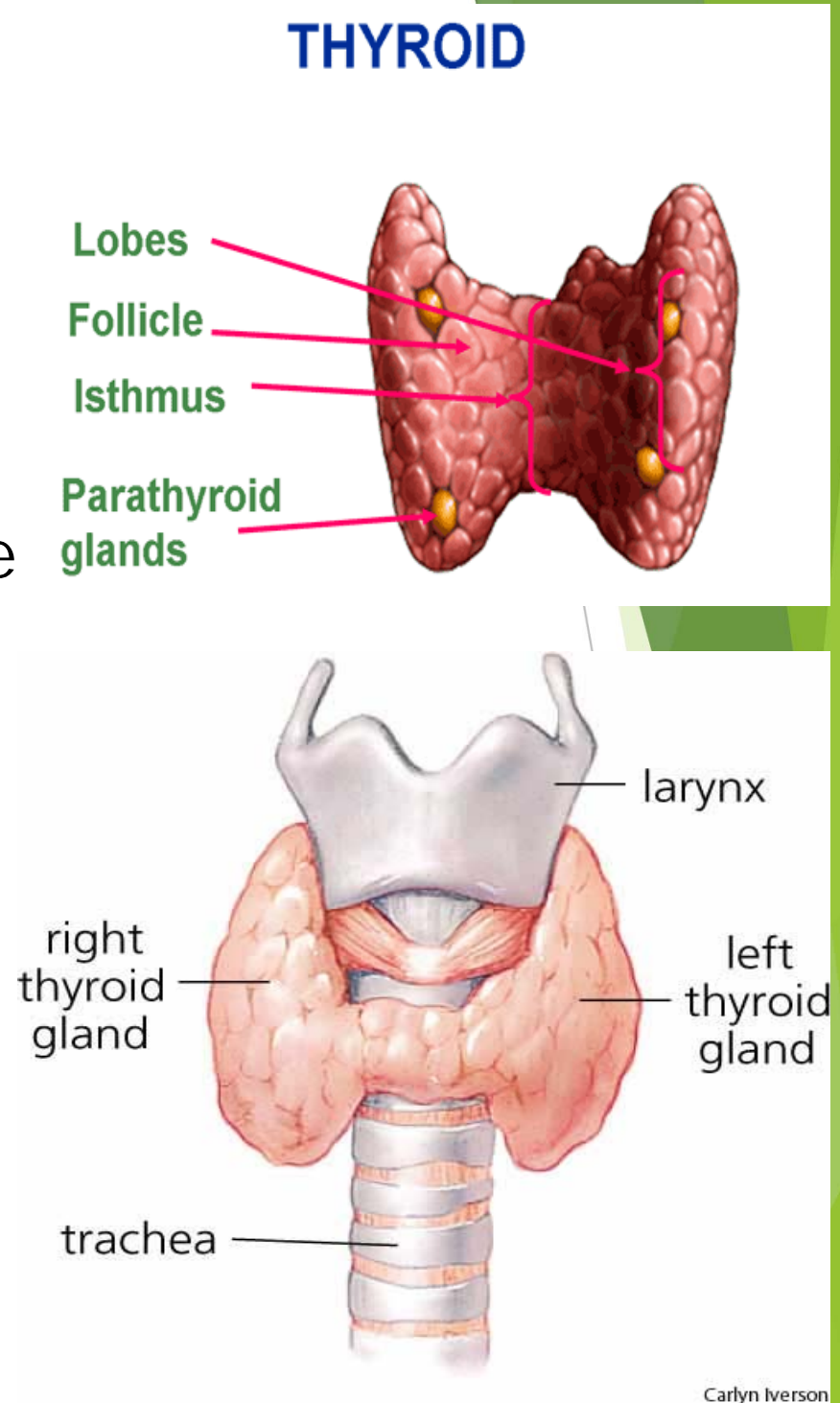
Tonsillar branches of facial arteries

Branches of maxillary and lingual arteries

Thyroid Gland

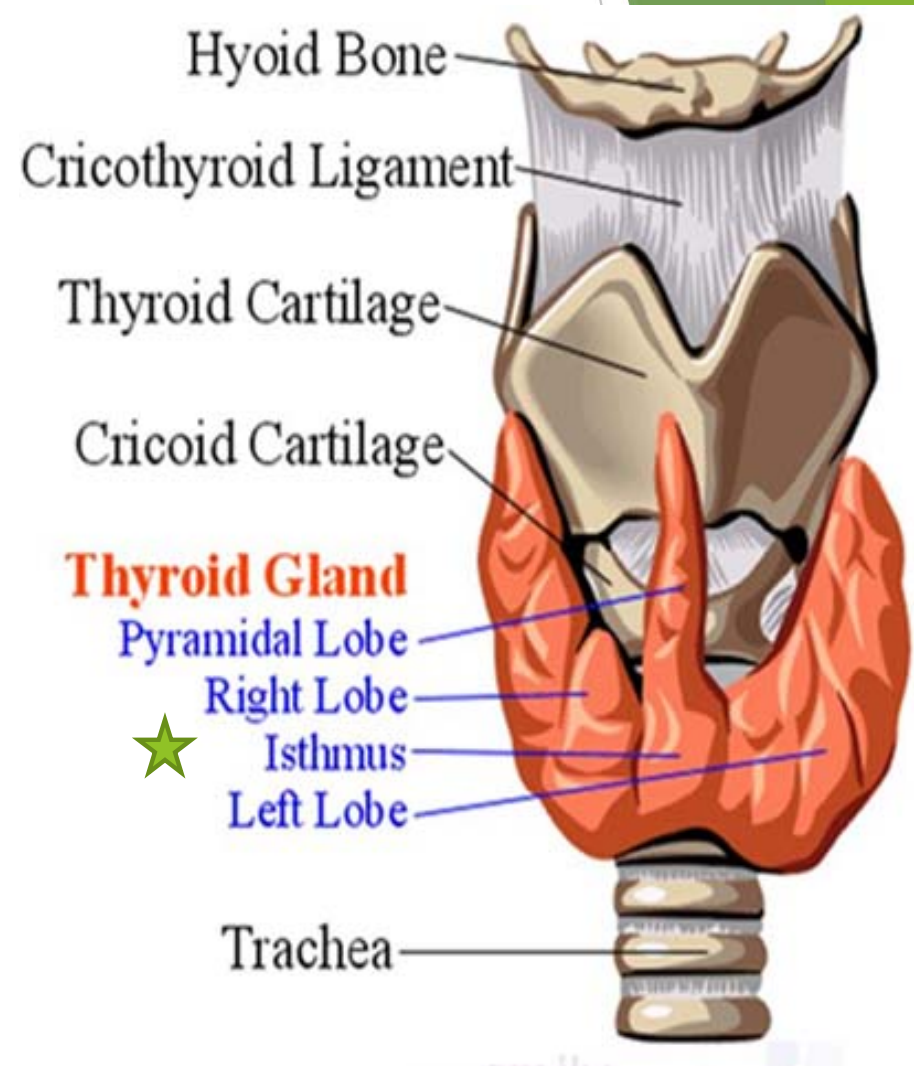
* The thyroid gland, is one of the largest endocrine glands in the body, and consists of two connected lobes. It is found in the neck, **below the laryngeal prominence (Adam's apple)**.

* The two lobes (left and right) connected by a thin, median isthmus overlying the 2nd to 4th tracheal rings.



* Each lobe is pyramidal in shape, with its apex directed upward and its base directed downward. The isthmus is the narrow part of the gland connecting the two lobes.

* A small pyramidal lobe projecting upward from the isthmus is often present on the left of the midline.



Relations of the Lobes

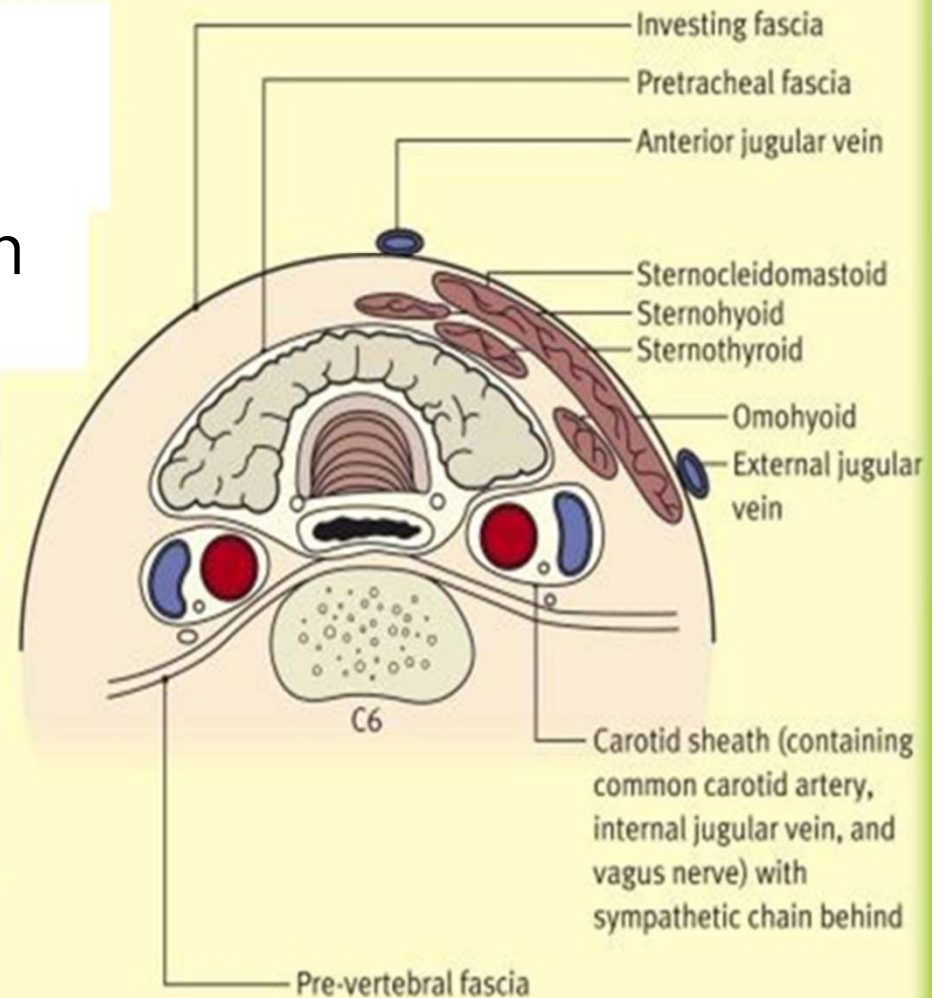
Anterolateral:

1. sternothyroid M.
2. superior belly of the omohyoid M.
3. sternohyoid M.
4. sternocleidomastoid M.

Posterolaterally:

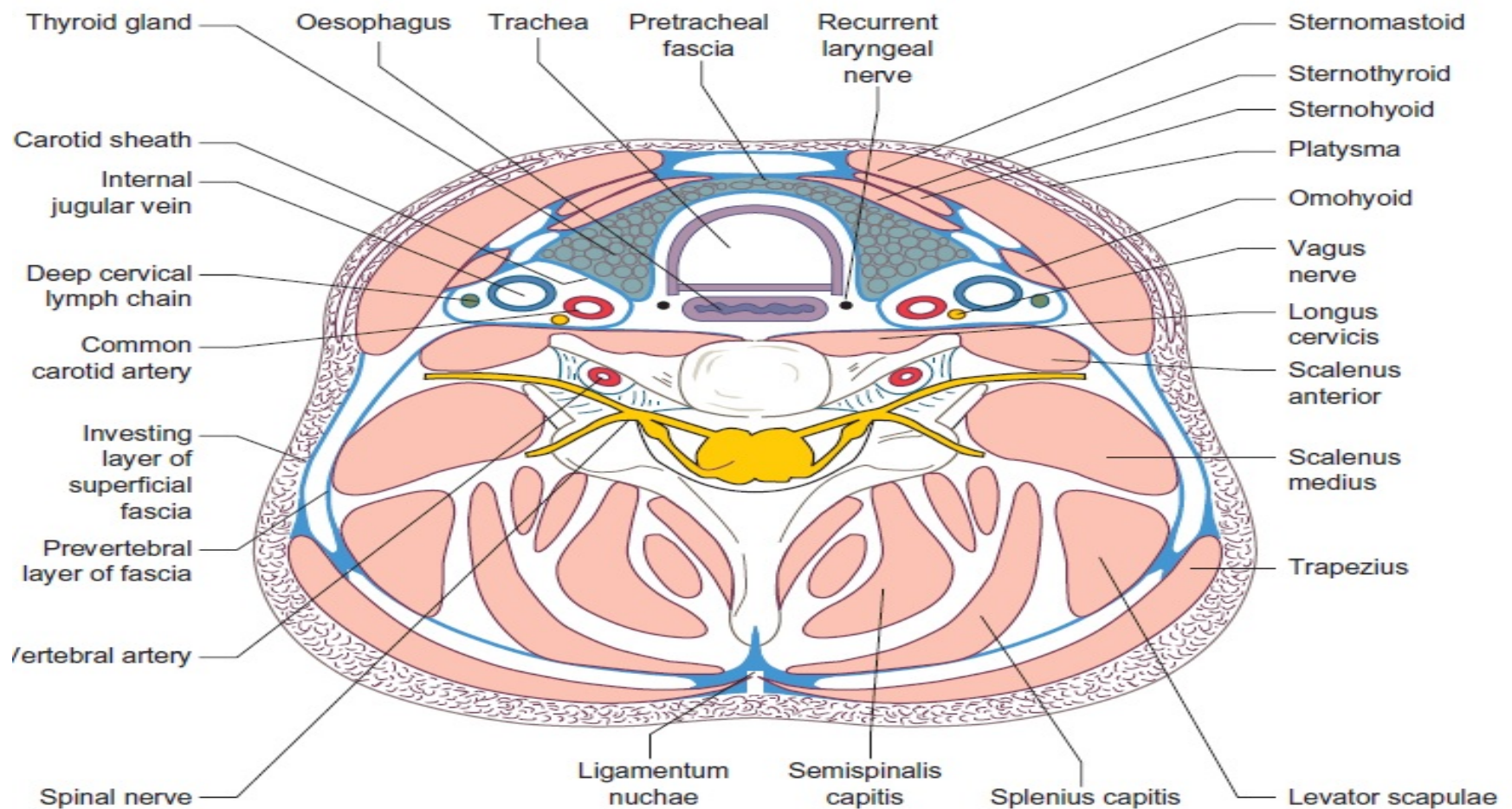
The carotid sheath with the common carotid artery, the internal jugular vein, and the vagus nerve.

Transverse section of the neck through C6



Medially:

1. larynx,
2. trachea,
3. pharynx,
4. esophagus.
5. In the groove between the esophagus and the trachea is the recurrent laryngeal nerve.



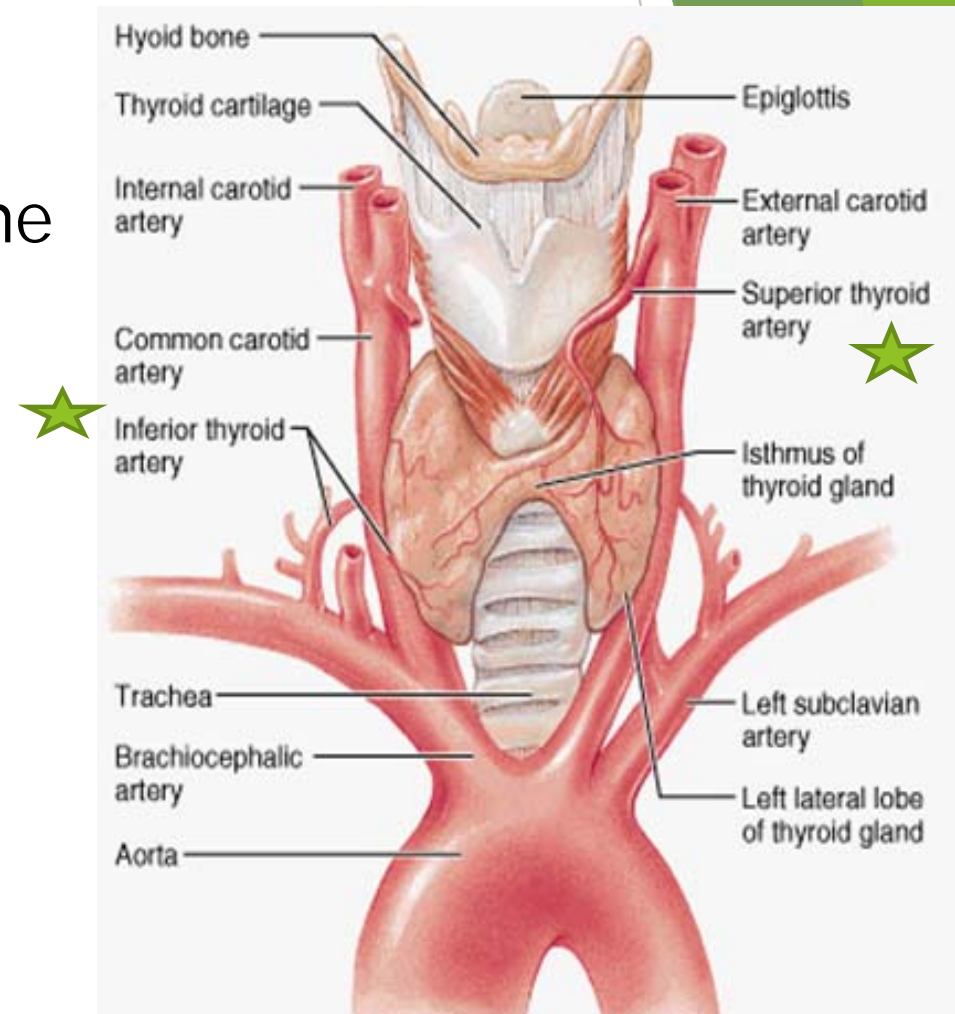
Blood Supply of thyroid gland

The superior thyroid artery

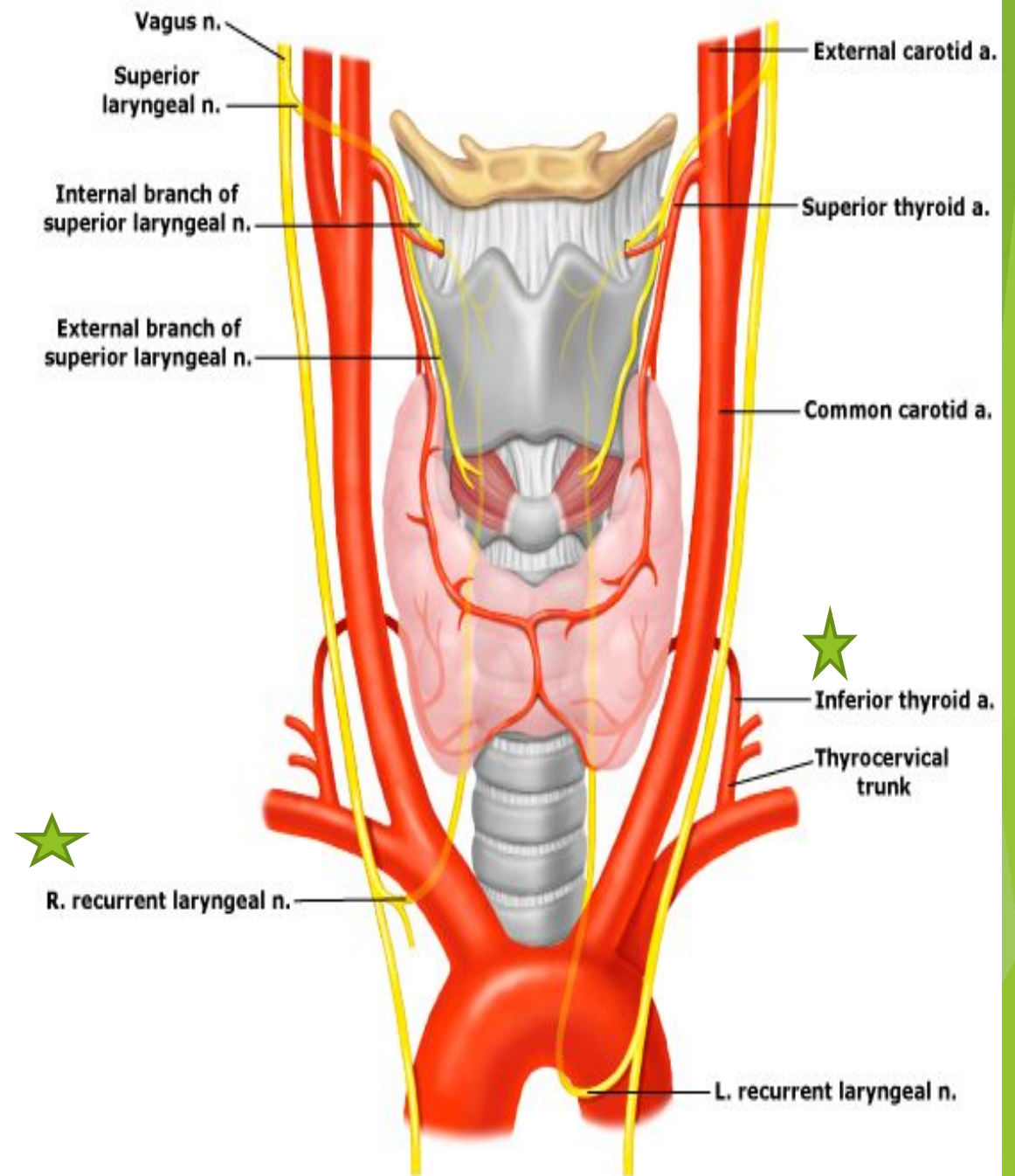
A branch of the external carotid artery, descends to each lobe, accompanied by the external laryngeal nerve .

The inferior thyroid artery

A branch of the thyrocervical trunk, ascends behind the gland to reach the posterior border of the gland

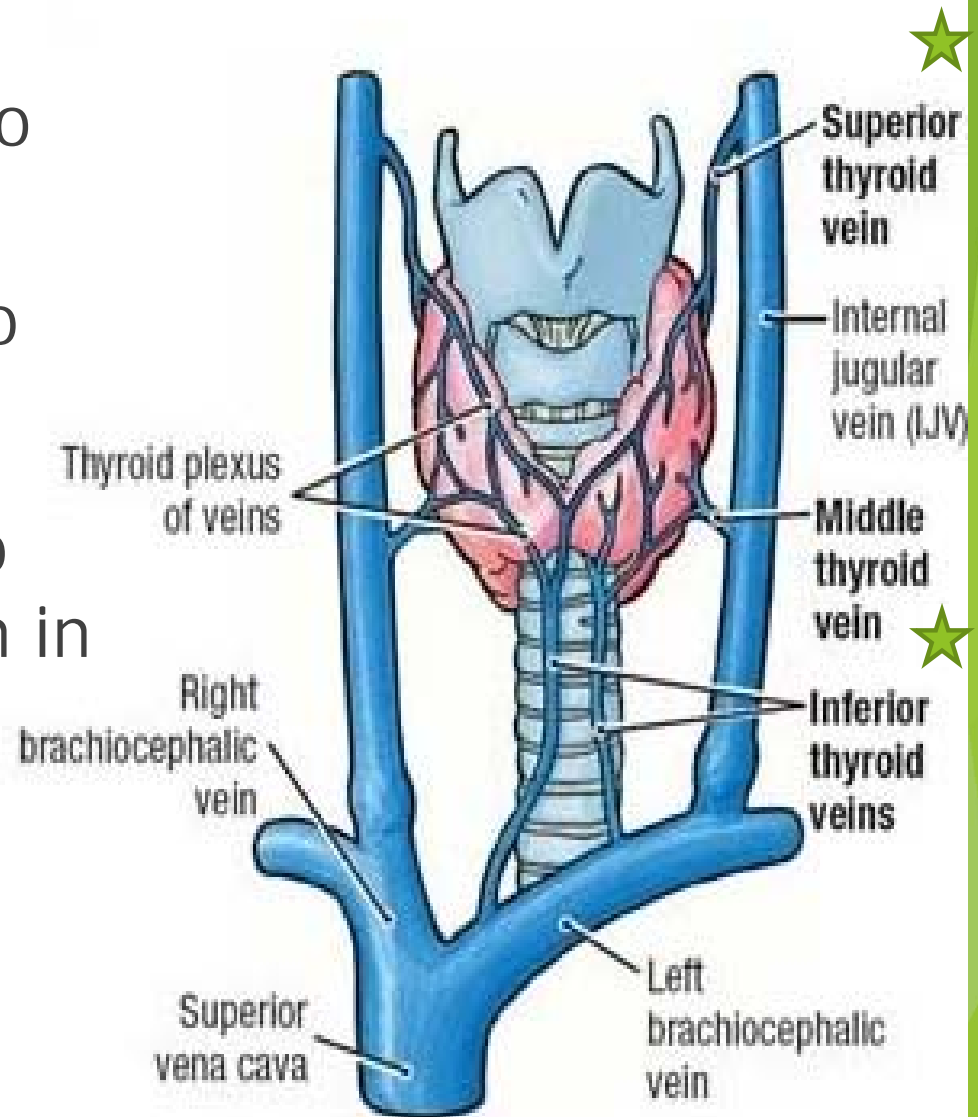


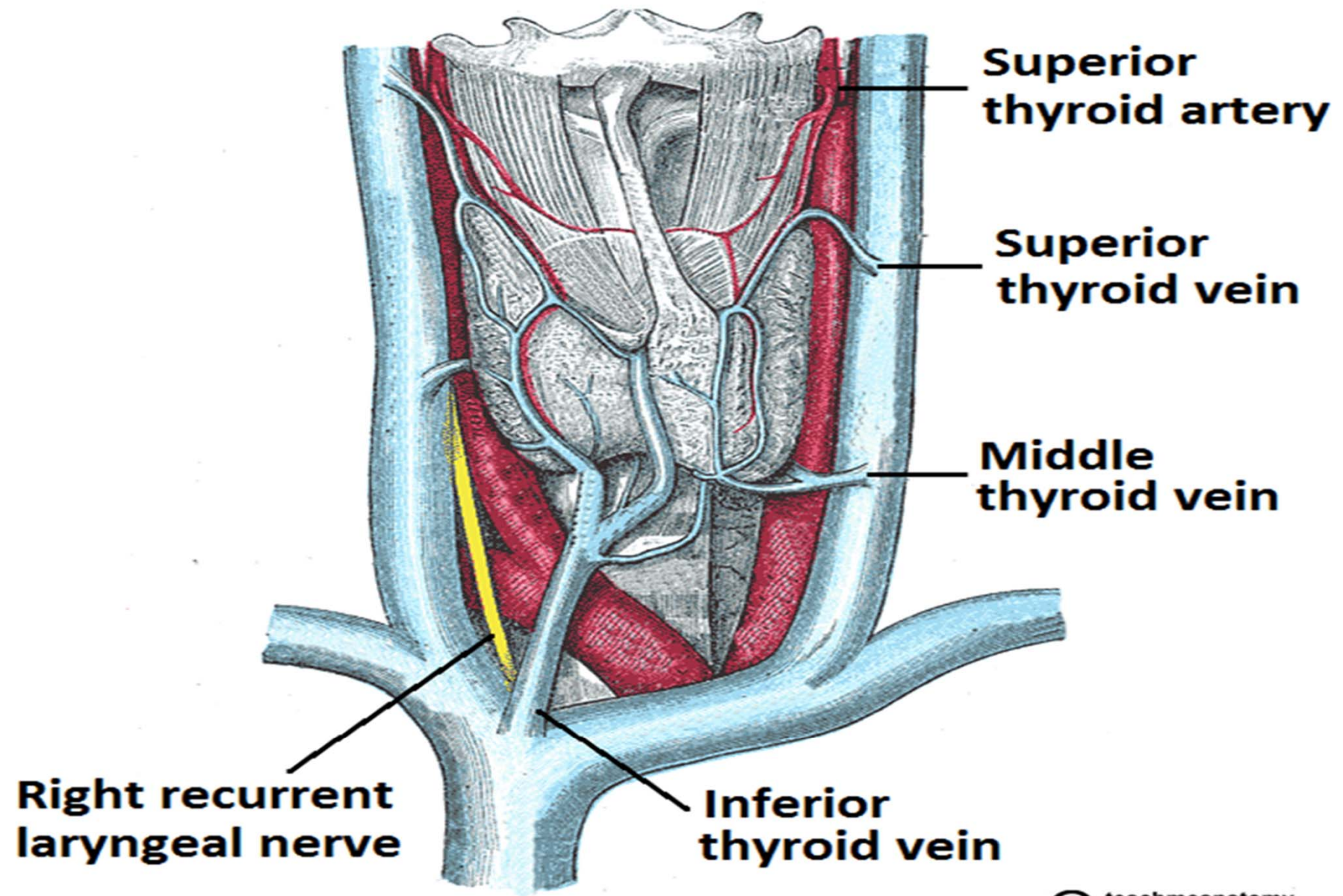
Nerve supply: The recurrent laryngeal nerve crosses either in front of or behind the inferior thyroid artery.



The veins from the thyroid gland :

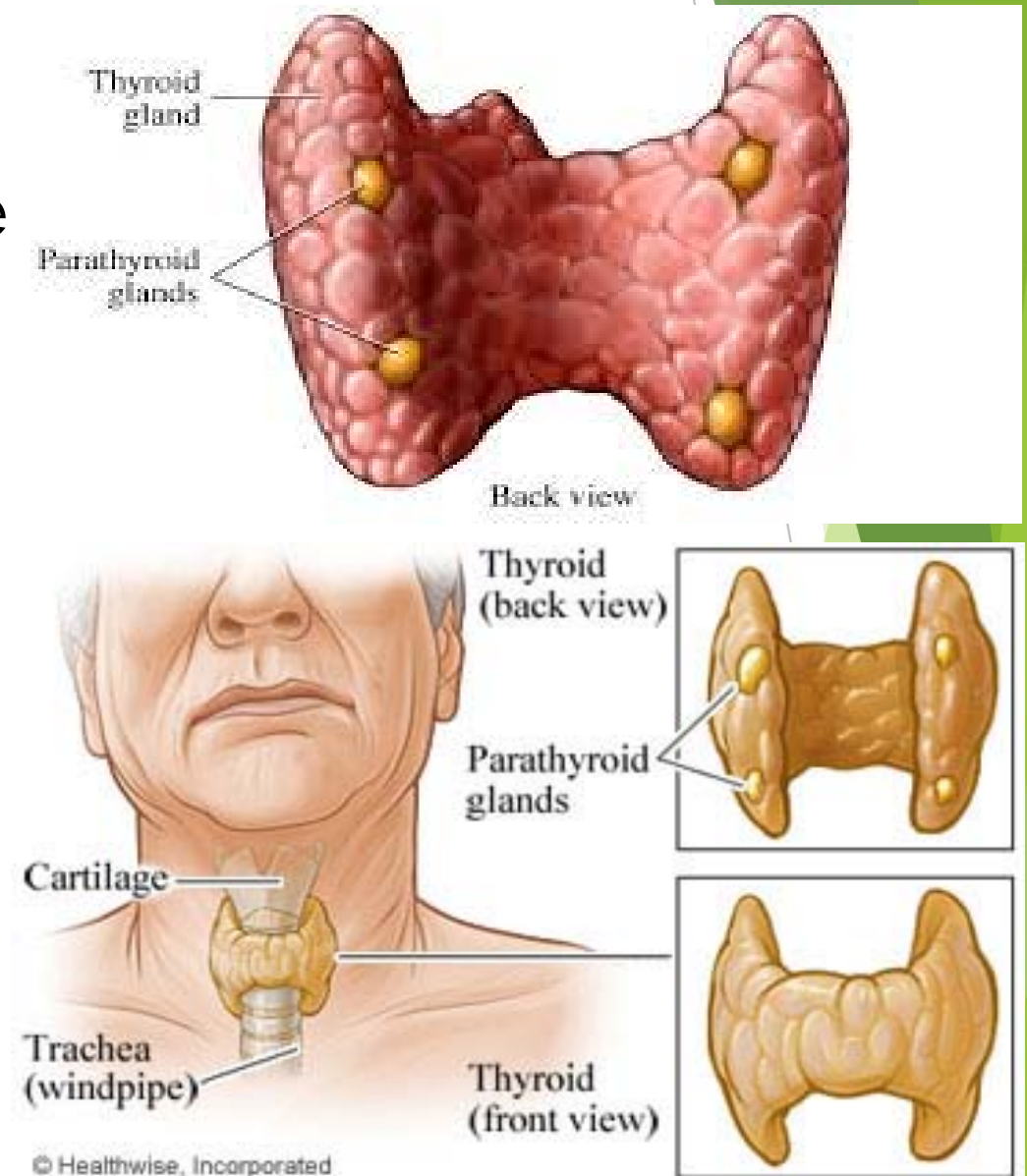
- 1-**Superior thyroid V:** drains into the internal jugular vein.
- 2-**Middle thyroid V:** drains into the internal jugular vein.
- 3-**Inferior thyroid Vs:** drain into the left brachiocephalic vein in the thorax





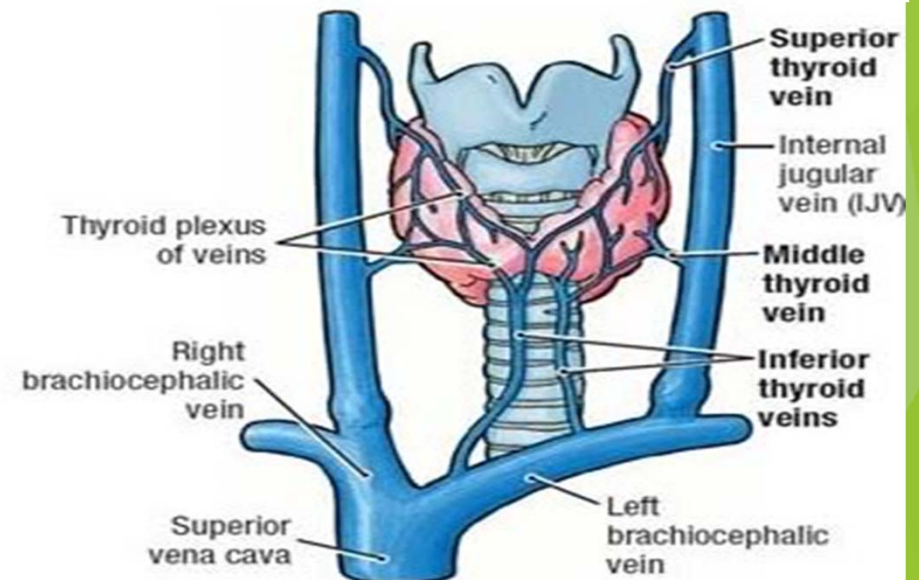
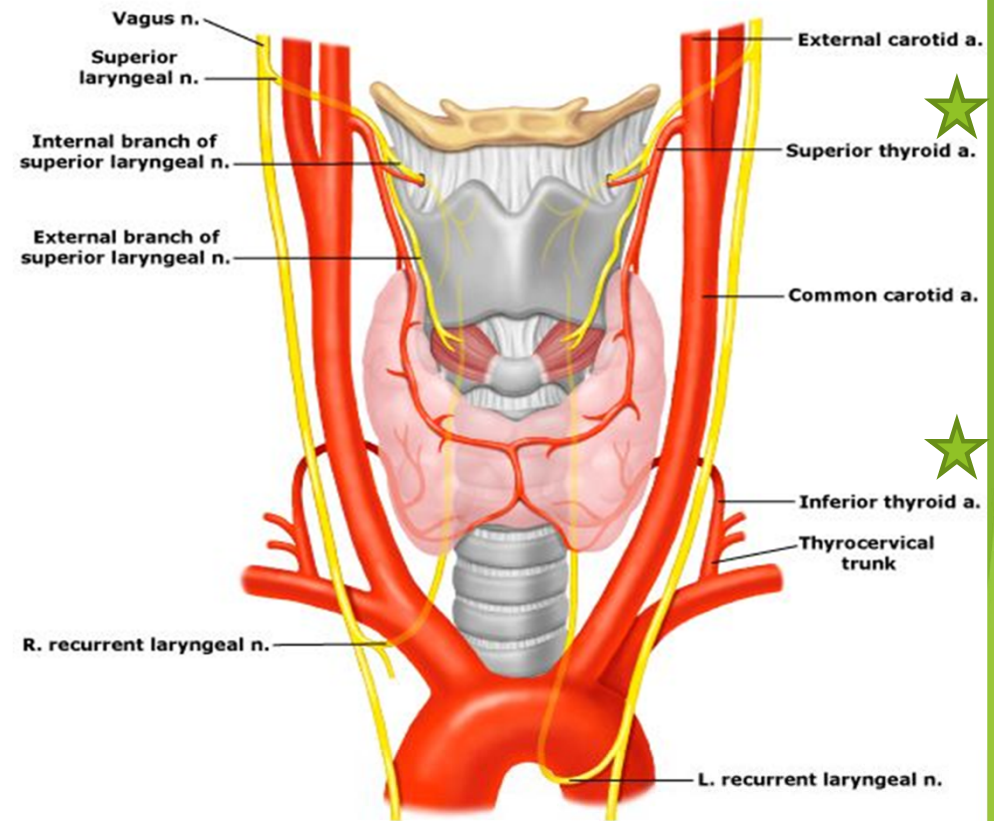
Parathyroid Glands

Are ovoid bodies and they are four in number and are closely related to the posterior border of the thyroid gland, lying within its fascial capsule.



Blood Supply of Parathyroid Glands:

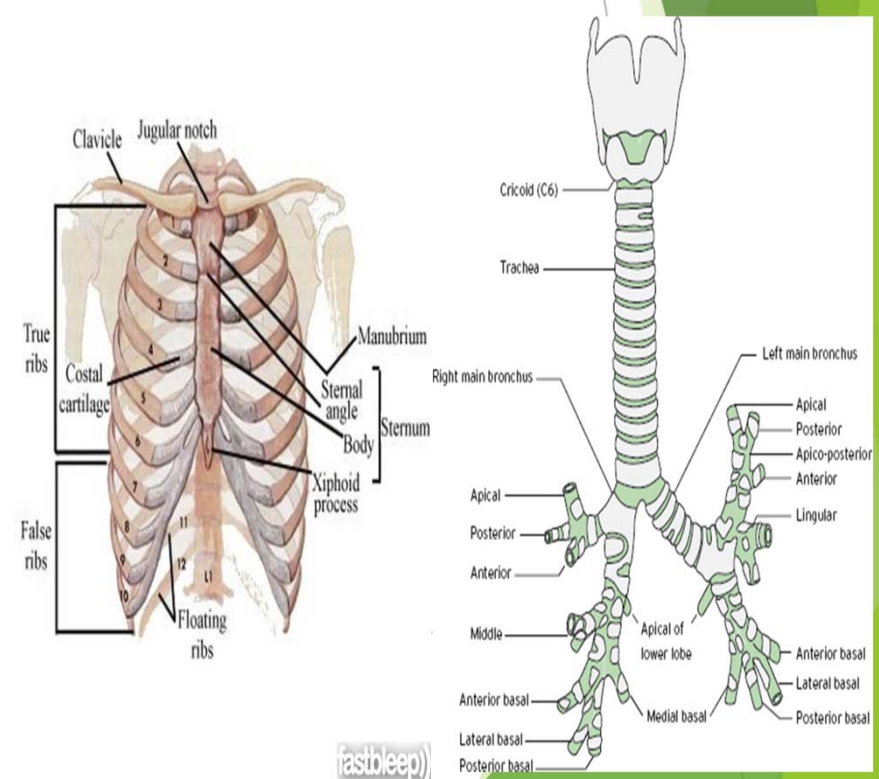
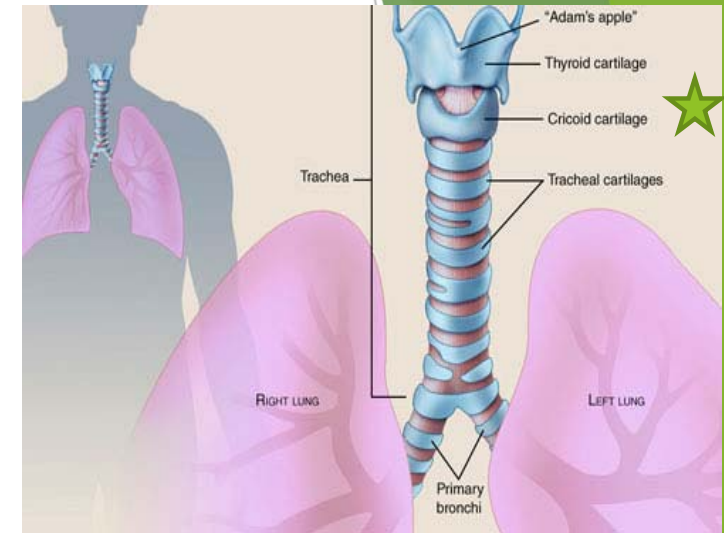
The arterial supply to the parathyroid glands is from the **superior** and **inferior thyroid arteries**. The venous drainage is into the **superior**, **middle**, and **inferior thyroid veins**.



Trechea

* It is a cartilaginous and membranous tube that connects the pharynx and larynx to the lungs, begins at the lower border of the cricoid cartilage at the level of the 6th cervical vertebra it is allowing the passage of air.

* Under the larynx (voice box) it runs down, at sternal angle (opposite the disc between the 4th and 5th thoracic vertebrae) the trachea divides into two smaller tubes called **bronchi** which continue toward the lungs.



Relations of the Trachea in the Neck:

Anteriorly: isthmus of the thyroid gland

Posteriorly:

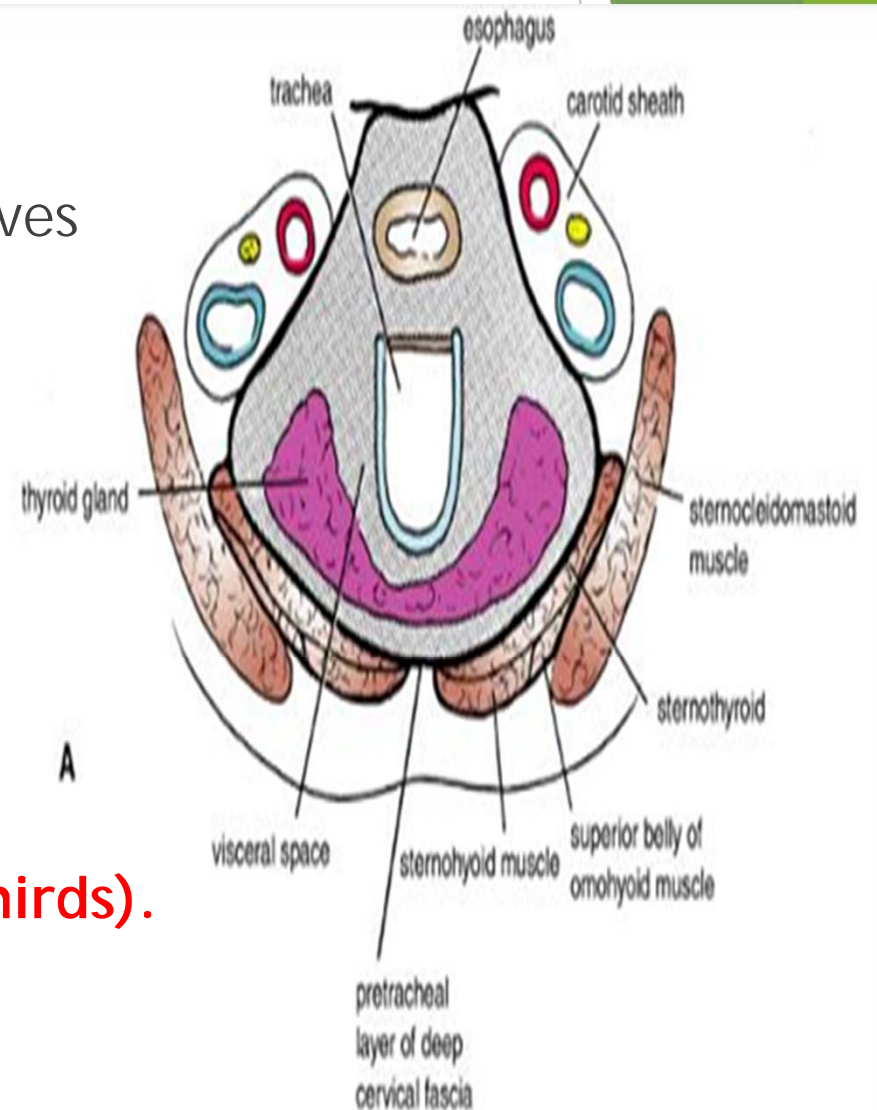
1. Right and left recurrent laryngeal nerves
2. Esophagus

Laterally:

1. Lobes of the thyroid gland
2. Carotid sheath and its contents

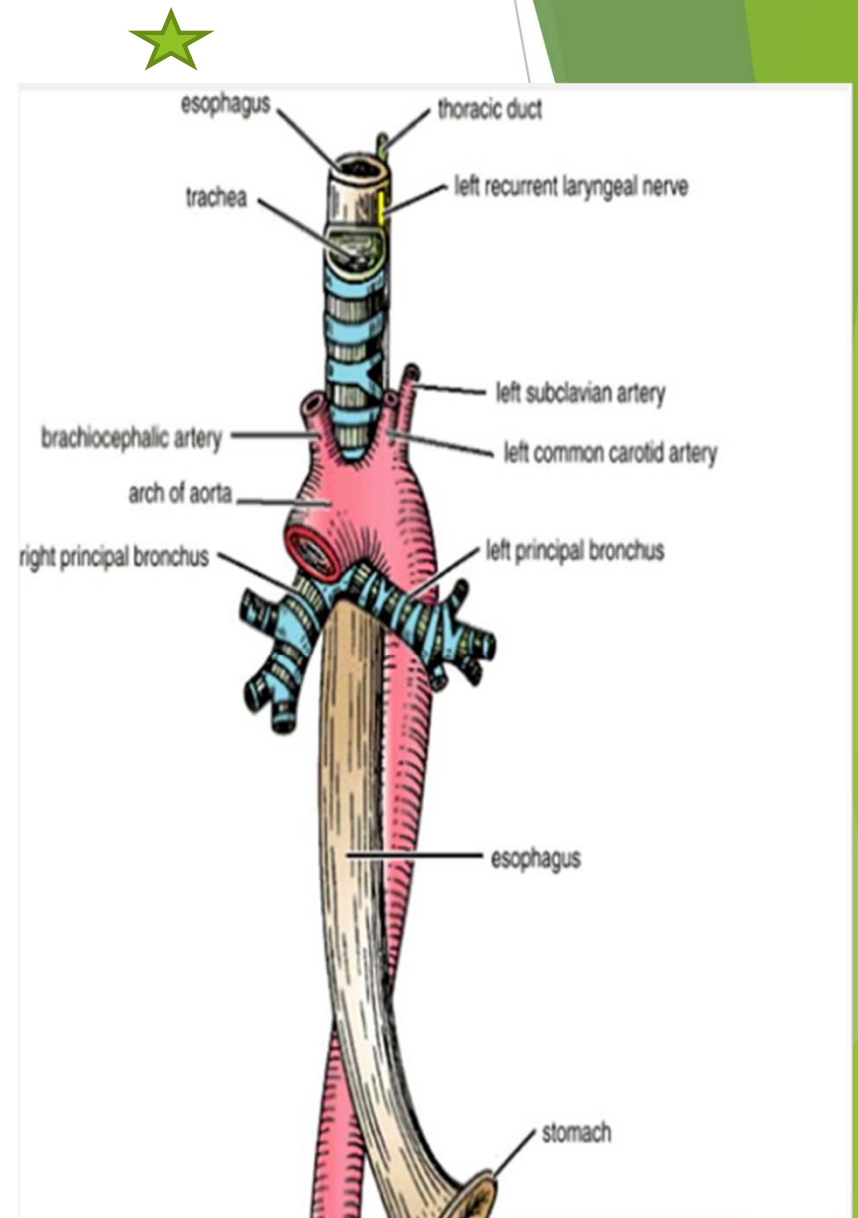
Blood Supply of the Trachea

- * Inferior thyroid arteries (**upper two thirds**).
- * Bronchial arteries (**lower third**).



Esophagus

- * Is a muscular tube about (25 cm) long, extending from the pharynx to the stomach.
- * Begins at the level of the cricoid cartilage, opposite the body of the sixth cervical vertebra.
- * It commences in the midline, but as it descends through the neck, it inclines to the left side.



Relations in the Neck

Anteriorly:

1. Trachea
2. Recurrent laryngeal nerves

Posteriorly:

1. Prevertebral layer of deep cervical fascia,
2. Prevertebral muscles

Laterally:

1. Lobes of the thyroid gland
2. Carotid sheath

Blood Supply of esophagus in the Neck

Derived from the **inferior thyroid arteries**.

Transverse section of the neck through C6

