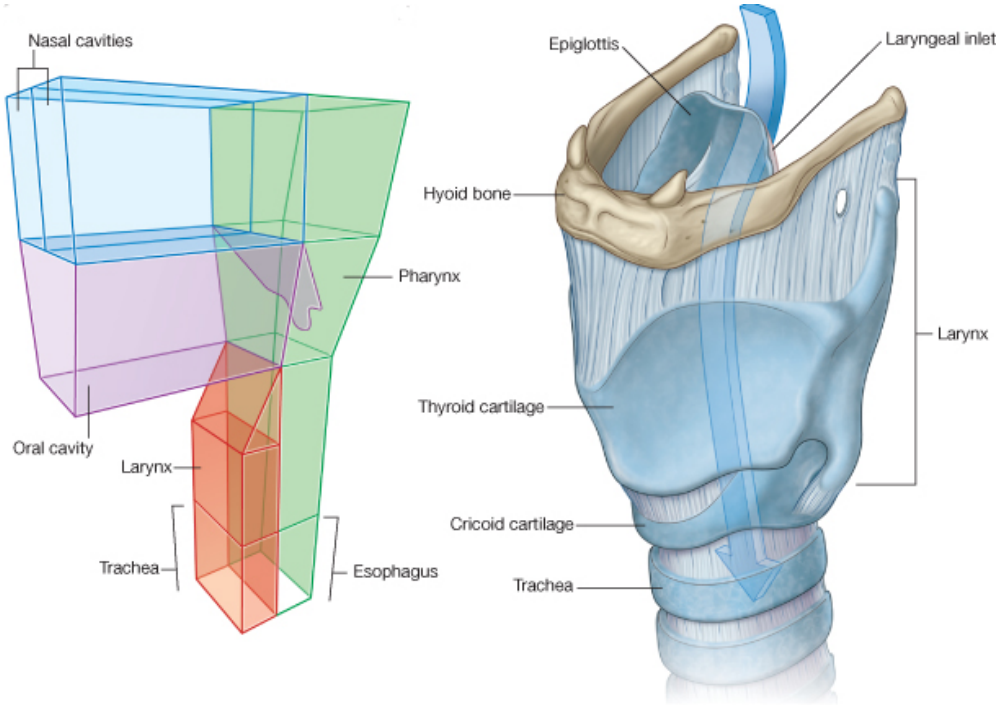
LARYNX

- Hollow musculolig. With cartilaginous framework
- Organ of respiration & phonation
- Acts as a valve to close resp. tract
- Suspended above by hyoid below to trachea



Extent :

Upper border	Lower Border
epiglottis	cricoid
C3	C6

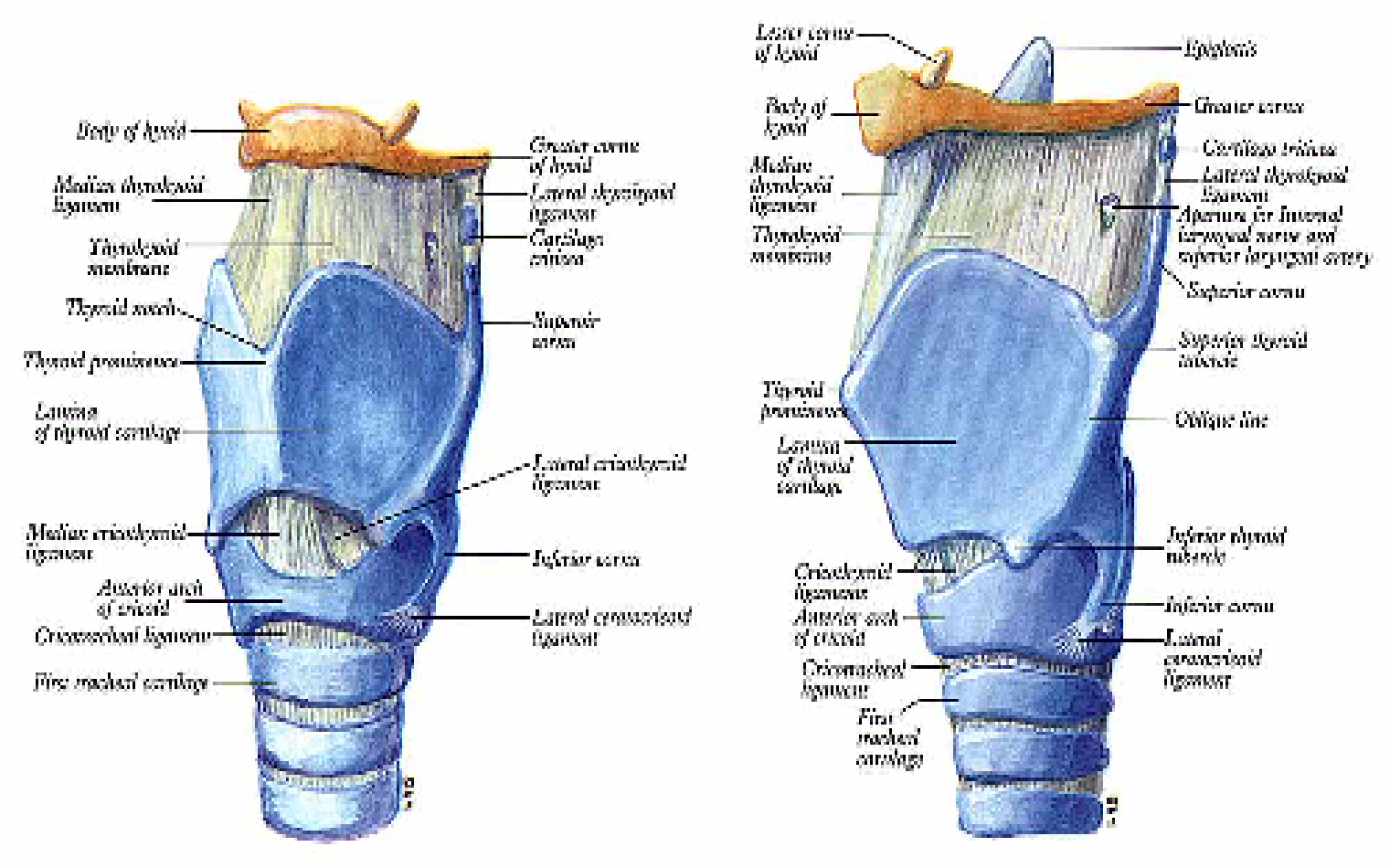
Avg. measurements:

Vertical - 44mm in males
36 mm in females

Transverse - 43 mm in males
41 mm in females

Antero- posterior -36 mm in males
- 26 mm in females

Larynx-anterior & lateral view



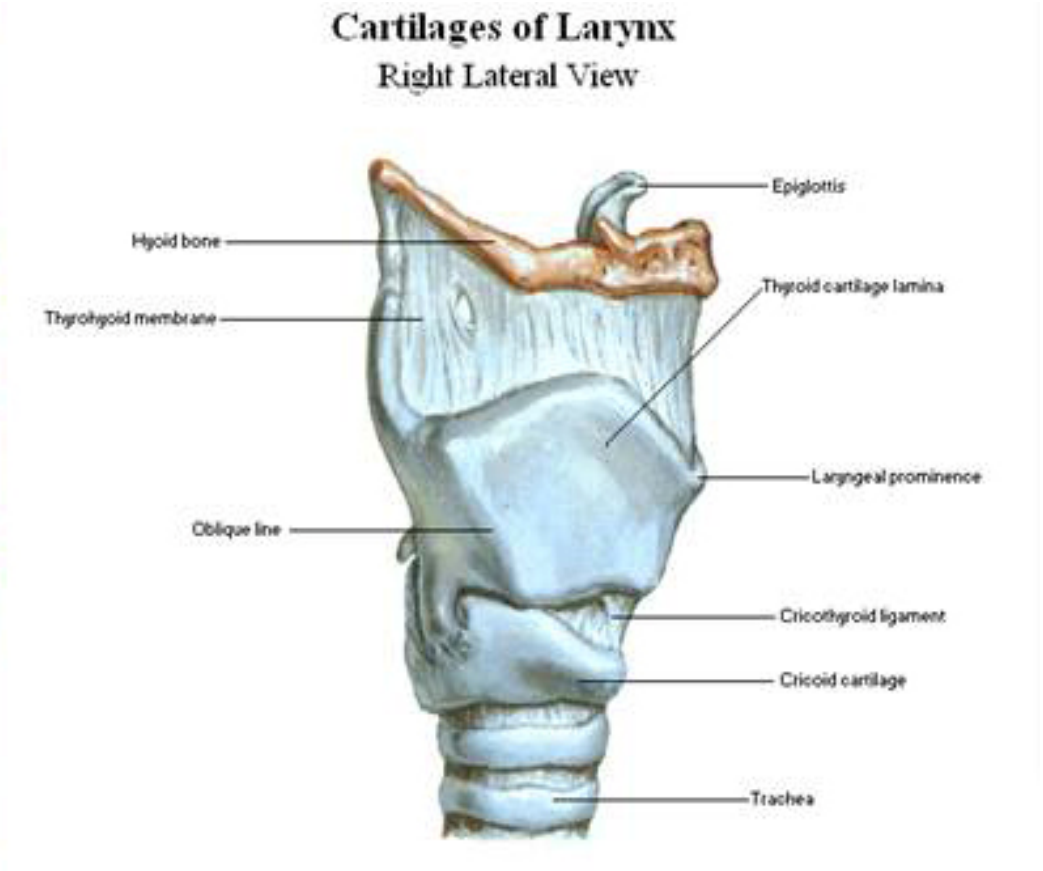
LARYNX

- **Skeleton : Cartilaginous**

unpaired
epiglottis
thyroid
cricoid

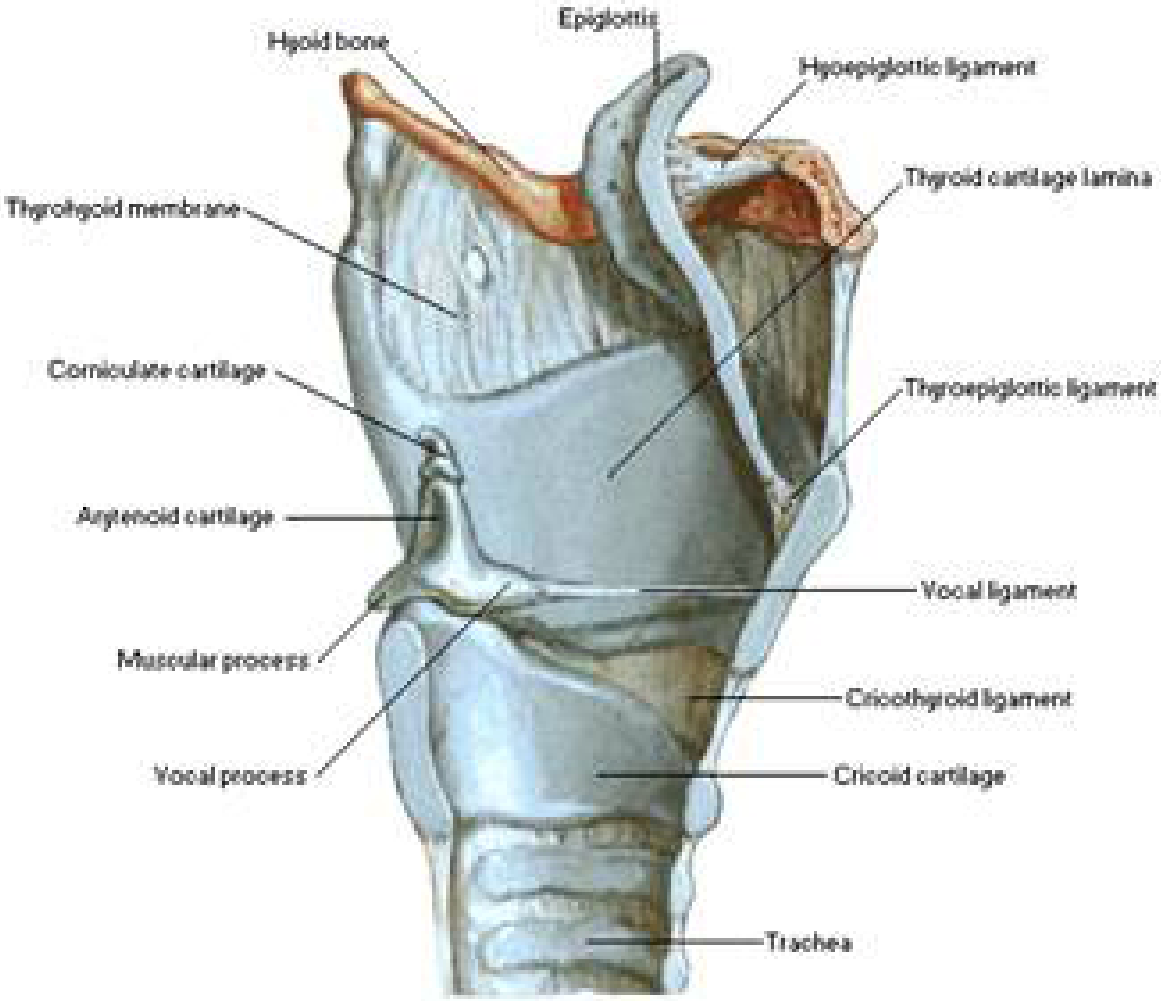
paired
arytenoid
corniculate
cuneiform

ALL hyaline **except**
epiglottis,
corniculate,
cuneiform,
vocal process and
apex of arytenoid



Cartilages of Larynx

Sagittal Section



Epiglottis

ends - upper (free)

-lower (thyro-epiglottic ligament)

Surfaces – anterior (connected)

a) median glosso-epiglottic,

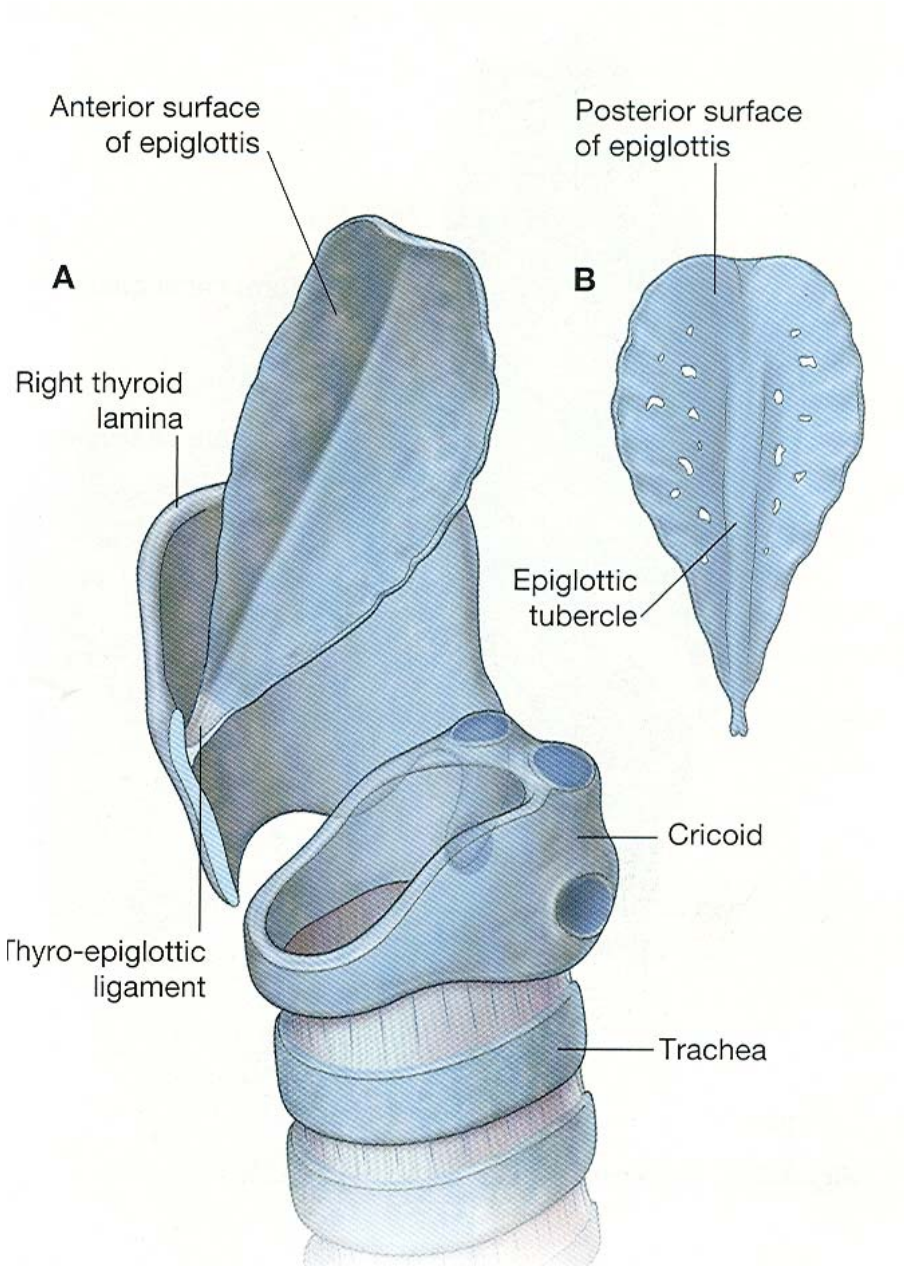
b) lateral glosso-epiglottic,

c) and hyo-epiglottic ligaments

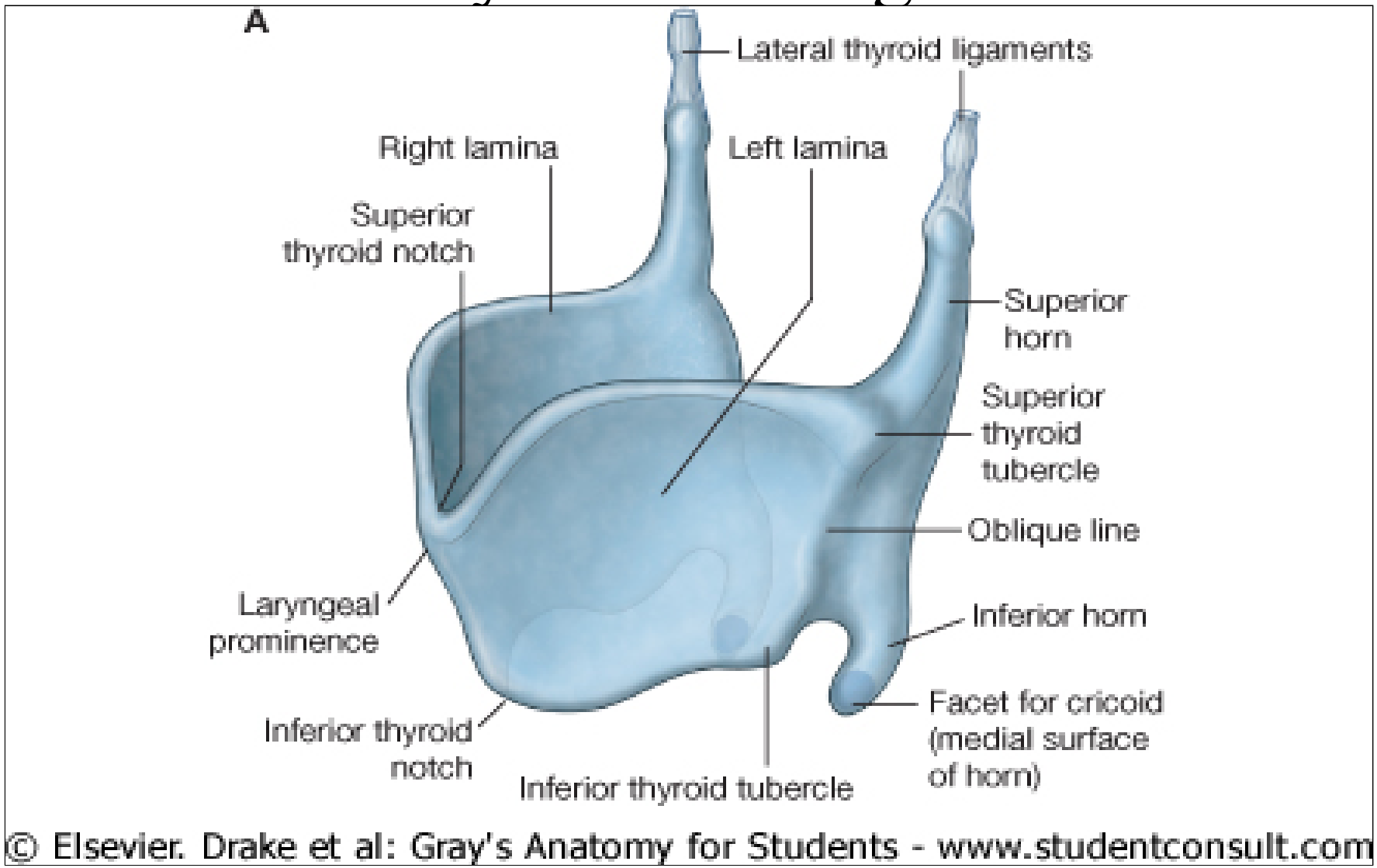
posterior

Border –lateral

lower part-aryepiglottic fold



Thyroid cartilage



Larynx-Cartilage

- **Thyroid:**

level – C4-C5

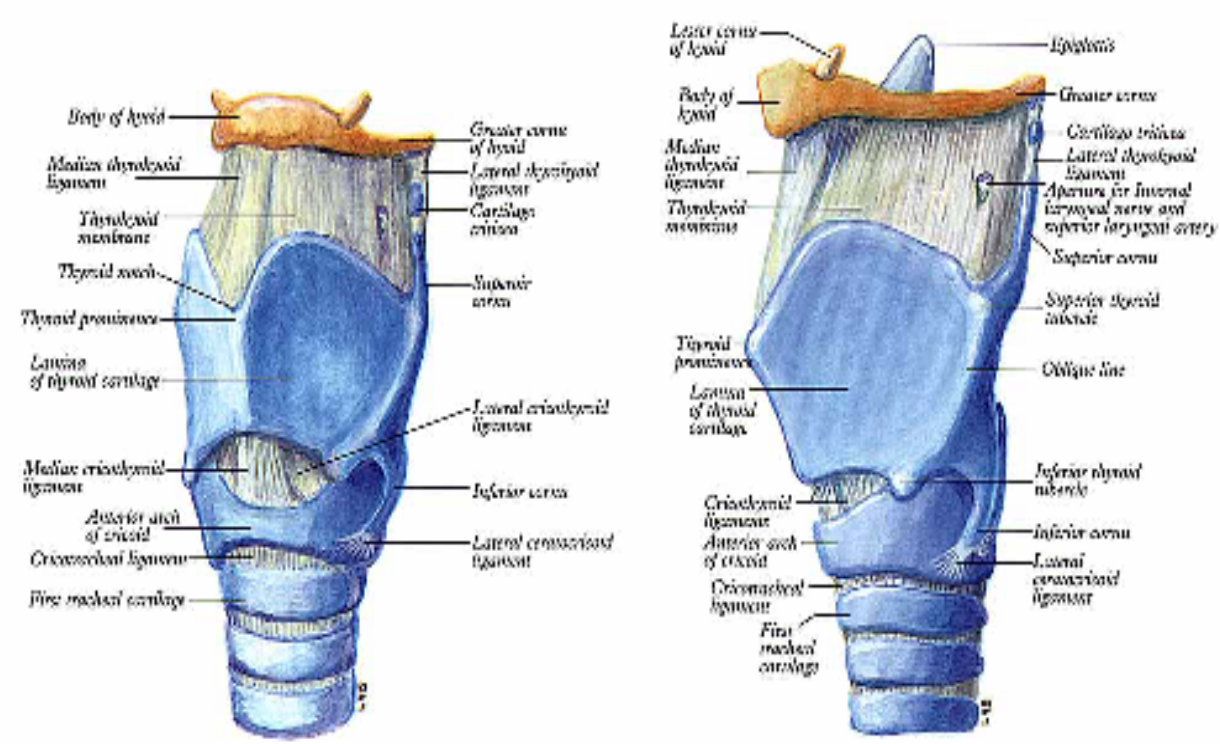
Consists of lamina

upper border

thyro-hyoid membrane

lower border-ant. part

anterior border-thyroid angle



Thyroid cartilage

- **Posterior border**

Superior horn (lat. thyrohyoid lig.)

Inf. horn (cricothyroid joint

Outer surface-oblique ridge

↓

thyrohyoid

↓

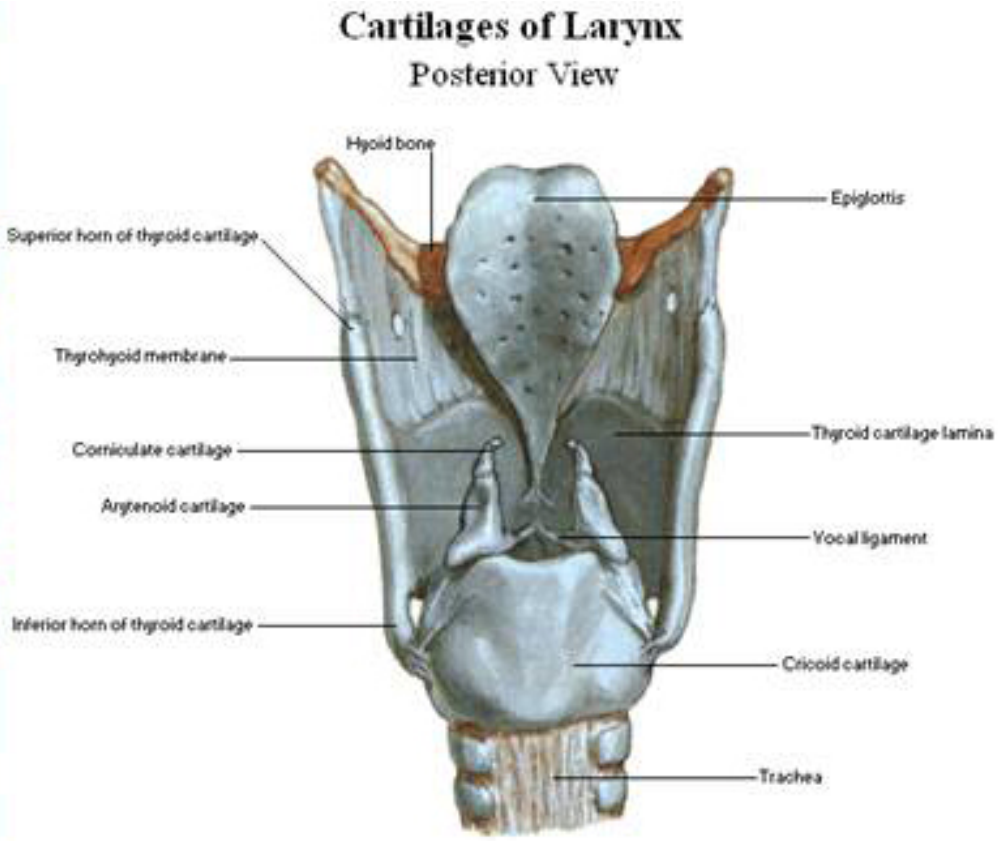
sternothyroid

Upper pole of thyroid gland

↓

thyropharyngeus

Inner surface -lat. Wall of piriform fossa



LARYNX

Cricoid :

Foundation stone

Like a signet ring

Parts- ant. Arch^{C6}

| - cricothyroid jt.

\- post. Lamina

Ant. Arch:

post.- cap. of cricoarytenoid jt.

Lower border cricotracheal lig.

Outer surf.- cricothyroid (infront)

cricopharyngeus(behind)

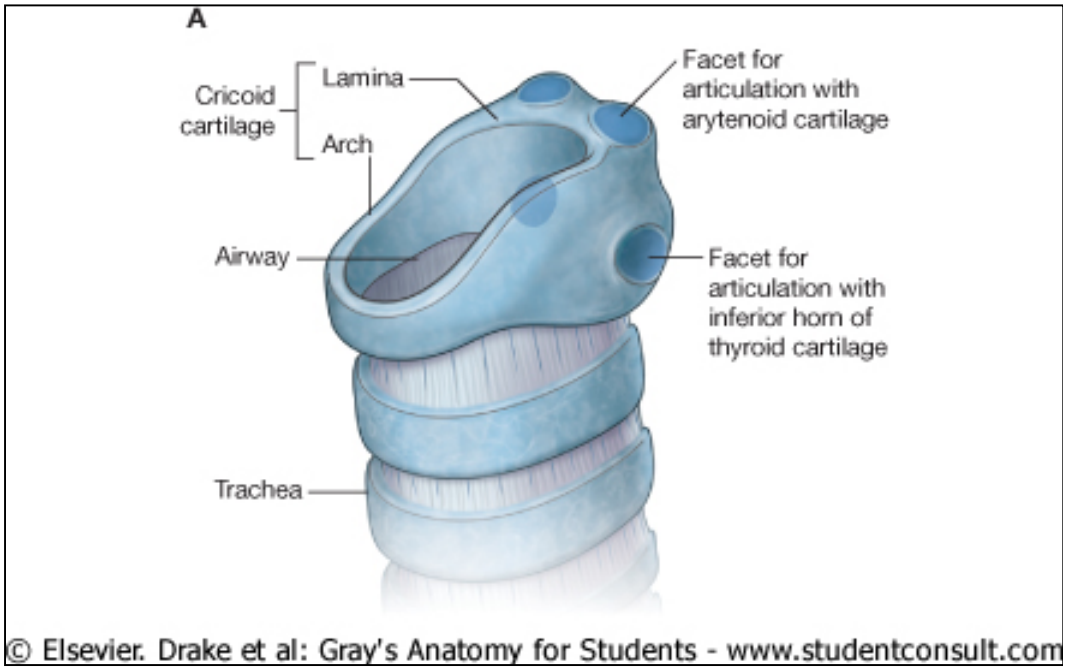
Post. Lamina: upper border-articular

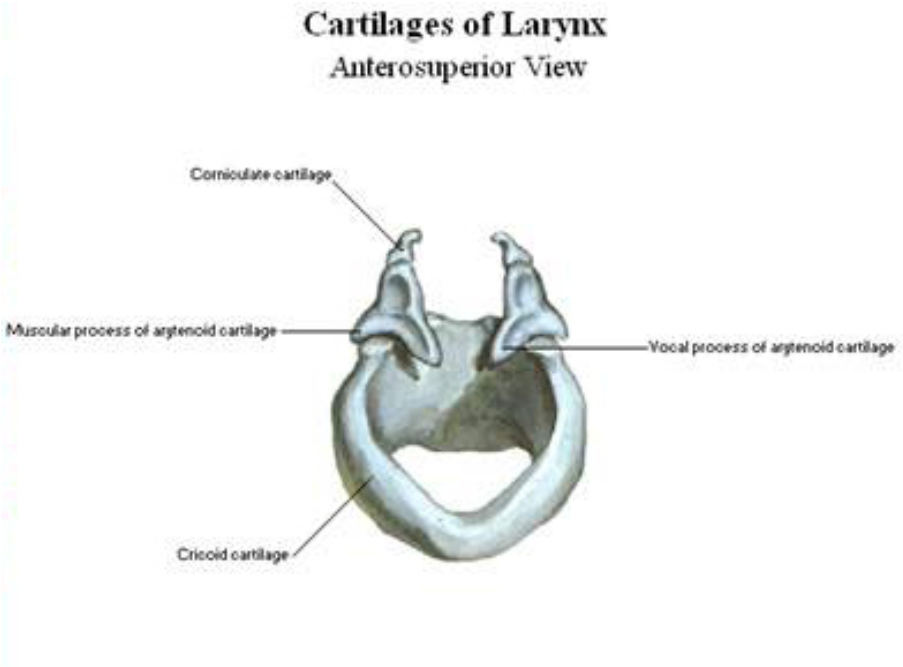
lower border- trachealis

anterior surface

post. surface- median ridge- tendon of oesophagus

lat. area- post. cricoarytenoid

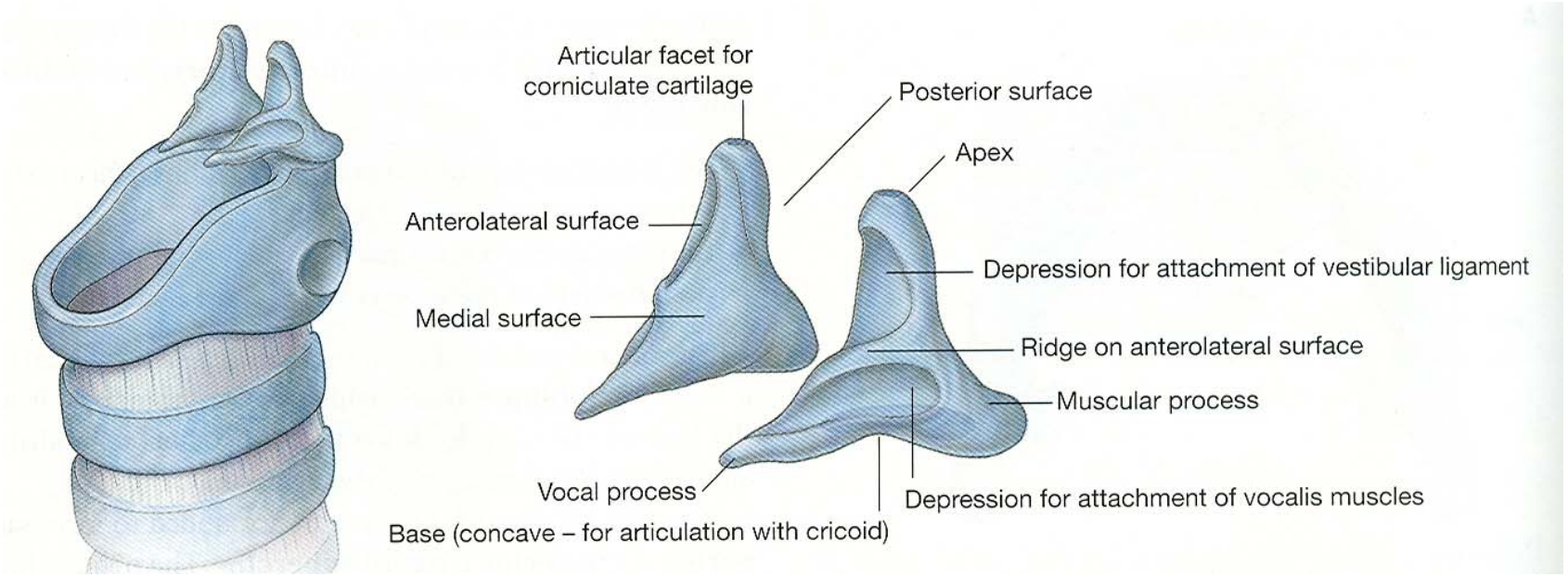




Arytenoid

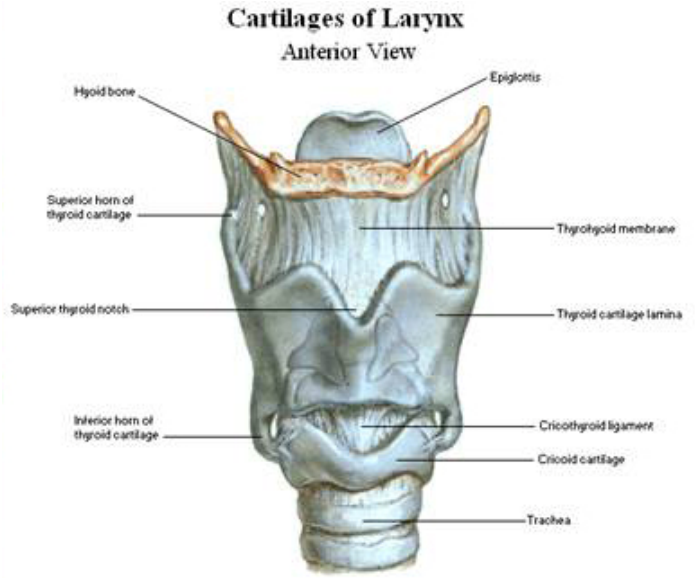
pyramidal

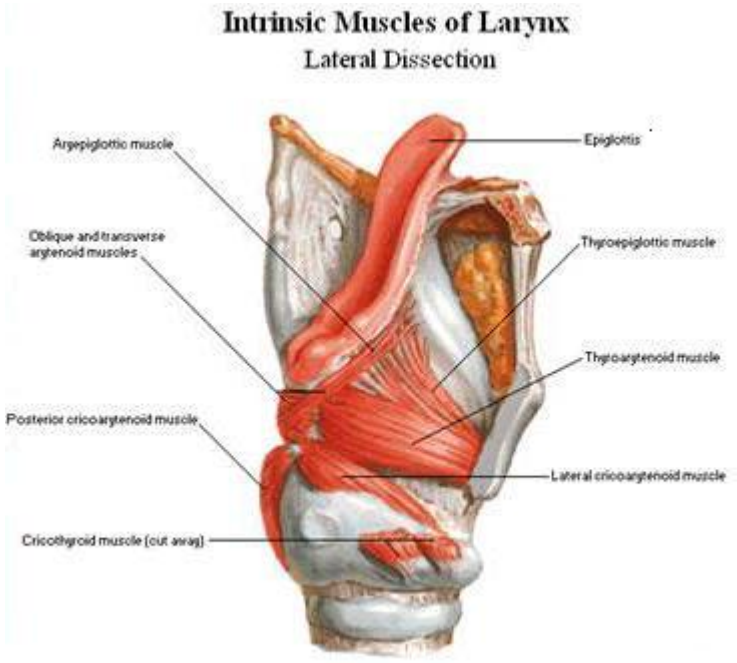
Apex-articulates with corniculate
attachment to oblique arytenoideus and aryepiglotticus
Base- synovial jt. – rotatory & gliding movements
Post. surface-arytenoideus transversus (only unpaired)
Medial surface-laryngeal cavity
Anterolateral surface (vocal pr.& adjoining area)
vocalis muscle
Vocal ligament
Thyroarytenoideus muscle
Muscular process- infront-lat. Cricoarytenoid muscle
Behind- post. Cricoarytenoid muscle
Vocal process- vocal ligament (tip)
-vocalis muscle (laterally)



Arytenoid

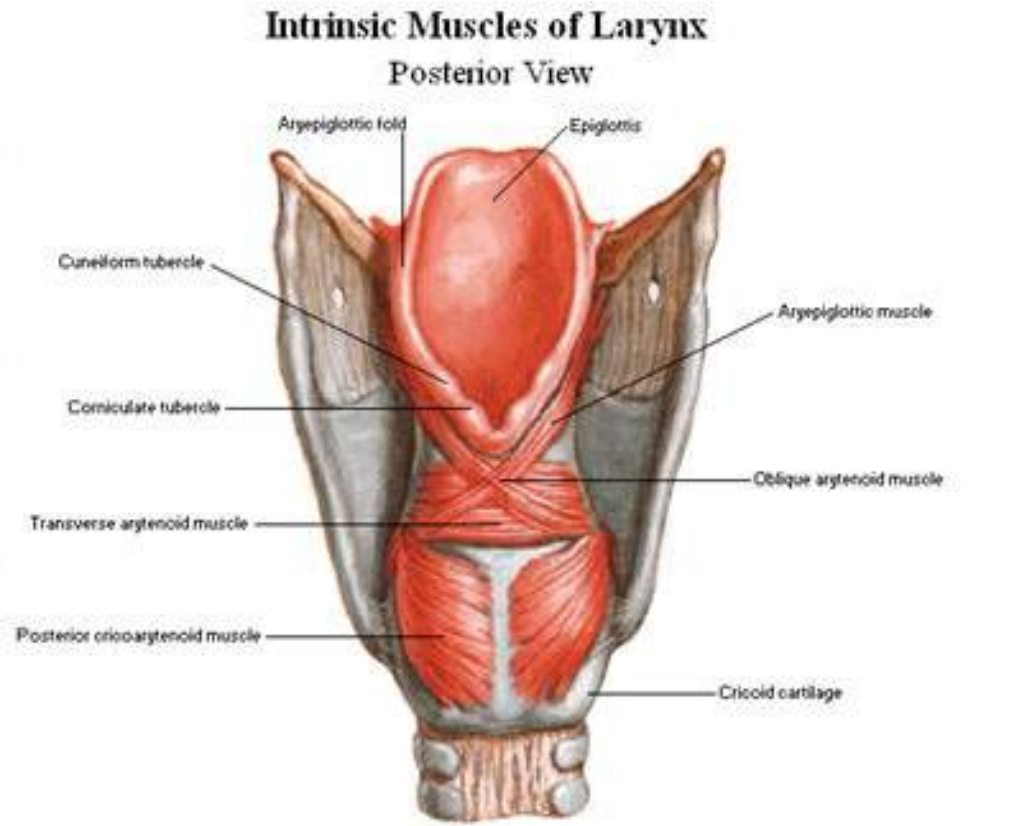
Base: concave, articulates with lamina of cricoid cartilage
Apex: articulates with corniculate cartilage
Medial surface face eachother
Anterio lateral: two depressions
Vocalis
Vestibular ligament
two processes: vocal process
muscular process



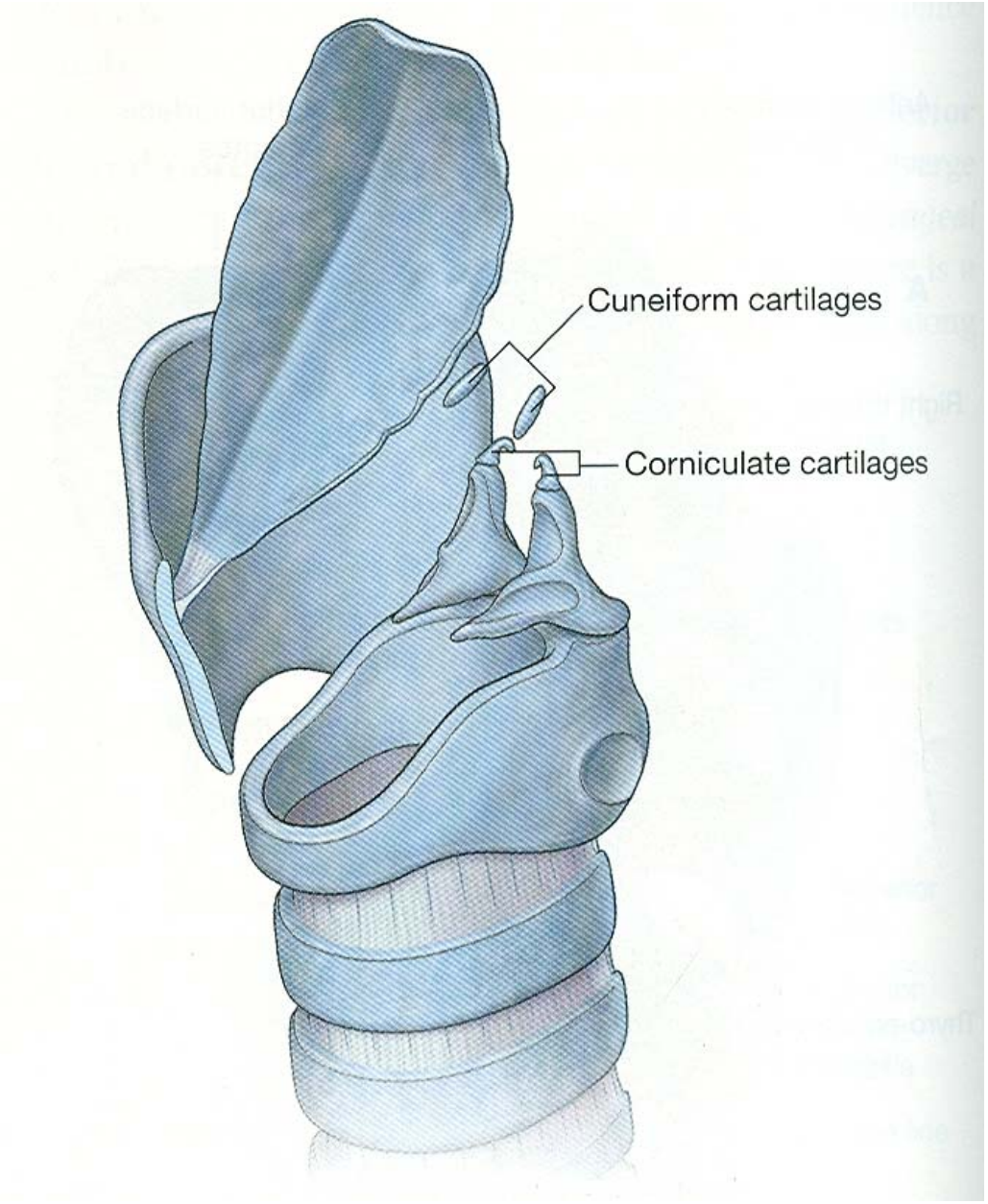


Corniculate & Cuneiform

- Contained in aryepiglottic fold
- Set at right angles to each other
- Corniculate articulates with apex of arytenoid
- **Action** – prop & keep aryepiglottic folds upright



Corniculate & Cuneiform



LARYNX

Cavity of larynx:

Laryngeal inlet

|

lower border of cricoid

Ant. Wall-longer

Post. Wall –smaller

Three folds

-aryepiglottic (laryngeal inlet

-vestibular (rima vestibuli)

-vocal fold (rima glottidis)

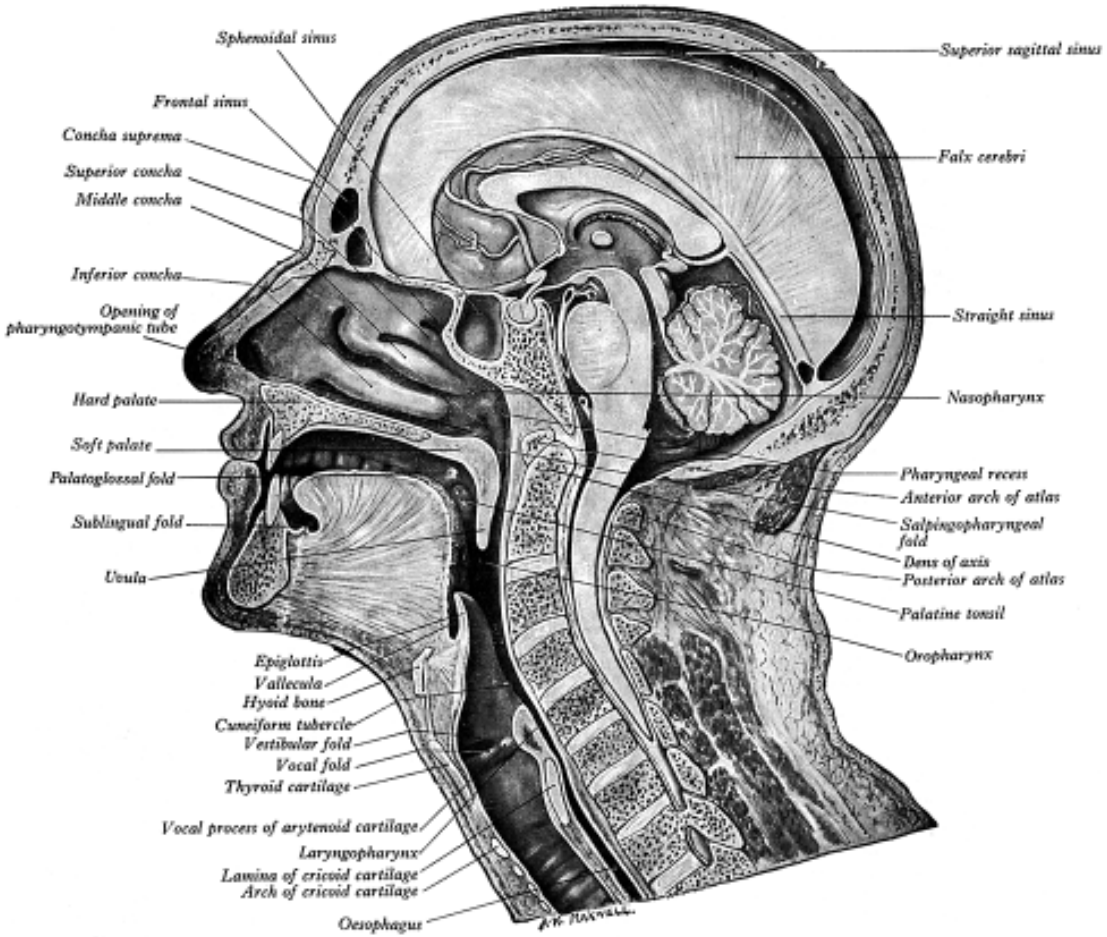
vocal process

Subdivisions:

-vestibule

- sinus of larynx (saccule of larynx)

- infraglottic



LARYNX

posterior surface

thyroepiglottic ligament

|

vestibular ligament. (pair)

|

vocal ligament. (pair)

**/ **

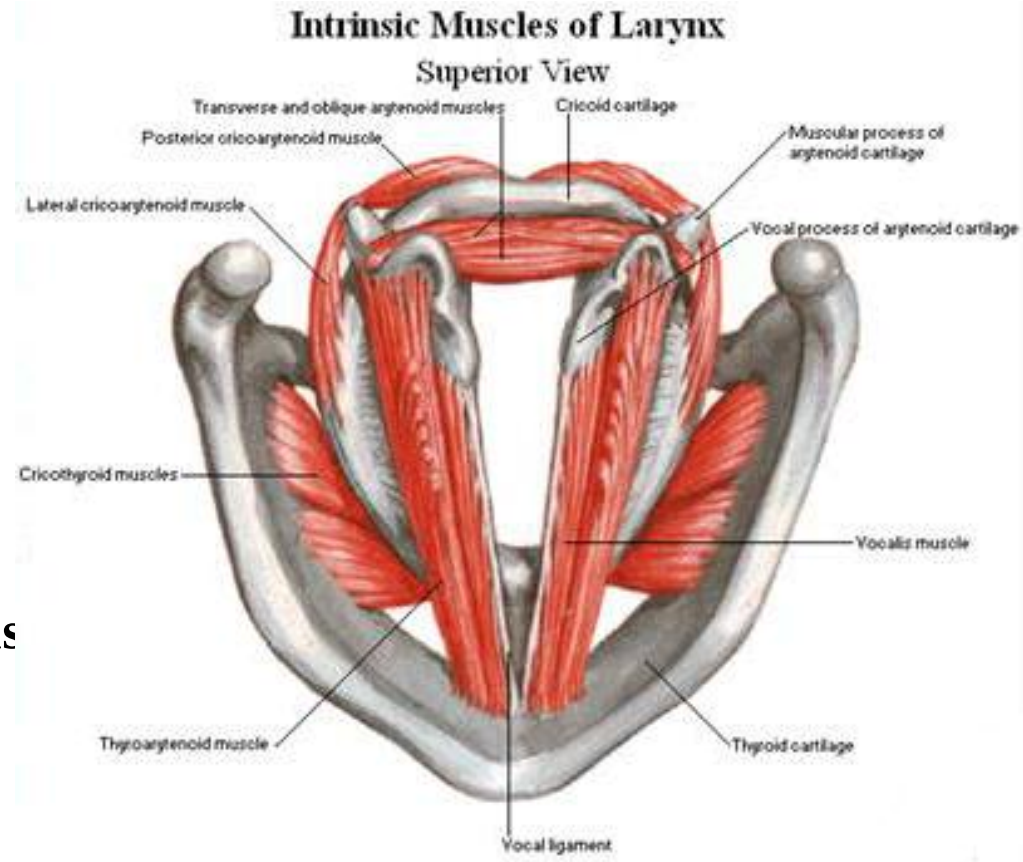
vocalis

/ vocalis

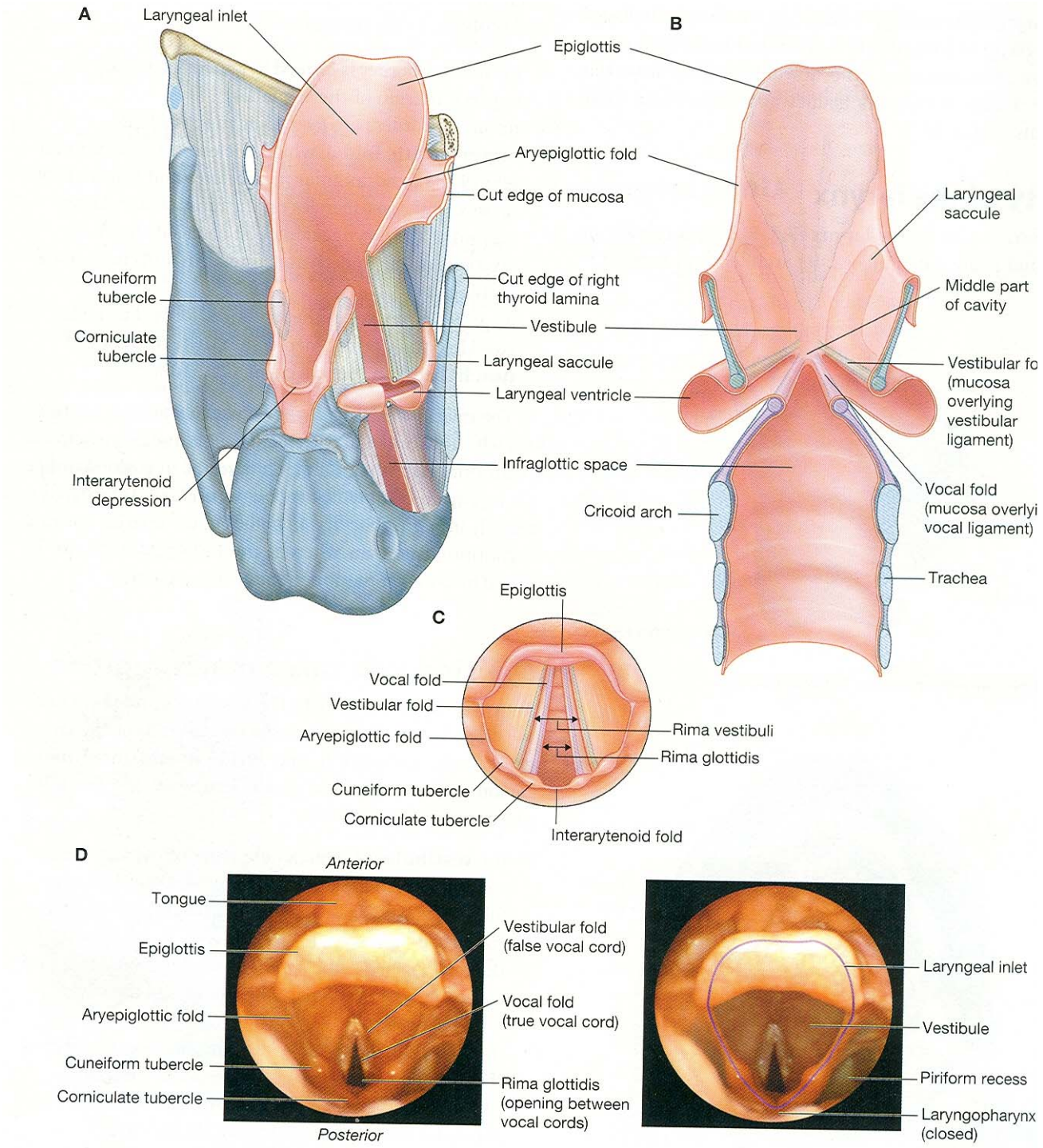
thyroarytenoid thyroarytenoid

**/ **

thyroepiglotticus thyroepiglotticus



Larynx Cavity



Ligaments & Membranes of larynx

- Extrinsic-

  Throhyoid ligament

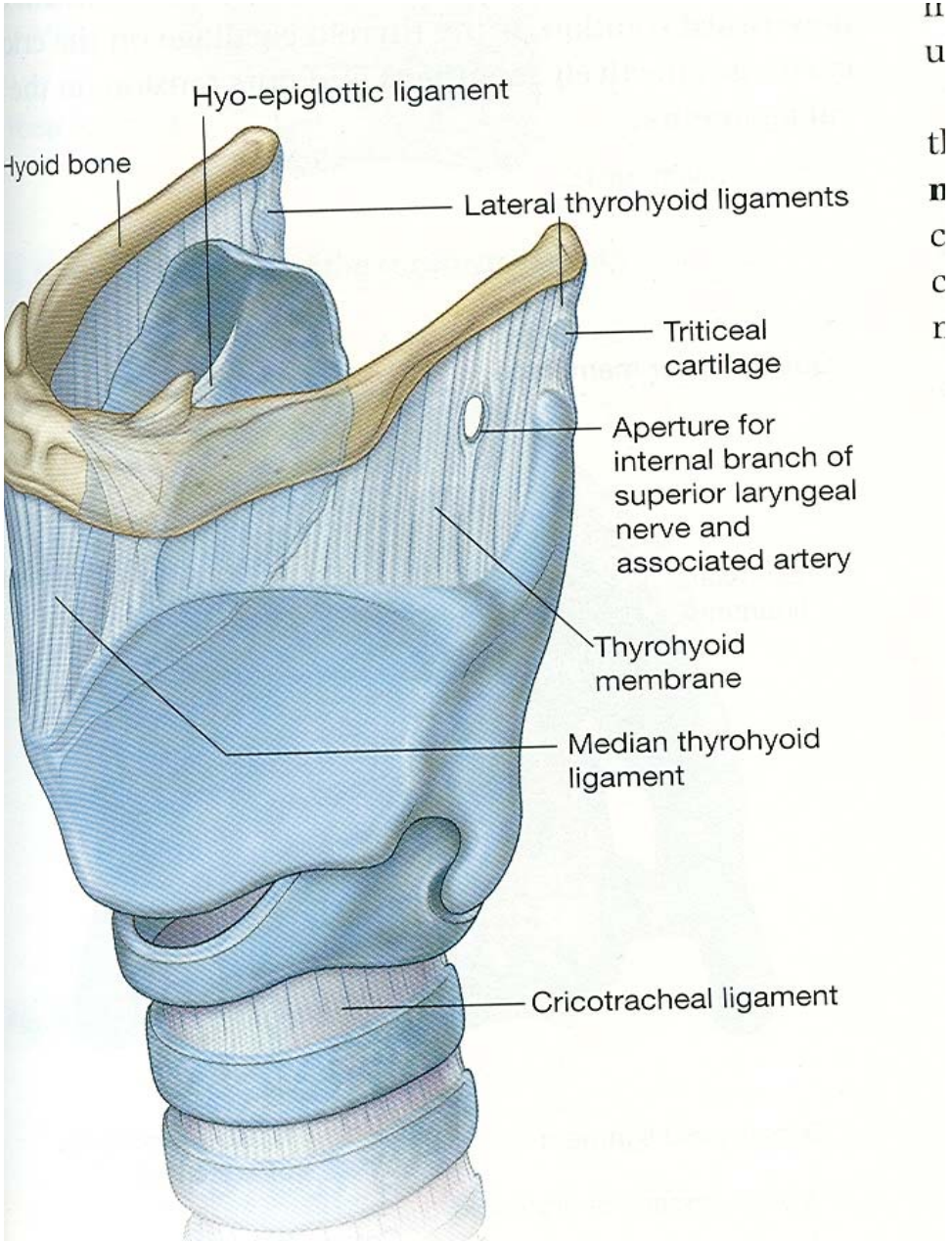
  Cricitracheal membrane

  Hyoepiglottic ligament

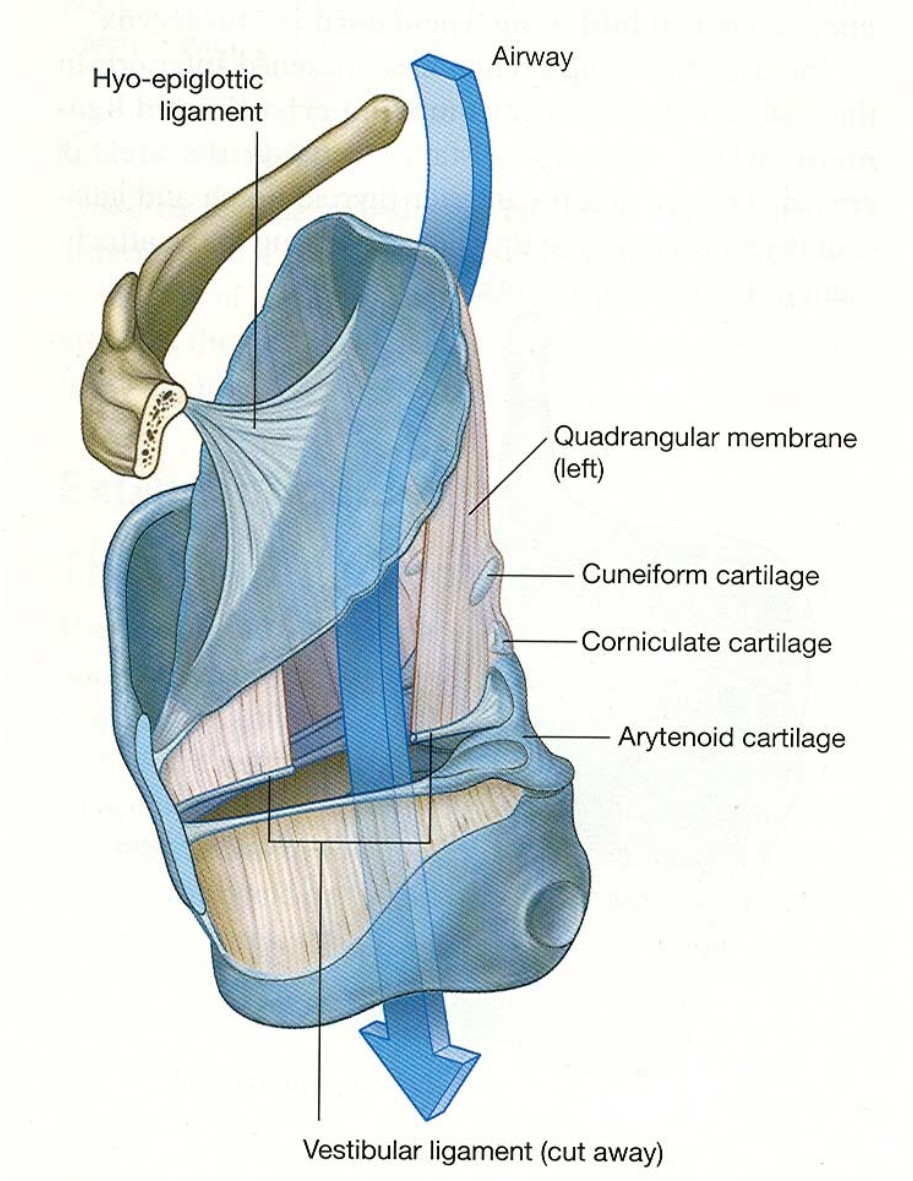
- Intrinsic-

  Quadrangular membrane

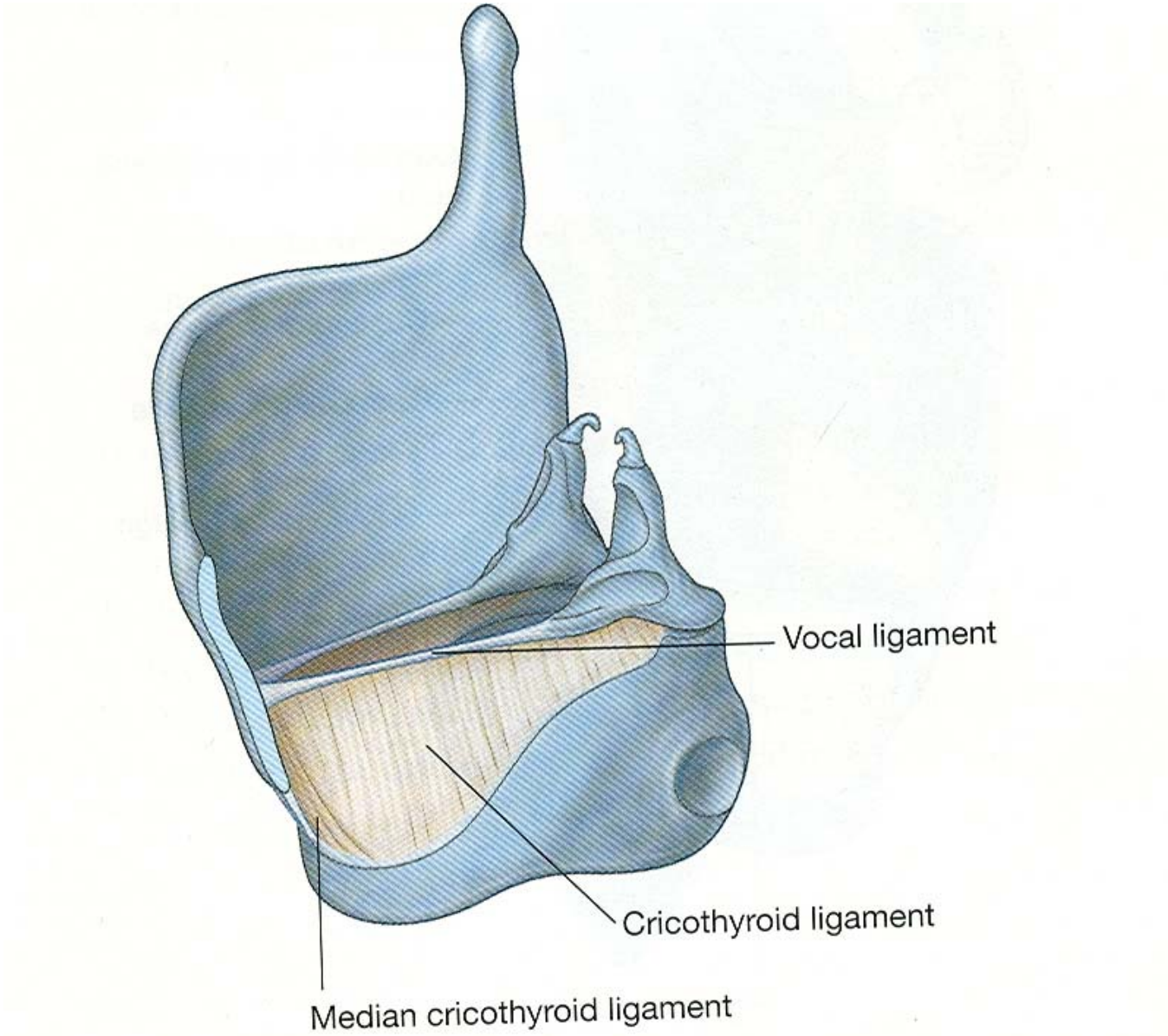
  Cricovocal membrane



Quandragular membrane



Cricothyroid ligament



LARYNX

- **Inlet of larynx**

upp. Margin of epiglottis

Aryepiglo ttic fold | Aryepiglottic fold

Interarytenoid fold of mucous memb.

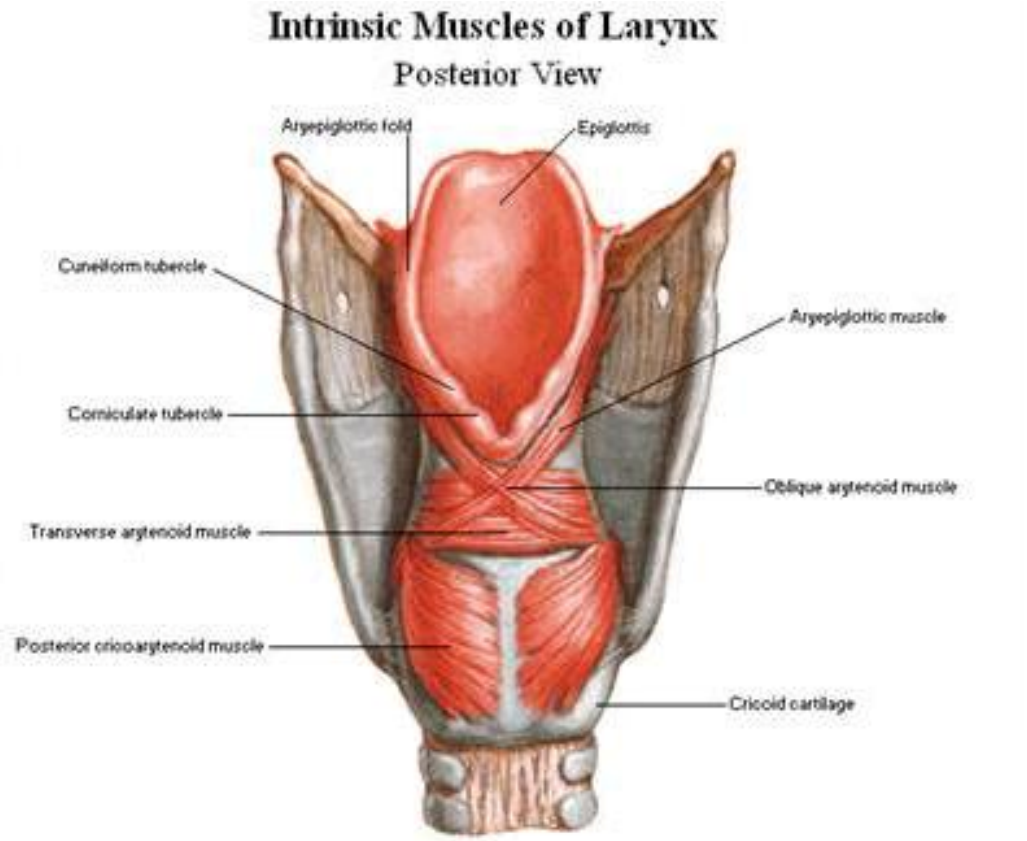
Aryepiglotticus – **closure -** approximating the aryepiglottic folds & bringing the arytenoids in close contact with the tubercle of the epiglottis

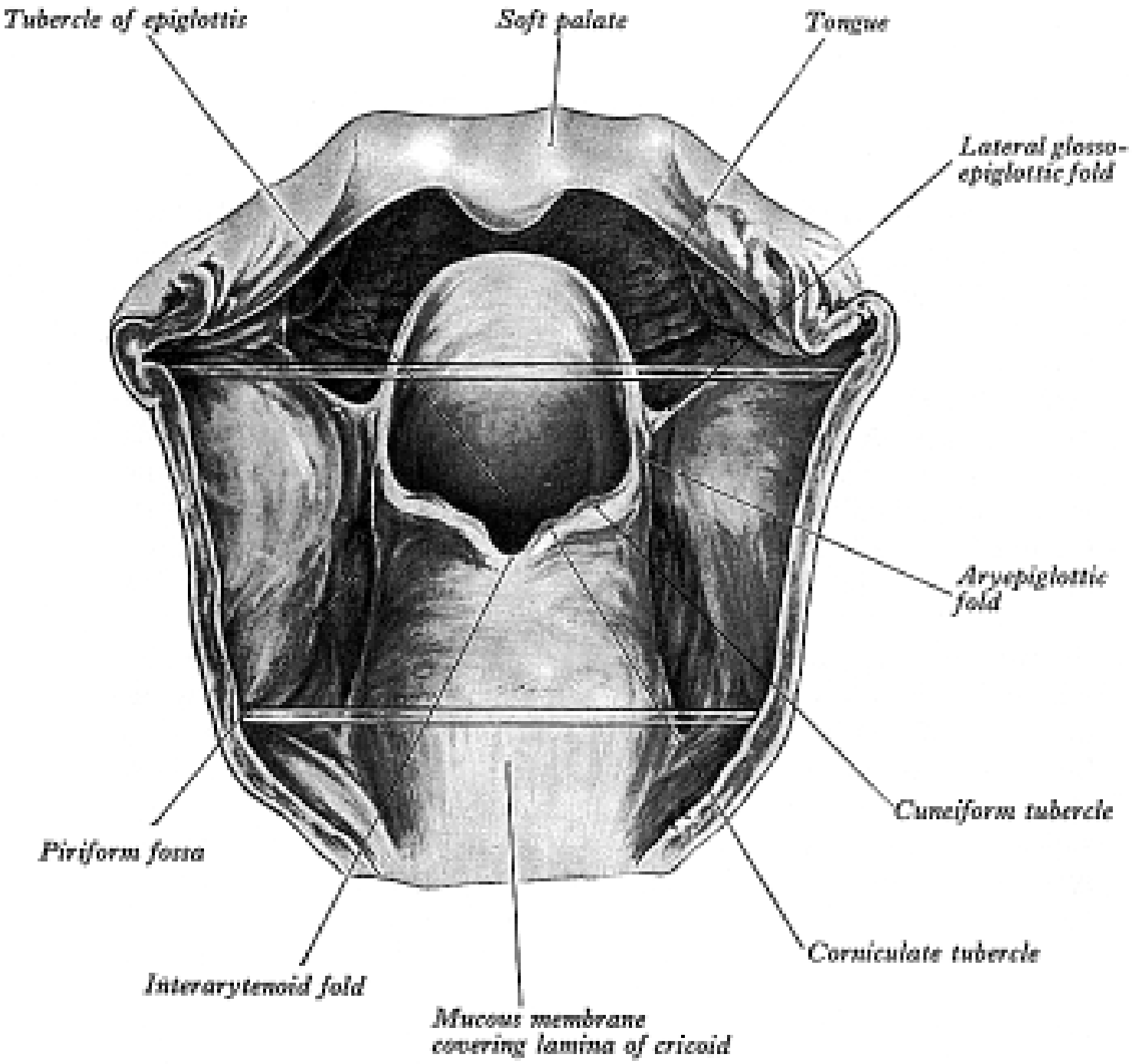
Opening- passive assisted by throepiglotticus

Rima vestibuli-s/m coat

Function-exit valve

-holding breath>↑intaabdominal pressure or intrathoracic




Tubercle of epiglottis
Soft palate
Tongue
Lateral glosso-epiglottic fold
Aryepiglottic fold
Cuneiform tubercle
Corniculate tubercle
Piriform fossa
Interarytenoid fold
Mucous membrane covering lamina of cricoid

LARYNX

Rima glottidis-no s/m coat

Sagittal dia.

-23mm adult males

-17mm adult females

Boundaries –

Infront-angle of thyroid cartilage

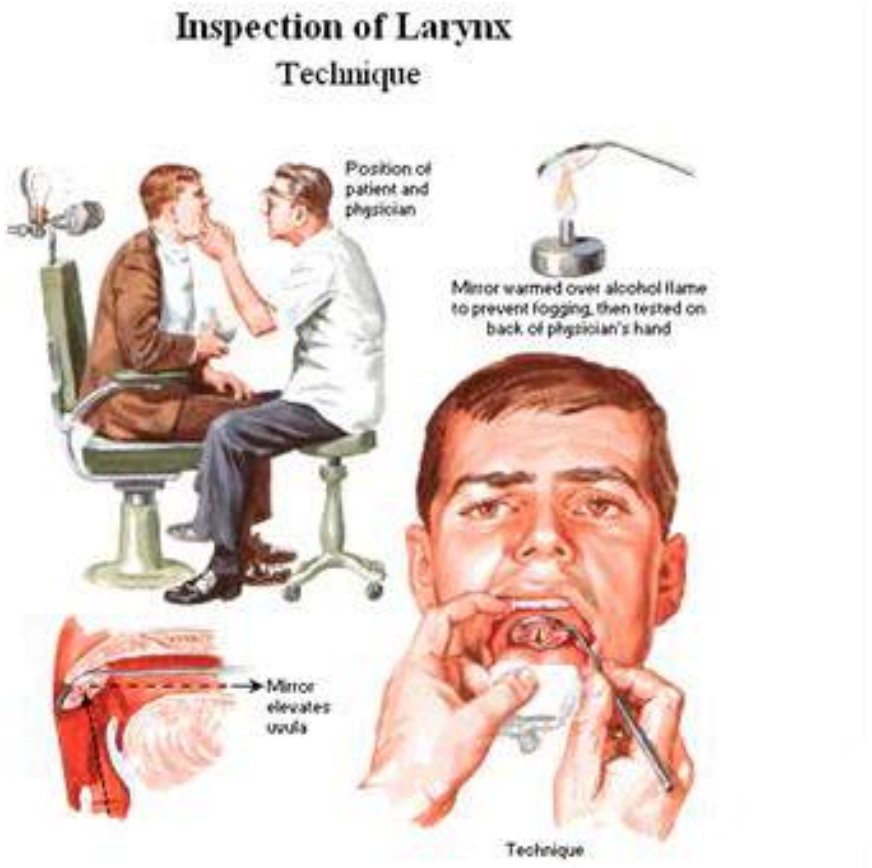
Behind –interarytenoid mucous fold

Each side –vocal fold (3/5th intermemb.) --vocal process (2/5th intercartilagin.)

Shape of rima glottidis:

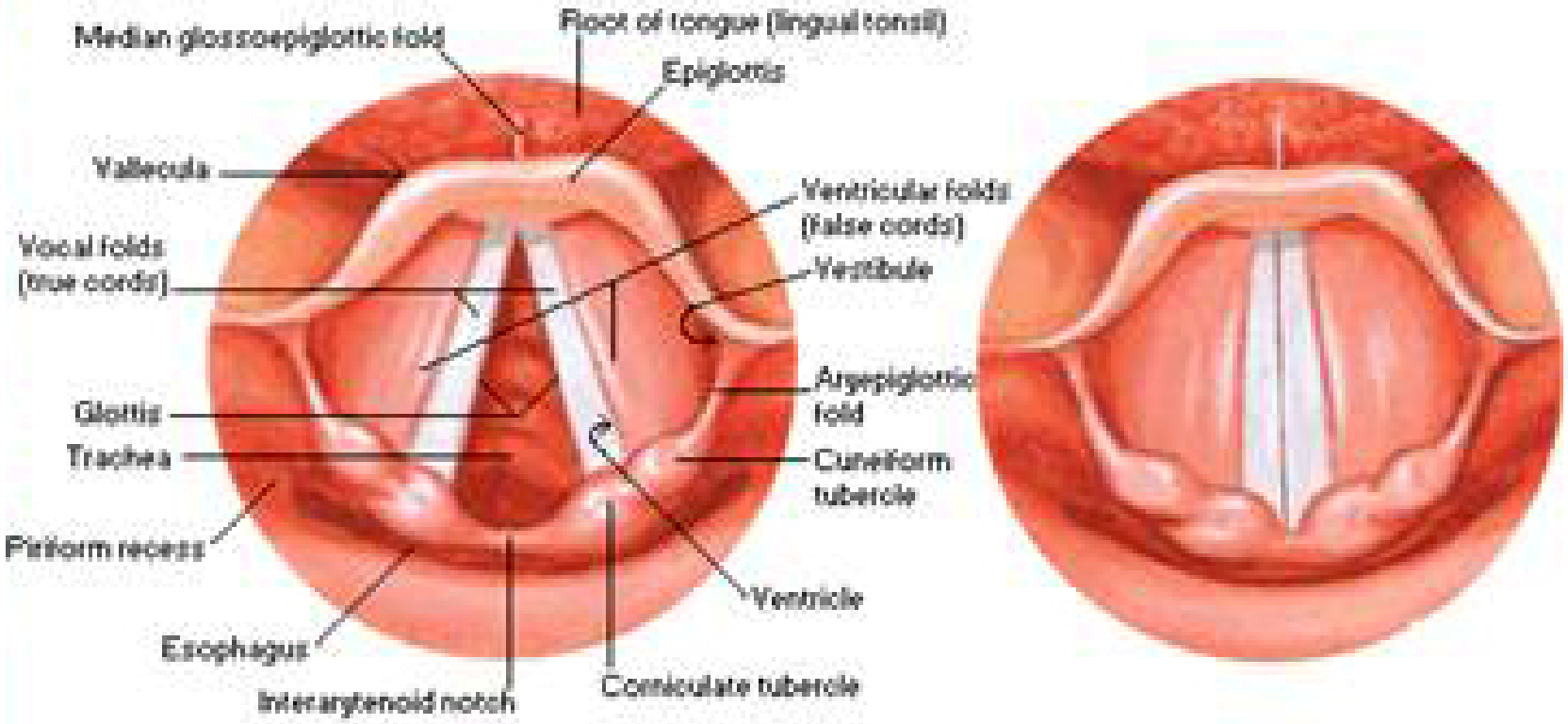
1) Normal quiet breathing-⌂
2) Full inspiration-Δ or diamond
3) High pitch sound-‖
4) Whispering - ‖

/ \



Inspection of Larynx

Views during Inspiration and Phonation



Normal larynx: inspiration

Normal larynx: phonation

LARYNX

- **Movements of rima glottidis:**

Abduction- in full inspiration

posterior criciarytenoid(safety muscle)

Rotatory movement-upper horizontal fibres

Gliding movement-lower vertical fibres(more pronounced)

STEADIES the arytenoid during adduction by lat. Cricoarytenoid

Adduction –in high pitched

I/M-lat. Cricoarytenoid(whispering)

I/C-arytenoideus transversus & oblique arytenoideus(gliding)

Tension (elongation)-crocothyroid

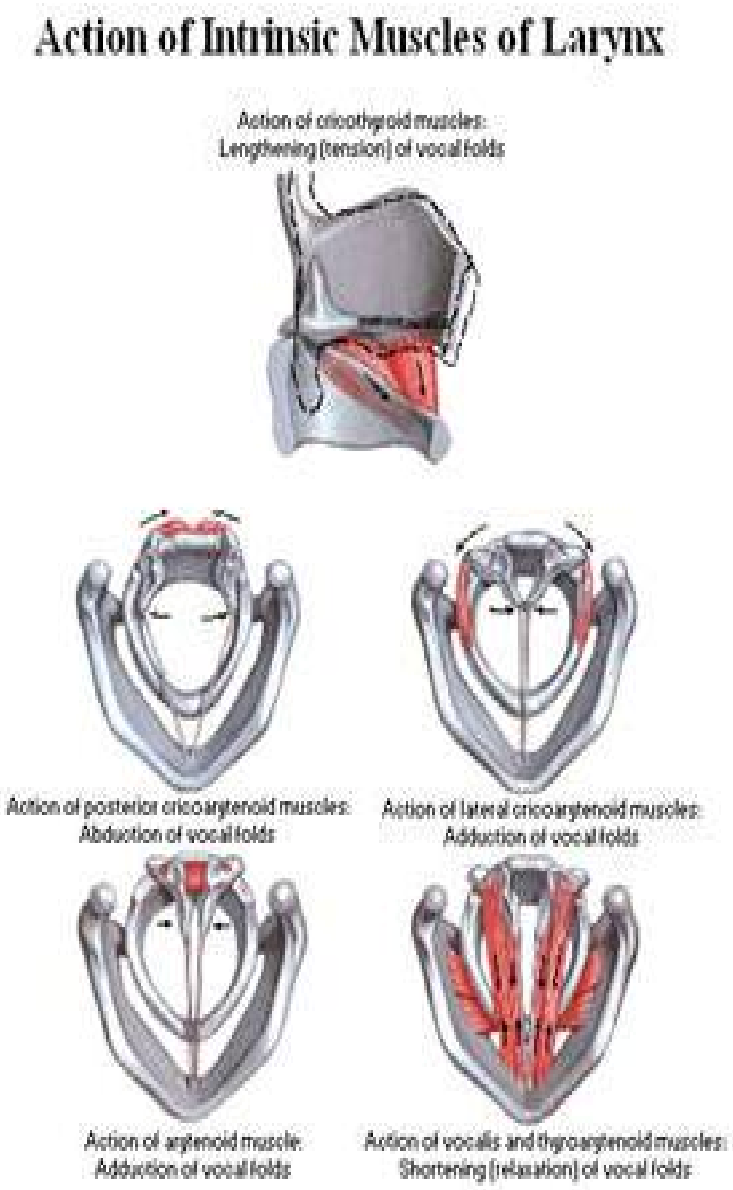
mechanism of action (partly by vocalis)

a-classical view

b –negus view

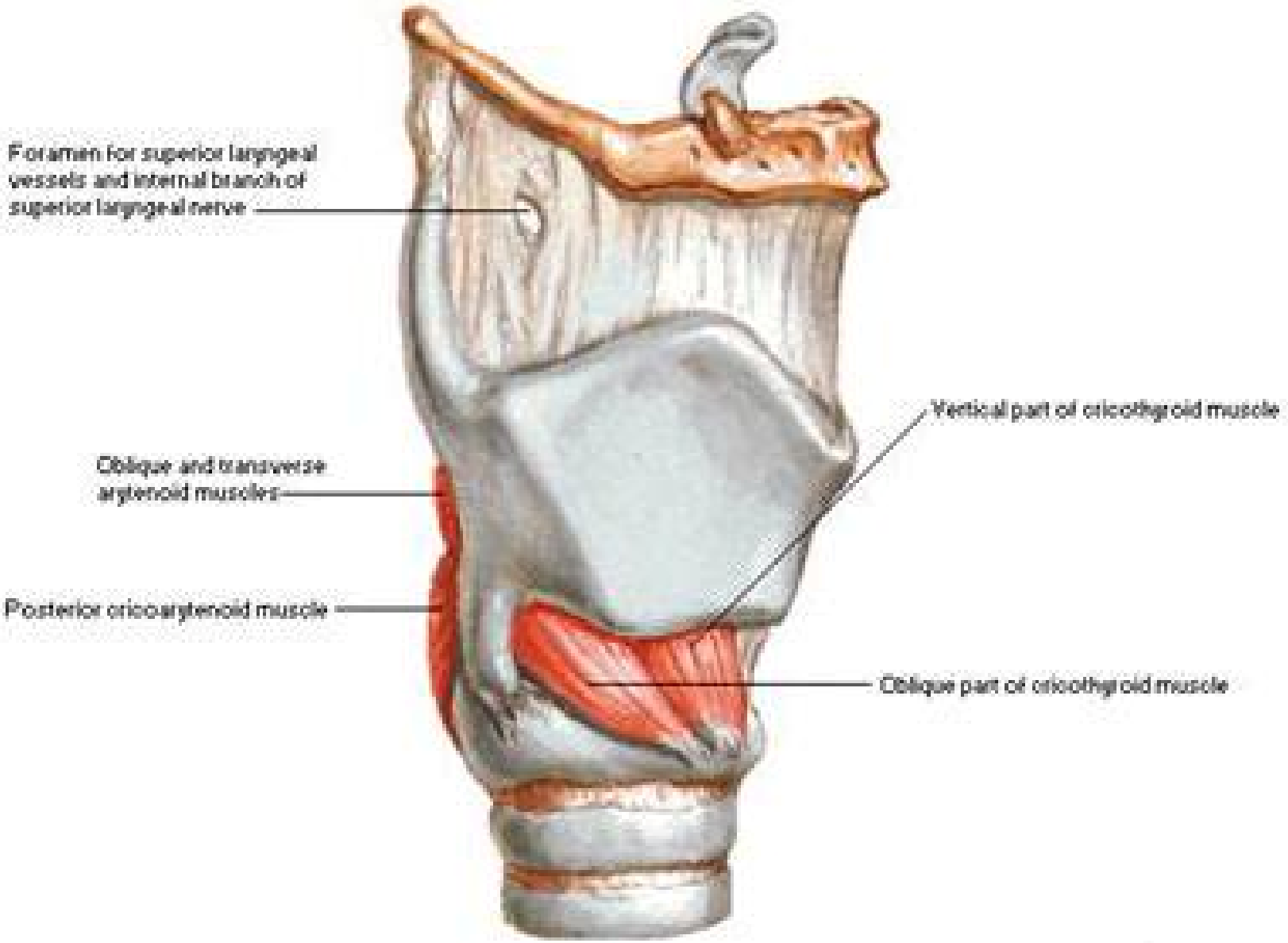
Relaxation –(shortening) – thyroarytenoid

(partly by vocalis< modulation of voice)



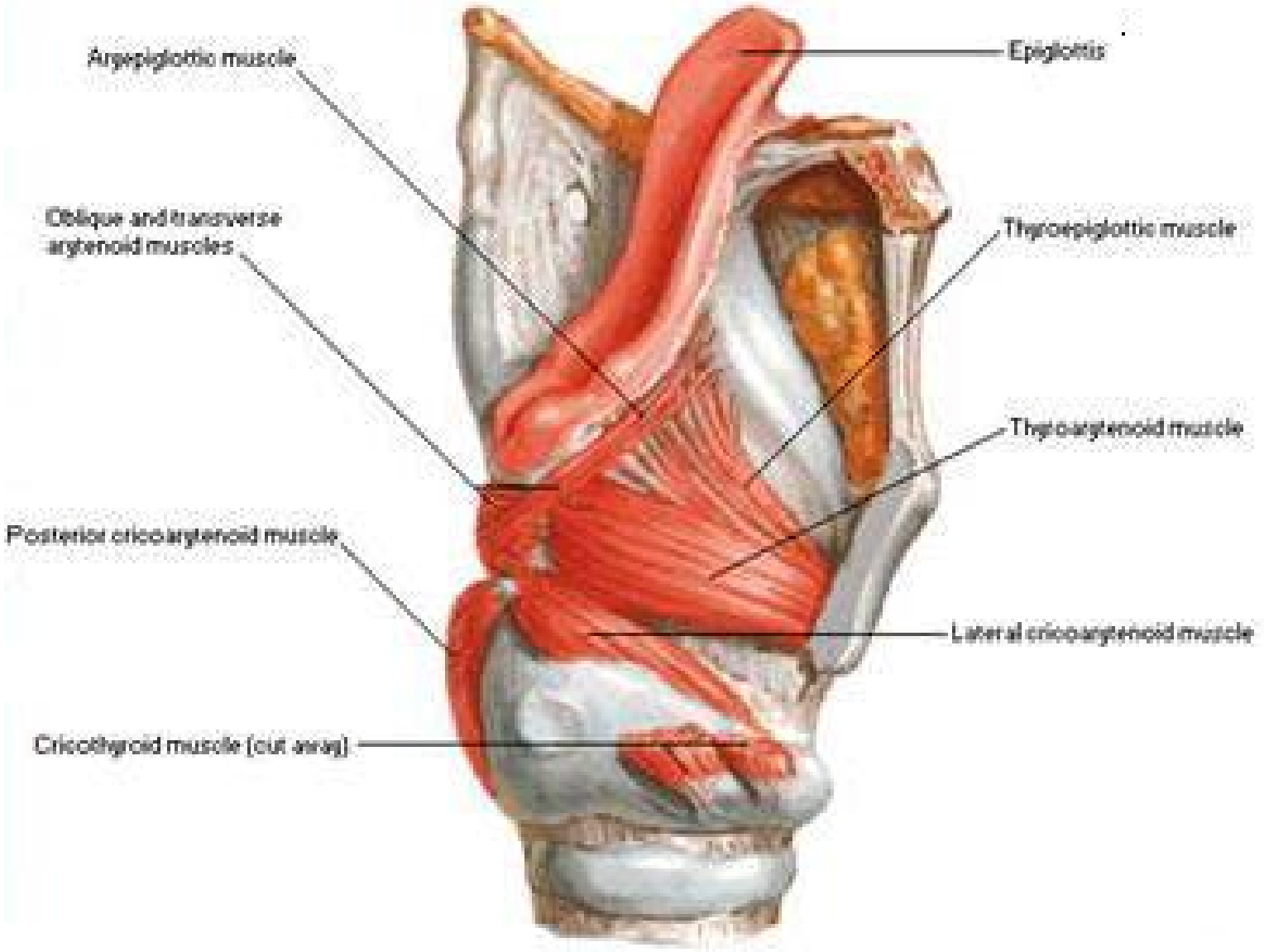
Intrinsic Muscles of Larynx

Right Lateral View



Intrinsic Muscles of Larynx

Lateral Dissection



LARYNX

- **Function of rima glottidis:**

  - entry valve (for free arm movement)

-acts in phonation

ALL vowels are voiced but consonants are unvoiced

-lubrication by oil can action of the glands of saccule

NO oedema due to absence of S/M coat

Mucous memb.-ciliated pseudostratified columnar except- aryepiglottic fold, vocal fold, upper posterior surf. Of epiglottis

Taste buds-aryepiglottic fold, epiglottis & vestibular fold

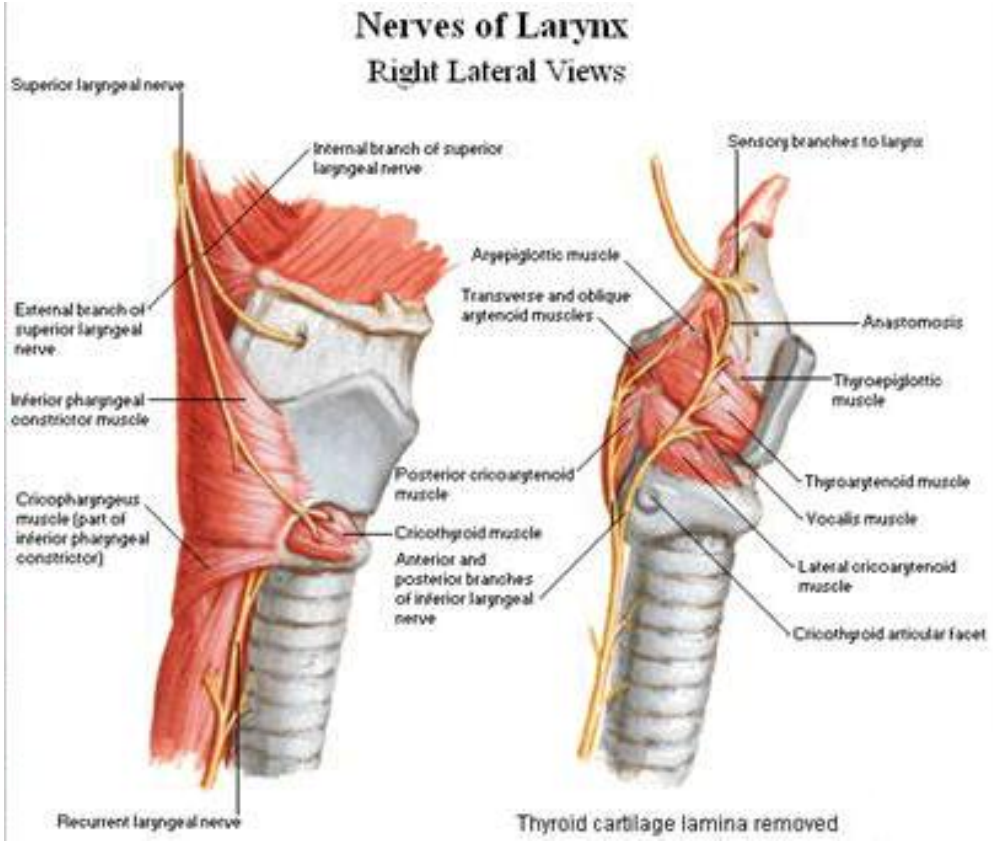
N.Supply -ILN & RLN (sensory)

MOTOR-RLN except cricothyroid by ELN

BLD. supply- SLart. &ILart.

veins-corresponding

Lymphatic drainage-prelaryngeal , jugulodiagastric &pretracheal,paratracheal



LARYNX

- **Applied:**

1)RLN cut (thyroidectomy)

Affected half Para median fixed position, Hoarseness, no difficulty in respiration

2)BOTH RLN cut

Fixed in Para median position, Aphonic,Difficulty on slight exertion

treatmentt- tracheostomy

3)RLN & ELN both sides(cadaveric position)Further abducted & fixed

4)SEMON'S law -

chronic involvement of RLN

Abductors are paralyzed first followed by others

Seen in a growing tumors or vascular aneurysm