

Lab / Second Week

- 1. Larynx.**
- 2. Vocal Cord.**

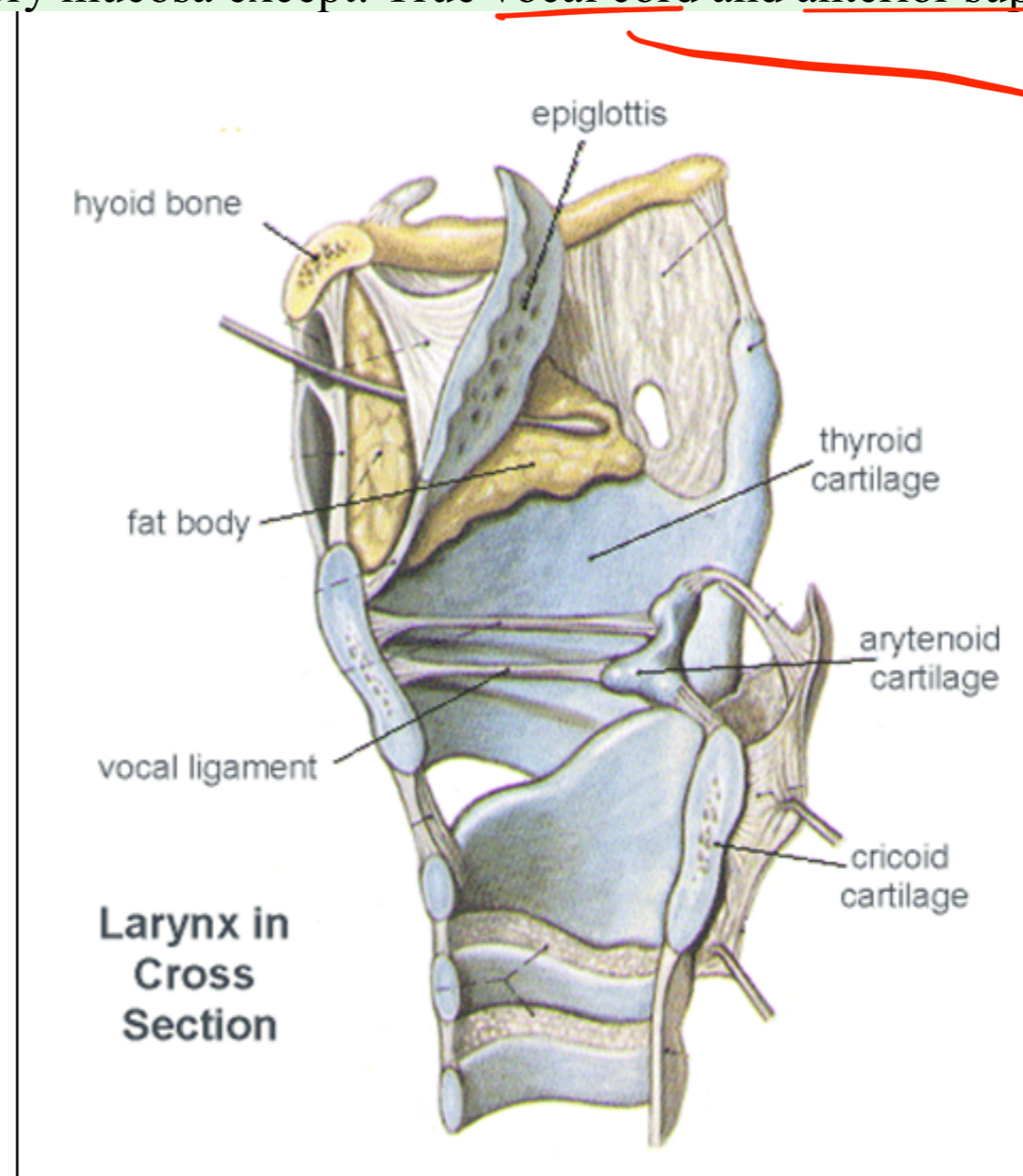
✦ Larynx.

From C3 to C6
Laryngopharynx ↓ Lower border of cricoid cartilage

- The students should know the parts of the Larynx :

1. Cartilage
2. Mucosa
3. Ligaments
4. Muscles

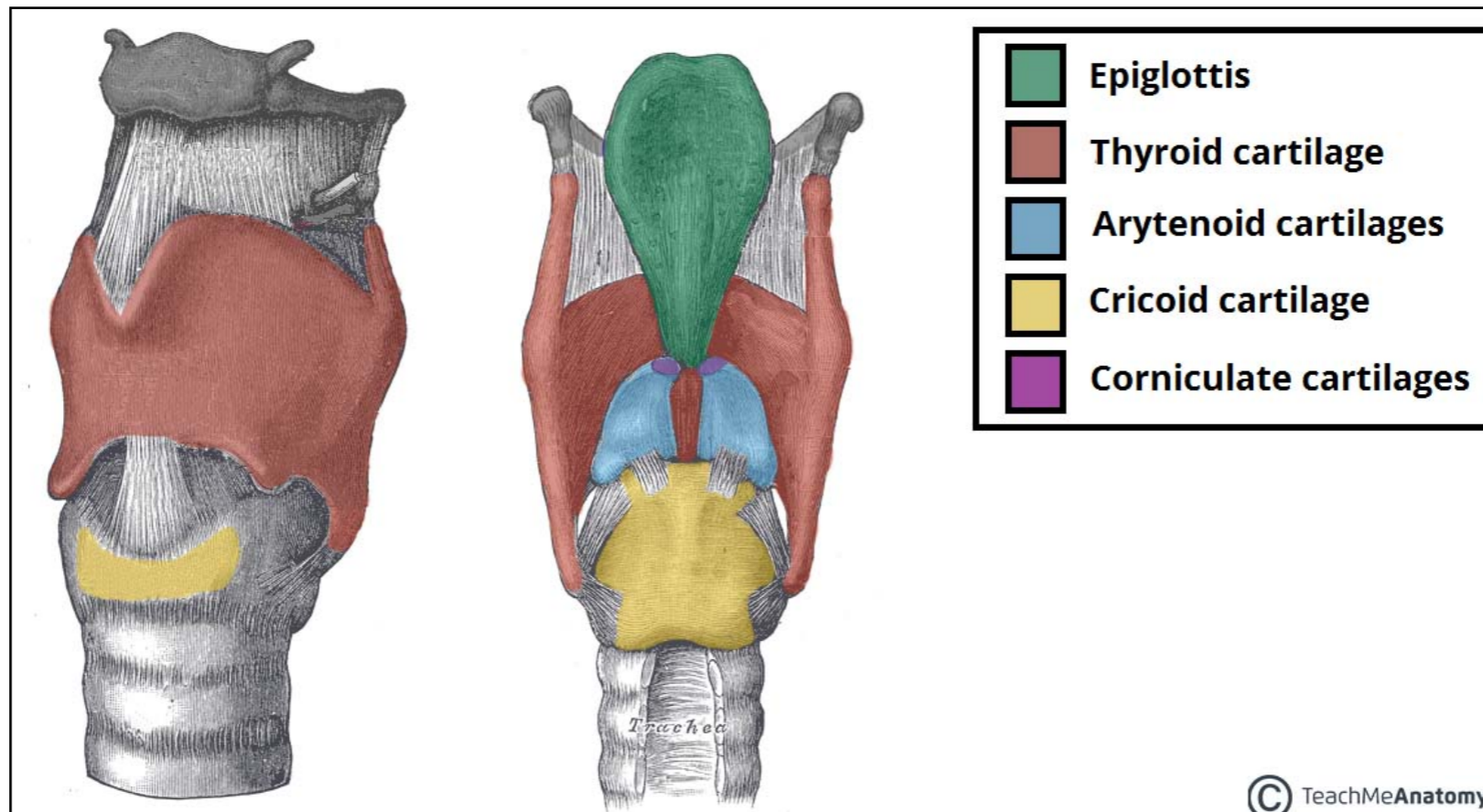
Respiratory mucosa except: True vocal cord and anterior superior surface of epiglottis



Both stratified squamous nonkeratinized (oral epithelium)

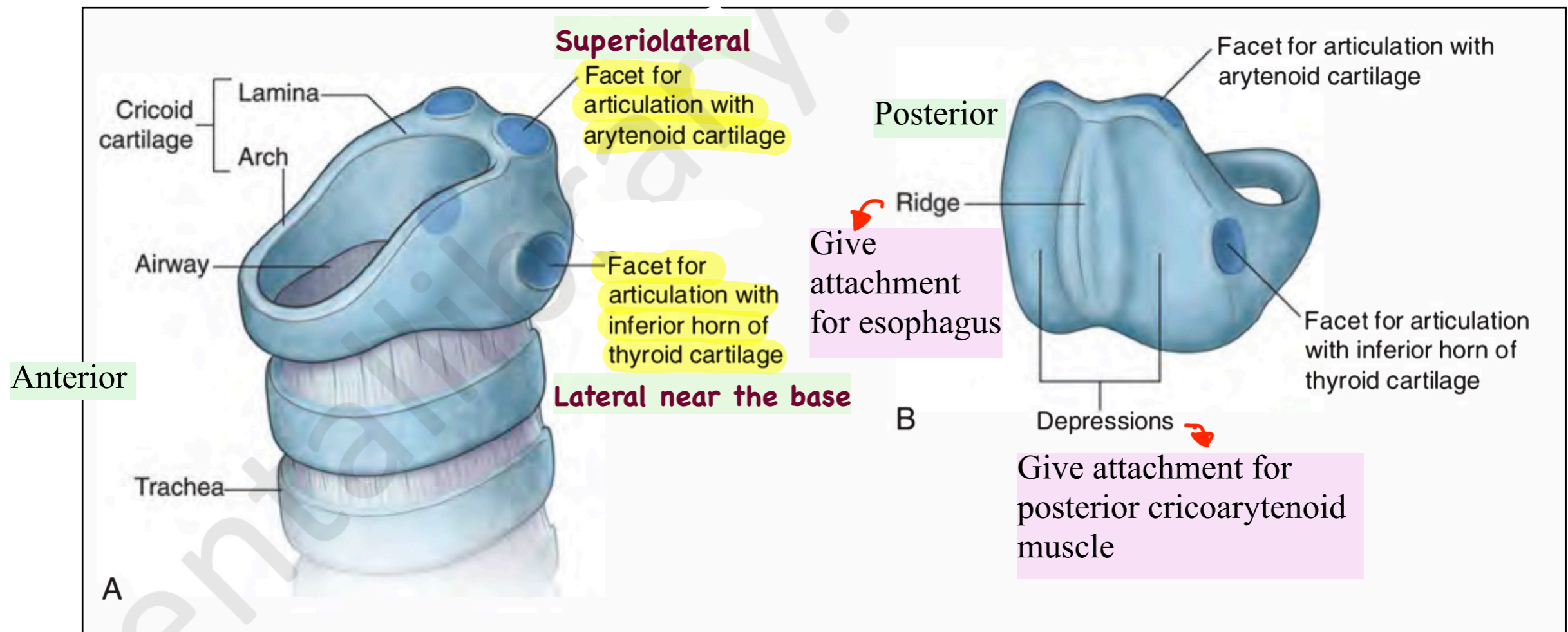
• Cartilages of the larynx

- The students should know the single cartilages :
 1. Epiglottis
 2. Cricoid **The most inferior cartilage**
 3. Thyroid **The largest**
- The students should know the paired cartilages :
 1. Arytenoid
 2. Cuneiform
 3. Corniculate



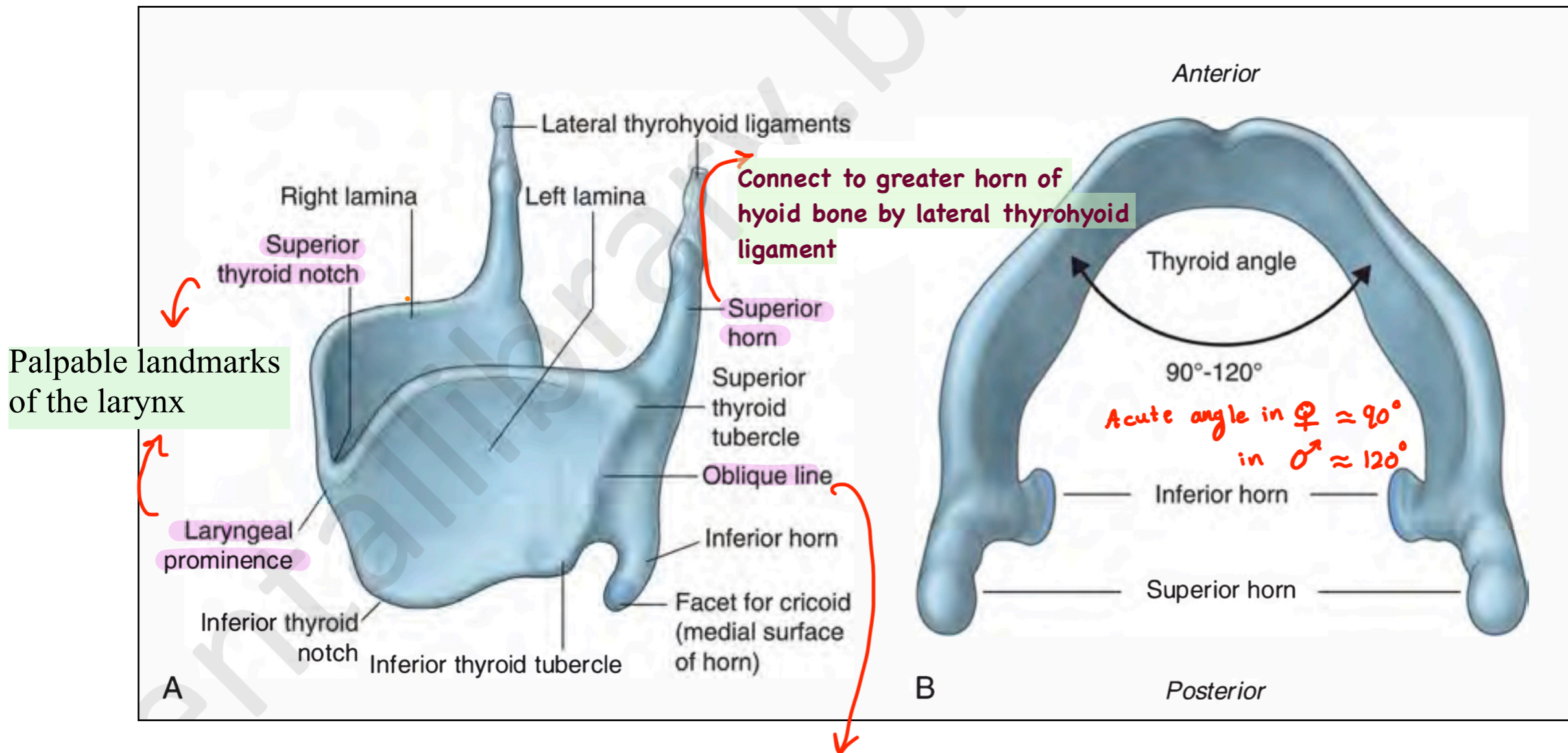
• Cartilages of the larynx

- The students should know the parts of cricoid cartilage : 👉 **Signet shap**
👉 **Has 2 facets on each side**



• Cartilages of the larynx

- The students should know the parts of thyroid cartilage :

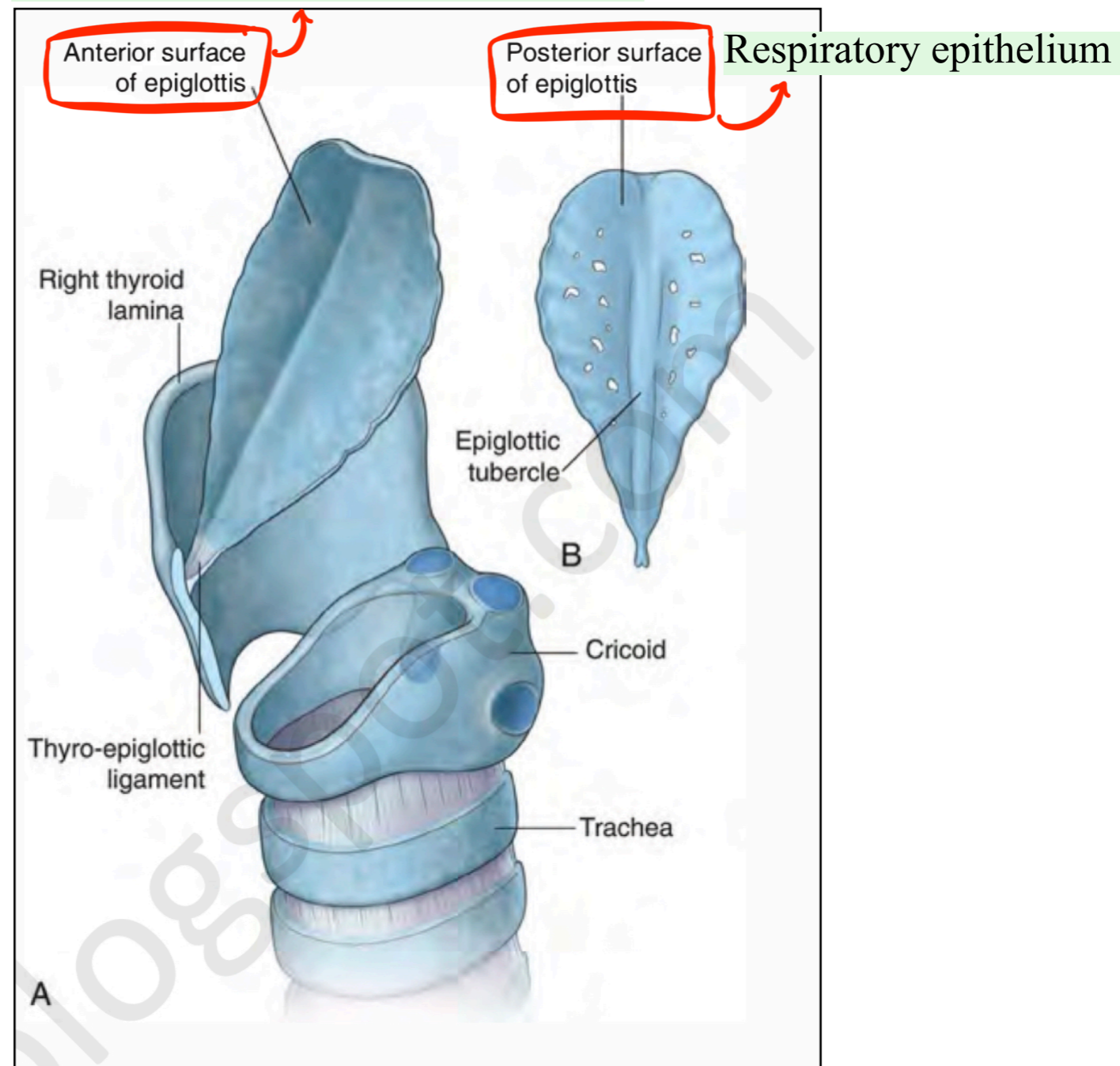


give attachment for strap muscles of the neck

• Cartilages of the larynx **Leaf shape**

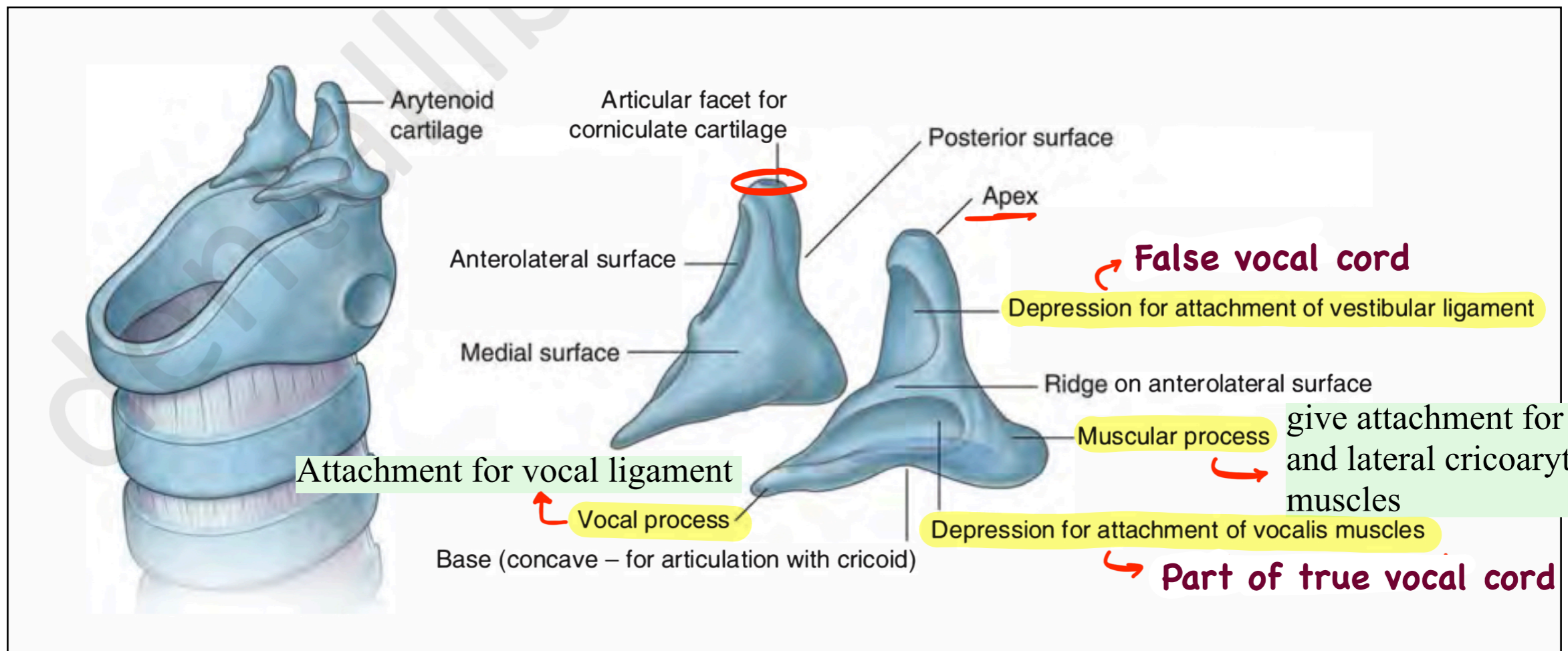
- The students should know the parts of epiglottis cartilage :

Stratified squamous non-keratinized



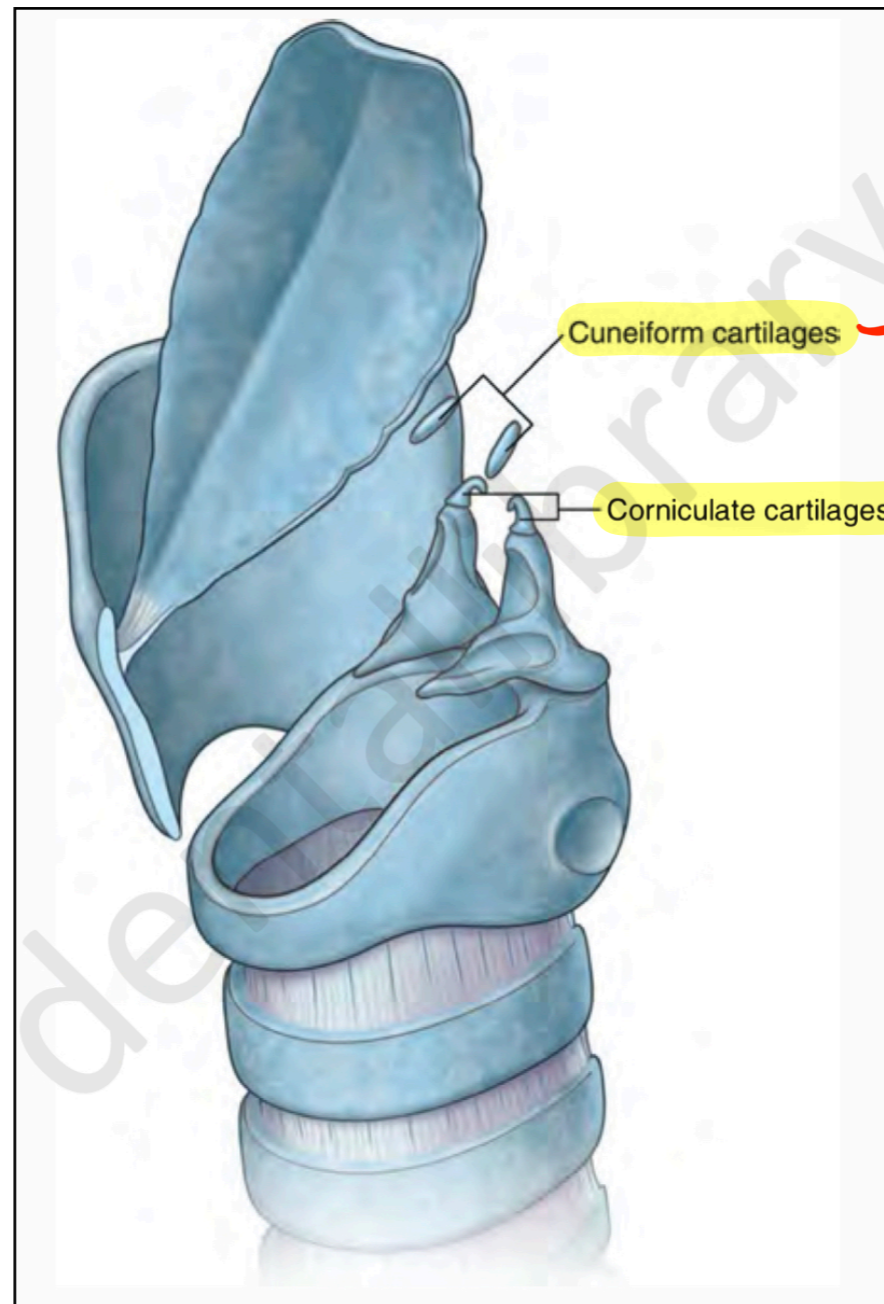
• Cartilages of the larynx

- The students should know the parts of Arytenoid cartilage :



• Cartilages of the larynx

- The students should know the parts of Corniculate and Cuneiform cartilages :

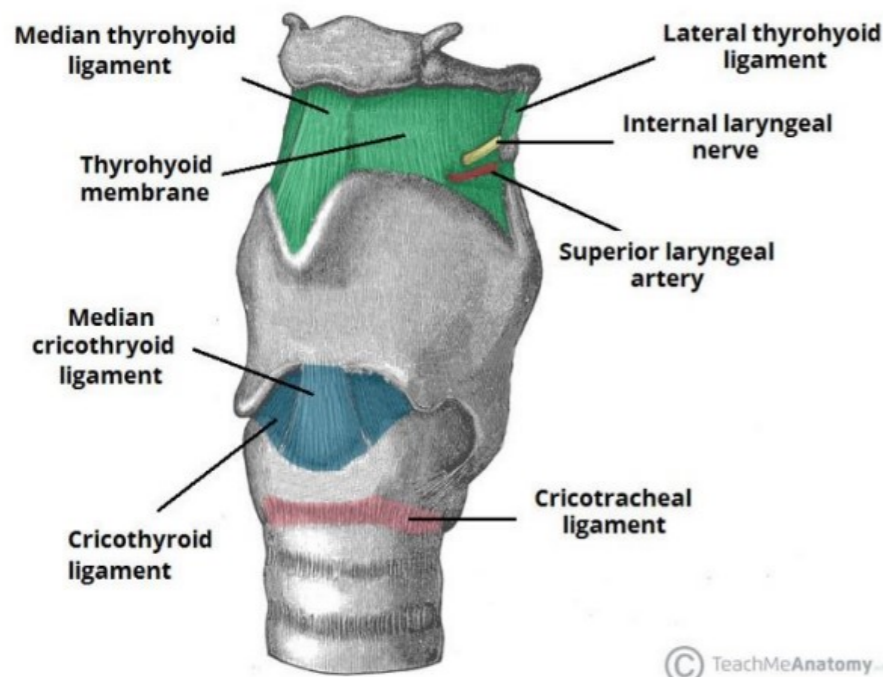


- Anterior to corniculate cartilage
- Suspended in aryepiglottic folds

- Articulate at the apex of arytenoid
- Marks the end of aryepiglottic folds

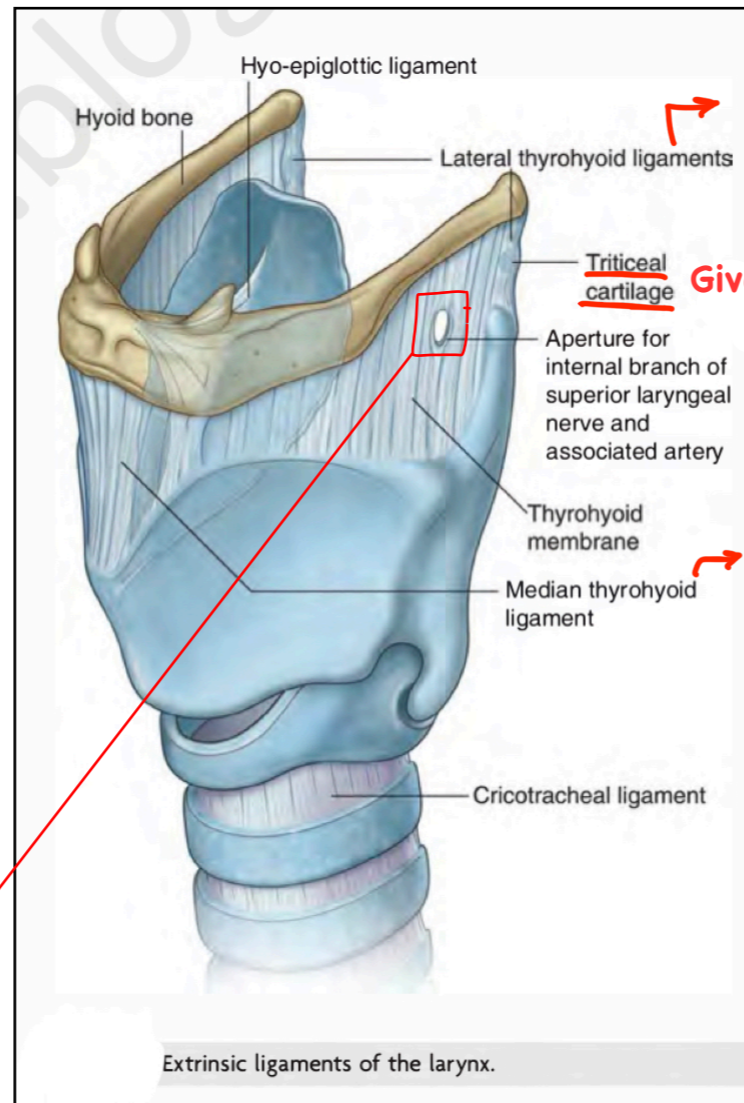
• Ligaments of the larynx

- The students should know the Extrinsic ligaments :
 1. Cricotracheal ligament
 2. The hyo-epiglottic ligament
 3. Thyrohyoid ligament and membrane
- What is the structures which pass through the membrane ?



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Passage for:
 a. Superior laryngeal artery
 b. Internal laryngeal nerve
 c. Lymphatic vessels.



Extrinsic ligaments of the larynx.

result from thickening of posterior part of cricothyroid membrane

Gives attachment to lateral thyrohyoid ligament

result from thickening of middle part of cricothyroid membrane

Ligaments of the larynx

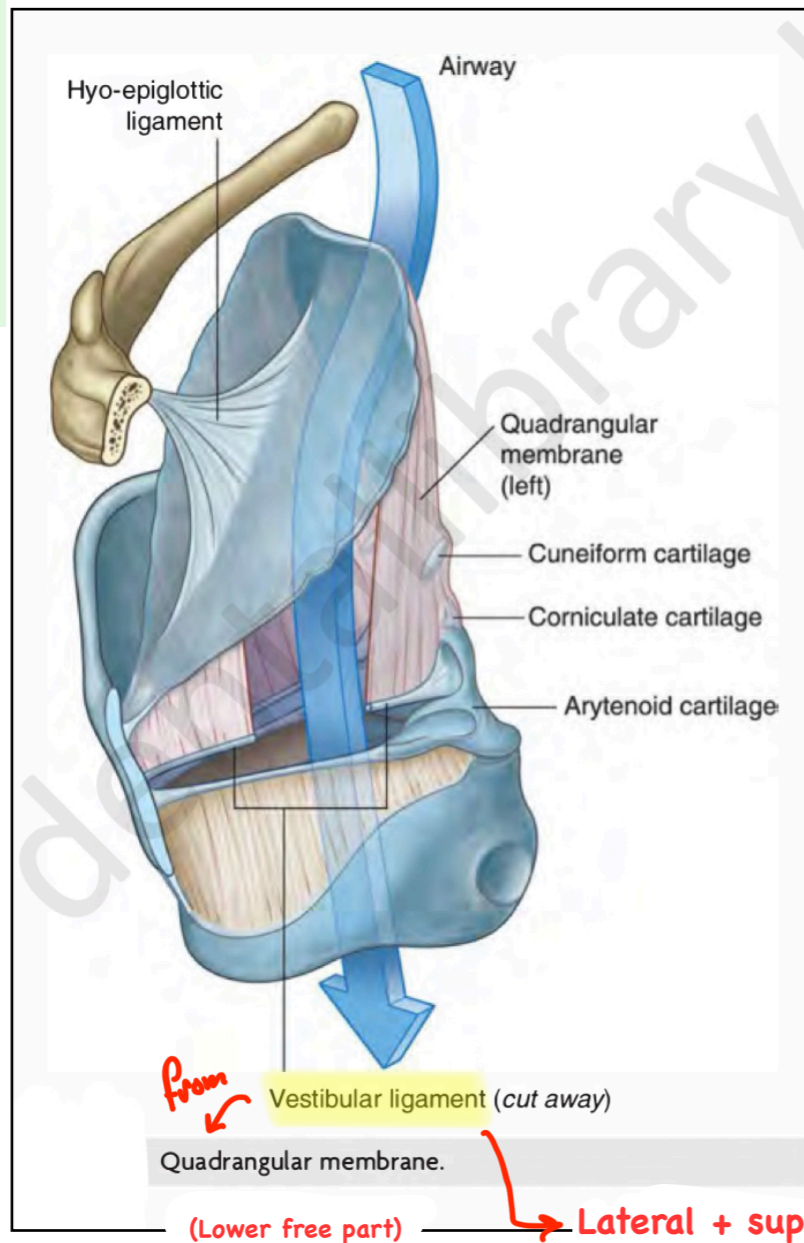
Vocal ligament results from thickening of upper free margin of cricothyroid ligament

Vestibular ligament results from thickening of lower free margin of quadrangular membrane

The students should know the Intrinsic ligaments (membranes) :

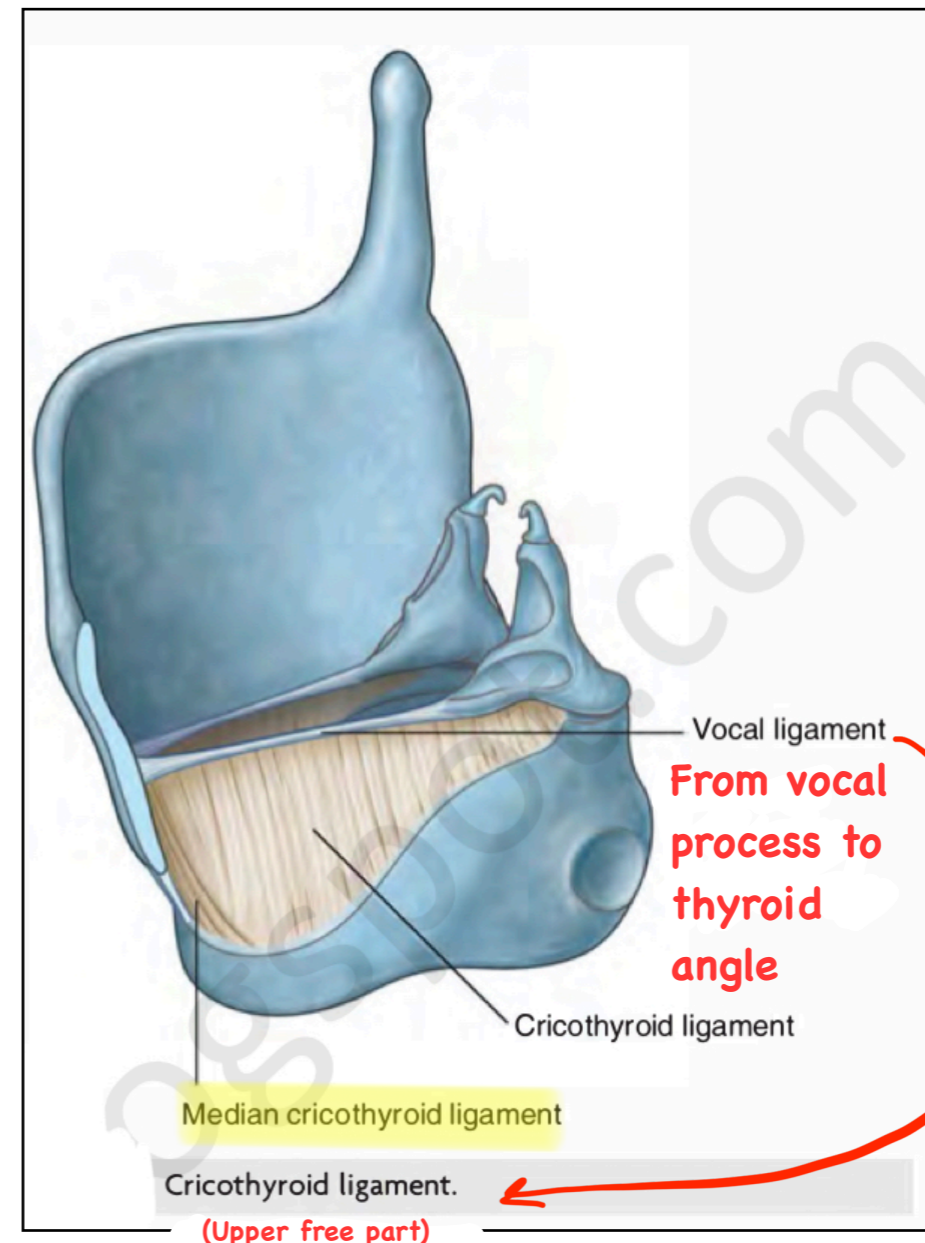
1. cricothyroid ligament (conus elasticus) → Originates from the arch of cricoid cartilage and extends superiorly to end in a free upper margin within the space enclosed by the thyroid cartilage
2. quadrangular membrane (**Cricovocal membrane**)

Originates from the lateral margin of the epiglottis and attaches to the anterolateral surface of arytenoid



from
Vestibular ligament (cut away)
Quadrangular membrane.

(Lower free part) → Lateral + superior to true vocal cord (vocal ligament)



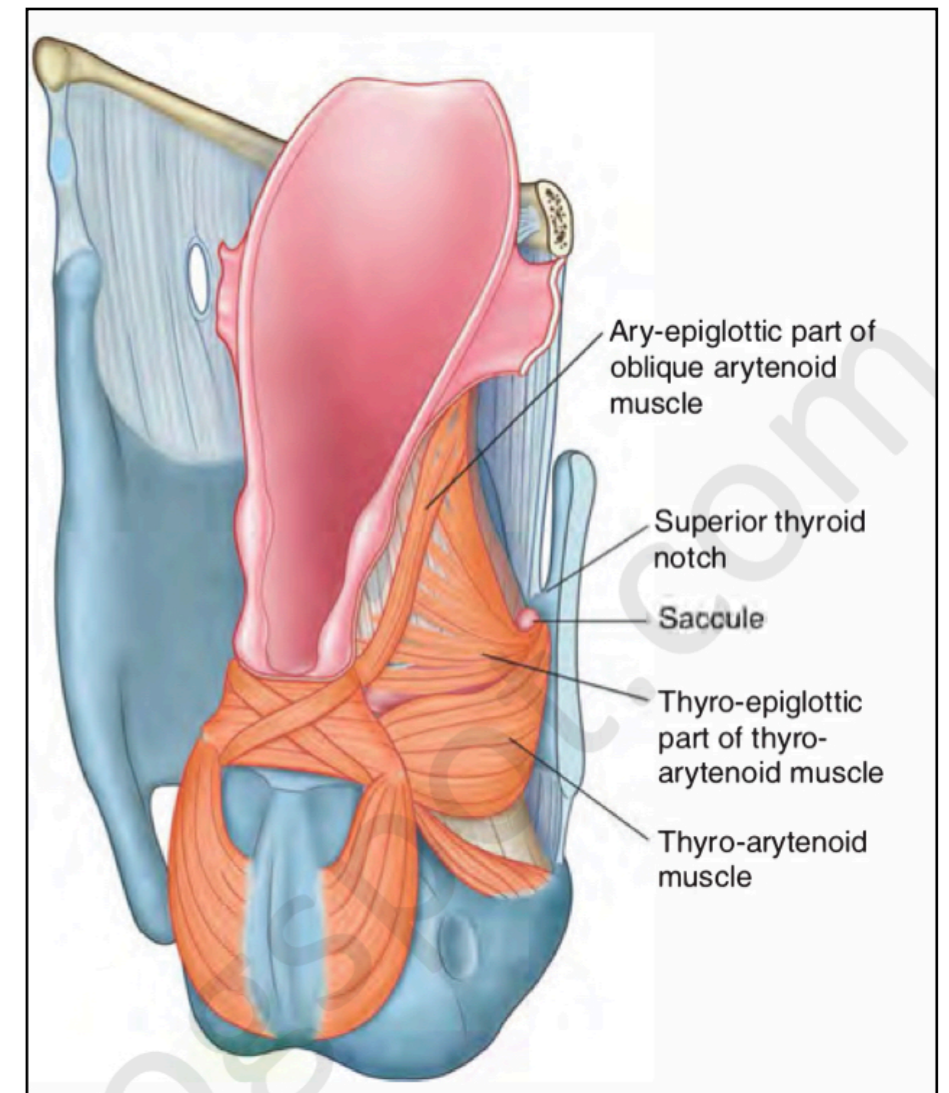
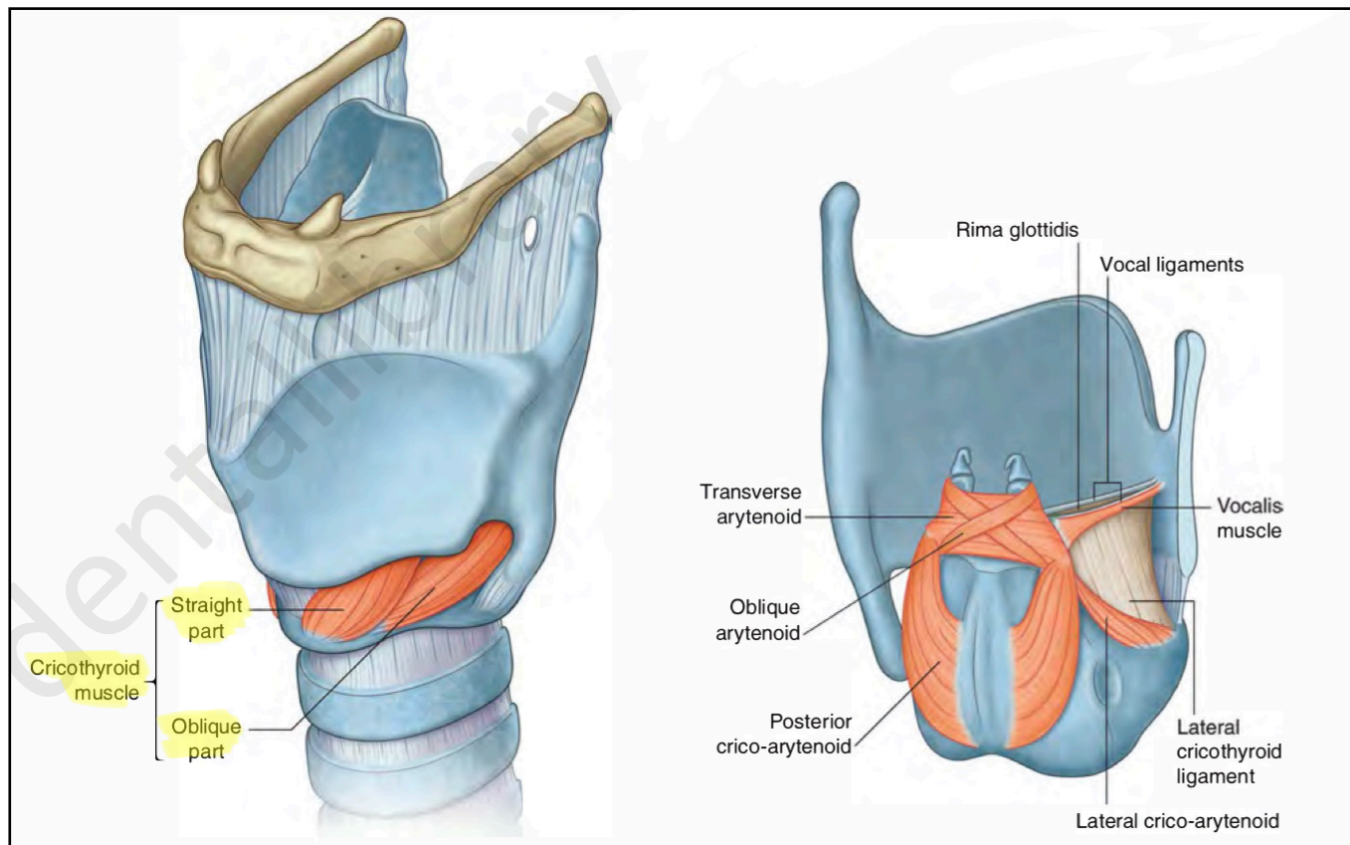
Vocal ligament
From vocal process to thyroid angle
Cricothyroid ligament

Median cricothyroid ligament
Cricothyroid ligament.
(Upper free part)

from

• Muscles of the larynx

- The students should know the Intrinsic muscles (origin/ insertion/ nerve supply/ action) :
 1. Cricothyroid muscles
 2. Posterior crico-arytenoid muscles
 3. Lateral crico-arytenoid muscles
 4. Transverse arytenoid
 5. Thyroarytenoid (vocalis)
 6. Oblique arytenoid
 7. Thyroepiglottic (aryepiglottic muscles)



muscle	origin & insertion	action	nerve supply
Cricothyroid muscle	The <u>oblique</u> part from the arch of cricoid to inferior horn of thyroid. The <u>straight</u> part from the arch of the cricoid to posteroinferior margin of the thyroid lamina	Tense vocal cords (high pitch of voice)	External laryngeal nerve
Posterior and lateral cricoarytenoid muscles	<u>Origin</u> : posterior cricoarytenoid originate from the posterior surface of cricoid lamina. The lateral cricoarytenoid muscle originates from lateral surface of cricoid lamina. <u>Insertion</u> : both in muscular process of arytenoid	lateral cricoarytenoid muscles adducts the vocal cords. Posterior cricoarytenoid abducts the vocal cords	recurrent laryngeal nerve
Transverse arytenoid	From one arytenoid to the other	Closes posterior part of rima glottidis (adductor)	recurrent laryngeal nerve
Thyroarytenoid (vocalis muscle)		relaxes the true vocal cords (Low pitch of voice)	recurrent laryngeal nerve
Oblique arytenoid	From the muscular process of one arytenoid to the apex of the opposite arytenoid.	narrow the inlet by adducting aryepiglottic folds.	recurrent laryngeal nerve
Aryepiglotticus muscle	between arytenoid and epiglottis, it lies within the aryepiglotticus fold	widening of the laryngeal inlet by the abduction the aryepiglottic folds when acting ALONE, but it narrows the inlet when acting with oblique arytenoid.	recurrent laryngeal nerve

• Muscles of the larynx

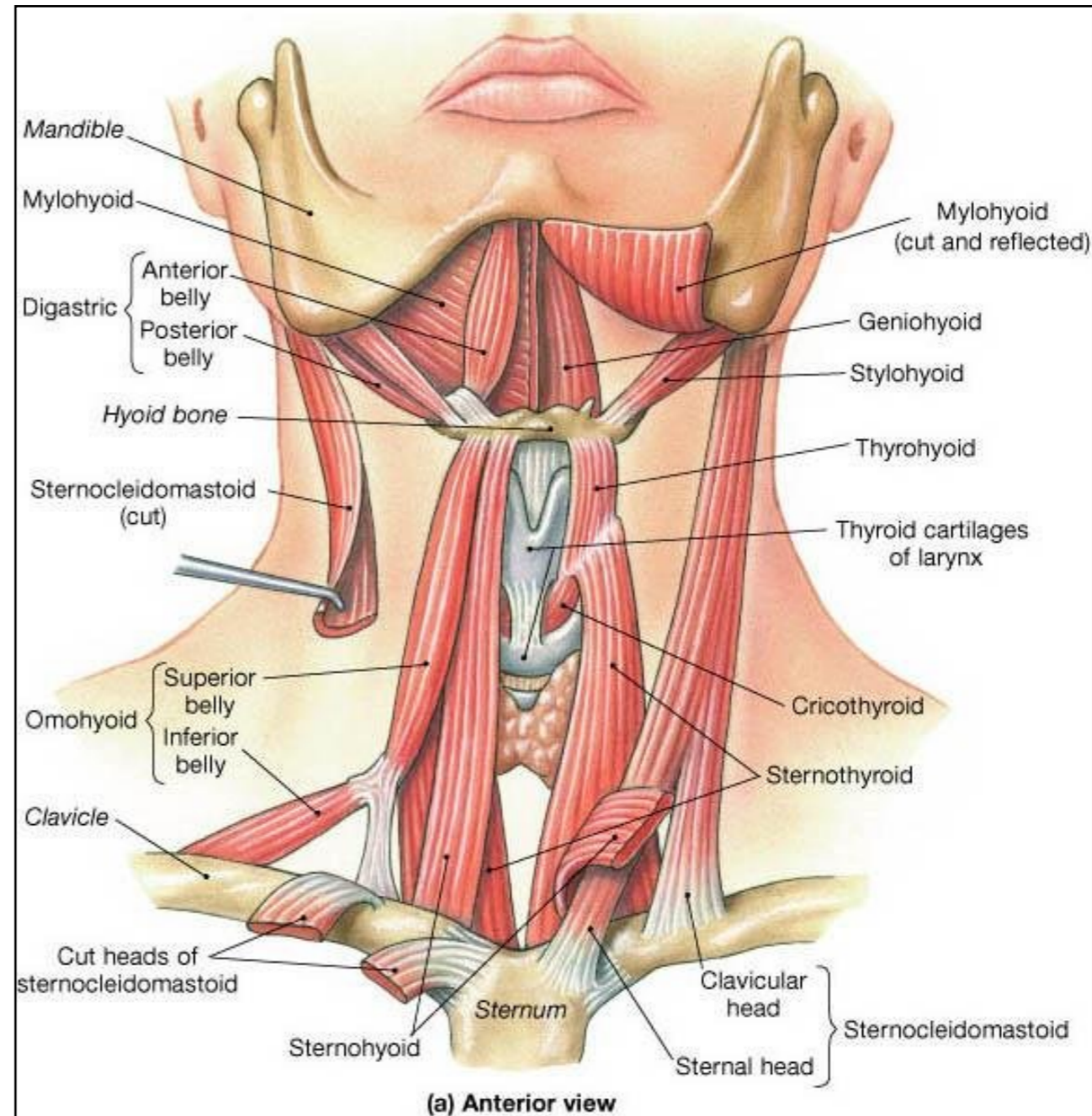
- The students should know the extrinsic muscles :

- **Elevators of the larynx:**

1. Digastric muscle
2. Stylohyoid
3. Mylohyoid
4. Geniohyoid

- **Depressors of the larynx :**

1. Sternothyroid
2. Sternohyoid
3. Omohyoid



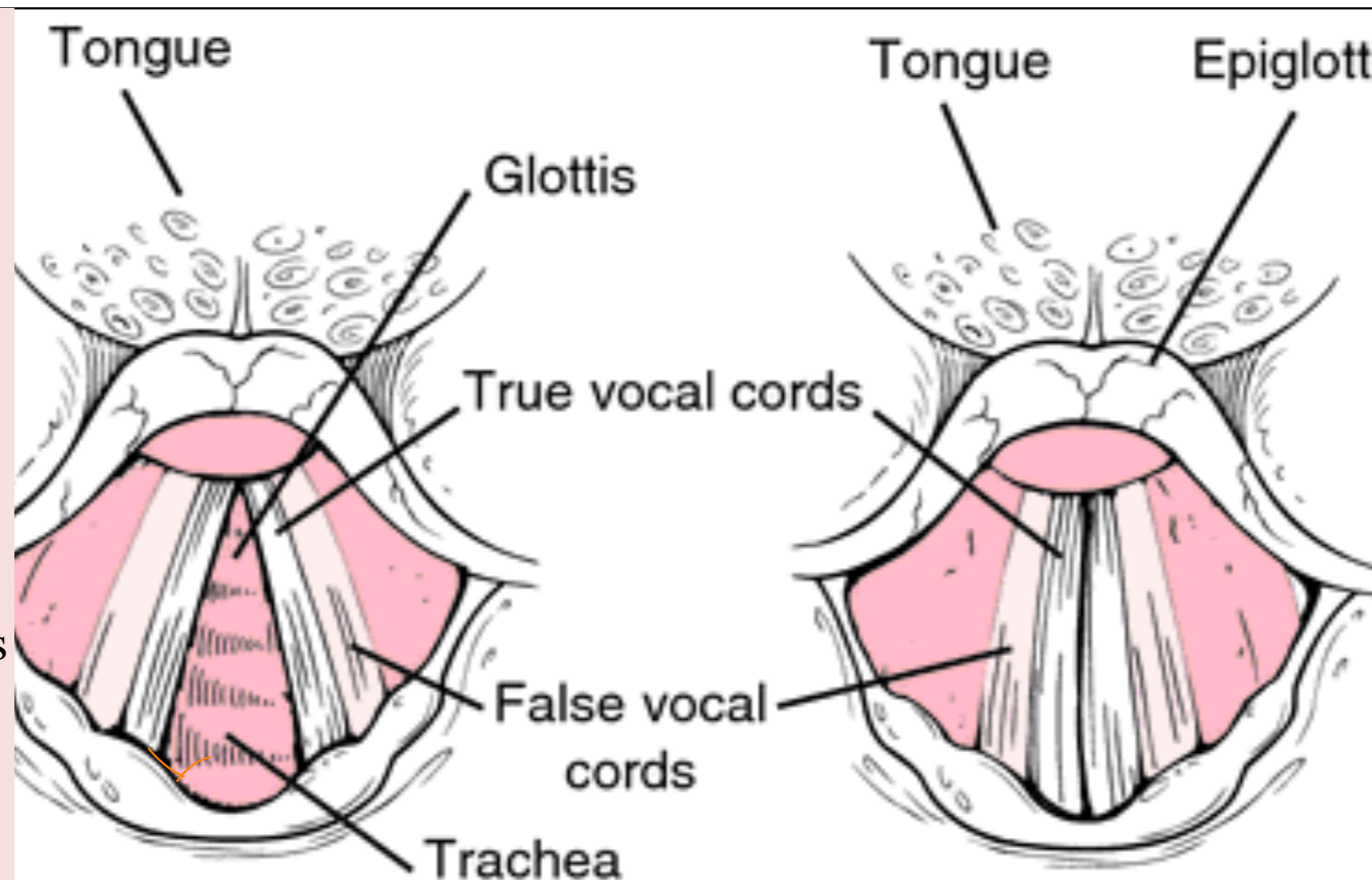
✦ Vocal Cords.

Important

- The students should observe the different between true and false vocal cords :

True vocal cord:
thickened, upper free edge of the cricothyroid membrane

- 1.They consist of Vocal ligaments
- 2.stratified squamous nonkeratinized
- 3.They have Vocalis muscles
- 4.They have no submucosa
- 5.white in color (no blood vessels)



False vocal cord:
formed by the lower free edge of quadrangular membrane

1. consist of vestibular ligament
2. respiratory mucosa (pseudostratified columnar)
- 3.Red color (Vascularized)
4. Fixed and not movable

*Superior to the true vocal cords

✱ Vocal Cords.

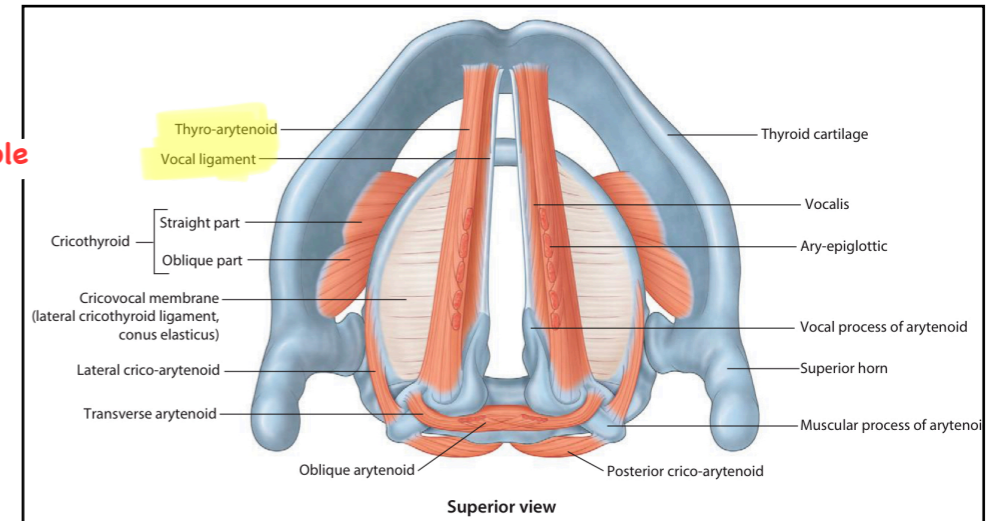
- The students should know the characters of the true vocal cord :

Submucosa presents in all respiratory tract except true vocal cords

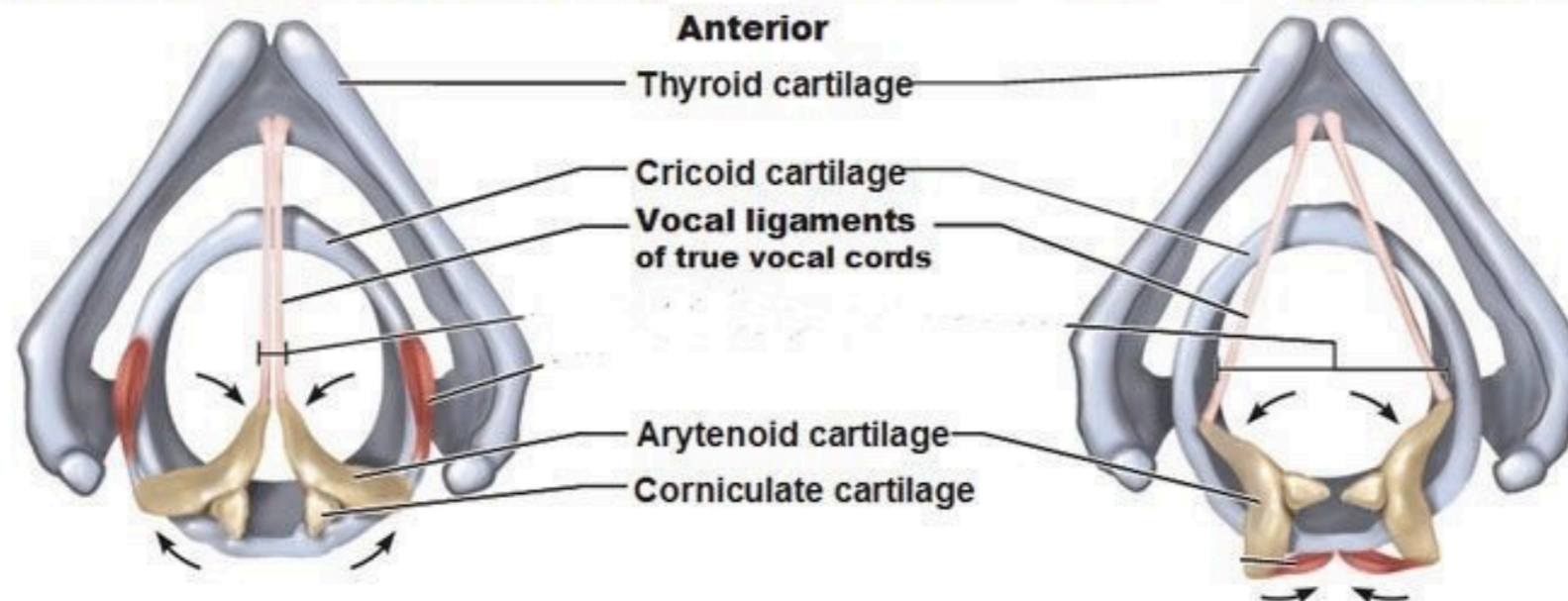
- Vocal ligament
- Mucous membrane (stratified squamous)
- Vocalis muscle
- No submucosa. to prevent the accumulation of fluid
- Avascular.
- No lymphatic drainage.

Nonkeratinized
Mitotic + regenerable

supplied by diffusion from the surrounding fluid



True Vocal Cords (= "Folds" or "Ligaments")



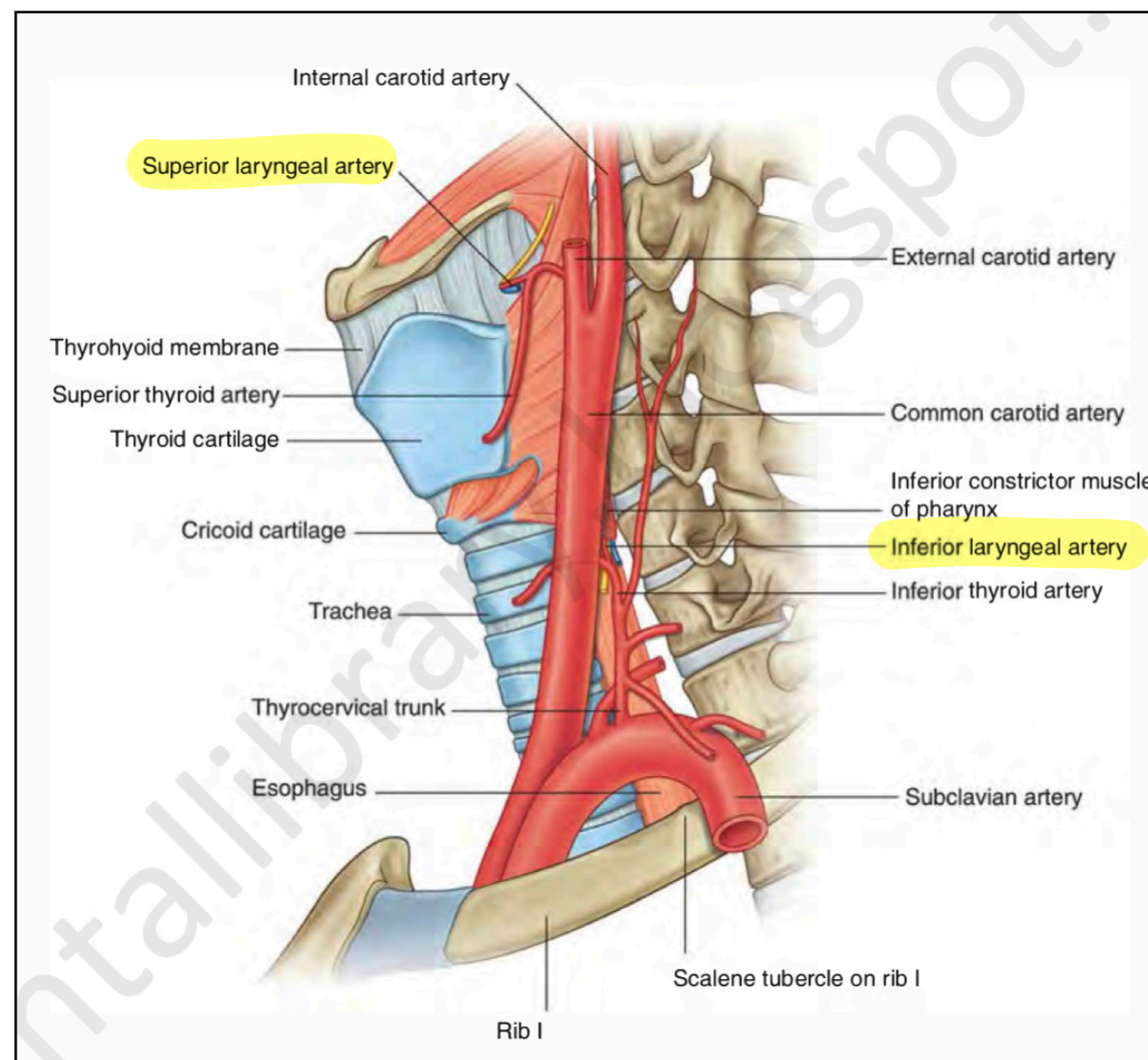
• Blood and nerve supply

- The students should know the arterial supply of the larynx :
 1. Superior laryngeal artery. **External carotid artery** ▶ **Superior thyroid artery** ▶ **Superior laryngeal artery**
 2. Inferior laryngeal artery. **Subclavian artery** ▶ **Throcervical trunk** ▶ **Inferir laryngeal artery**

Motor: by recurrent laryngeal nerve except cricothyroid supplied by external laryngeal nerve
Sensory: By internal laryngeal nerve (above true vocal cords) and recurrent laryngeal nerve (below true vocal cords)

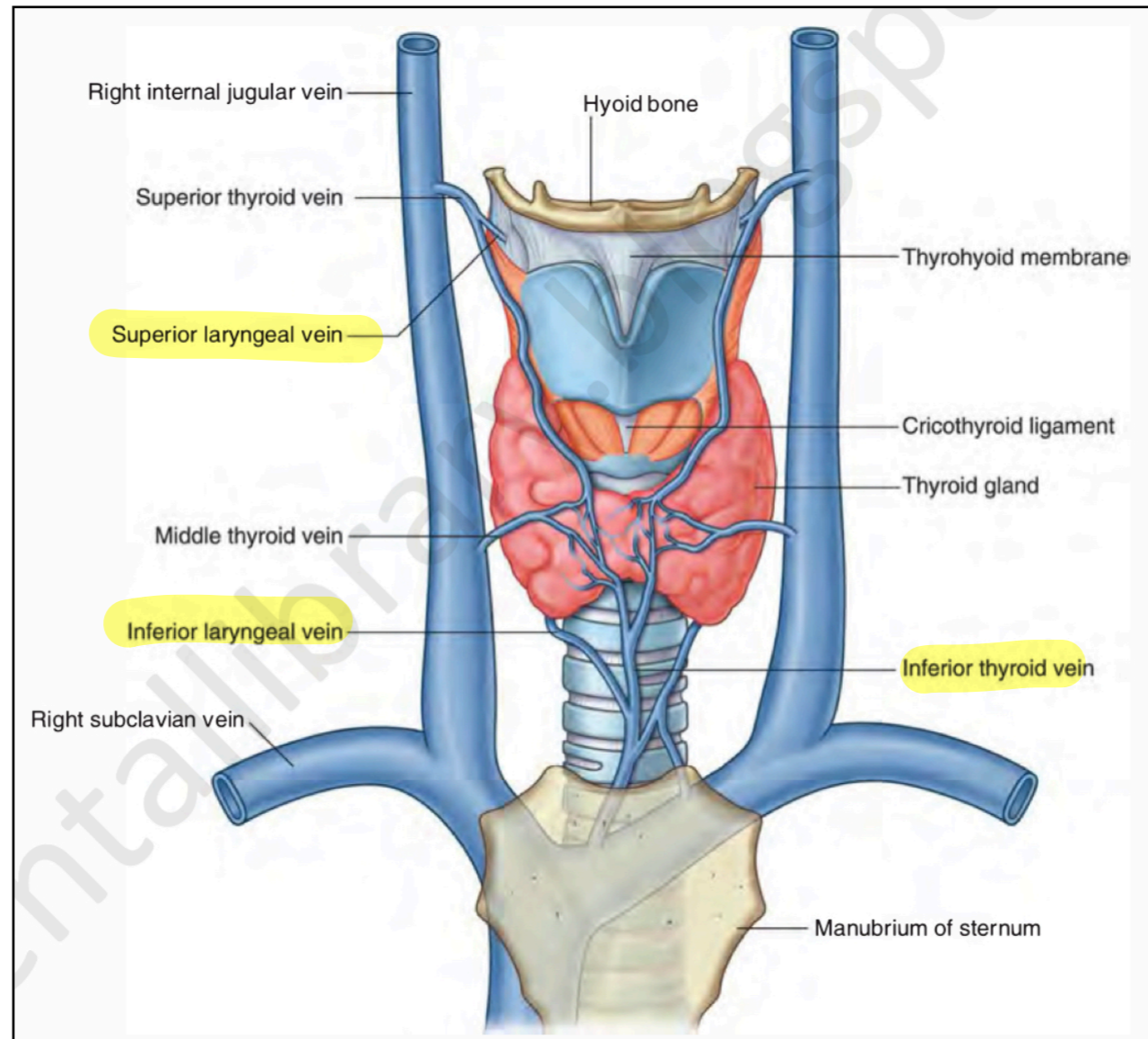
note:

Recurrent laryngeal nerve passes between the branches of the inferior thyroid artery and then with the inferior laryngeal artery. Together, they ascend in the groove between the esophagus and trachea, entering the larynx by passing deep to the margin of the inferior constrictor muscle of the pharynx



• Blood and nerve supply

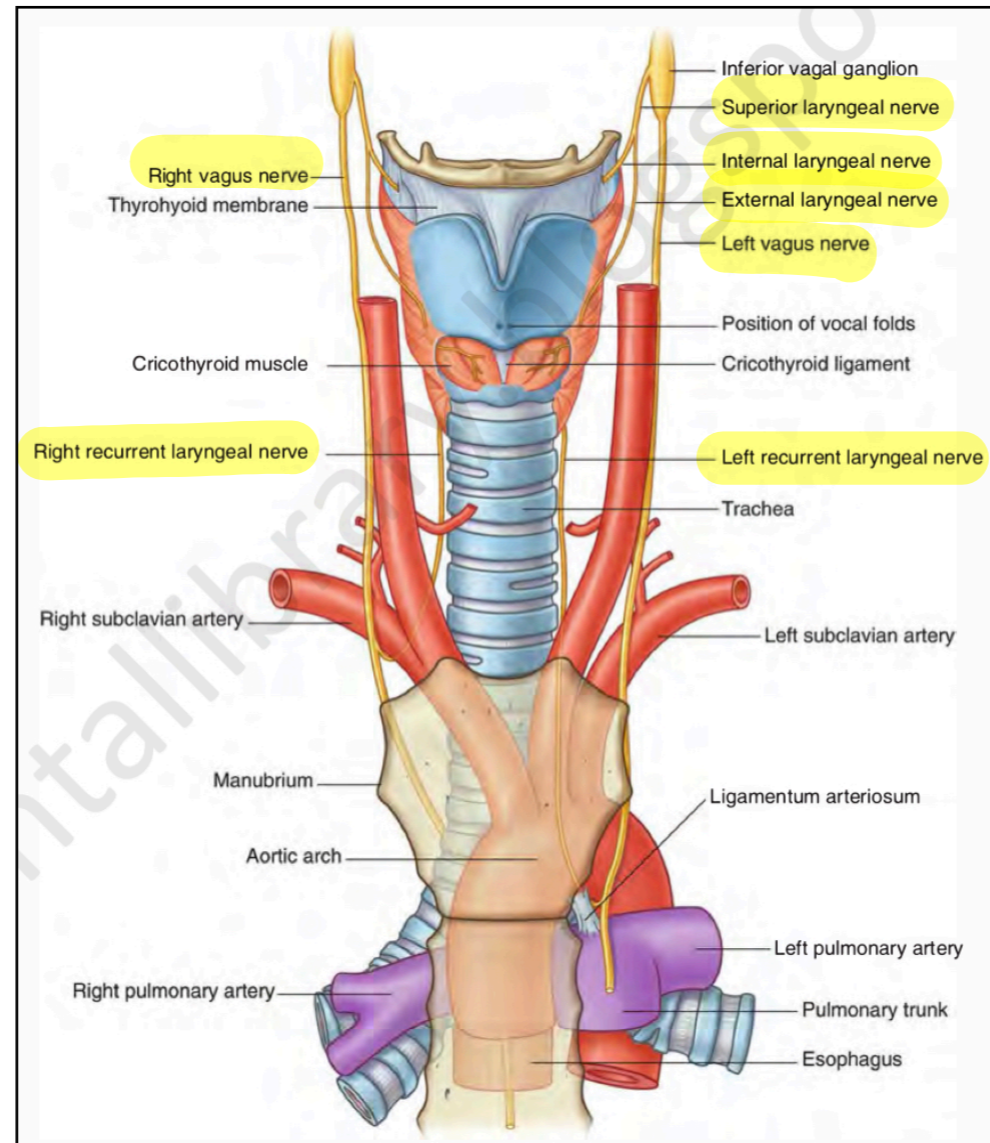
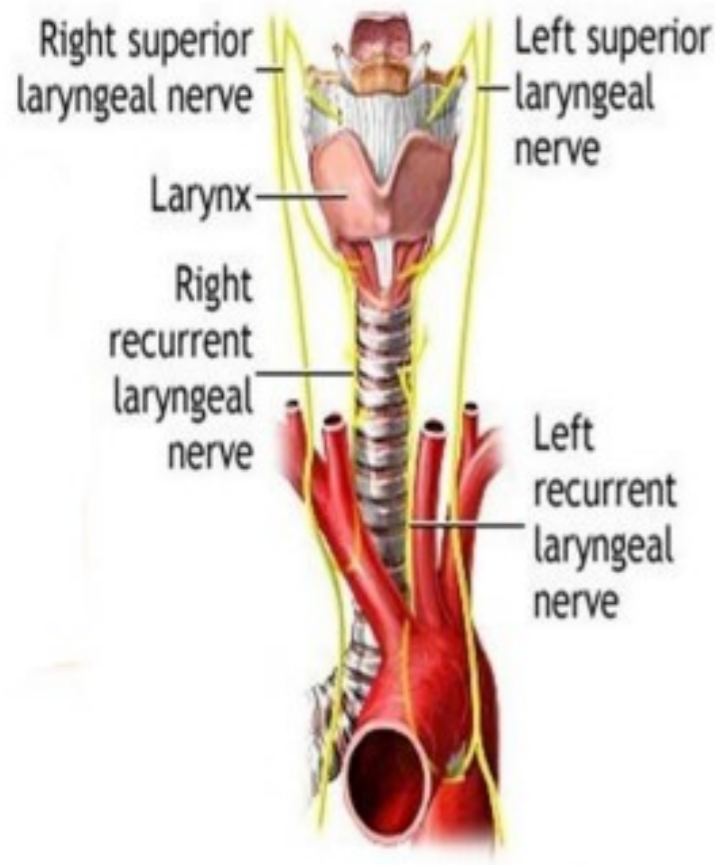
- The students should know the venous drainage of the larynx:



- * Superior laryngeal vein → drains into superior thyroid vein → internal jugular vein
- * Inferior laryngeal vein → inferior thyroid vein → left brachiocephalic vein.
- * The inferior thyroid vein ends in the left brachiocephalic

• Blood and nerve supply

- The students should know the nerve supply of the larynx:
 1. Superior laryngeal nerves.
 2. Recurrent laryngeal nerves.
- The students should know the results of injury of recurrent laryngeal nerve



In sheet (4)
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Edited by: Shahed Atiyat