

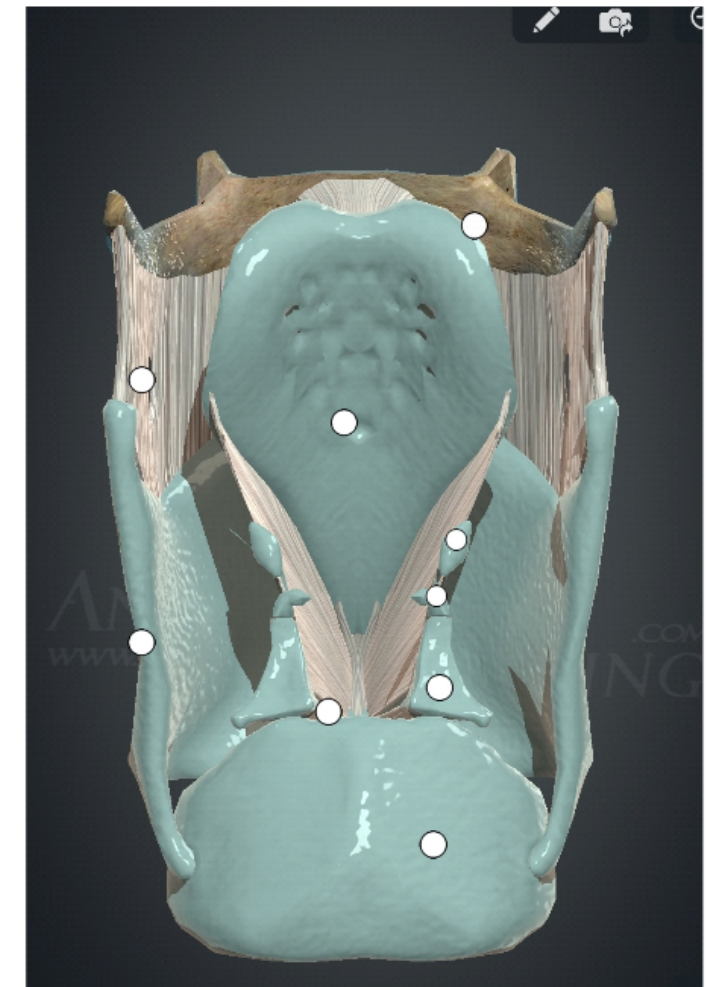
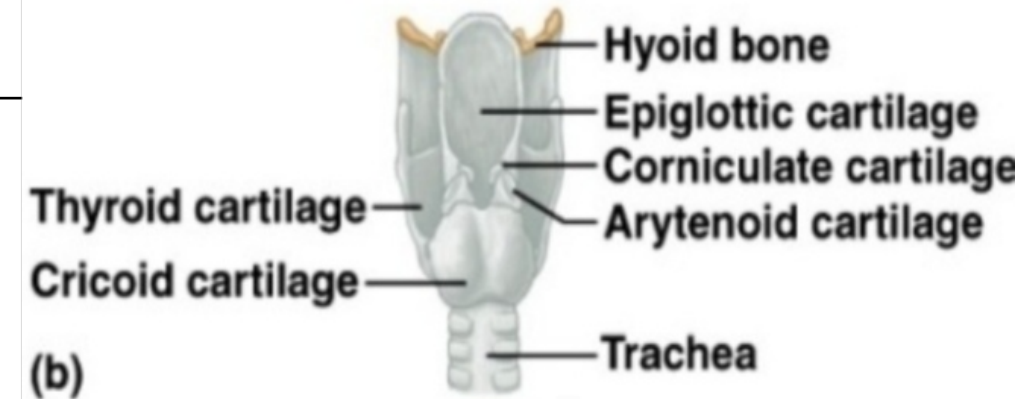
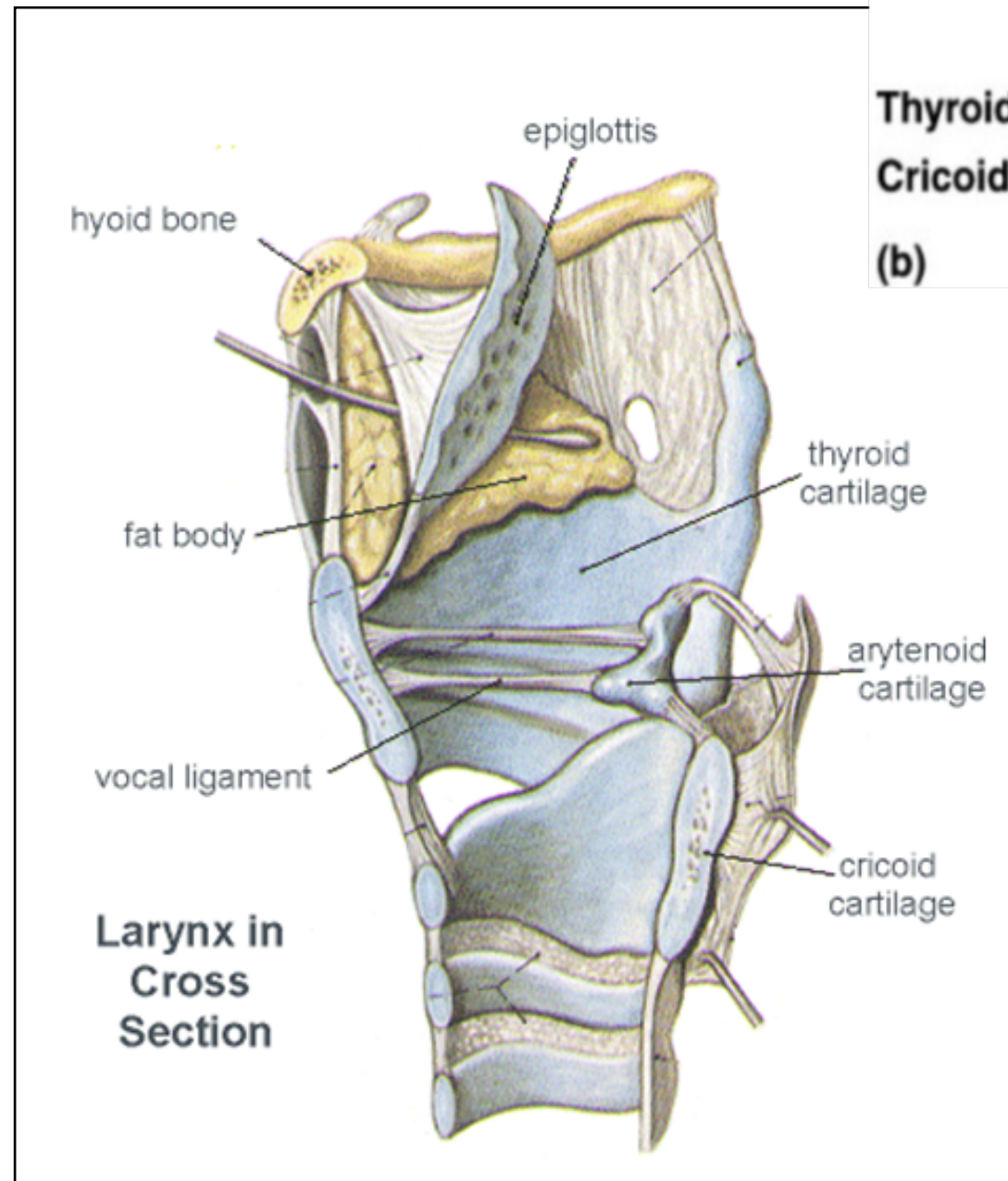
Lab / Second Week

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

✱ Larynx.

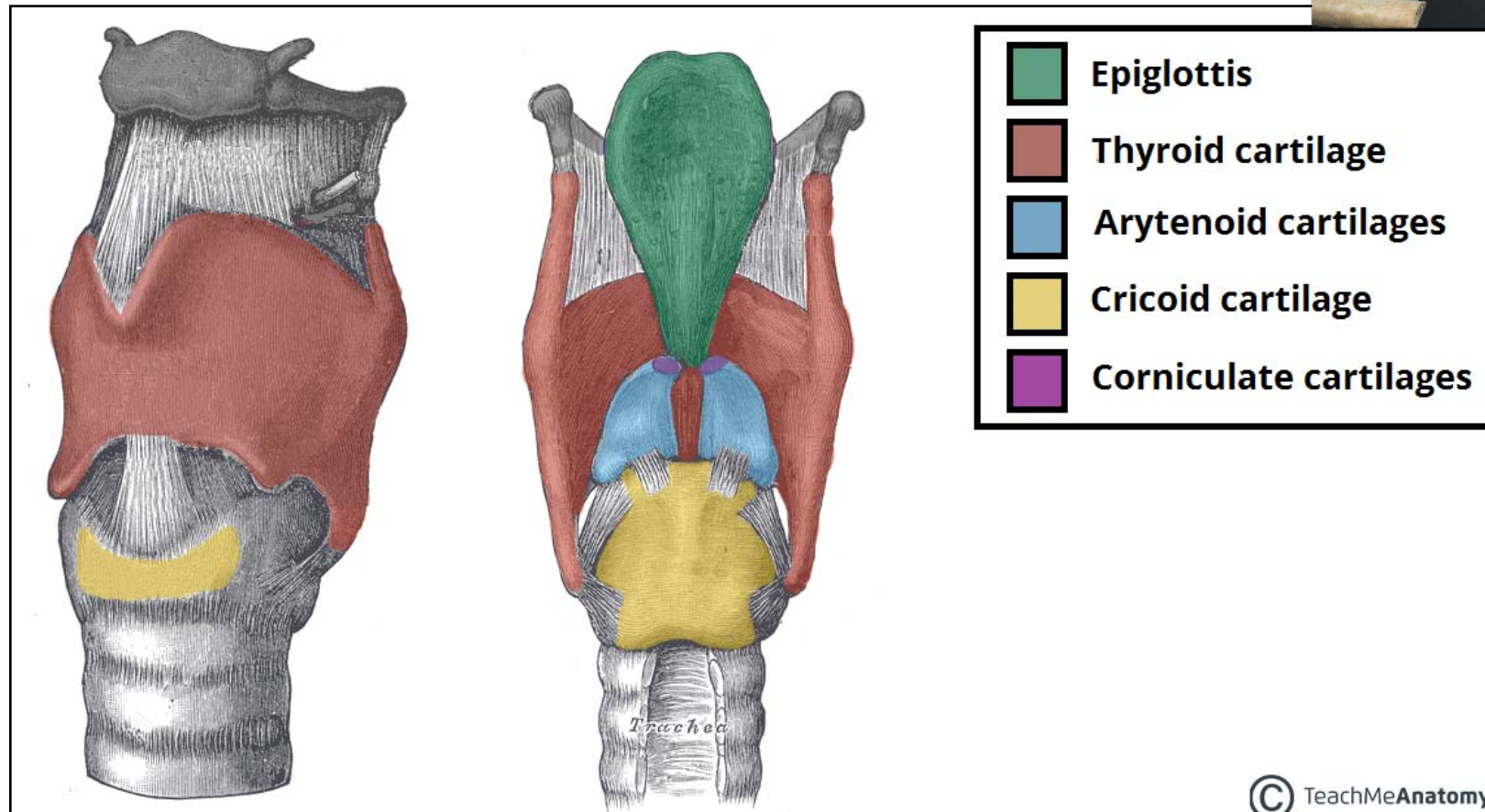
- The students should know the parts of the Larynx :

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



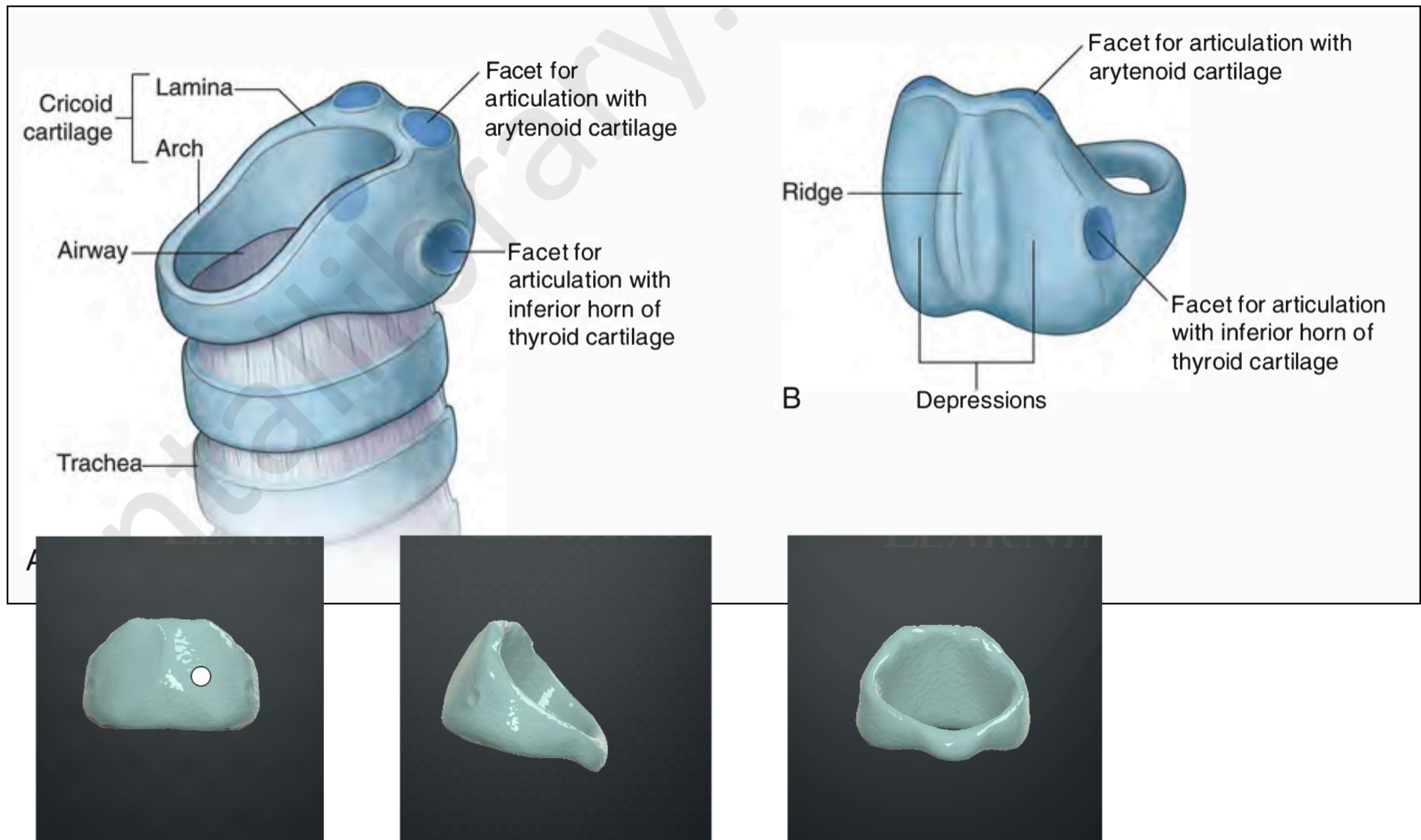
• Cartilages of the larynx

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



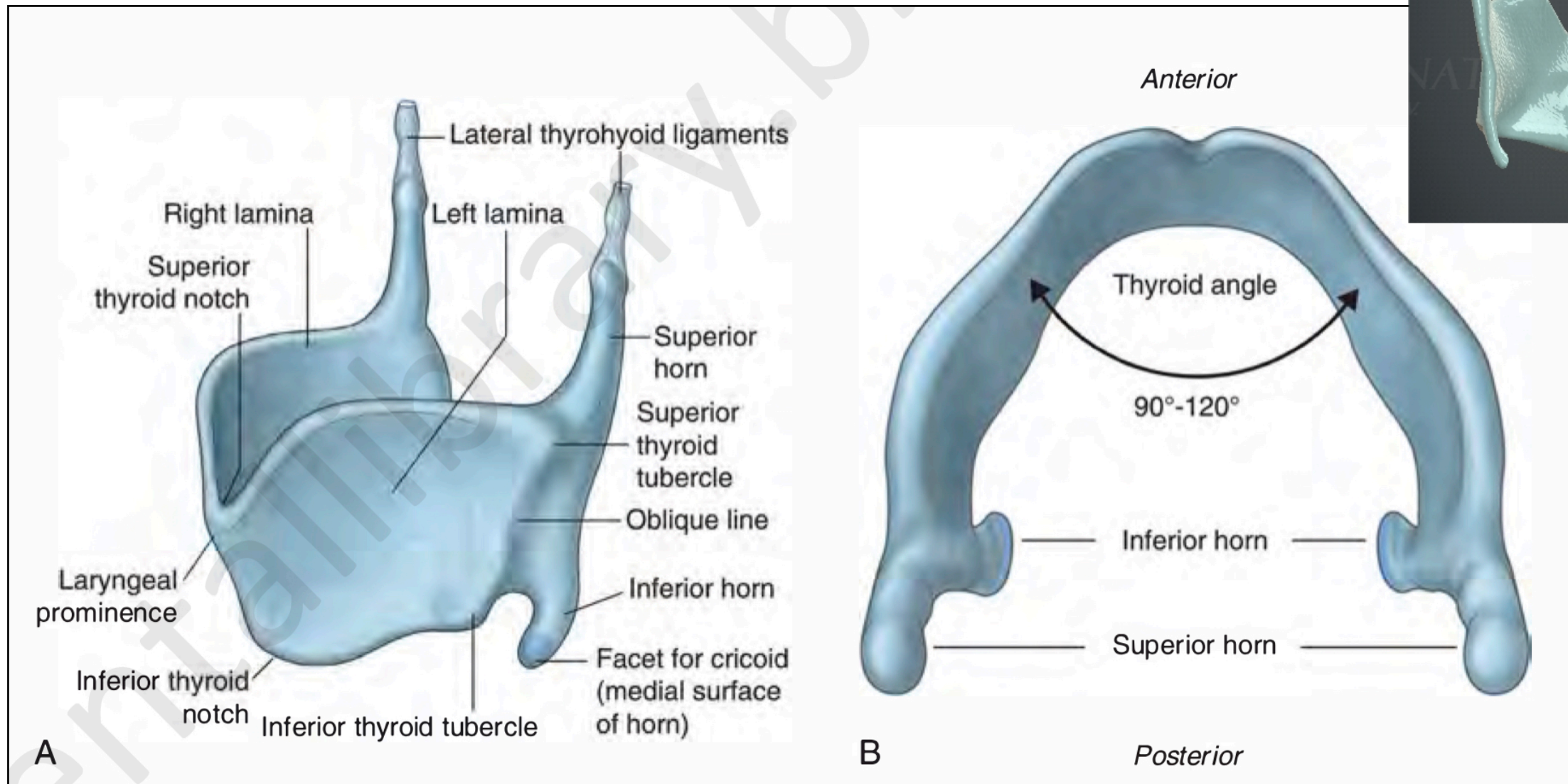
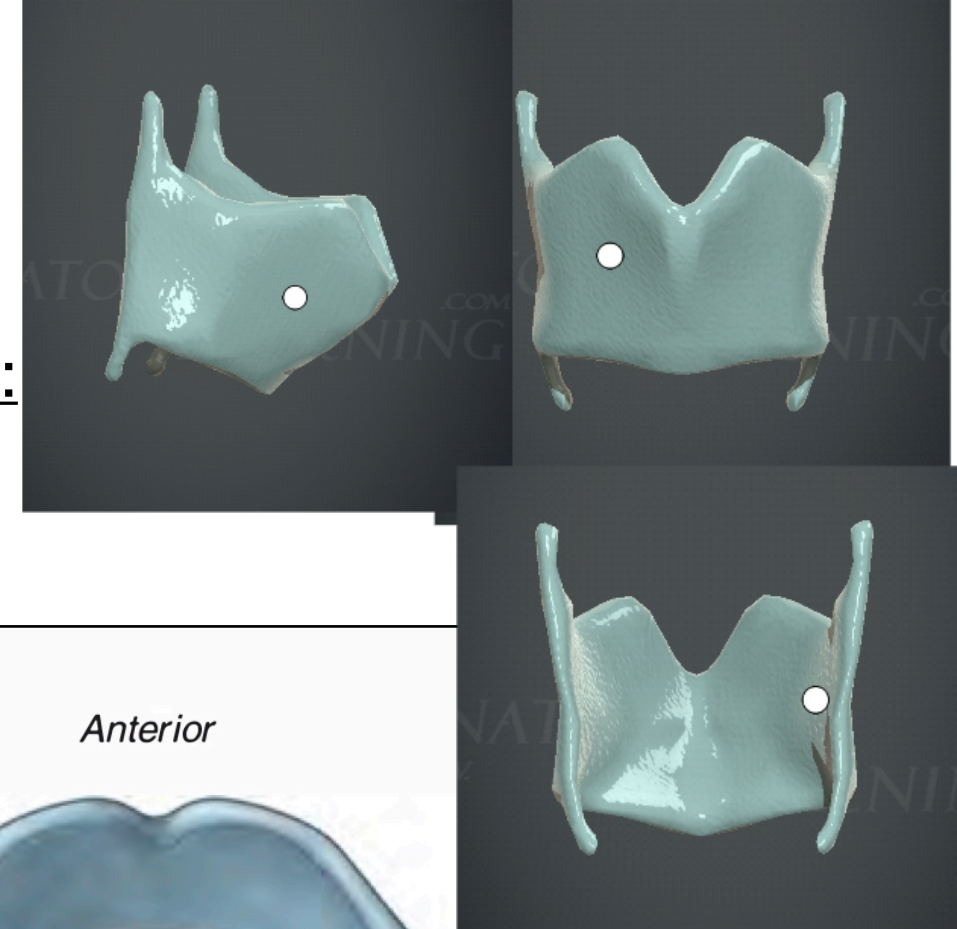
• Cartilages of the larynx

- The students should know the parts of cricoid cartilage :



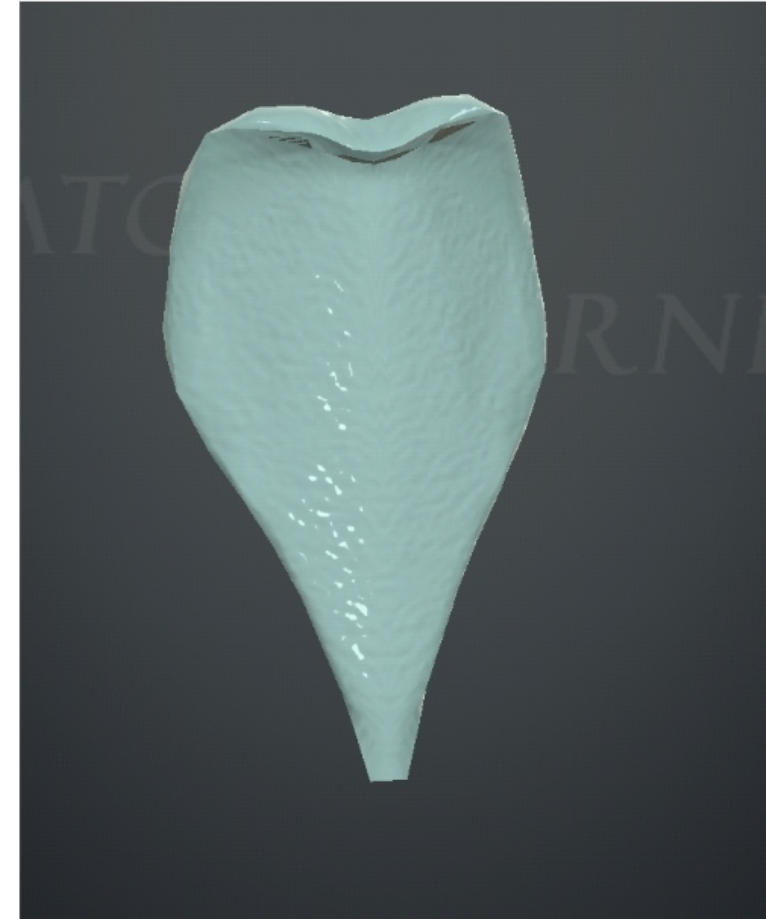
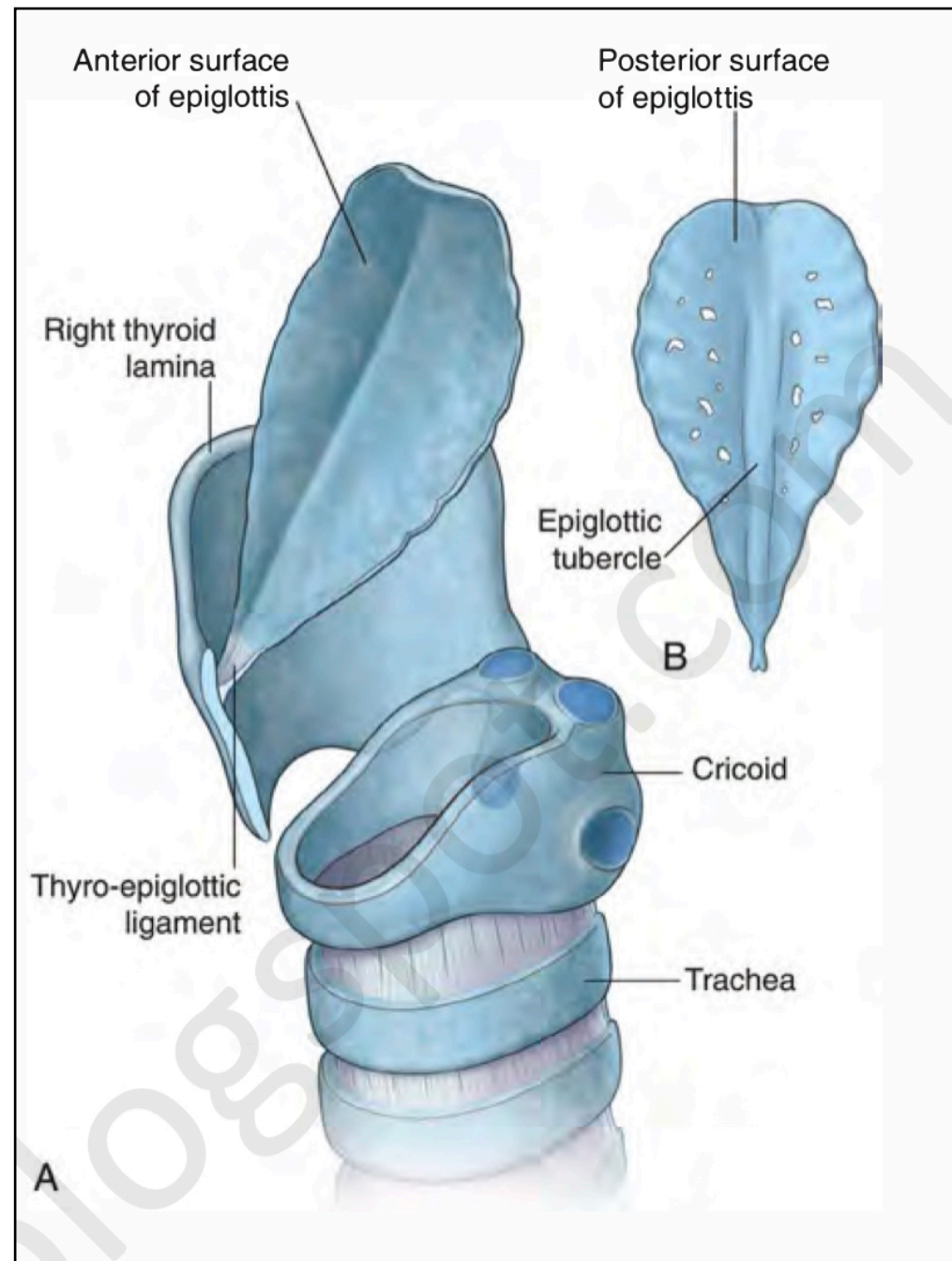
• Cartilages of the larynx

- The students should know the parts of thyroid cartilage :



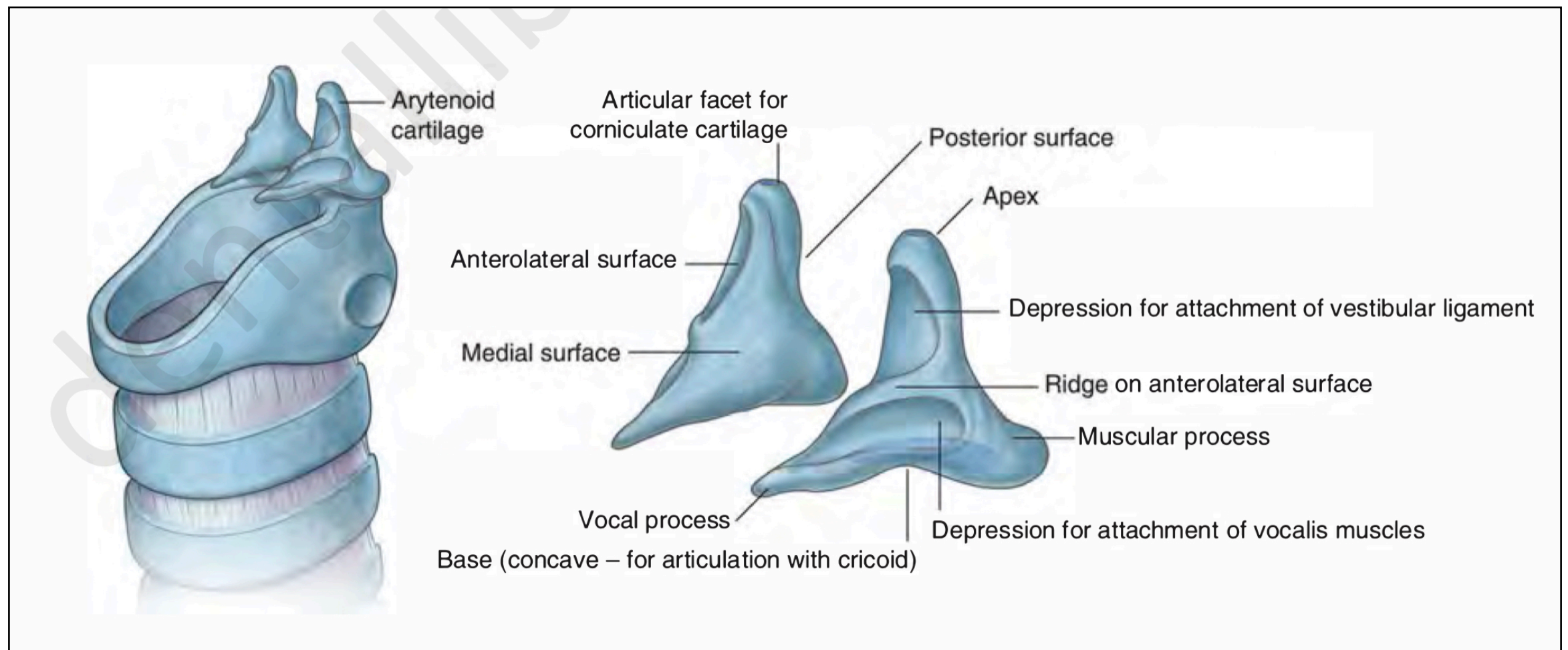
• Cartilages of the larynx

- The students should know the parts of epiglottis cartilage :



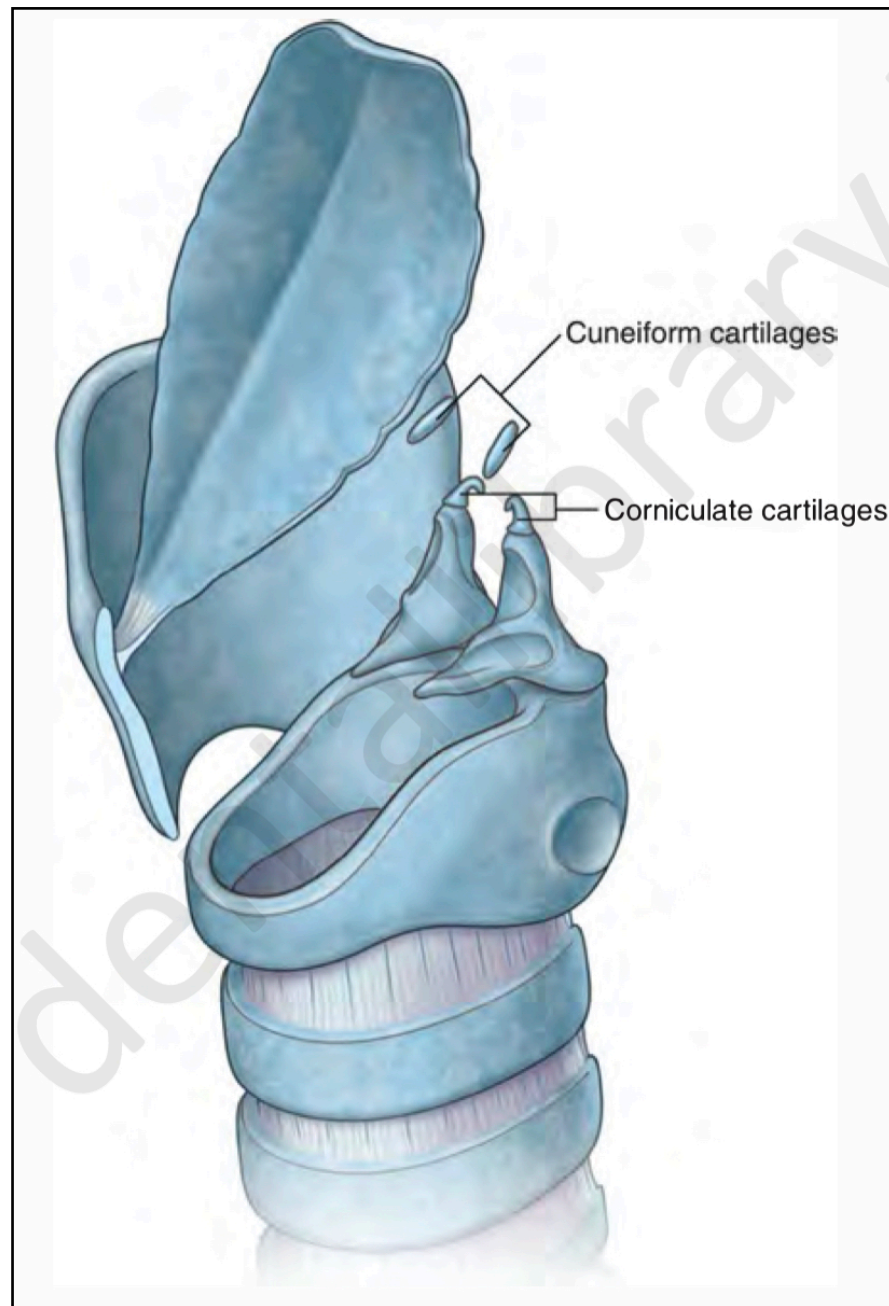
• Cartilages of the larynx

- The students should know the parts of Arytenoid cartilage :



• Cartilages of the larynx

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



• Ligaments of the larynx

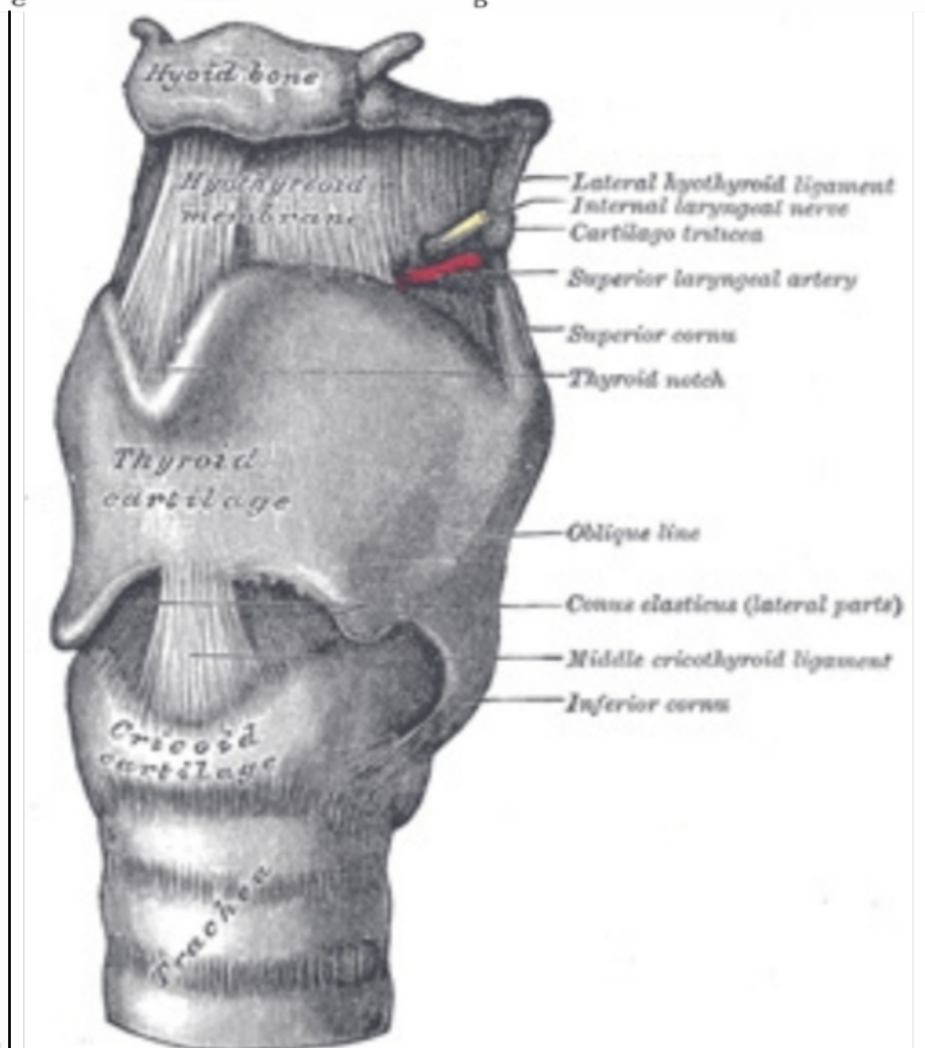
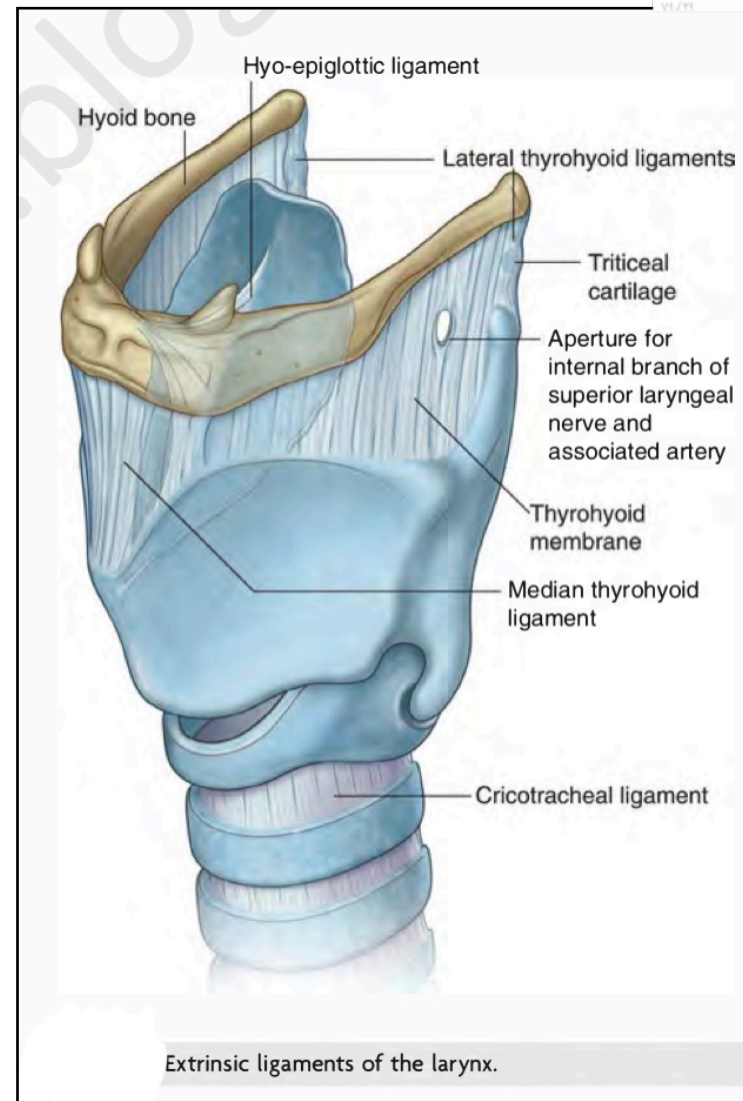
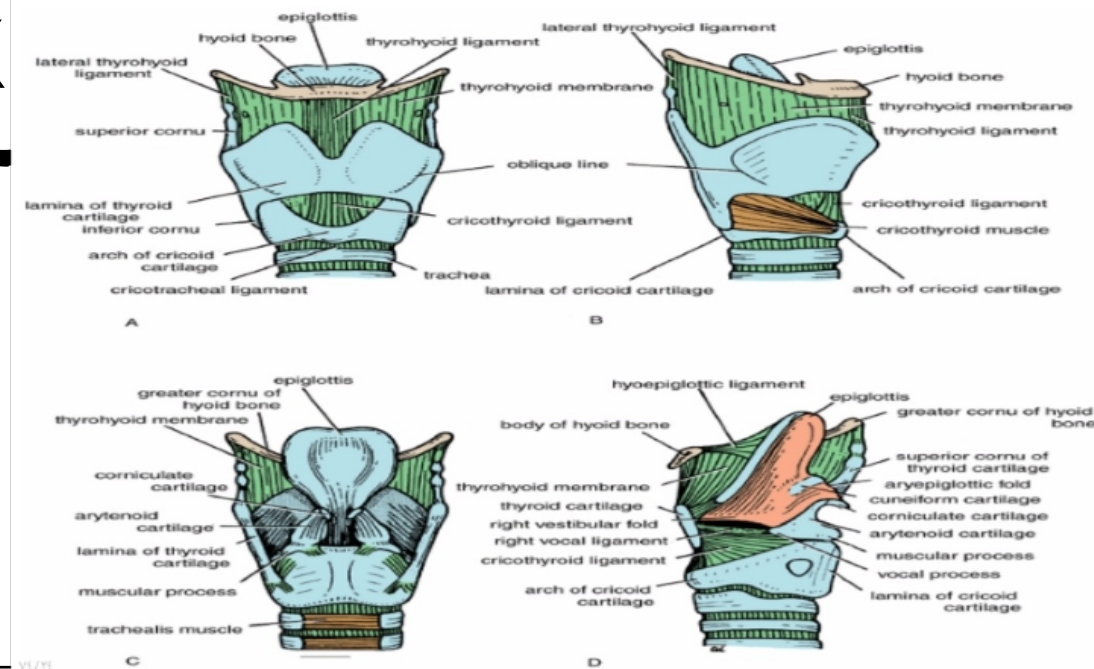
- The students should know the Extrinsic ligaments :

1. Cricotracheal ligament
2. The hyo-epiglottic ligament
3. Thyrohyoid ligament and membrane

↳ Internal laryngeal nerve + Superior laryngeal Artery

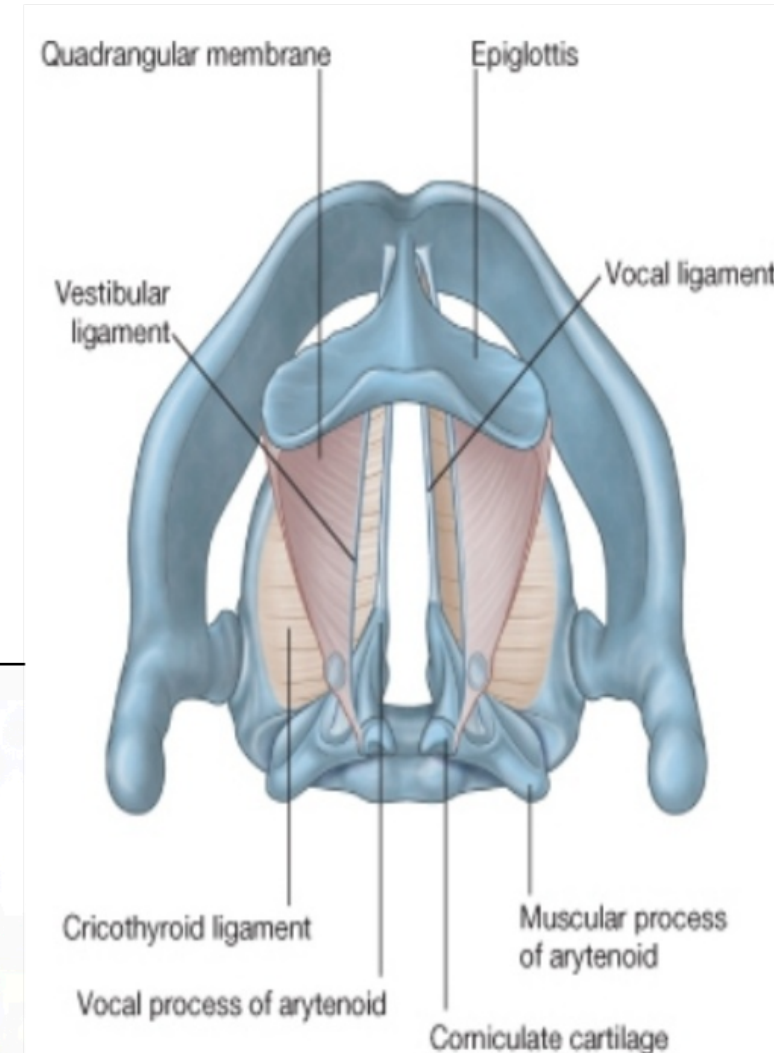
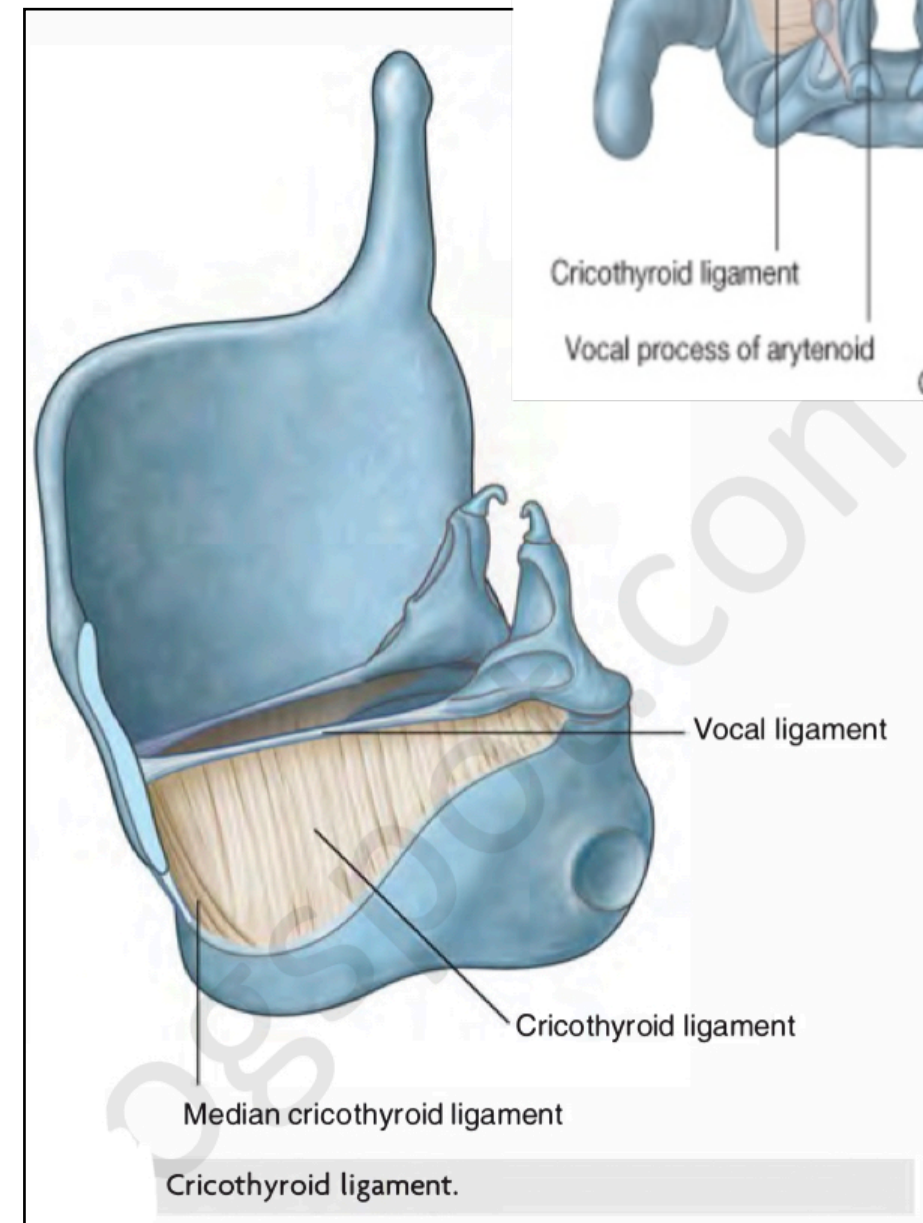
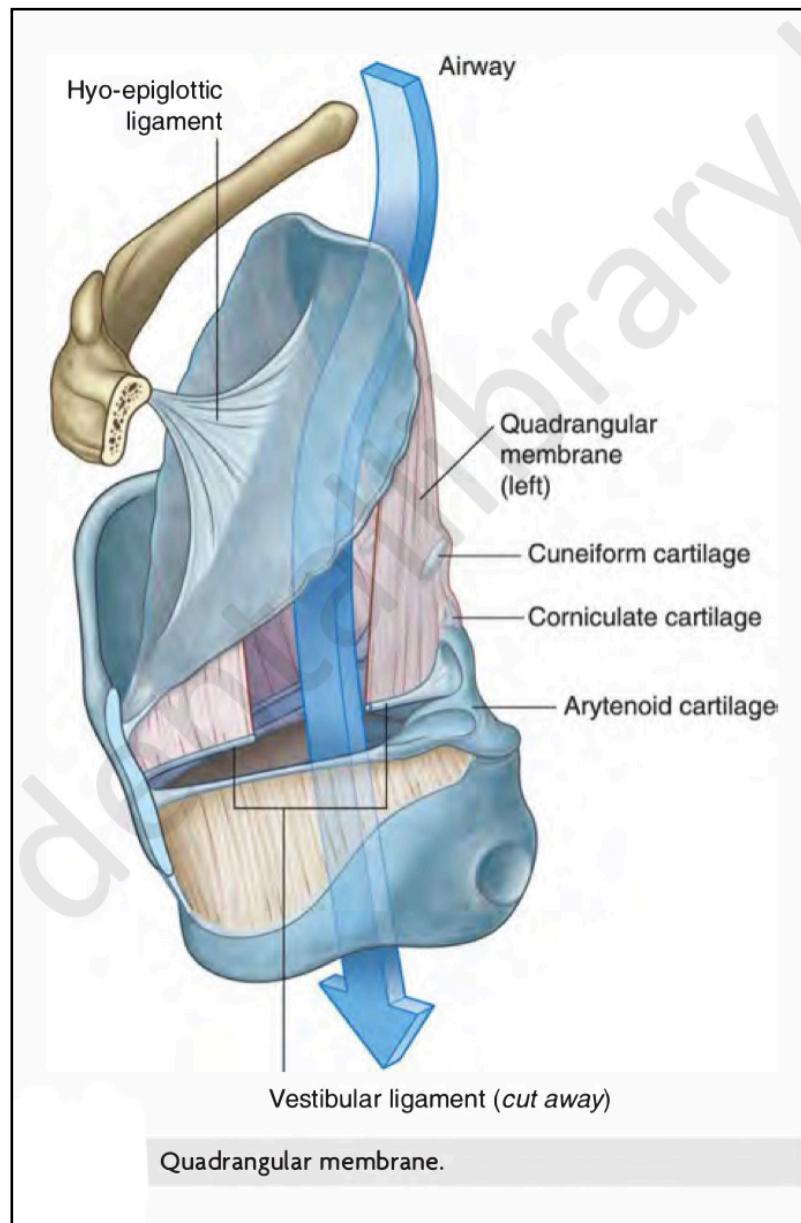
- What is the structures which pass through the membrane ?

Cartilage and Ligaments



• Ligaments of the larynx

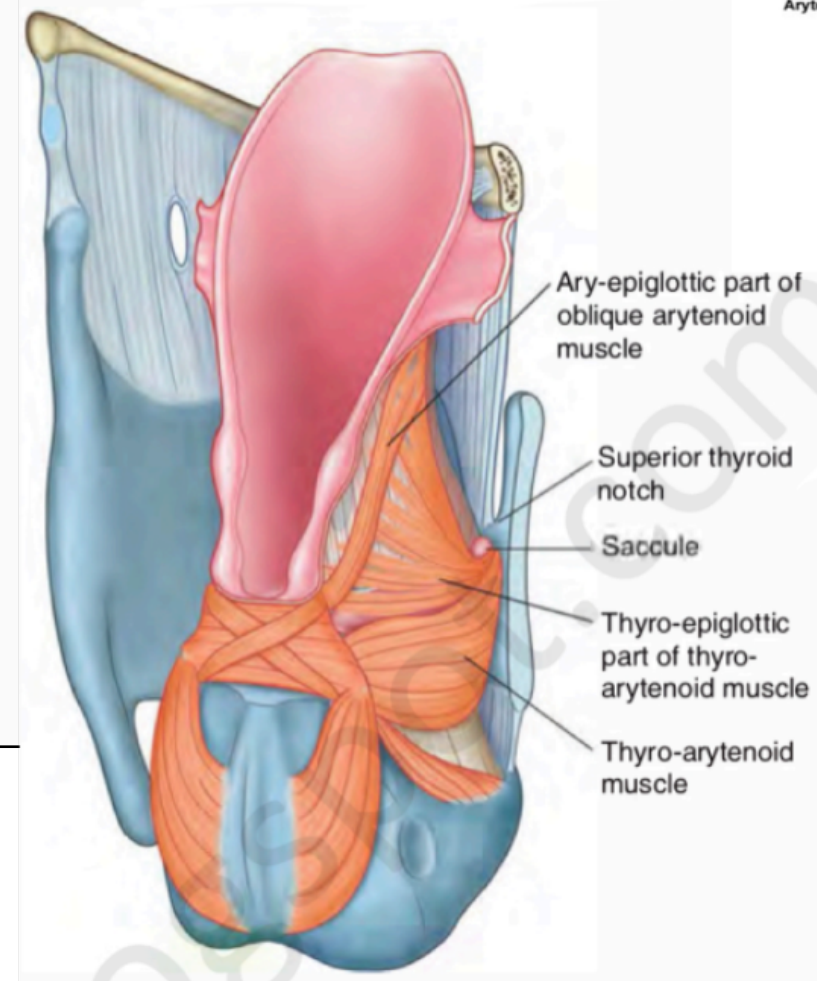
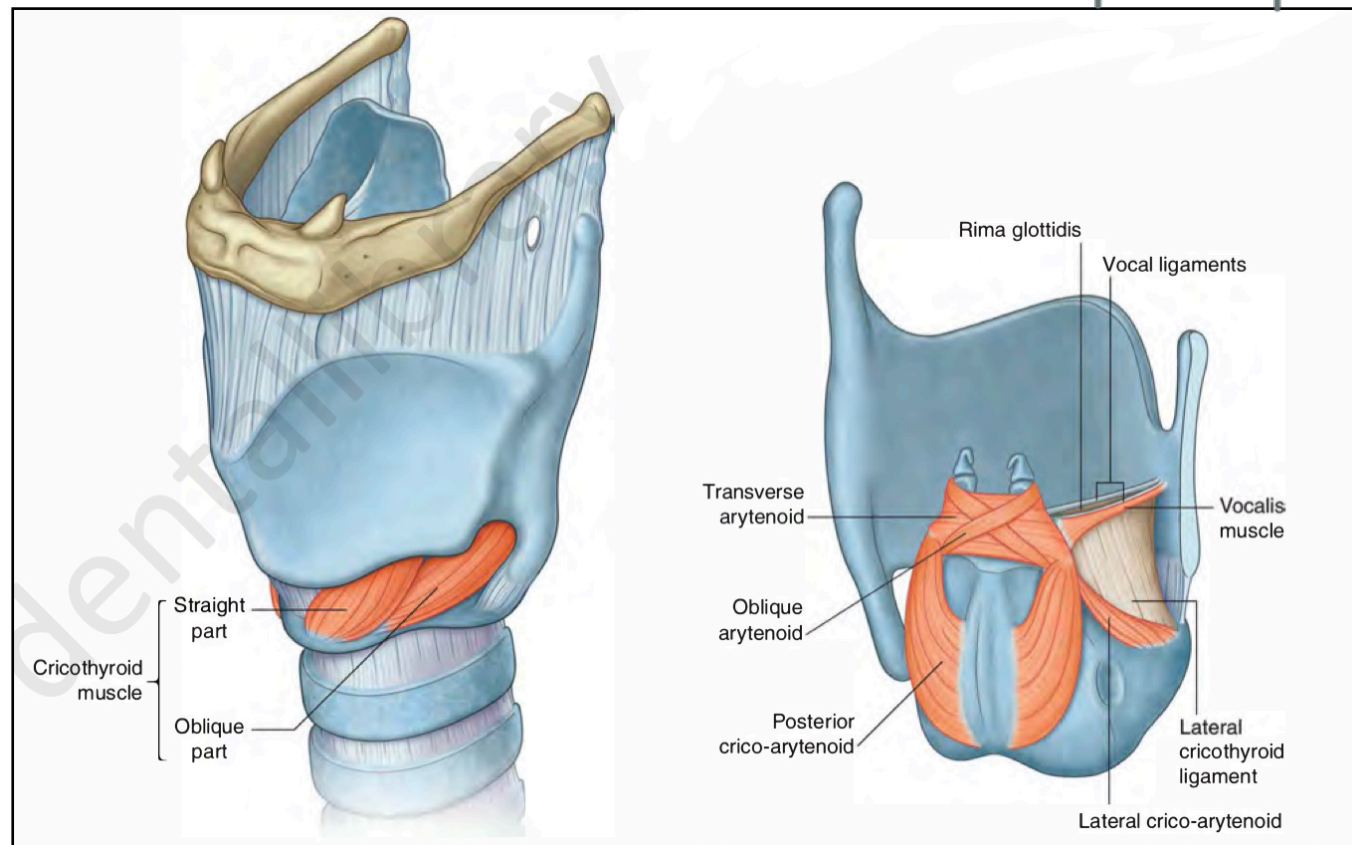
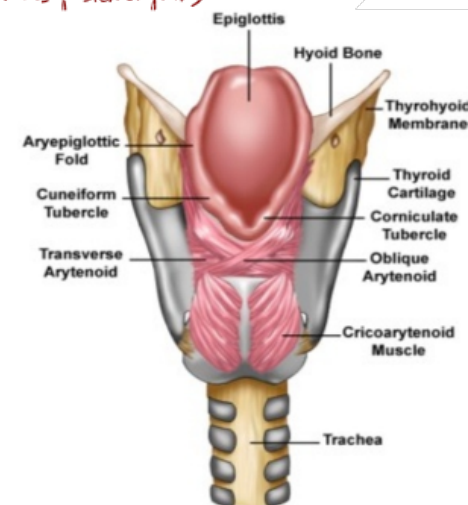
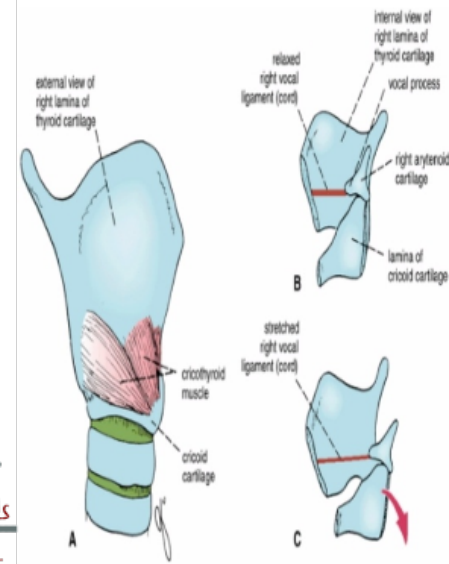
- The students should know the Intrinsic ligaments (membranes) :
 1. cricothyroid ligament (conus elasticus)
 2. quadrangular membrane



• Muscles of the larynx

- The students should know the Intrinsic muscles (origin/ insertion/ nerve supply/ action) :

1. Cricothyroid muscles	anterolateral Surf. of Cricoid	thyroid cartilage	External laryngeal	tense vocal cords
2. Posterior crico-arytenoid muscles	Back of cricoid	muscular process of Arytenoid	Recurrent laryngeal	Abducts vocal cords
3. Lateral crico-arytenoid muscles	upper border of Cricoid	muscular process of Arytenoid	Recurrent laryngeal	Adducts vocal cords
4. Transverse arytenoid	Back and medial Surf. of Arytenoid	Back and medial Surf. of the opposite Arytenoid	Recurrent laryngeal	Closes posterior part of Rima Glottidis
5. Thyroarytenoid (vocalis)	Inner Surface of Thyroid	Arytenoid	Recurrent laryngeal	Relaxes vocal cords
6. Oblique arytenoid	muscular process of Arytenoid	Apex of opposite Arytenoid	Recurrent laryngeal	Narrows the inlet (closes posterior part)
7. Thyroepiglottic (aryepiglottic muscles)	medial Surf. of Thyroid	lateral margin of epiglottis and Aryepiglottic fold.	Recurrent laryngeal	widens the inlet.



• Muscles of the larynx

• The students should know the extrinsic muscles :

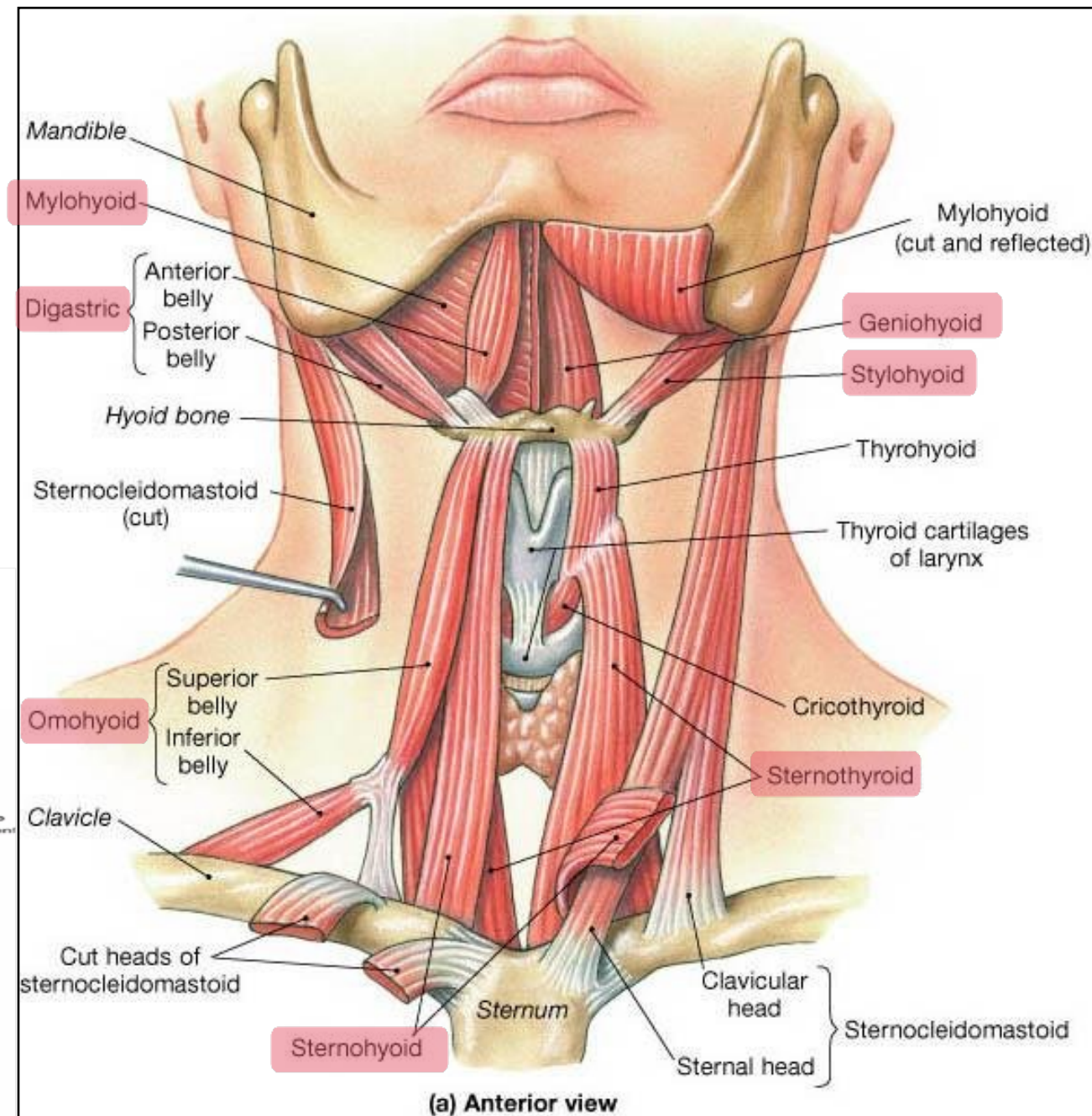
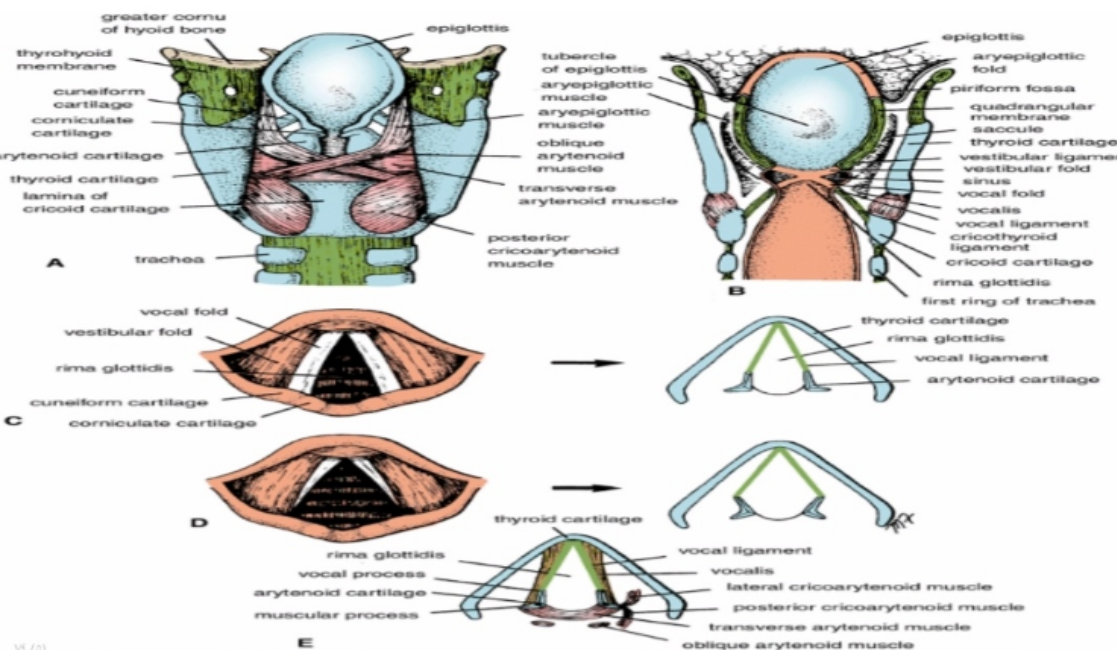
- Elevators of the larynx:

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

- Depressors of the larynx :

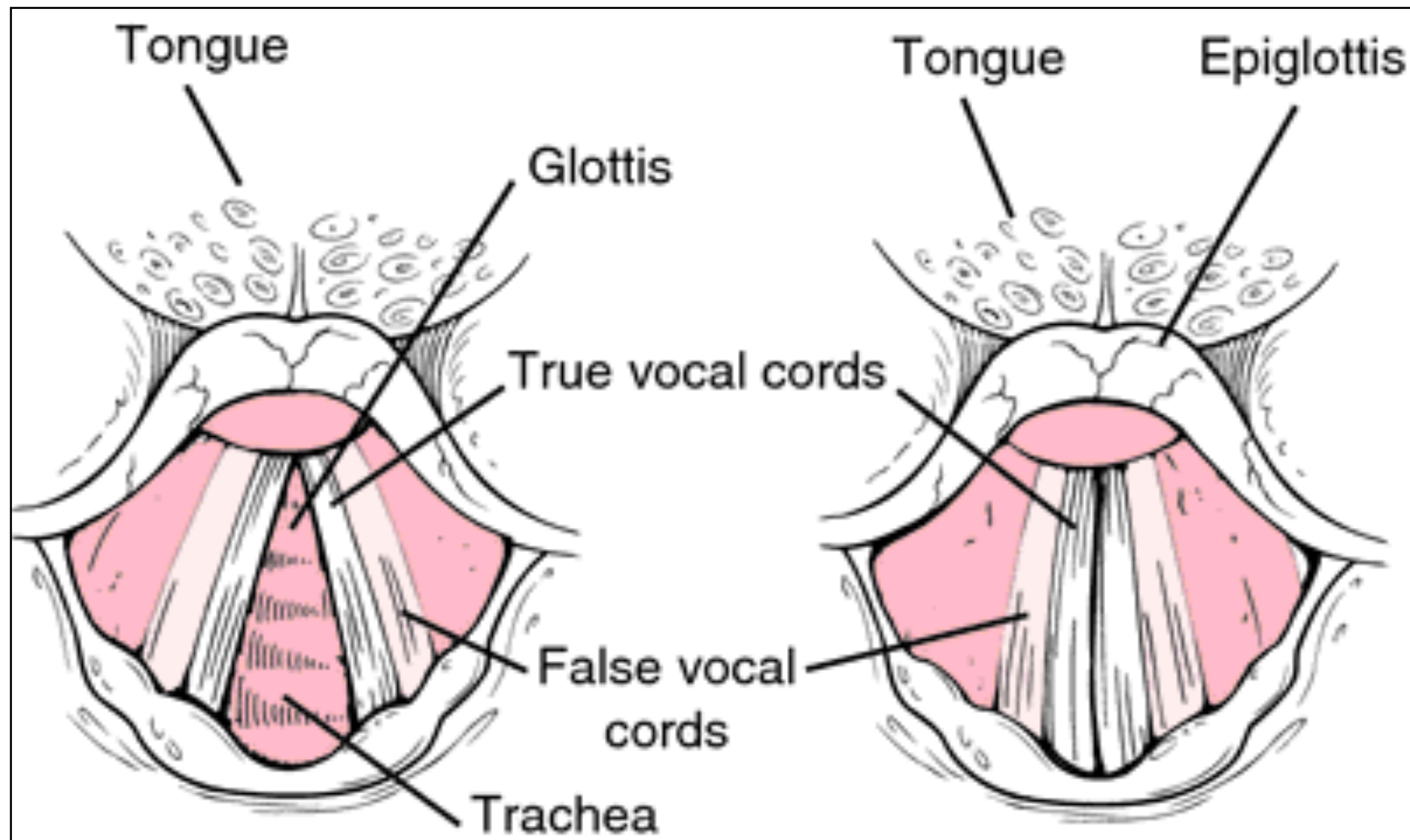
1. Sternothyroid
2. Sternohyoid
3. Omohyoid

Muscles and Cavity



✱ Vocal Cords.

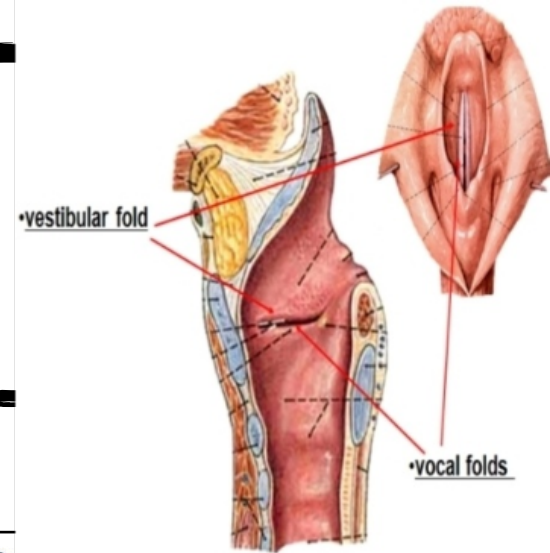
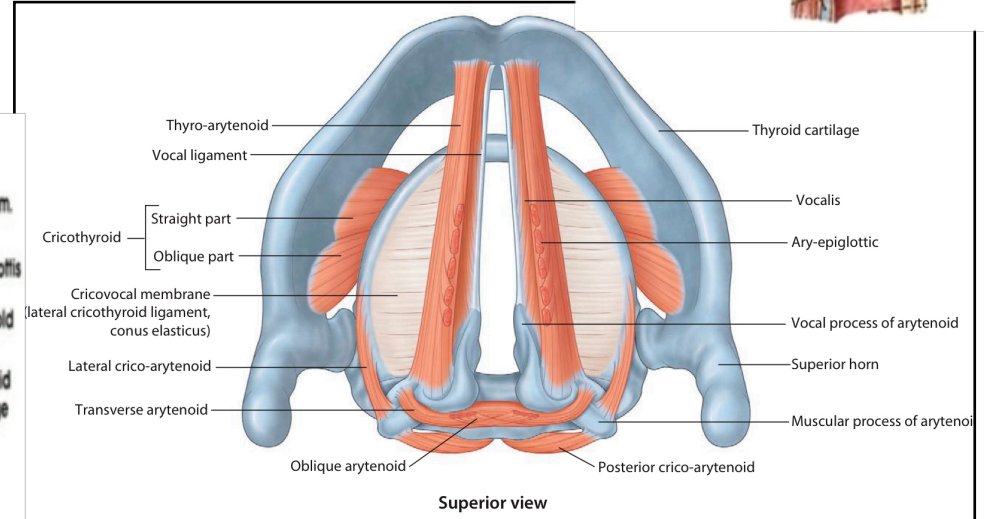
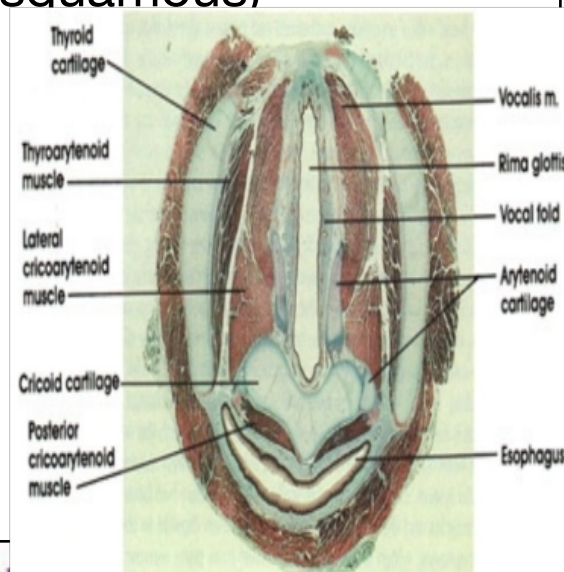
- The students should observe the different between true and false vocal cords :



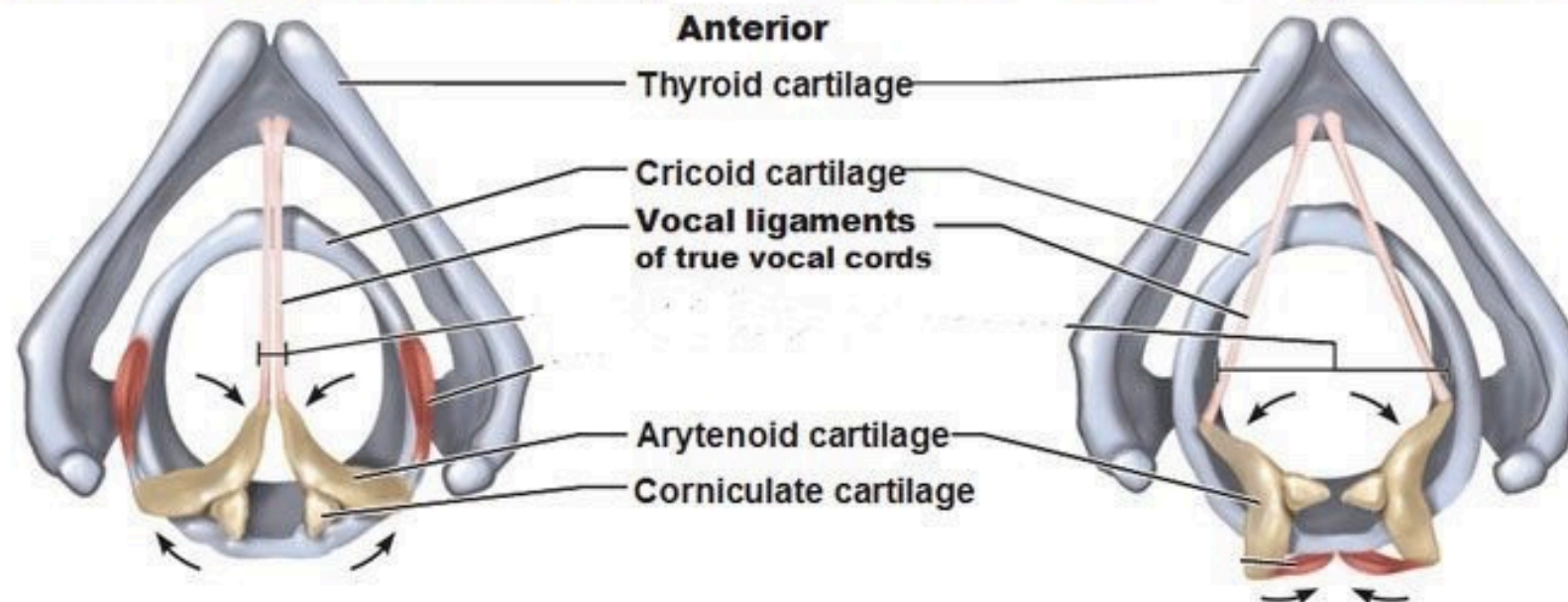
✱ Vocal Cords.

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

1. Vocal ligament
2. Mucous membrane (stratified squamous)
3. Vocalis muscle
4. No submucosa.
5. Avascular.
6. No lymphatic drainage.



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

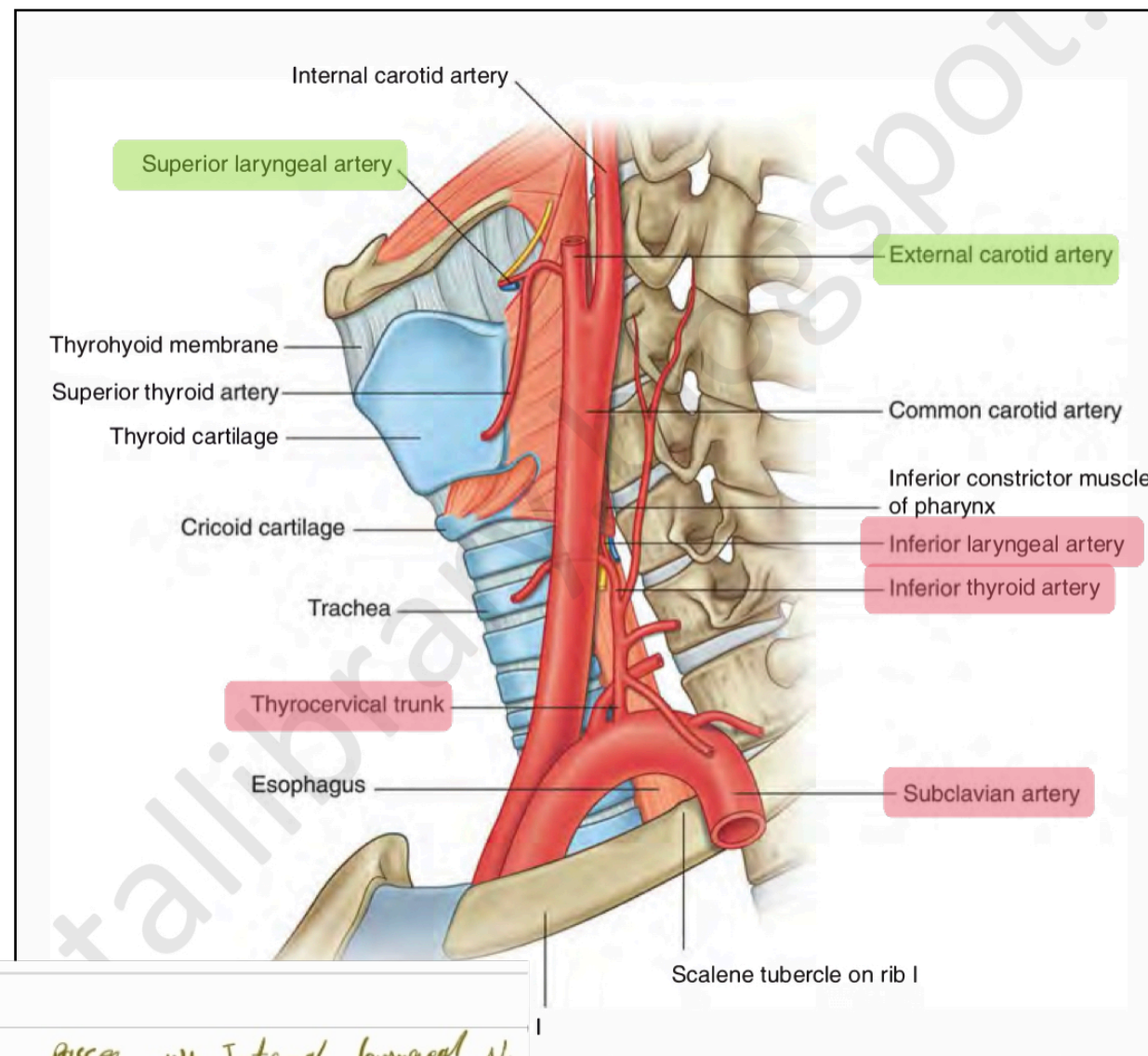


• Blood and nerve supply

- The students should know the arterial supply of the larynx :

1. Superior laryngeal artery.

2. Inferior laryngeal artery.



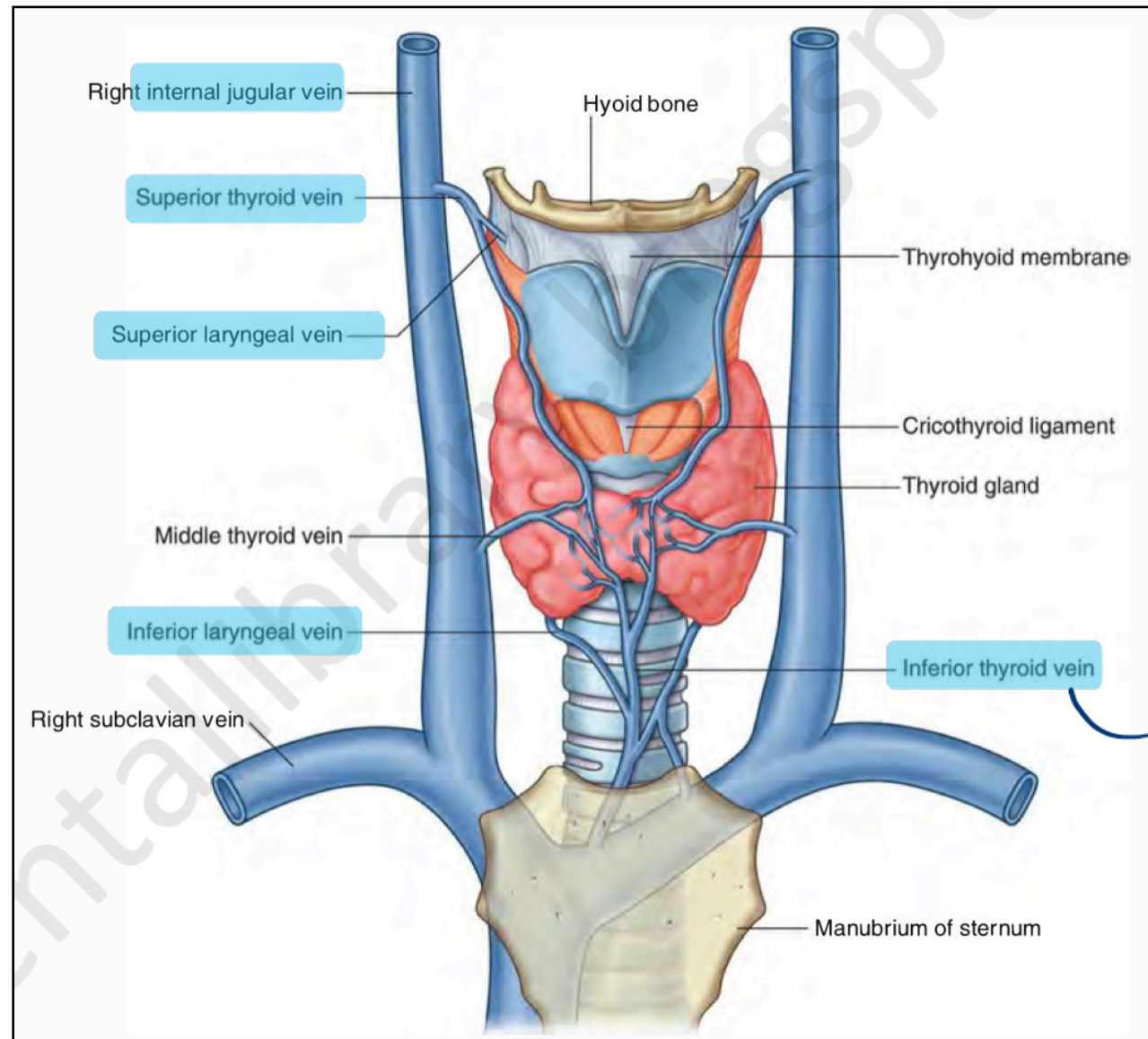
Blood Supply

passes with Internal laryngeal N.

- External Carotid → Superior thyroid → Superior laryngeal Artery
- Sub Clavian → Thyrocervical trunk → Inferior thyroid → Inferior laryngeal Artery
↳ with Recurrent laryngeal N.

• Blood and nerve supply

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

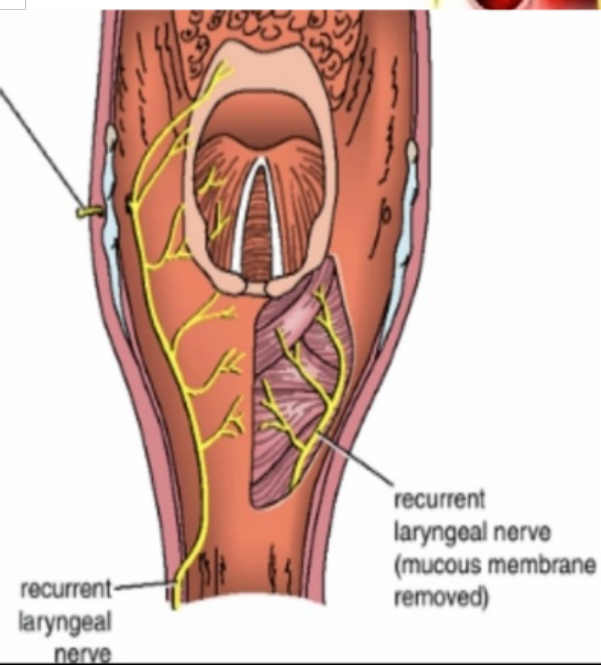
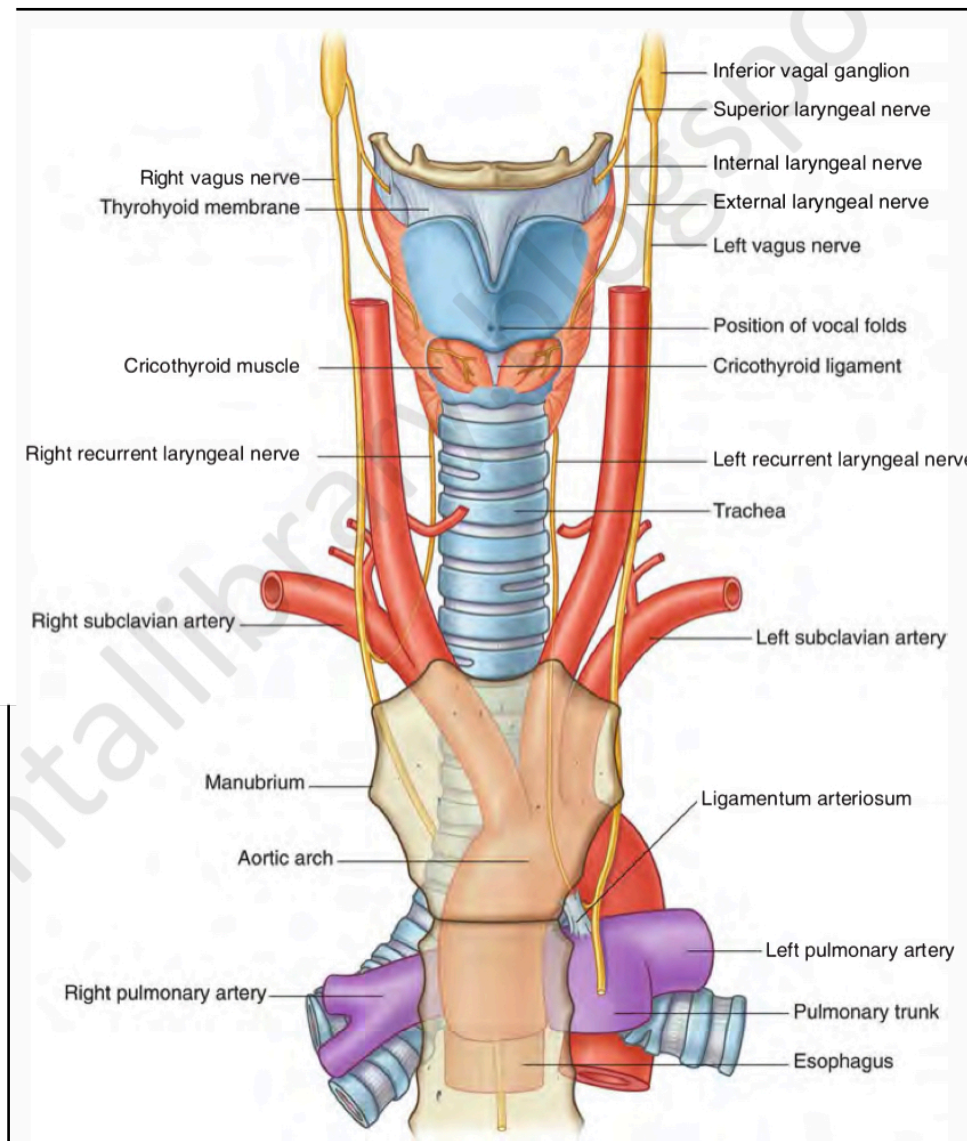
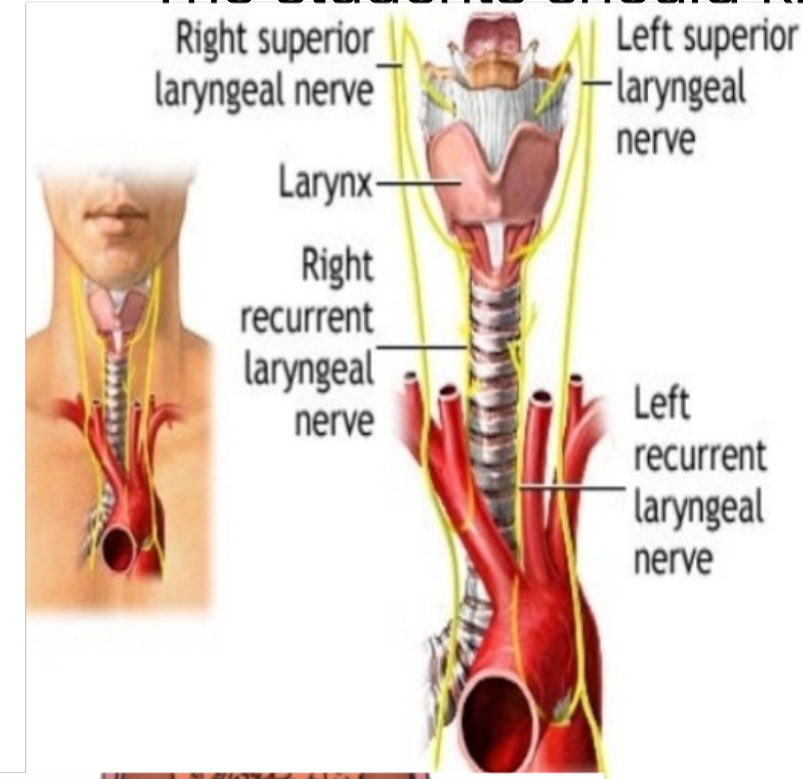
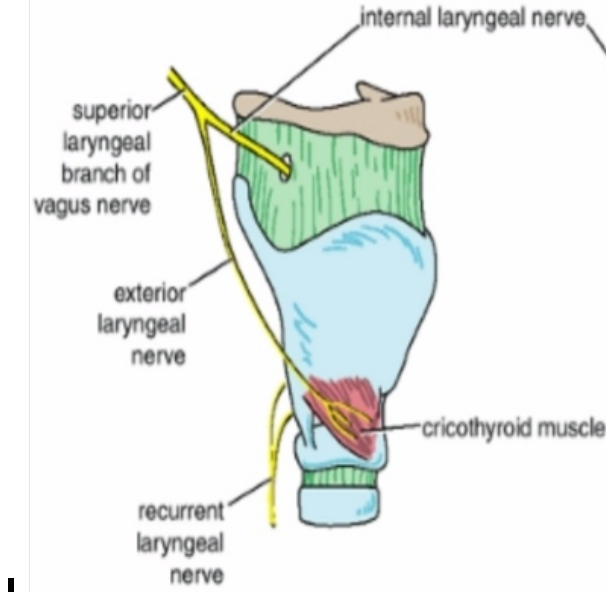


Veins

Superior laryngeal veins → Superior thyroid → Internal jugular
Inferior laryngeal veins → Inferior thyroid → 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



Nerves

Sensory for mucosa above true vocal
 Internal laryngeal
 External laryngeal
 Motor for Cricothyroid muscle

Sensory
 Above true vocal cord
 Internal laryngeal
 Below true vocal cords
 Recurrent laryngeal
 On left side it hooks under the aortic arch
 On right side hooks below right subclavian.
 Left is longer than right

Motor: All muscles are supplied by recurrent laryngeal N. except for Cricothyroid by External laryngeal N.

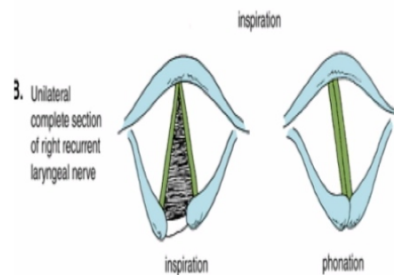
Thyroidectomy

- Sectioning of the **external laryngeal** nerve might happen in thyroidectomy
- Due to the close relationship between the external laryngeal nerve and the superior thyroid artery.
- Produces **weakness in voice** since the vocal cords cannot be tensed (cricothyroid M.).

Section of the Recurrent laryngeal nerve

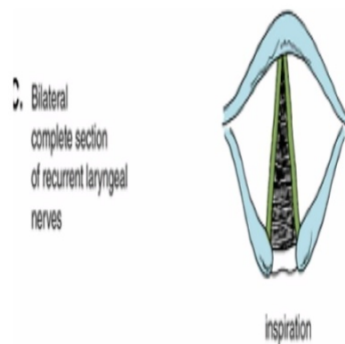
1. Unilateral complete section:

- One vocal fold (on the affected side) in the position midway between abducted and adducted
- Speech not greatly affected as the other vocal cord compensate for the action.



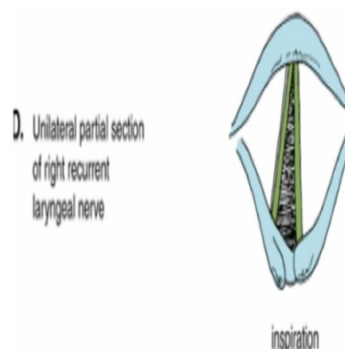
2. Bilateral complete section:

- Both vocal folds in position midway between abducted and adducted
- Breathing is impaired since the rima glottis is partially close and speech is lost



3. Unilateral partial section :

- This results in a greater degree of paralysis of the abductor muscles than of the adductor .
- Therefore the affected cord is in the adducted midline position
- Hoarseness of the voice (the other vocal fold compensates the action)



4. Bilateral partial section:

- This results in bilateral paralysis of the abductor muscles
- Therefore the vocal folds are adducted together in the midline
- Acute breathlessness (Dyspnea) and stridor follow
- Lead to suffocation so tracheostomy is necessary

