

LARYNX

(voice box)

By

Dr. Reda Samir

rtaha@zu.edu.jo

Larynx (voice box)

- **Functions of the larynx**

- Air-way passage.

- Protective valve at the inlet of larynx
against entry of food particles.

- Organ of phonation.

- It helps with expulsion processes, such as defecation and vaginal labor.

.

Larynx (voice box)

Site: lies in-front of the **lower part of the pharynx** at the level of the **4th, 5th and 6th cervical vertebrae**.

It extends from the root of tongue (above) to continue with trachea (below).

Structure: formed by:-

1=Cartilages :

attached to each other by

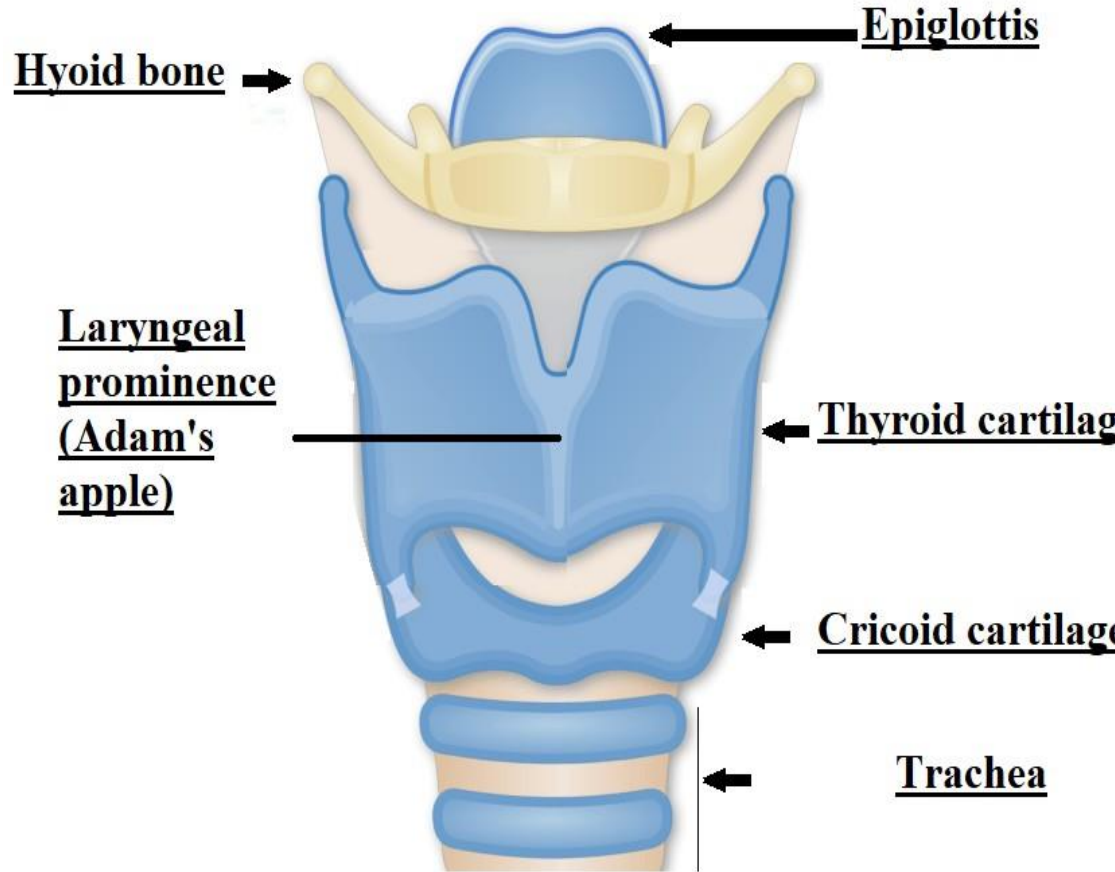
2=Ligaments :

moved by

3=Muscles :

Interiorly is lined by

4=Mucus membrane.



Larynx Anterior View

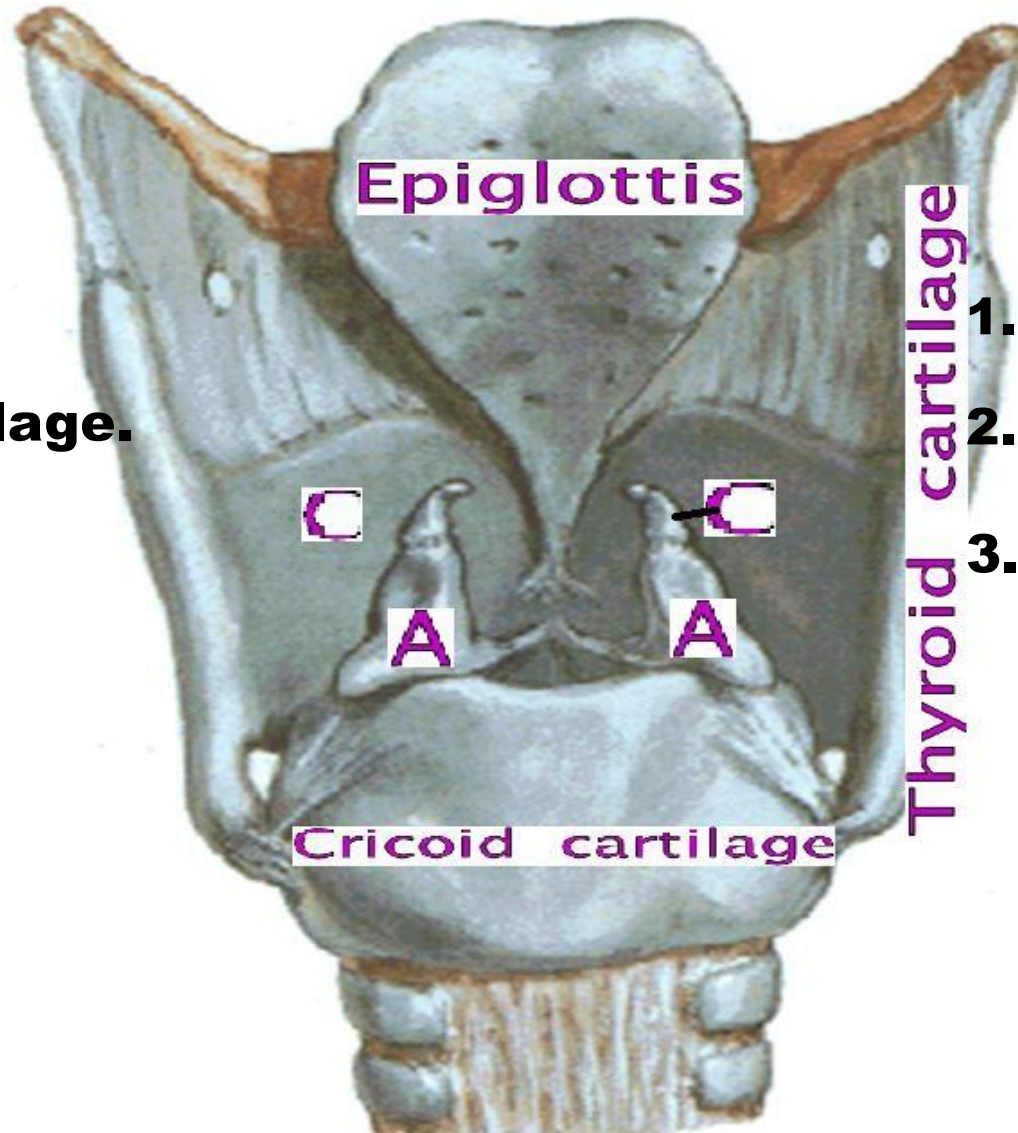
LARYNGEAL CARTILAGES

[a]=Single

1.Epiglottis.

2.Thyroid cartilage.

3.Cricoid



Epiglottis

[b]=Paired

1.Arytenoid (A).

2.Corniculate (C).

3.Cuneiform.

Thyroid cartilage

Cricoid cartilage

1- Thyroid cartilage .

- It is **shield-shaped**; consists of **2 laminae**
 - a. Ant border: meets together in the midline forming thyroid angle (**Adam's apple**).
 - b. The thyroid cartilage is the **largest cartilage** of the larynx.
 - c. On the outer surface is an **oblique line** for the attachment of muscles..

2- Cricoid cartilage: a signet ring appearance

3. Epiglottis: a thin leaf-like elastic fibrocartilage.

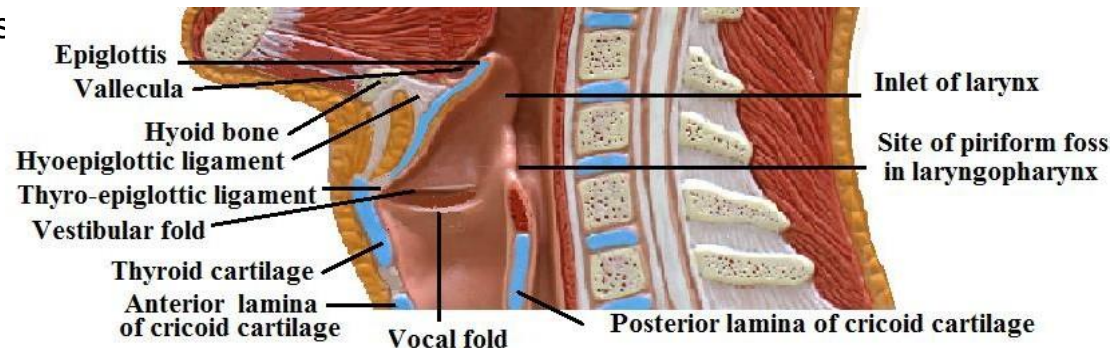
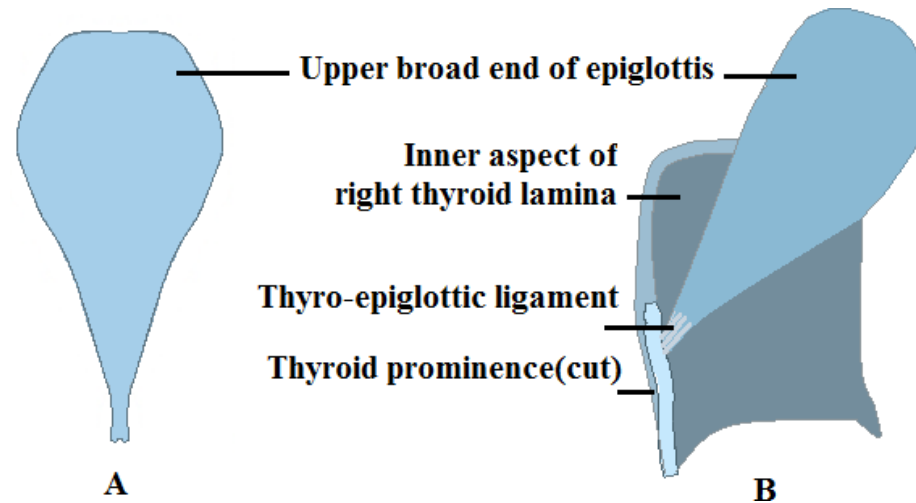
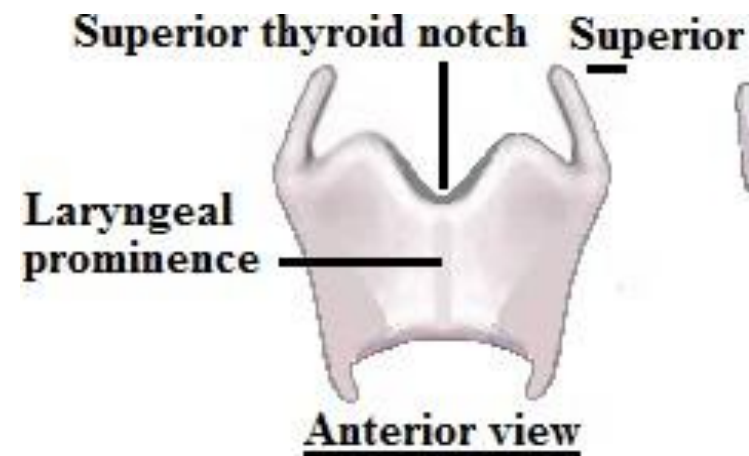
- It acts as a lid covering the opening of larynx, closing it during swallowing → prevent food passage.

4-Arytenoid: pyramidal in shape has apex & Base

- The base has 2 processes; **muscular** process and **vocal** process anteriorly

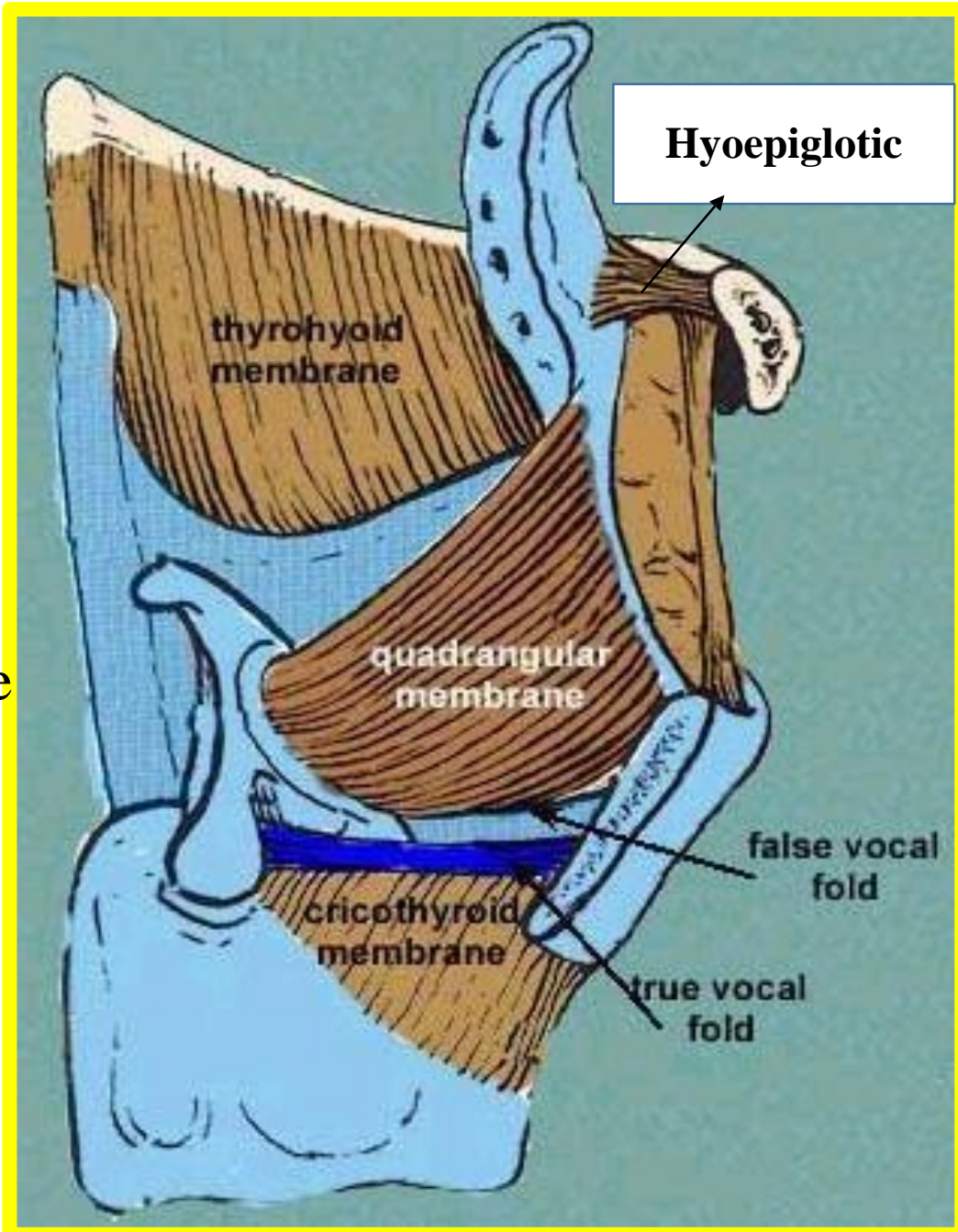
5Corniculate: articulates with the apex of each arytenoid cartilage.

6Cuneiform: A very small cartilage lies in the aryepiglottic fold.



LARYNGEAL MEMBRANES

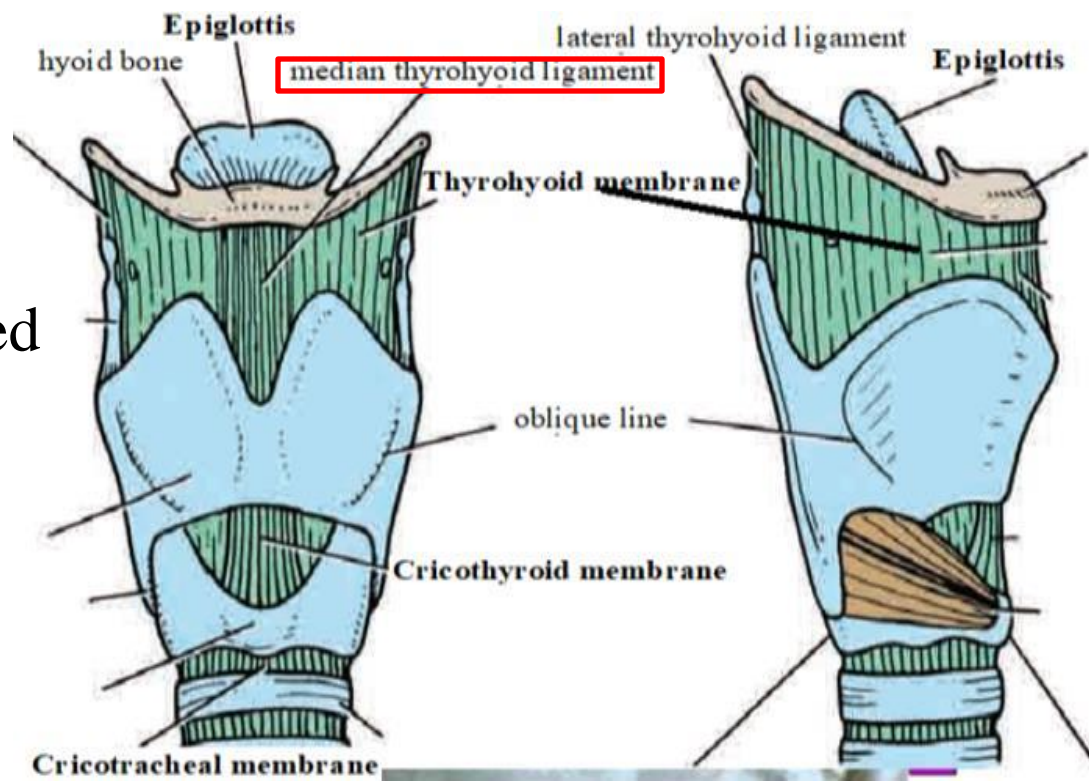
- 1- **Cricothyroid membrane**
- Between cricoid cartilage & thyroid cartilage.
- 2 **Quadrangular membrane:**
upward continuation of cricothyroid membrane.
- 3 **Thyroepiglottic membrane:**
Between thyroid cartilage & the epiglottis.
- 4**Hyoepiglottic:** between the hyoid bone and the epiglottis.



5Thyrohyoid membrane :
upper border of the thyroid cartilage to the upper border of the hyoid bone.

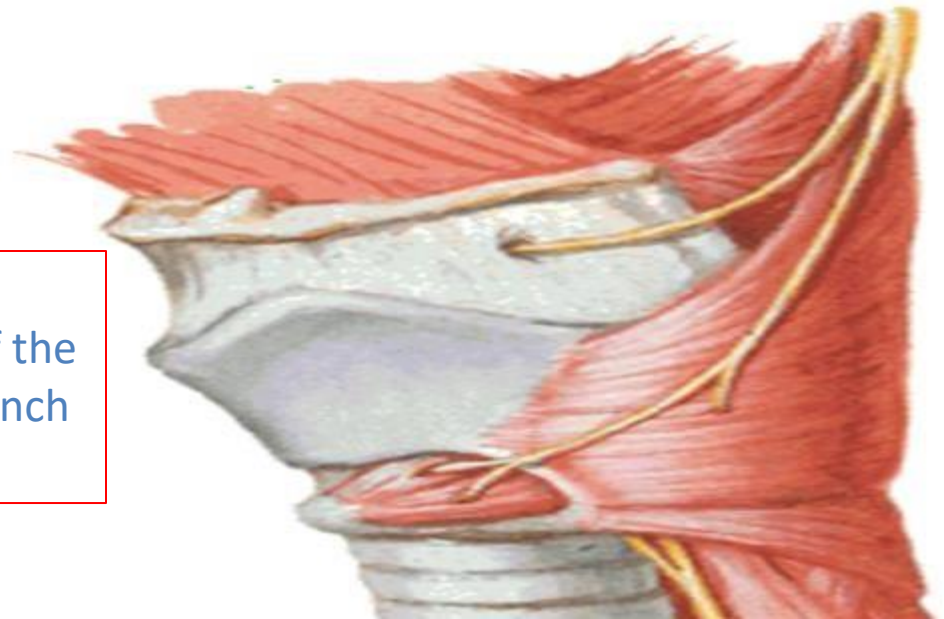
It shows median thick part called **median thyrohyoid ligament** and pierced by the superior laryngeal artery & the internal laryngeal nerve.

6Cricotracheal membrane
from the cricoid cartilage to the 1st tracheal ring.



NOT REQUIRED...

The superior laryngeal artery is a branch of the superior thyroid artery, which itself is a branch of the external carotid artery.



LARYNGEAL MUSCLES

1. Extrensic muscles of larynx:

- (a) **Supra-hyoid muscles:**
Elevate the hyoid and larynx.
- (b) **Infra-hyoid muscles:**
Depress the hyoid bone and larynx.

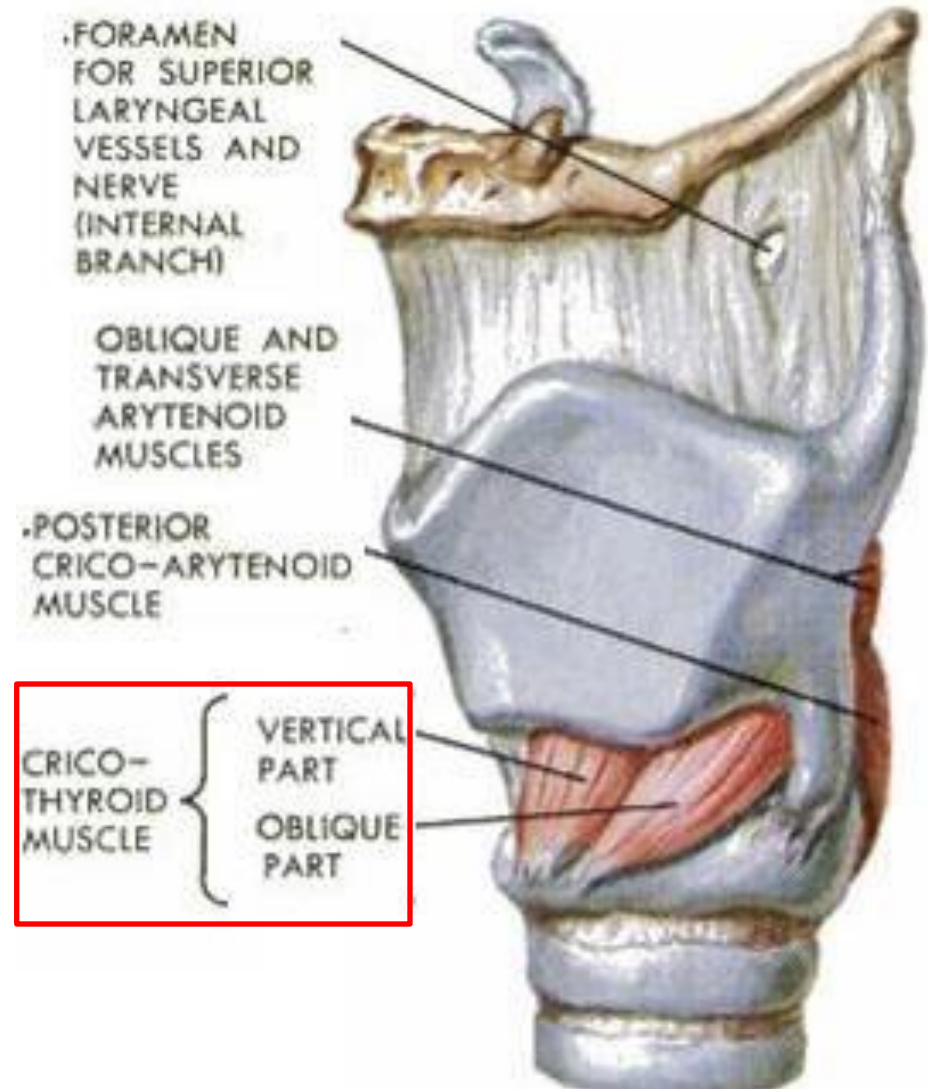
2. Intrinsic muscles of larynx :

Example:

Cricothyroid muscle (on the external aspect of the anterior larynx).

Intrinsic muscles of larynx

and the movement are responsible for sound productions of the laryngeal cartilages and vocal folds.



• **Laryngeal inlet:** is bounded by:

- Epiglottis –anteriorly.
- Aryepiglottic—one on each side.
- Apices of the arytenoids and interarytenoid fold posteriorly.

Cavity of larynx:

It is divided by vestibular and vocal folds into 3 zones:

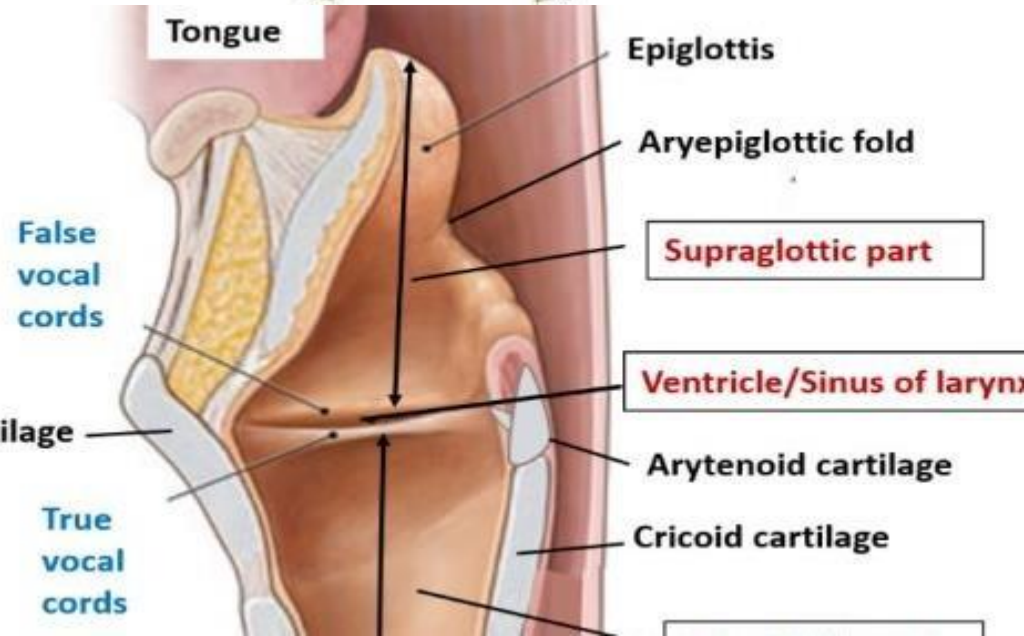
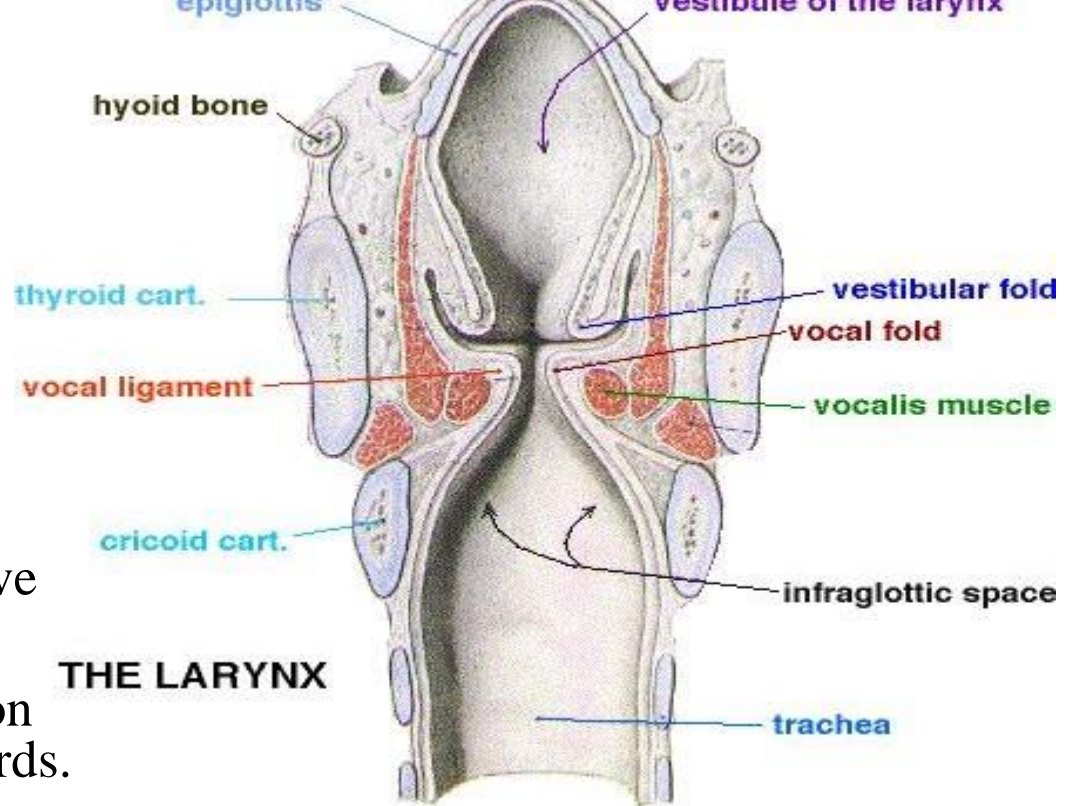
- 1 **Vestibule** of the larynx; lying above the false cords.
- 2 **Ventricle** of the larynx; a depression lying between the false and true cords.
- 3 **Subglottic zone**; lying between the true cords and the trachea.

(a) **Rima vestibuli** is the slit (or cleft) between the 2 vestibular (false) cords.

(b) **Rima glottidis (glottis):**

It is the slit (or cleft) between the 2 vocal (true) cords).

It is the **narrowest part** of the laryngeal passage.



- **Vestibular fold**

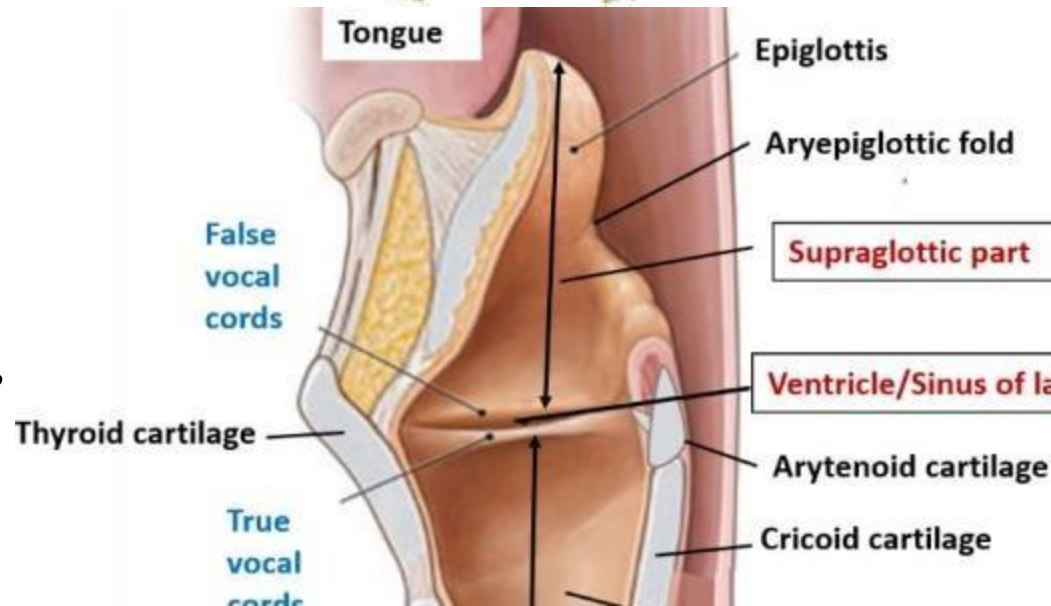
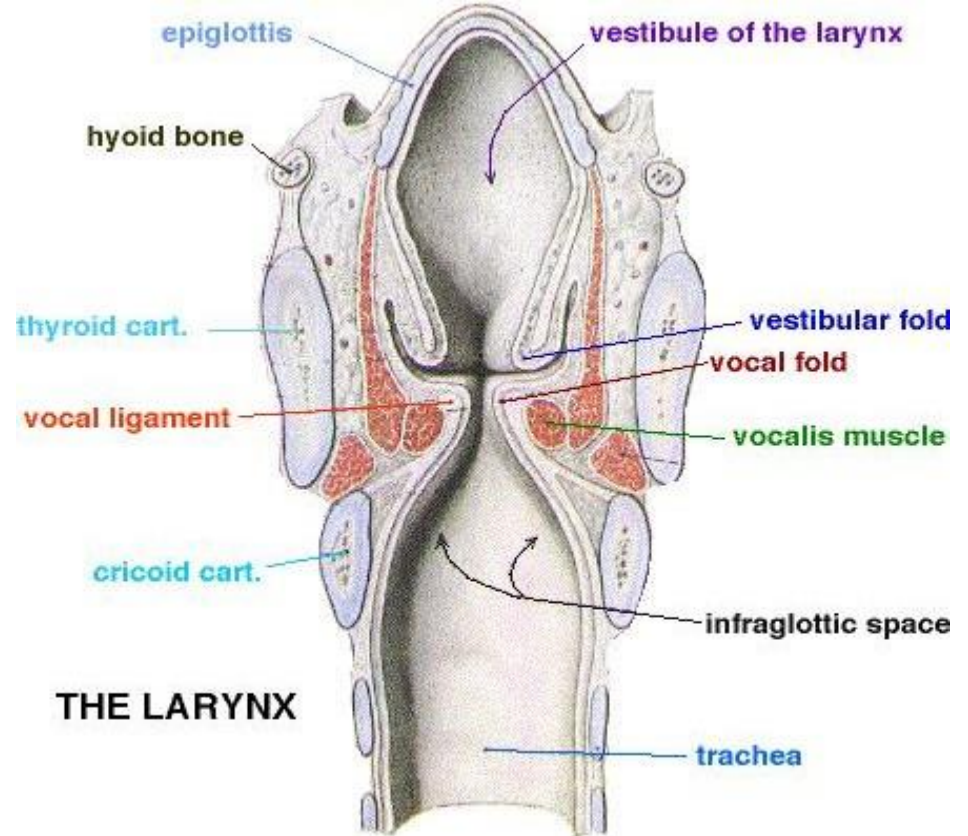
is the upper fold,
containing a small amount of
fibrous tissue,
forming false vocal cord.

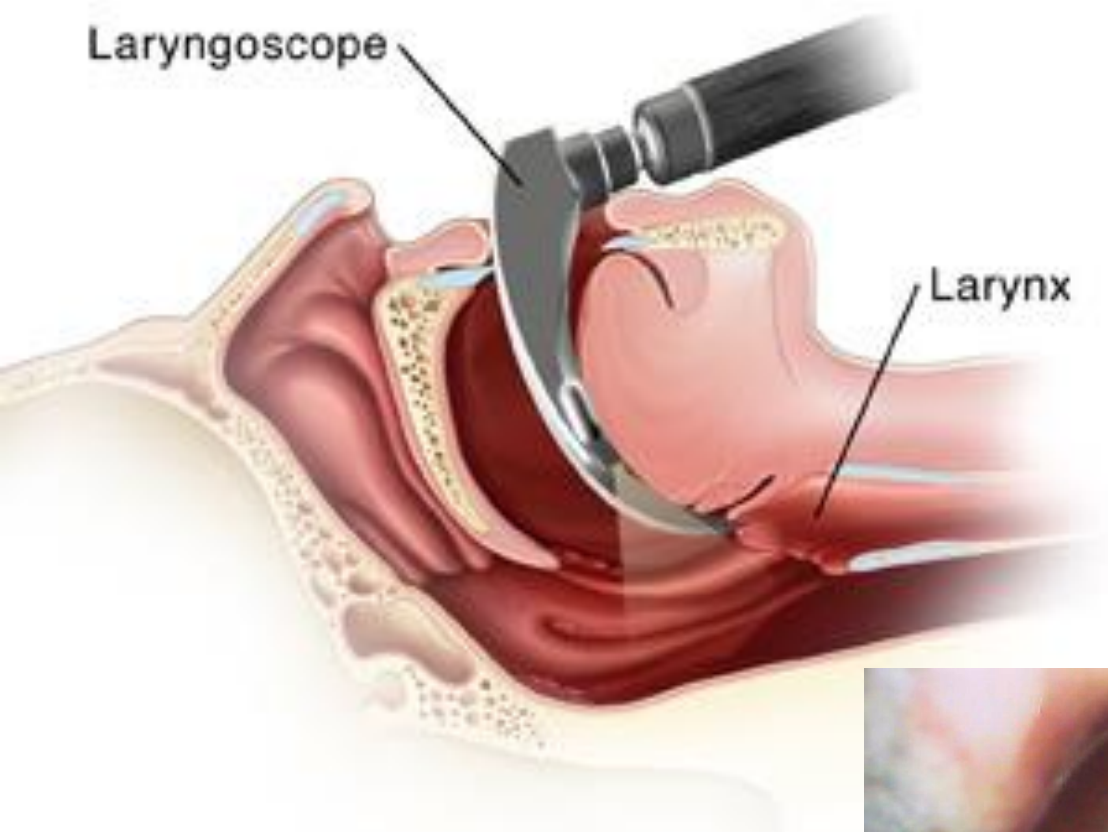
- **Vocal fold**

is the lower fold,
containing vocal ligament,
forming true vocal cord.

The 2 vocal cords produce sound
when air passes over them.

*N.B.: On laryngoscopy, the vocal
cords appear avascular and
pearly white (because the
mucosa is firmly adherent to the
vocal ligaments without
submucosal involvement).*





Nerve supply of larynx (innervation of larynx)

**Indirect question on VAGUS n.
(vago-accessory complex)**

1. Motor. (10th)

ALL THE INTRINSIC MUSCLES OF LARYNX
ARE SUPPLIED BY
RECURRENT LARYNGEAL NERVE
EXCEPT
CRICO-THYROID MUSCLE
IS SUPPLIED BY
EXTERNAL LARYNGEAL NERVE

2. Sensory:-

**a)-laryngeal mucous membrane above vocal
cords:-** by internal laryngeal nerve

**b)-laryngeal mucous membrane below vocal
cords:-** by recurrent laryngeal nerve

1.Arterial supply:

a)- above vocal cords:

superior laryngeal artery
from superior thyroid artery.

b)- below vocal cords:

inferior laryngeal artery
from inferior thyroid artery

2.Venous drainage:

Veins correspond to arteries.

3.Lymphatic drainage:

Upper part to upper deep cervical LN

Lower part to lower deep cervical LN

