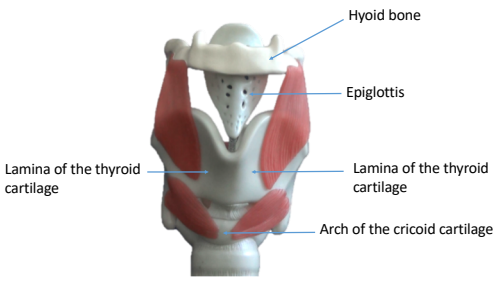
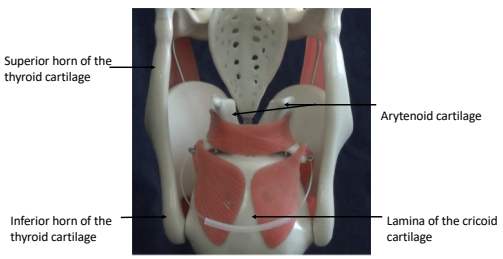
Joints of the larynx

Lecturer – Anita Zacharias

Cartilages of the larynx (review)



Cartilages of the larynx (review)



Joints of larynx

Structural/histological classification

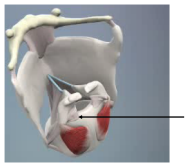
- synovial

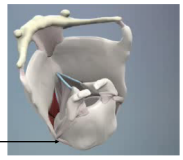
a. cricoarytenoid

- arytenoid moves relative to cricoid
  - abducts vocal folds (opens glottis)
  - adducts vocal folds (closes glottis)

b. cricothyroid

- thyroid moves over the cricoid
  - stretches/tenses vocal folds

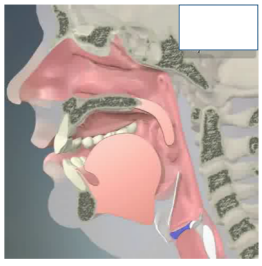


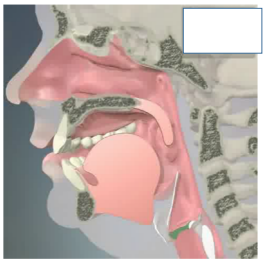


Vocal fold adjustments to influence glottis

- Abducted: folds are separated for breathing (resting position)and voiceless sounds.
- Adducted: folds brought together for phonation (voiced sounds)
- Positions intermediate between full abduction or adduction may be used for some speech sounds

Whispering (cartilaginous part of glottis is open)





Post your answers on the discussion forum

Describe the effect on the vocal folds and the glottis as a result of movement at the cricoarytenoid joint

Describe the effect on the vocal folds and the glottis as a result of movement at the cricoarytenoid joint

Post your answers on the discussion forum

What is the position of the true vocal folds during voiced sounds/phonation

True/False –

The true vocal folds vibrate during voiceless sounds - True /False

Intrinsic muscles of the larynx

Anita Zacharias

Muscles of larynx

TVF = True vocal folds

- intrinsic
  - both attachments on larynx
  - **change position of TVF's (abduct/adduct) or changes the length of TVF's (influences tension)**
- extrinsic
  - one attachment on larynx, one attachment elsewhere
  - **move entire larynx**

Intrinsic muscles of the larynx

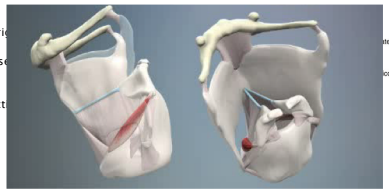
- Lateral cricoarytenoid
- Interarytenoid
- Posterior cricoarytenoid
- Cricothyroid
- Thyroarytenoid
  - Thyrovocalis (vocalis)
  - Thyromuscularis

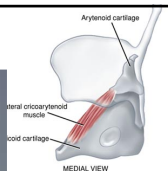
Lateral cricoarytenoid

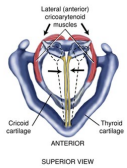
Ori

Inse

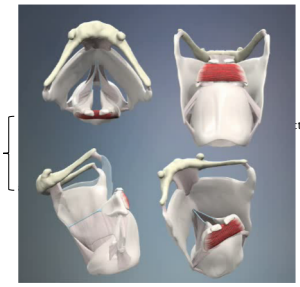
Act







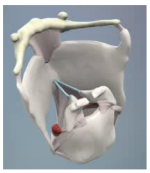
Interarytenoid

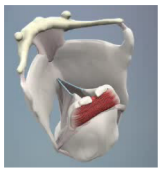


Seikel Fig 4-13

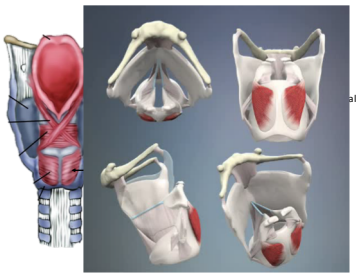
Adduction of vocal folds

- Lateral cricoarytenoid
- Interarytenoid

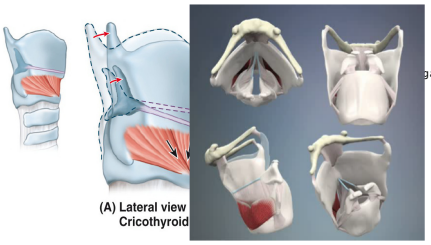




Posterior cricoarytenoid



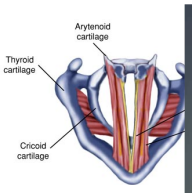
Cricothyroid

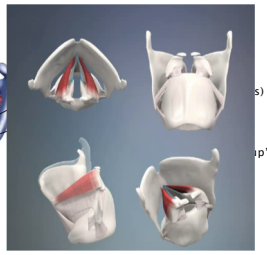


gaments = tenses the

Moore Fig 8.38

Thyroarytenoid

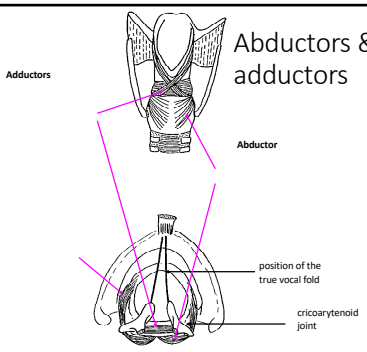




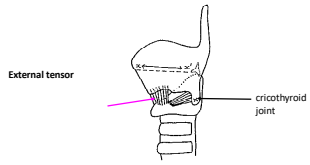
s) – changes tension in

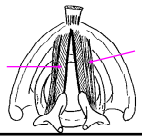
p' the vocal folds

Abductors & adductors



Manual





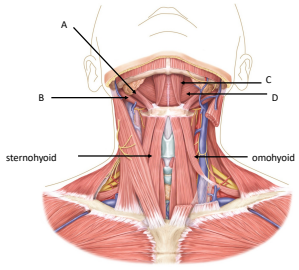
Manual

Extrinsic muscles of the larynx

Anita Zacharias

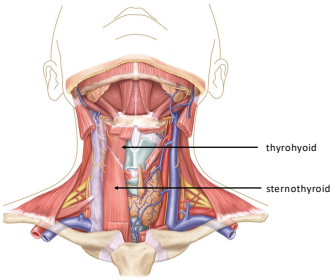
Extrinsic muscles of larynx

- elevators
  - Suprahyoid muscles
- depressors
  - Infrahyoid muscles

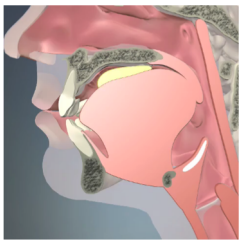


Pansky Fig 1.4A

Extrinsic muscles of larynx



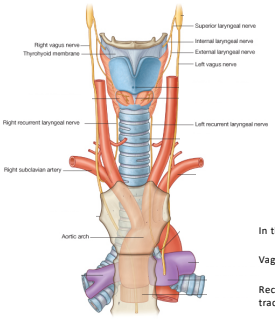
Pansky Fig 1.4A



- Elevation of the hyoid bone
  - Pharyngeal phase of swallowing

Innervation of the larynx

Anita Zacharias

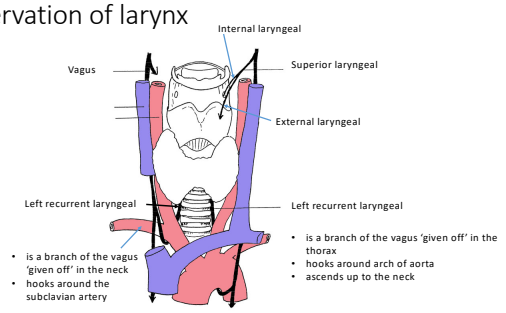


In the neck –

Vagus forms the neurovascular bundle

Recurrent laryngeal – lies in the tracheoesophageal groove

Innervation of larynx



- is a branch of the vagus 'given off' in the neck
- hooks around the subclavian artery

- is a branch of the vagus 'given off' in the thorax
- hooks around arch of aorta
- ascends up to the neck

Manual

Vagus and its branches (in the neck)

- superior laryngeal n. (SLN)
  - branches
    - internal laryngeal(sensory) (pierces the thyrohyoid membrane)
    - external laryngeal (motor) (supplies the cricothyroid)
- recurrent laryngeal n. (RLN) (inferior laryngeal)
  - Mixed
  - Left recurrent laryngeal (given off in the thorax) winds around the arch of aorta and then ascends onto the neck
  - Right recurrent laryngeal given off in the neck and winds around the right subclavian artery and then ascends to the larynx

Innervation of larynx

Motor (nerve fibre type?)

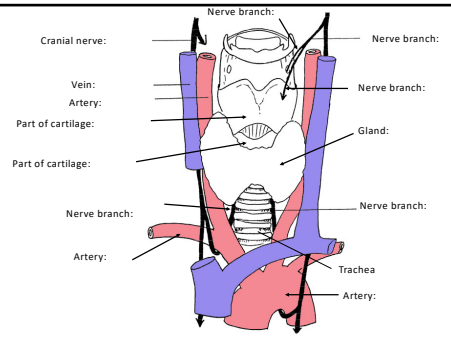
- recurrent laryngeal
  - all intrinsic muscles except cricothyroid
  - *cricothyroid innervated by external laryngeal nerve*

Sensory – (nerve fibre type?)

- above glottis – internal laryngeal
- below glottis – recurrent laryngeal

Innervation of the extrinsic muscles

- Suprahyoid muscles –
  - Digastric
    - Anterior belly: Mandibular division of trigeminal
    - Posterior belly: Facial
  - Mylohyoid: Mandibular division of trigeminal
  - Stylohyoid: Facial
- Infrahyoid muscles – (as a group)
  - Ventral rami of C1, C2, C3



Manual