"Larynx"

》 Location:

- Situated below: Tongue + Hyoid bone
- Between: Great vessels of neck
- Lies at the level of: 4th, 5th and 6th cervical vertebrae
- Opens above into: Laryngeopharynx
- Continuous below with: Trachea

》 Boundaries:

- Anterior: Skin + Infrahyoid muscles + Pyramidal lobe of thyroid gland
- Laterally: Great vessels of neck + Thyroid lobe
- Posteriorly: Laryngeopharynx

》 Frameworks of Larynx:

- Is formed of cartilages
- Held together by ligaments + membranes
- Lined by mucous membrane
- Moved by muscles

》 Laryngeal cartilages:

i) Paired group:

- Arytenoid
- Corniculate
- Cuneiform

ii) Unpaired group:

- Thyroid
- Epiglottis
- Cricoid

-> Thyroid Cartilage:

- Largest cartilage of larynx
- Has two lamina of hyaline cartilage
- The lamina meet in midline making a V-shaped prominence called Adam's apple
- Posterior border: Has superior + inferior cornu

- Outer surface has oblique line for attachment of muscles

-> Cricoid Cartilage:

- Signet ring shape
- Posteriorly: Broad lamina → articulates with arytenoid cartilage
- Anteriorly: Shallow arch
- Lateral surface: Has facet for articulation with inferior cornu of thyroid cartilage
- All joints are synovial

-> Arytenoid cartilage:

- Located at the back of larynx
- Pyramidal shaped
- Apex: Articulates with corniculate cartilage
- Base: Articulates with lamina of cricoid cartilage
- Vocal process of base: Gives attachment to vocal ligament
- Muscular process of base: Gives attachment to lateral and posterior cricoarytenoid muscles

-> Corniculate Cartilage:

- Small conical shape
- Gives attachment to aryepiglottic folds

-> Cuneiform Cartilage:

- Two small rod shaped cartilages
- Found in aryepiglottic folds
- Strengthenary epiglottic folds

-> Epiglottis

- Leaf shaped lamina of elastic cartilage
- Lies behind root of tongue
- Stalk is attached to back of thyroid cartilage
- Upper edge: free
- Laterally: Attached to arytenoid cartilages by aryepiglottic folds of mucous membrane
- Anteriorly: Covering of mucous membrane passes forward onto posterior surface of tongue as median glossoepiglottic fold
- Depression on each of median glossoepiglottic fold: vallecula
- Laterally: Mucous membrane passes onto the wall of pharynx as lateral glossoepiglottic fold

》 Joints

1) Cricothyroid joint
2) Cricoarytenoid joint

- Both are multiaxial joints
- Allow rotation and gliding

》 Membranes of Larynx:

-> Thyrohyoid membrane:

- Pierced by Superior laryngeal vessels and Internal laryngeal nerve (branch of Superior laryngeal nerve)
- Thickened in anterior midline to form median thyrohyoid liagment

-> Quadrangular memebrane:

- Extends between epiglottis and arytenoid cartilages
- Upper part: Forms a fibrous memebrane which lines larynx
- Lower part: Thickened to form vestibular ligament which in turn forms interior of vestibular folds/false vocal cords

》 Ligaments of Larynx:

-> Thyroepiglottic ligament:

- Connects inferior end of epiglottic cartilage to posterior median aspect of thyroid lamina

-> Cricotracheal ligament:

- Connects cricoid cartilage to first trachea ring

-> Cricothyroid ligament:

- Supeior margin forms forms vocal ligaments
  - Vocal ligaments form interior of vocal folds/true vocal cords
- Anteriorly: Each vocal ligament is attached to inner surface of lamina of thyroid cartilage
- Posteriorly: Attached to vocal process of arytenoid cartilage

》 Inlet of Larynx:

- Is the opening from pharynx into larynx
- Formed by epiglottis and aryepiglottic folds
  - Faced backwards and upwards into laryngeopharynx

- Opening wider in front

-> Boundaries

- Anteriorly: Epiglottis
- Laterally: Aryepiglottic folds + Cuneiform cartilage
- Posteriorly: Arytenoid + Corniculate cartilages

》 Piriform fossa:

- Depression on either side of laryngeal inlet between aryepiglottic folds and inlet
  - Bounded medially by: aryepiglottic folds
  - Bounded laterally by: Thyroid cartilage + thyroid memebrane

》 Folds of Larynx:

1) False Vocal Folds (Vestibular folds)

- Pink
- Vascular folds
- Fixed on each side of larynx
- Made of mucous memebrane covering the vestibular ligament

2) True Vocal Folds (Vocal Folds)

- White
- Avascular folds
- Mobile folds
- Present on each side of larynx
- Formed by mucous membrane covering vocal ligament
- Gap between the two vocal folds is called "Rima Glottidis" or simply "Glottis" (2.5 cm from front to back, lesser in females)
- Move with respiration
- Role in voice production

》 Cavity of Larynx:

- Extends from inlet to lower border of cricoid cartilage where it becomes continuous with trachea

-> Divided into three parts:

1) Vestibule: Area between inlet and vestibular folds

2) Middle Region: Space between opposite vestibular folds and vocal folds

- Has a ventricle/Sinus: Lateral recess between the vestibular folds above and vocal folds below
  - Saccule: a mucous membrane lined diverticulum that ascends from ventricle

3) Infraglottic cavity: Area between vocal folds above and lower border of cricoid cartilage below

》 Muscles of Larynx:

MUSCLE	ORIGIN	INSERTION	NERVE SUPPLY	ACTION
Muscles Controlling the Laryngeal Inlet				
Oblique arytenoid	Muscular process of arytenoid cartilage	Apex of opposite arytenoid cartilage	Recurrent laryngeal nerve	Narrows the inlet by bringing the aryepiglottic folds together
Thyroepiglottic	Medial surface of thyroid cartilage	Lateral margin of epiglottis and aryepiglottic fold	Recurrent laryngeal nerve	Widens the inlet by pulling the aryepiglottic folds apart
Muscles Controlling Vocal Fold (Cord) Movement				
Cricothyroid	Side of cricoid cartilage	Lower border and inferior cornu of thyroid cartilage	External laryngeal nerve	Tenses vocal cords
Thyroarytenoid	Inner surface of thyroid cartilage	Arytenoid cartilage	Recurrent laryngeal nerve	Relaxes vocal ligament
Vocalis	Deep fibers of the thyroarytenoid		Recurrent laryngeal nerve	Local tension on vocal ligament
Lateral cricoarytenoid	Upper border of cricoid cartilage	Muscular process of arytenoid cartilage	Recurrent laryngeal nerve	Adducts the vocal cords by rotating arytenoid cartilage
Posterior cricoarytenoid	Back of cricoid cartilage	Muscular process of arytenoid cartilage	Recurrent laryngeal nerve	Abducts the vocal cords by rotating arytenoid cartilage
Transverse arytenoid	Back and medial surface of arytenoid cartilage	Back and medial surface of opposite arytenoid cartilage	Recurrent laryngeal nerve	Closes the posterior part of rima glottidis by approximating arytenoid cartilages