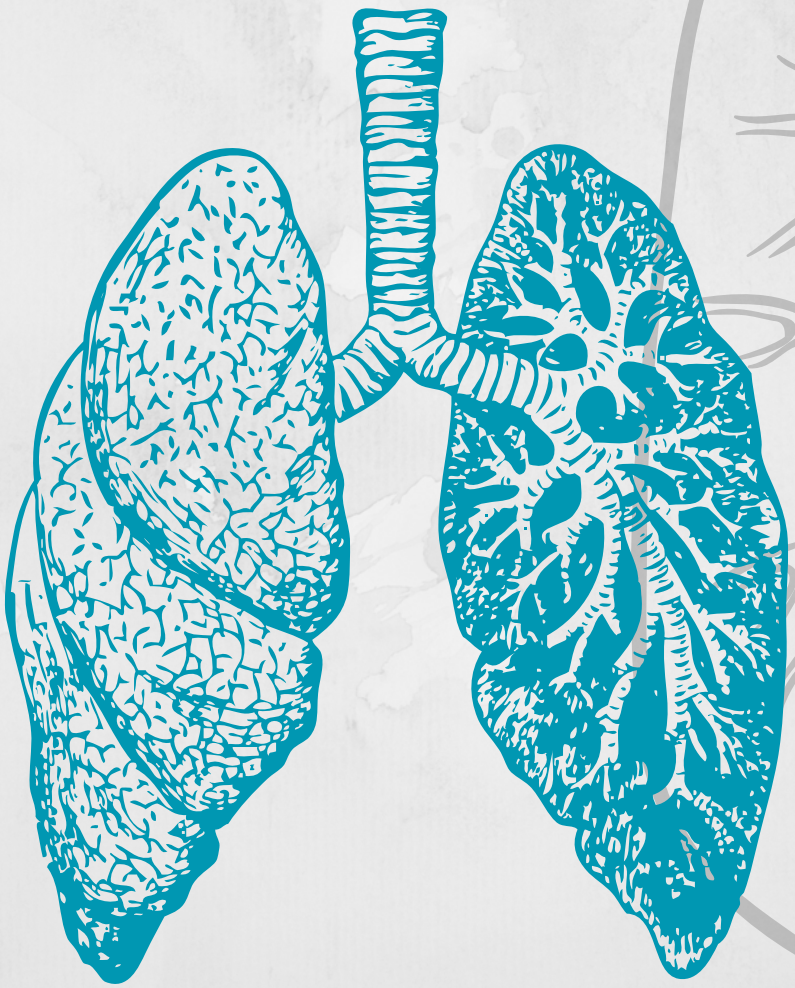
Antomy Lab



Done by

Layan Lafi

Ala’a Al-Najdawi

2nd Lab: Larynx and vocal cords

• *Larynx*

-From the middle of C3 to the lower border of C6

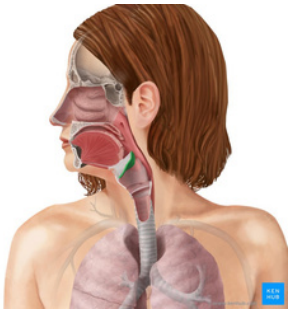
1. Cartilage

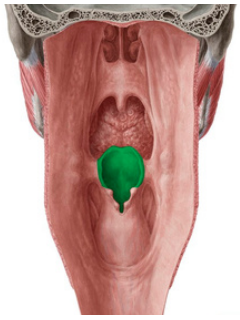
3 single and 3 pairs

A. Single:

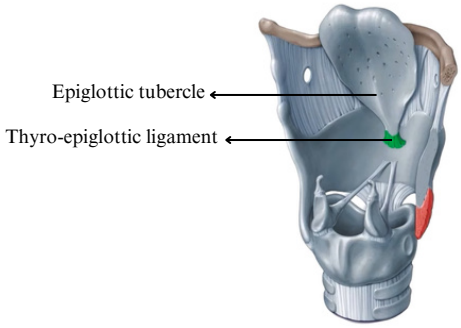
1. Epiglottis

- Leaf-shaped





Outer surface has oral epithelium (stratified squamous non-keratinized)
Inner surface has respiratory epithelium (pseudostratified ciliated columnar with goblet cells)

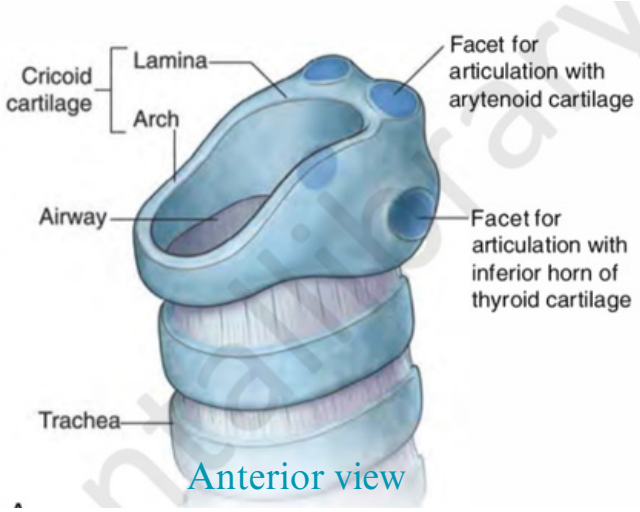


Posterior view

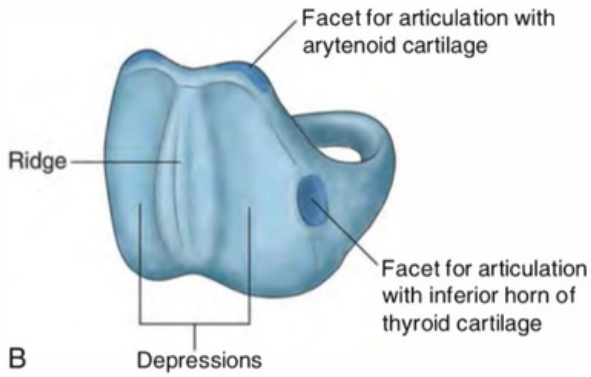
2. Cricoid

- signet ring shaped
- Most inferior cartilage

- You should know the parts of cricoid cartilage:



Anterior view



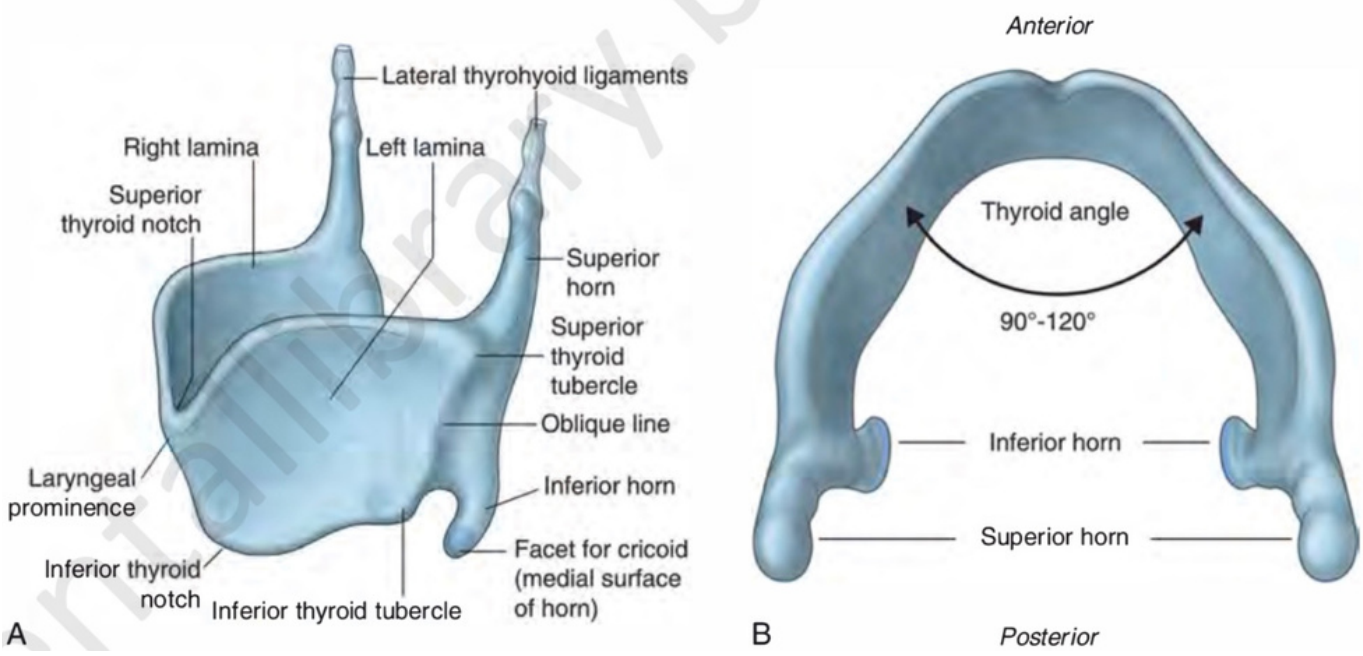
Posterior view

- The **esophagus** is attached to the **ridge**.
- **Depressions** are for attachment of the **posterior crico-arytenoid muscles**.
- Has two articular facets on each side
- **One facet** is on the sloping **superolateral surface** and articulates with **the base of an arytenoid cartilage.**
- The **other facet** is on the **lateral surface** near its base and is for articulation with **the inferior horn** of the thyroid cartilage

3. Thyroid

-The largest one

- You should know the parts of thyroid cartilage :



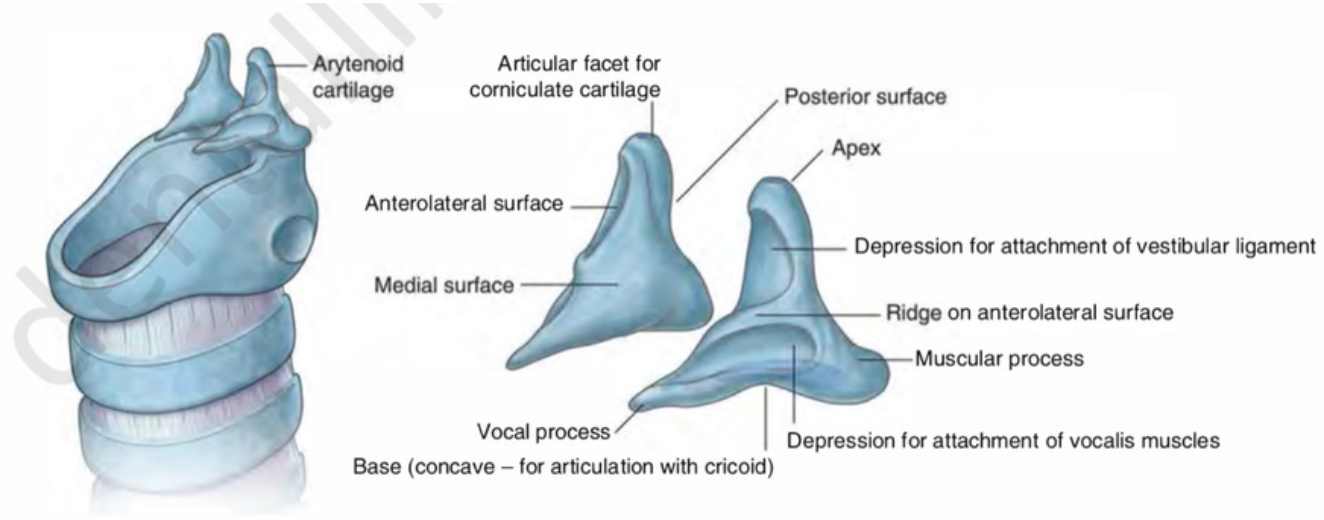
- The medial surface of the **inferior horn** has a facet for articulation with the **cricoid cartilage.**
- The **superior horn** is connected by a ligament to the posterior end of the **greater horn of the hyoid bone.**
- The **oblique line** is a site of attachment for the **extrinsic muscles** of the larynx (sternothyroid, thyrohyoid, and inferior constrictor).

B- Paired:

1. Arytenoid

- Pyramid shaped

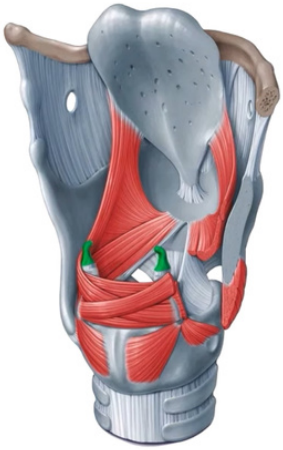
- You should know the parts of arytenoid cartilage:



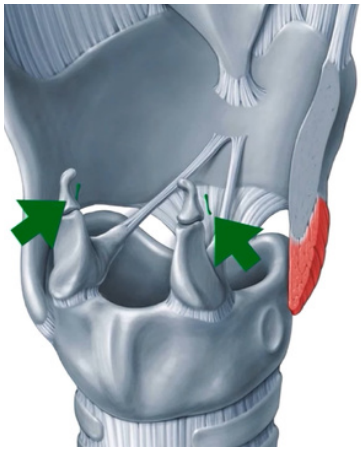
- **Vocal process** where the **vocal ligament** is attached
- **Muscular process** for attachment of the **posterior and lateral crico-arytenoid muscles.**

2. Corniculate

- Conical cartilages



3. Cuneiform



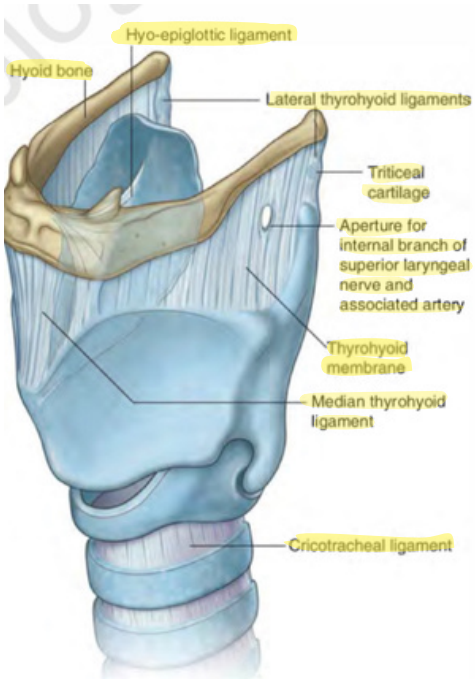
- Suspended in Quadrangular membrane (aryepiglottic fold)
- Lie anterior to the corniculate cartilages

2- Ligaments

A. The Extrinsic ligaments :

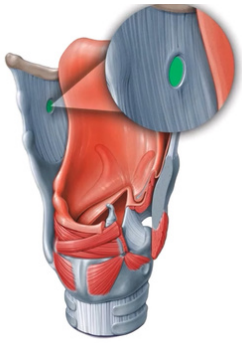
1. Cricotracheal ligament
2. The hyo-epiglottic ligament
3. Thyrohyoid ligament and membrane

- The posterior borders of the thyrohyoid membrane are thickened to form the **lateral thyrohyoid ligaments**.
- Also, thickened anteriorly in the midline to form the **median thyrohyoid ligament**.



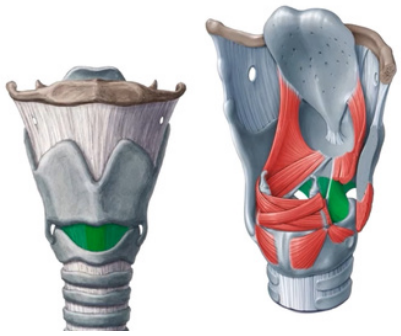
- Triticeal cartilage in each side

- An aperture in the lateral part of the **thyrohyoid membrane** on each side is for:
  1- The superior laryngeal arteries
  2- Internal laryngeal nerves
  3- Lymphatics

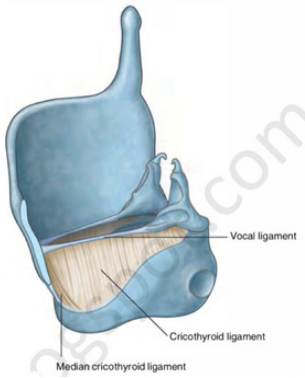


B. the Intrinsic ligaments (membranes) :

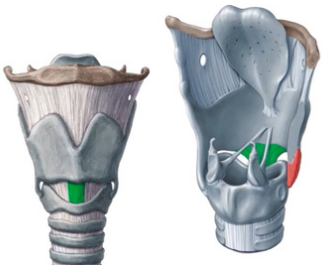
1. Cricothyroid ligament or cricovoacl ligament (conus elasticus)



Upper free margin attaches:
• Anteriorly to the **thyroid cartilage**.
• Posteriorly to the **vocal processes** of the arytenoid cartilages.
• The free margin is thickened to form the **vocal ligament**

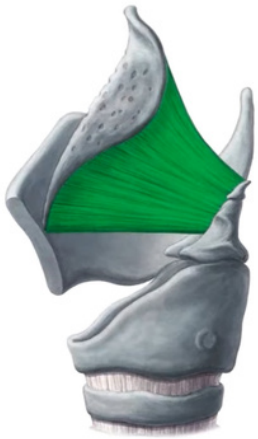


- Median cricothyroid ligament



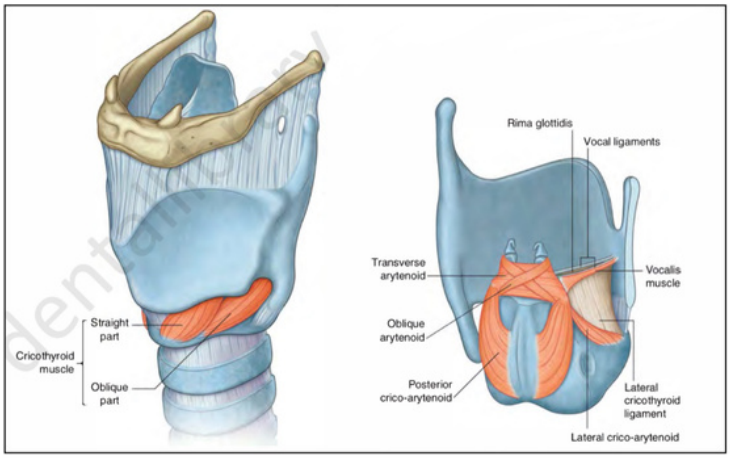
2. Quadrangular membrane

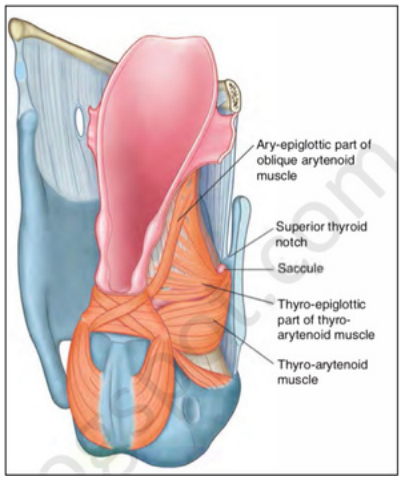
- Free lower margin is thickened to form the vestibular ligament under the vestibular fold (false 'vocal cord')

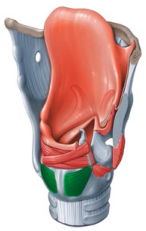
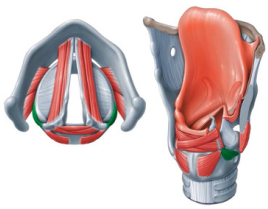
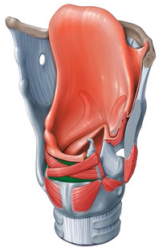
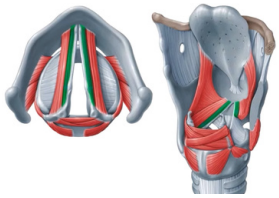


2-Muscles

- The Intrinsic muscles

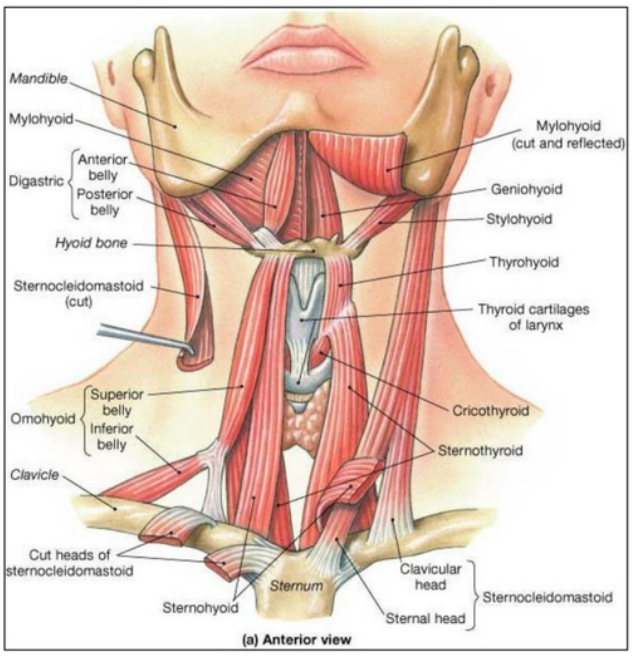




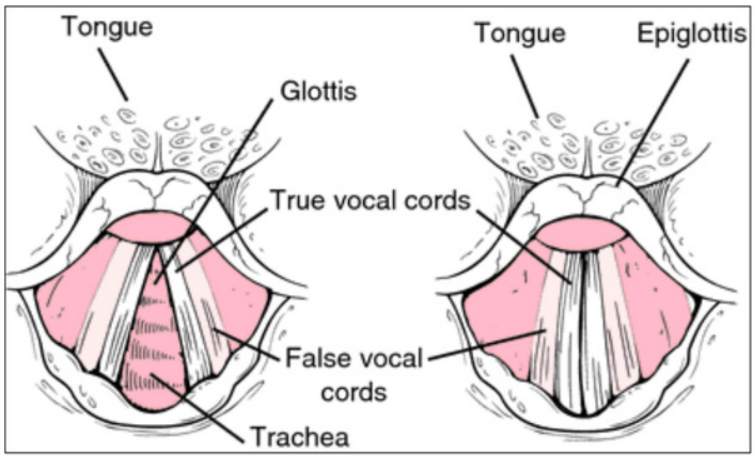
Muscle	Origin & Insertion	Action	Nerve supply
Cricothyroid muscle 	-The **oblique part** runs in a posterior direction from the arch of the cricoid to the inferior horn of the thyroid cartilage. -The **straight part** runs more vertically from the arch of the cricoid to the posteroinferior margin of the thyroid lamina.	Tenses vocal cords	External laryngeal nerve
Posterior crico-arytenoid muscle 	The fibers of each muscle originate from the Back of cricoid cartilage to the muscular processes of the arytenoid cartilage	Abducts the vocal cords	Recurrent laryngeal nerve
Lateral crico-arytenoid muscle 	Originates from the Upper border of cricoid cartilage and insert on the muscular process of the arytenoid	Adducts the vocal cords	Recurrent laryngeal nerve
Transverse arytenoid 	Originates from Back and medial surface of arytenoid cartilage and insert in the Back and medial surface of opposite arytenoid cartilage	Closes posterior part of rima glottidis	Recurrent laryngeal nerve
Thyroarytenoid (vocalis) 	From the Inner surface of thyroid cartilage to the Arytenoid cartilage	Relaxes true vocal cords	Recurrent laryngeal nerve

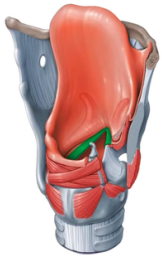
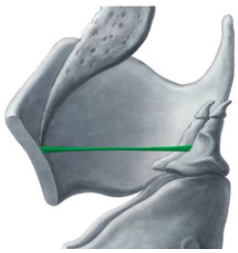
Oblique arytenoid 	From the Muscular process of arytenoid cartilage to the Apex of opposite arytenoid cartilage	Narrows the laryngeal inlet	Recurrent laryngeal nerve
Thyroepiglottic (aryepiglottic muscles) 	From the Medial surface of thyroid cartilage to the Lateral margin of epiglottis and aryepiglottic fold	Widens the laryngeal inlet	Recurrent laryngeal nerve

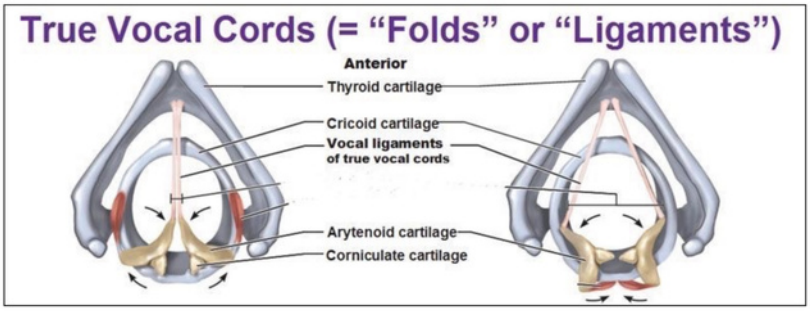
- The extrinsic muscles :
  - A. Elevators of the larynx:
    1. Digastric muscle
    2. Stylohyoid
    3. Myelohyoid
    4. Geniohyoid
  - B. Depressors of the larynx:
    1. Sternothyroid
    2. Sternohyoid
    3. Omohyoid

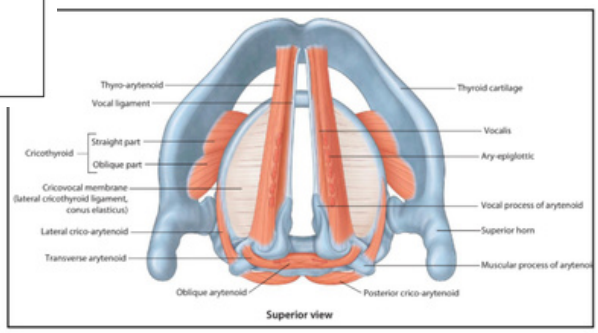


- **Vocal cords:**



	True vocal cord	False vocal cord
Ligaments	Vocal ligament ,from the upper free edge of conus elasticus (cricothyroid membrane)	Vestibular ligament ,from the lower free edge of quadrangular membrane
Mucous membrane	stratified squamous non-keratinized	pseudostratified ciliated columnar with goblet cells
Blood vessels and lymphatics	No White color	Yes Red color
Submucosa	No	Yes
Movable	Yes	No
Other info	It extends by vocalis muscle	Superior and lateral to the vocal cord
Picture		

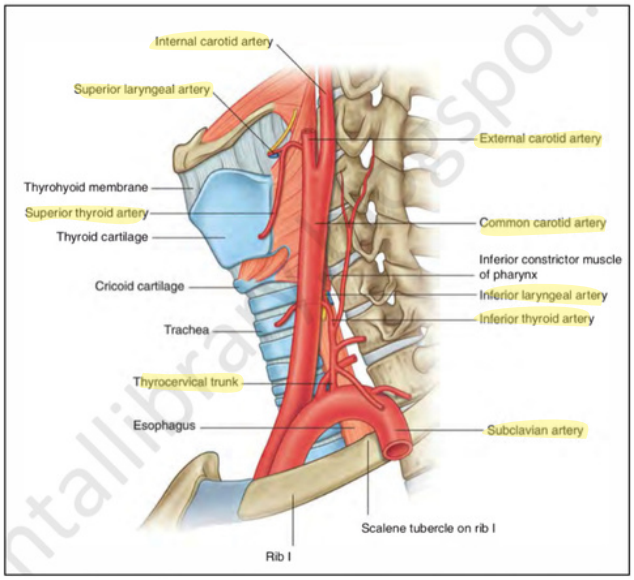




- **Blood supply:**

-The **superior laryngeal artery** originates from the **superior thyroid** branch of the **external carotid artery.**

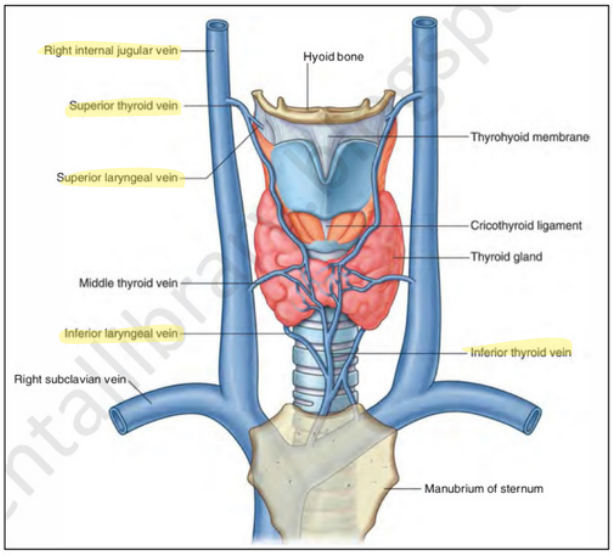
-The **inferior laryngeal artery** originates from the **inferior thyroid** branch of the **thyrocervical trunk** of the **subclavian artery.**



- **Venous drainage:**

-Superior Laryngeal vein ⟶Superior Thyroid vein ⟶Internal Jugular vein

-Inferior Laryngeal vein⟶ Inferior Thyroid vein ⟶Left Brachiocephalic vein



- **Nerve supply:**

-The nerve supply of the larynx:

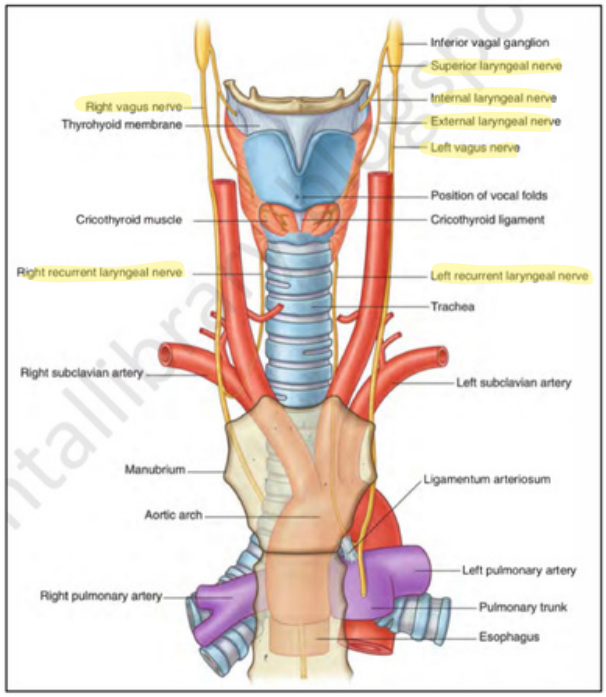
1. Superior laryngeal nerves.
2. Recurrent laryngeal nerves.

Motor innervation : recurrent laryngeal nerve expect cricothyroid muscle , it innervated by external laryngeal nerve.

Sensory innervation: above the true vocal cord ⟶internal laryngeal nerve

below the true vocal cord ⟶ recurrent laryngeal nerve

- The **Superior Laryngeal Nerve** is accompanied by the **Superior Thyroid Artery.**
- The **recurrent laryngeal nerve** is accompanied by the **inferior thyroid artery.**



- **Section of the Recurrent laryngeal nerve:**

1- Unilateral complete section:
Speech not greatly affected

2- Bilateral complete section:
Breathing is impaired since the rima glottis is partially close and speech is lost.

3- Unilateral partial section :
Hoarseness of the voice

4- Bilateral partial section:
-Acute breathlessness (Dyspnea) and stridor follow
-Lead to suffocation so tracheostmy is necessary

Other pictures from Doctor's slides :