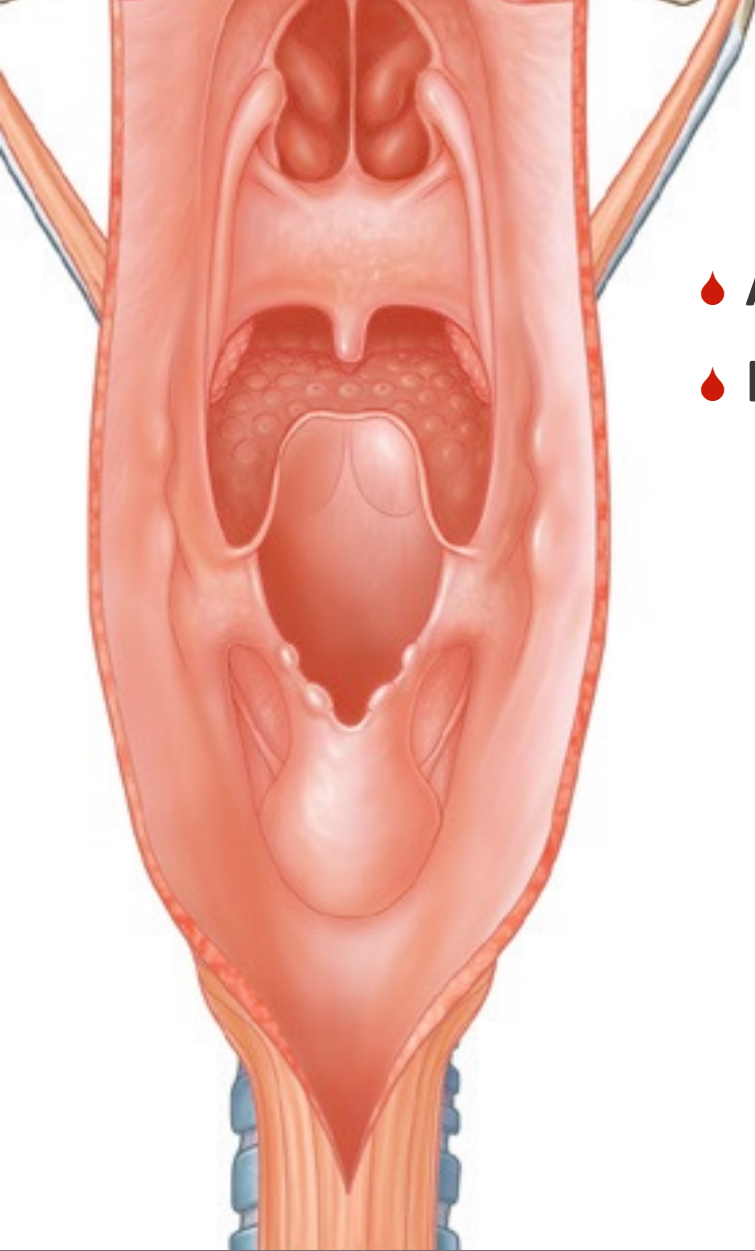
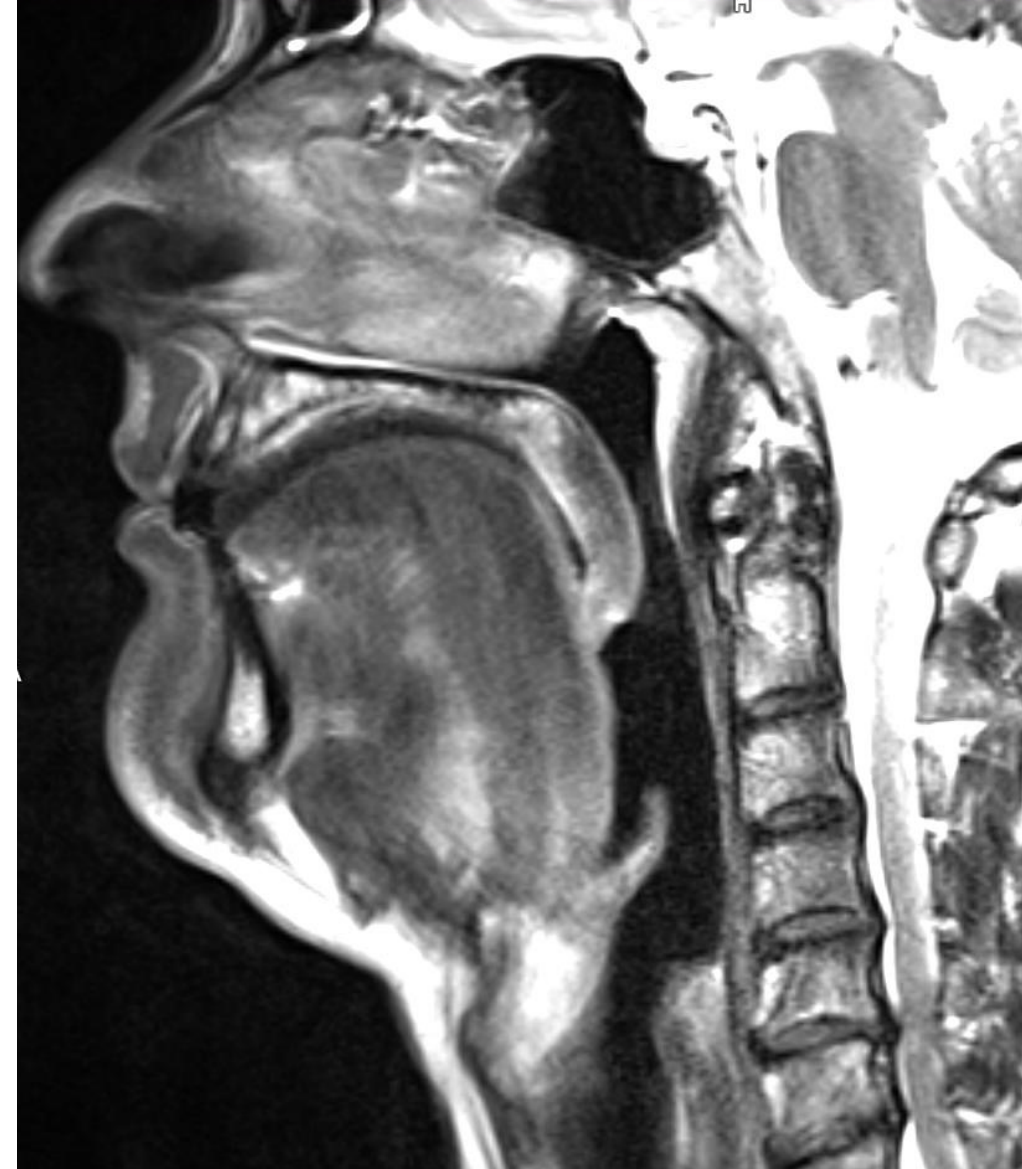


Larynx, thyroidea, parathyroidea, mm. cervicis

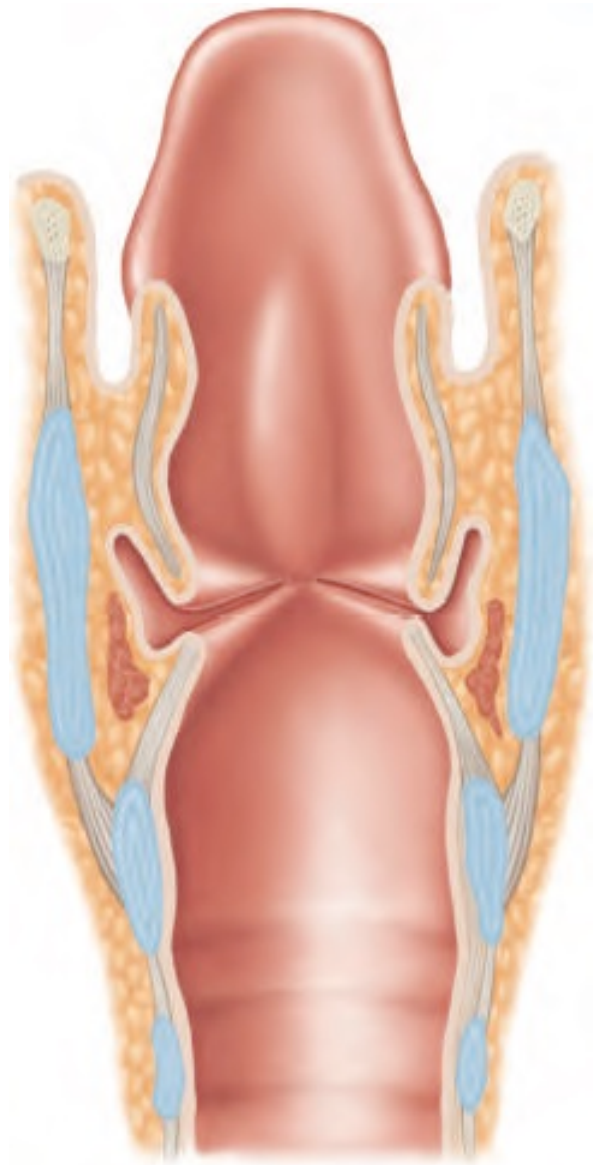
Prof. MUDr. Jiří Ferda, Ph.D.



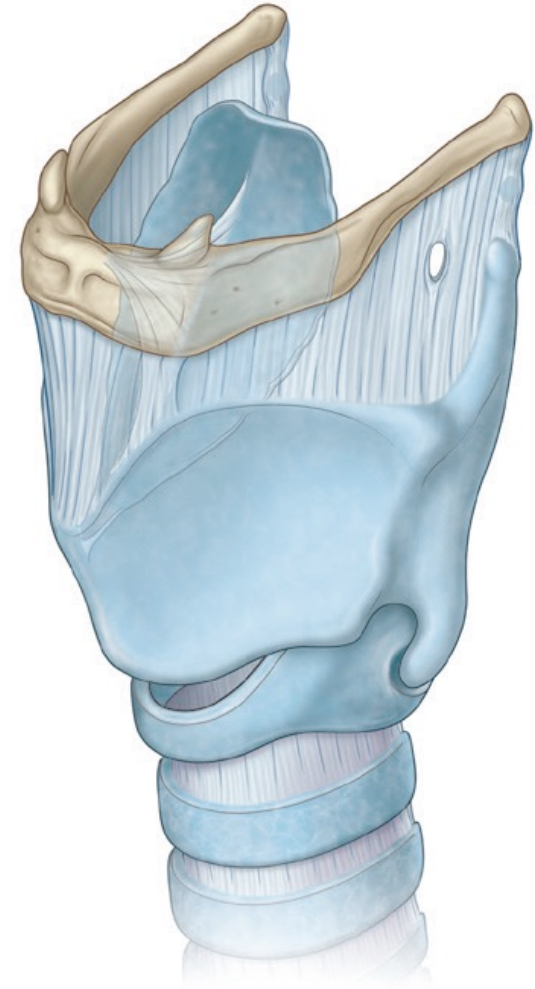
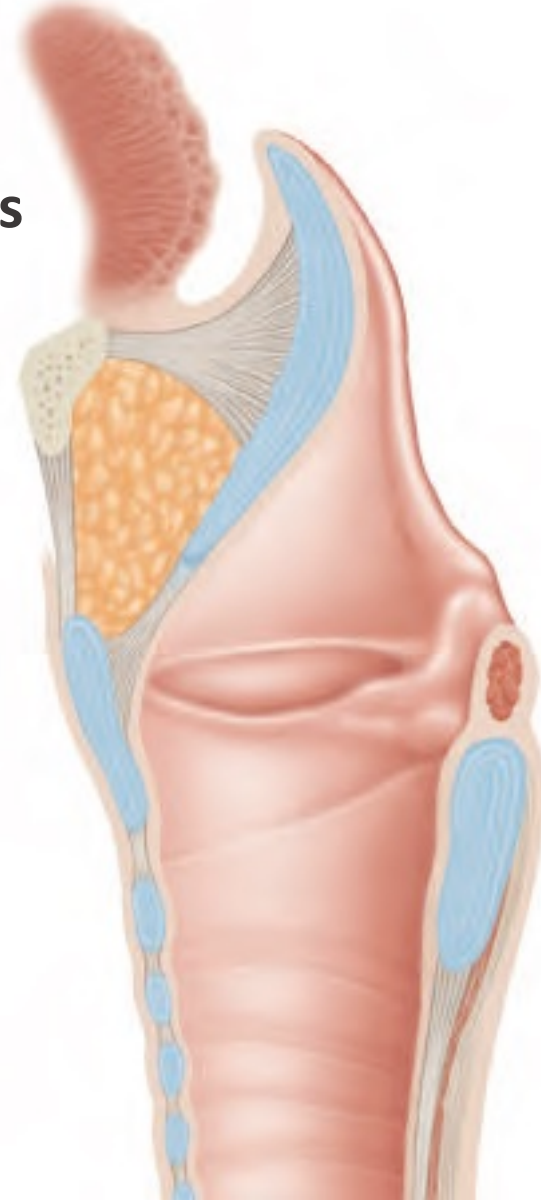
- ♦ **Aditus laryngis**
- ♦ **Fossae piriformes**
 - ♦ Recessus piriformis
 - ♦ grooves
 - ♦ Conduct solid and fluid meal
 - ♦ To esophagus



hypofarynx – laryngopharynx and larynx



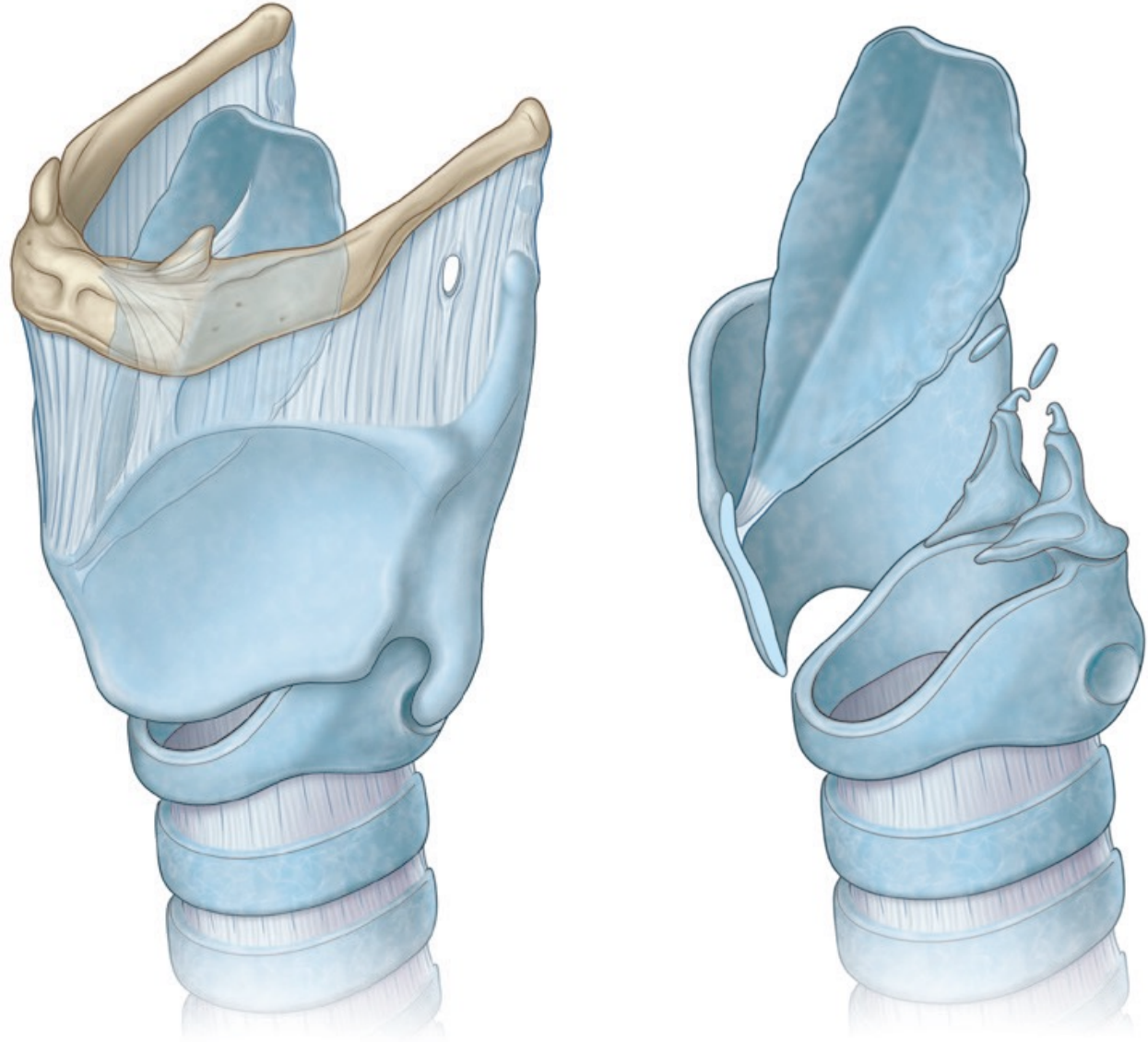
- ♦ **Aditus laryngis**
- ♦ **Tuberculum epiglottidis**
- ♦ **Vestibulum**
- ♦ **Cavitas supraglottica**
- ♦ **Plica vestibularis**
- ♦ **Ventriculus**
- ♦ **Glottis**
- ♦ **Plica vocalis**
 - ♦ **lig. vocale, m. vocalis**
- ♦ **Cavitas infraglottica**



larynx

cartilagine laryngis

- ♦ Cartilages – skeleton of larynx
- ♦ **paired**
- ♦ Cart. arytenoidea
- ♦ Cart. corniculata
- ♦ Cart. cuneiformis
- ♦ Cart. triticea
- ♦ **unpaired**
- ♦ Cart. thyroidea
- ♦ Cart. cricoidea
- ♦ Cart epiglottica



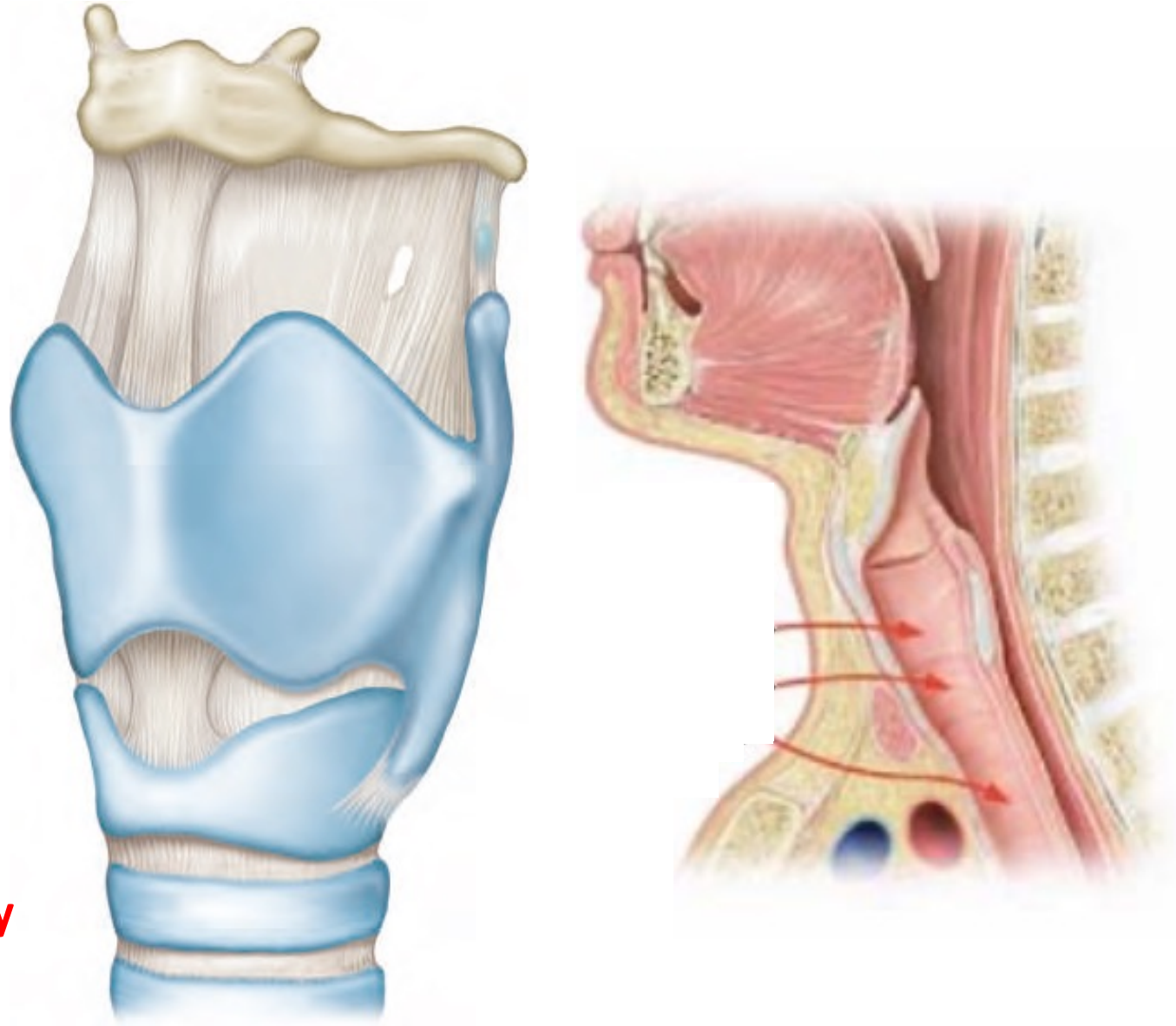
Larynx - cartilagine

- ♦ **Cartilago triticea**
- ♦ **Cart. thyroidea**
- ♦ *Cornu superius*
- ♦ *Cornu inferius*
- ♦ *Lamina*
- ♦ *Incissura thyroidea*
- ♦ *Prominentia laryngis*
- ♦ *Linea obliqua*
- ♦ *Tuberculum superius*
- ♦ *Tuberculum inferius*
- ♦ **Cart. cricoidea**
- ♦ *Arcus anterior*



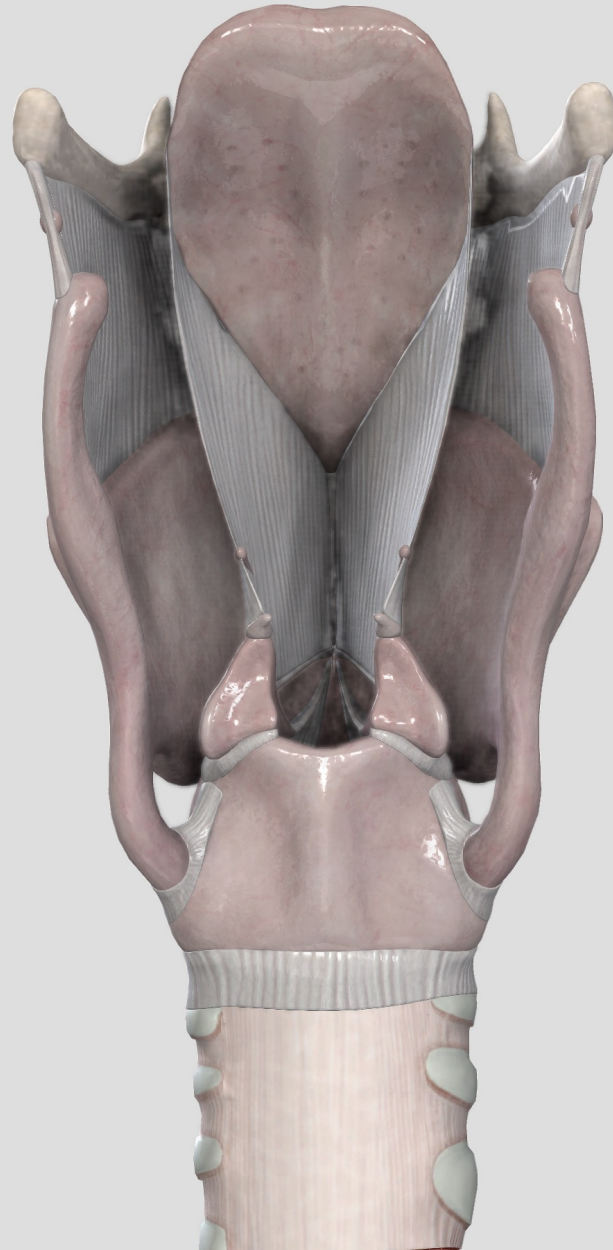
Connection of cartilages

- ♦ **Os hyoideum**
 - ♦ *Corpus, cornu minus, cornu majus*
- ♦ **Lig. thyrohyoideum medianum**
- ♦ **Membrana thyrohyoidea**
- ♦ **Apertura (n. et. a. laryngea ant.)**
- ♦ **Conus elasticus - coniotomy**
- ♦ **Lig. cricothyroideum medianum**
- ♦ **Capsula articulationis cricothyroidea**
- ♦ **Ligamentum cricotracheale - tracheostomy**
- ♦ **Trachea**



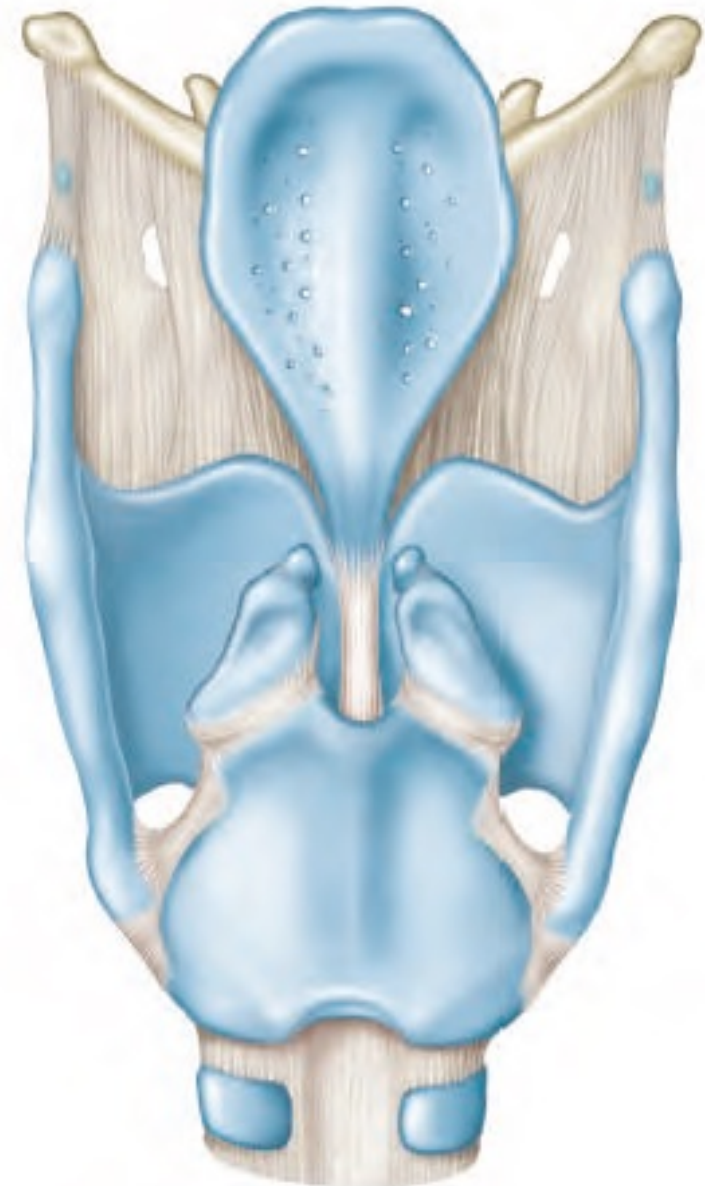
Laryngela cartilages

- **Cartilago triticea**
- **Cart. thyroidea**
- *Cornu superius*
- *Cornu inferius*
- *Lamina*
- *Incissura thyroidea*
- **Cart. cuneiformis**
- **Cart. corniculatum**
- **Cart. arytenoidea**
- **Cart. cricoidea**
- *lamina*
- *crista*

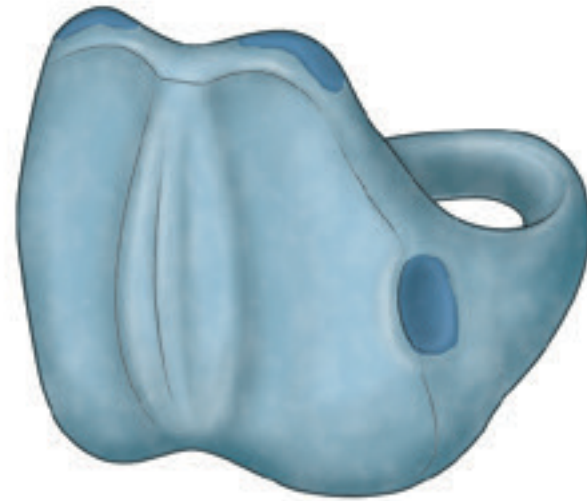
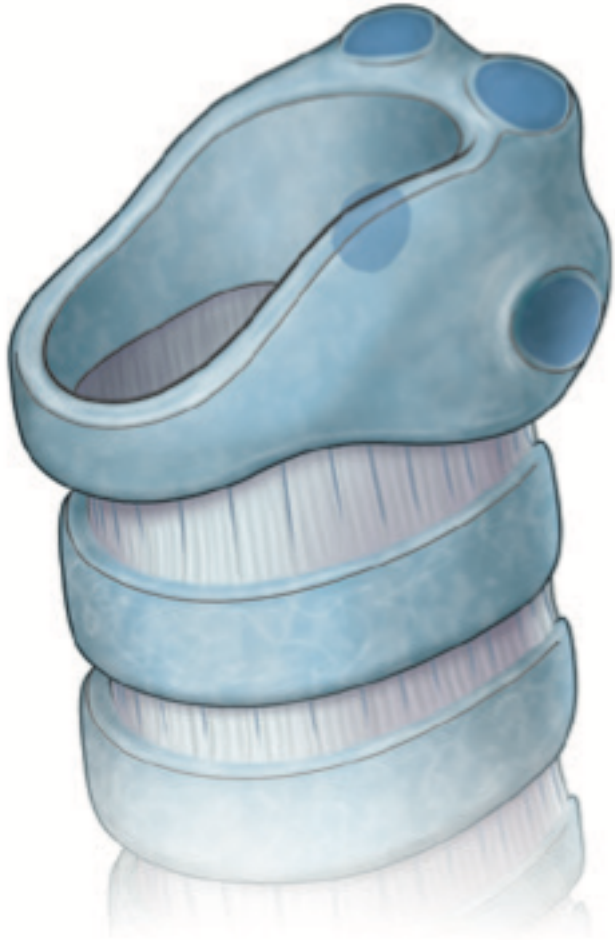


connection of cartilages

- ♦ Os hyoideum
- ♦ Lig. thyrohyoideum laterale
- ♦ Membrana thyrohyoidea
- ♦ Apertura (n. et. a. laryngea ant.)
- ♦ Epiglottis
- ♦ Lig. thyroepiglotticum
- ♦ Capsula art. cricoarytenoidea
- ♦ Lig. cricoarytenoideum post.
- ♦ Lig. cricothyroideum medianum
- ♦ Capsula art. cricothyroidea
- ♦ Ligamentum cricotracheale

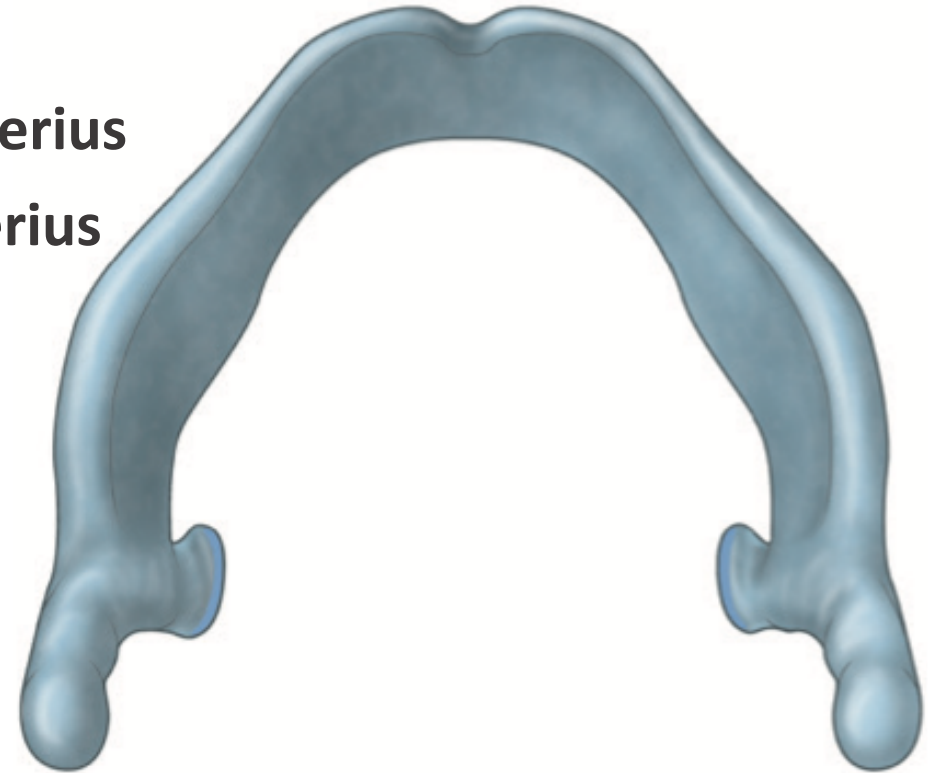
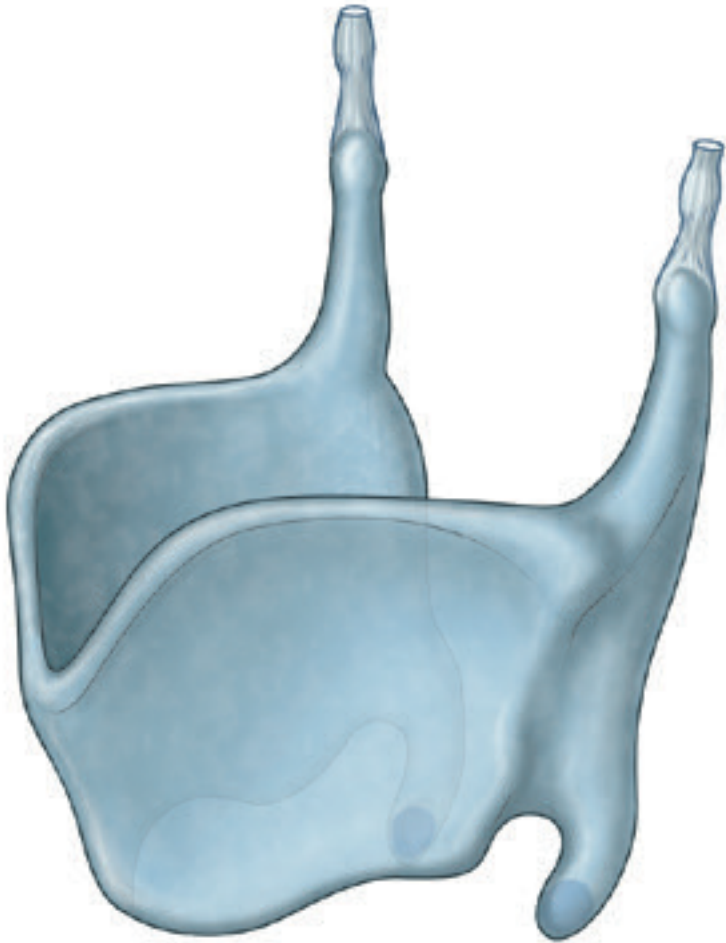


Cartilago cricoidea

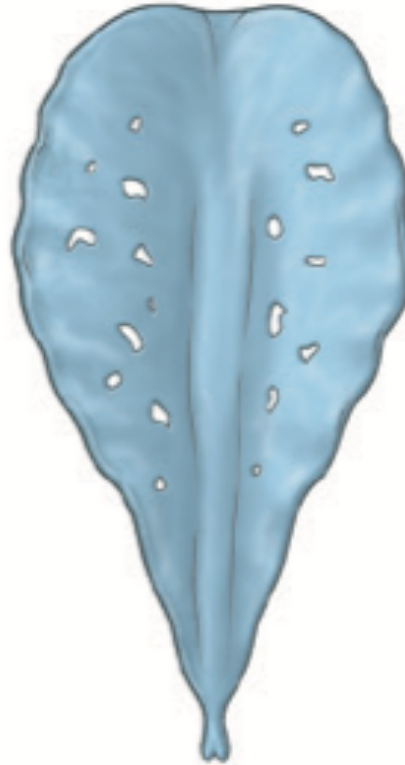


Cartilago thyroidea

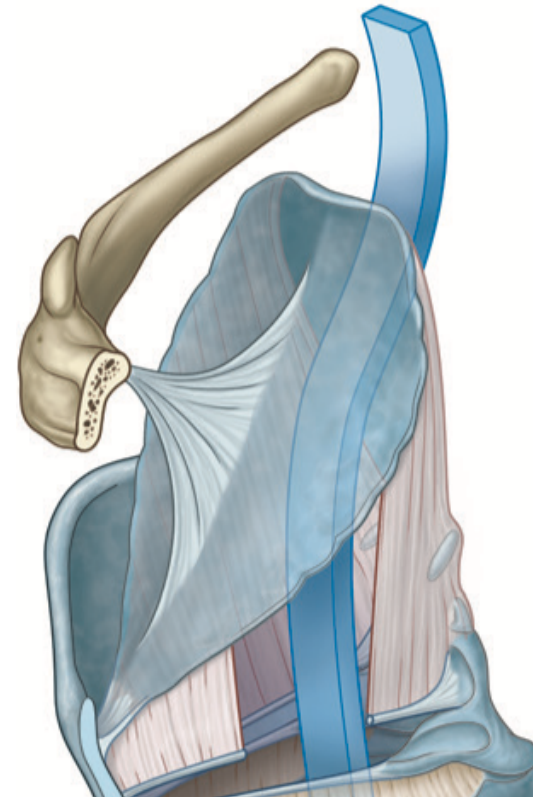
- ♦ Lamina
- ♦ Incissura superior
- ♦ Prominentia laryngis
- ♦ Incissura inferior
- ♦ Linea obliqua
- ♦ Tuberculum thyroideum superius
- ♦ Tuberculum thyroideum inferius
- ♦ Cornu superius
- ♦ Cornu inferius
- ♦ *Angulus laminarum*
 - ♦ 90-120 st.



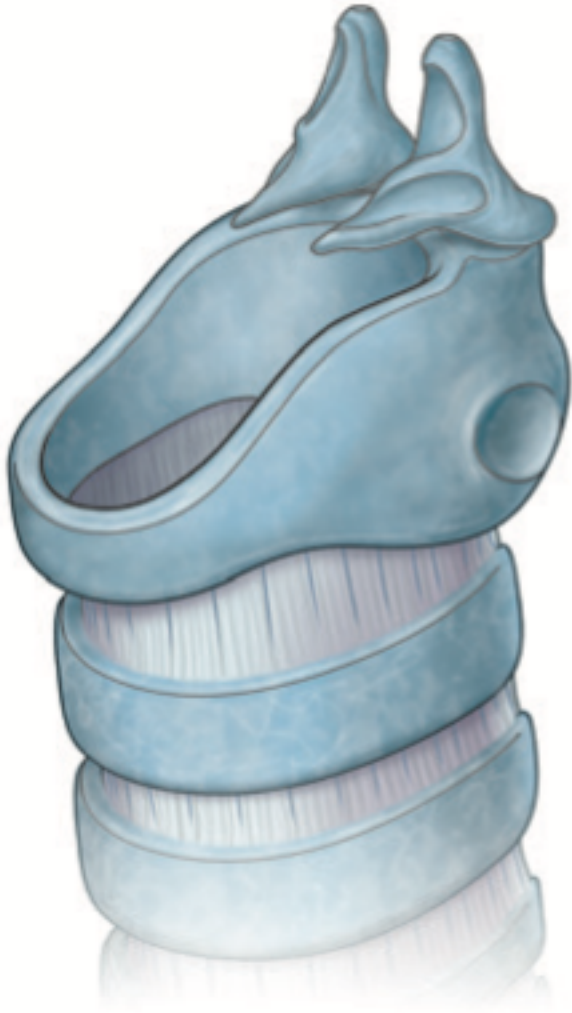
Epiglottis



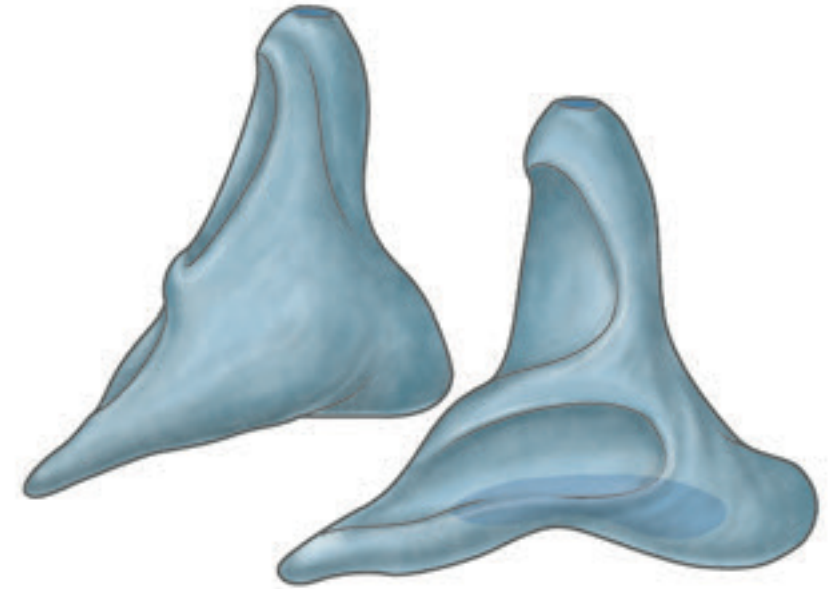
- ♦ **Facies anterior**
- ♦ **Facies posterior**
- ♦ **Tuberculum epiglottidis**
- ♦ ***Ligamentum hyo-epiglotticum***



Cartilago arytenoidea

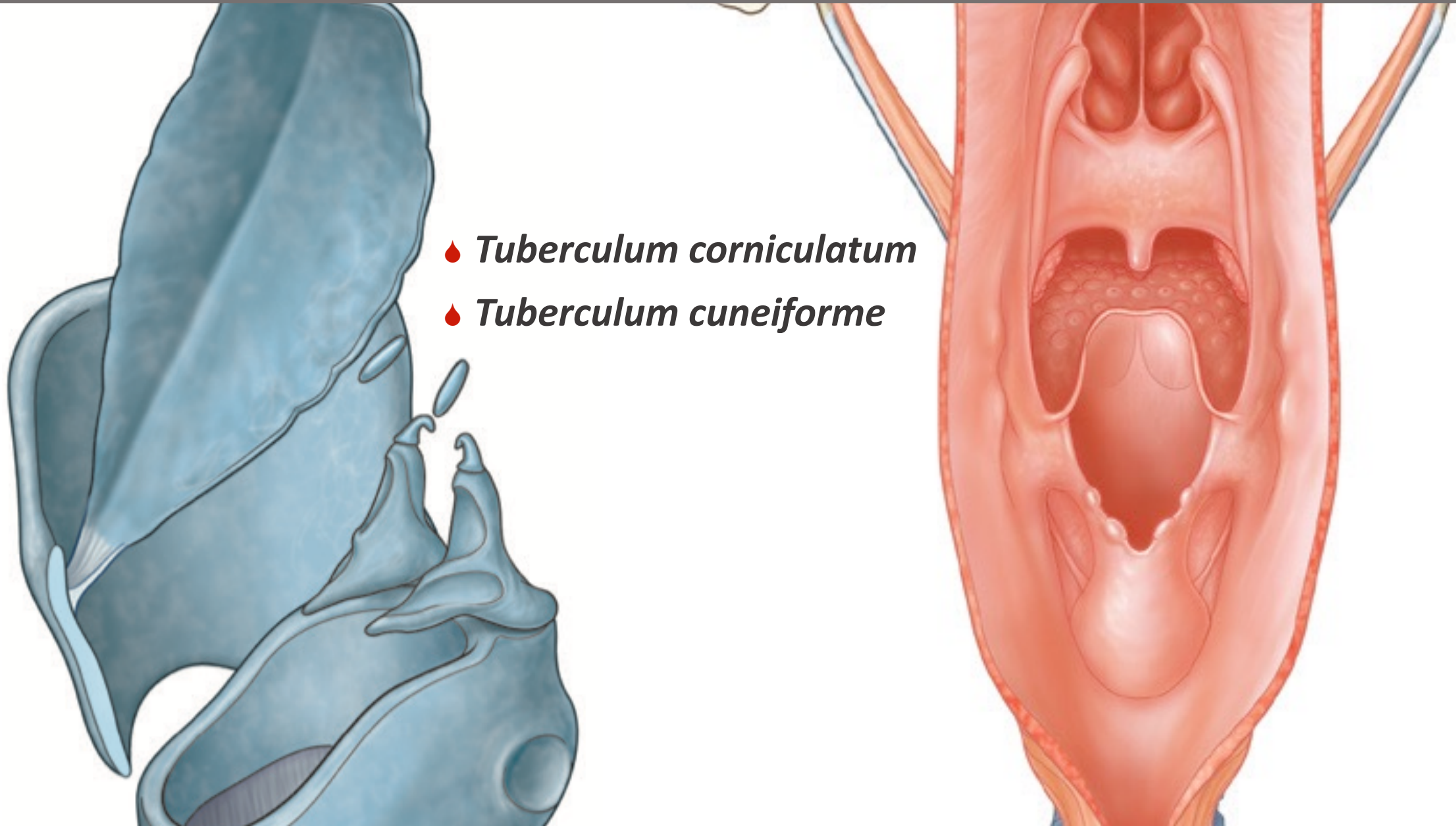


- ♦ **Processus vocalis**
- ♦ **Processus muscularis**

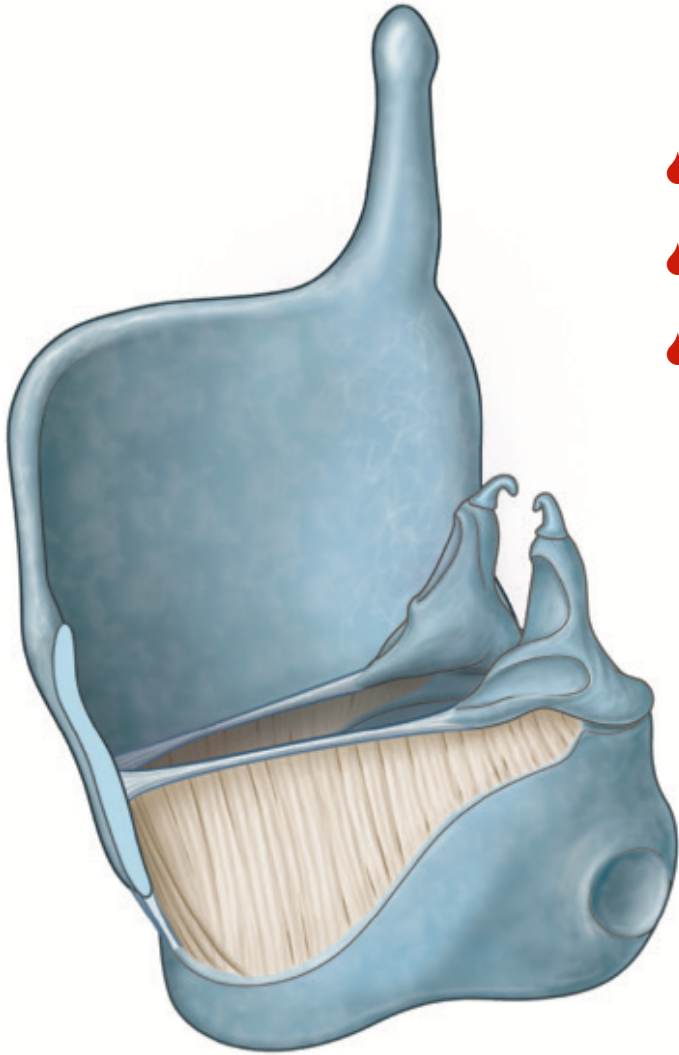


- ♦ *Insertio m. vocalis*
- ♦ *Insertio lig. vestibulare*

Cartilago corniculata et cuneiformis



Conus elasticus

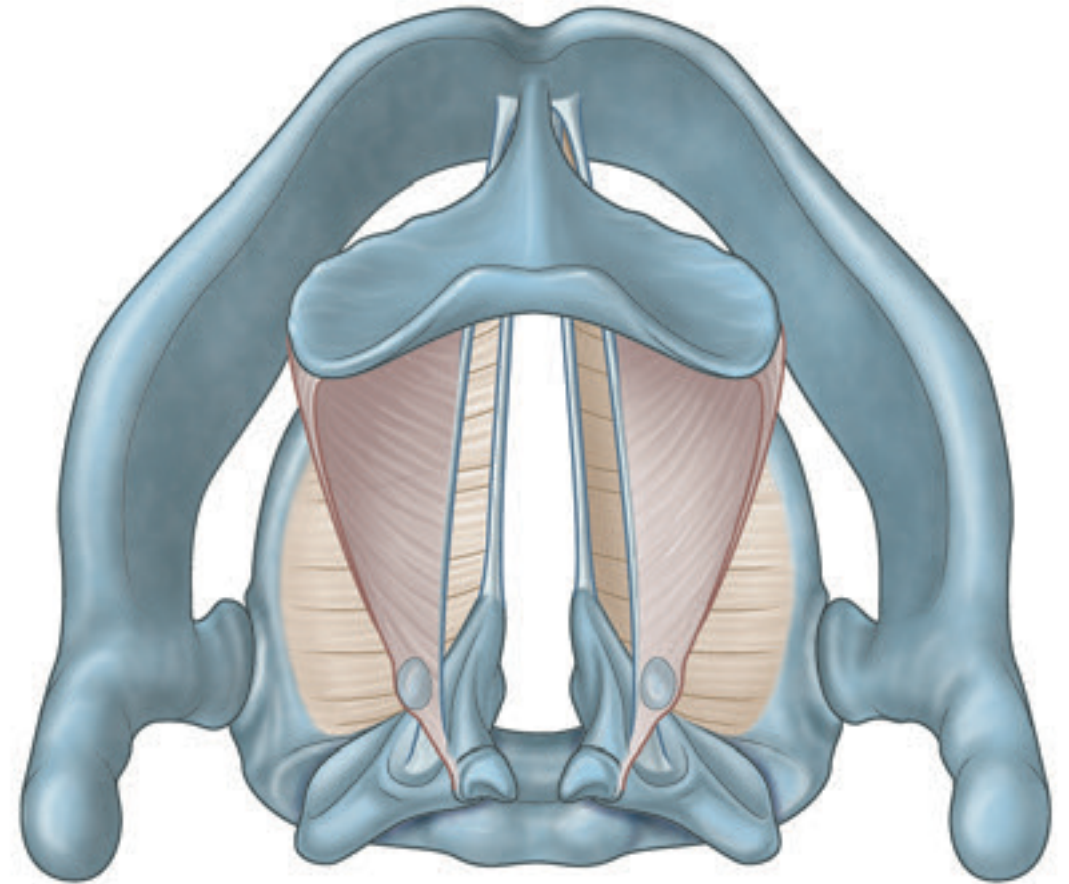
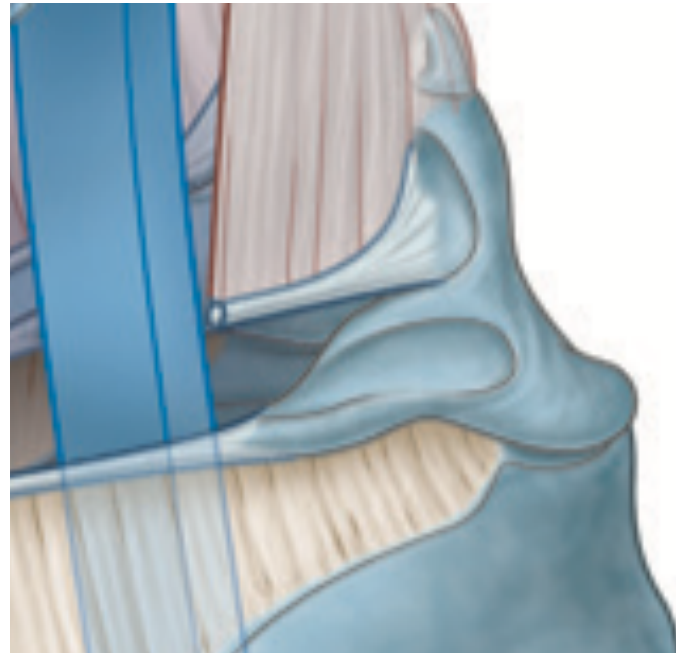
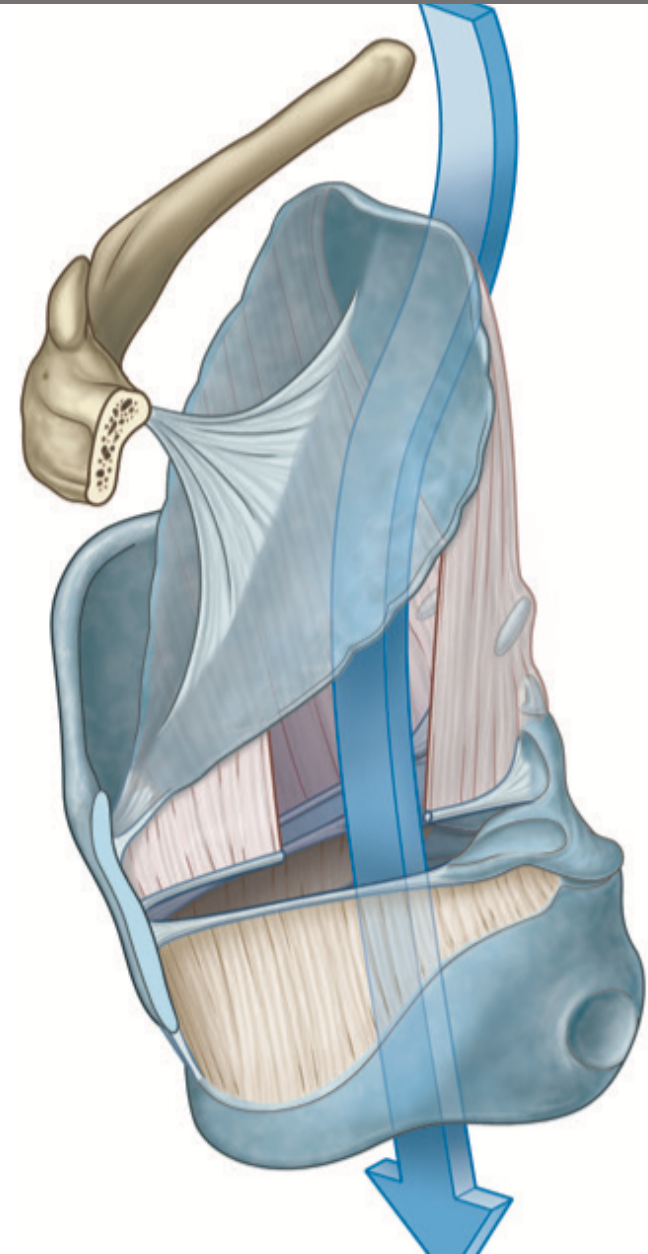


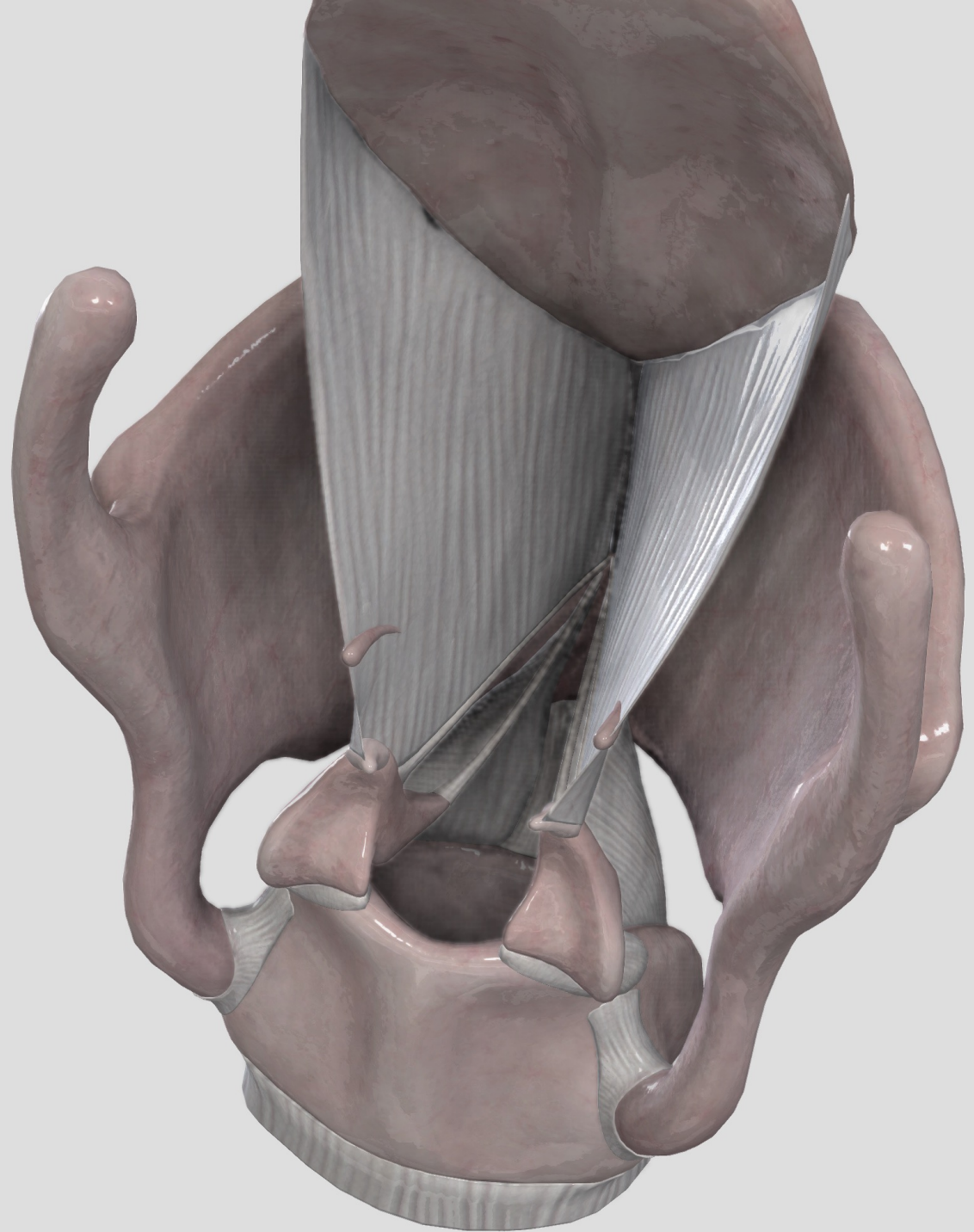
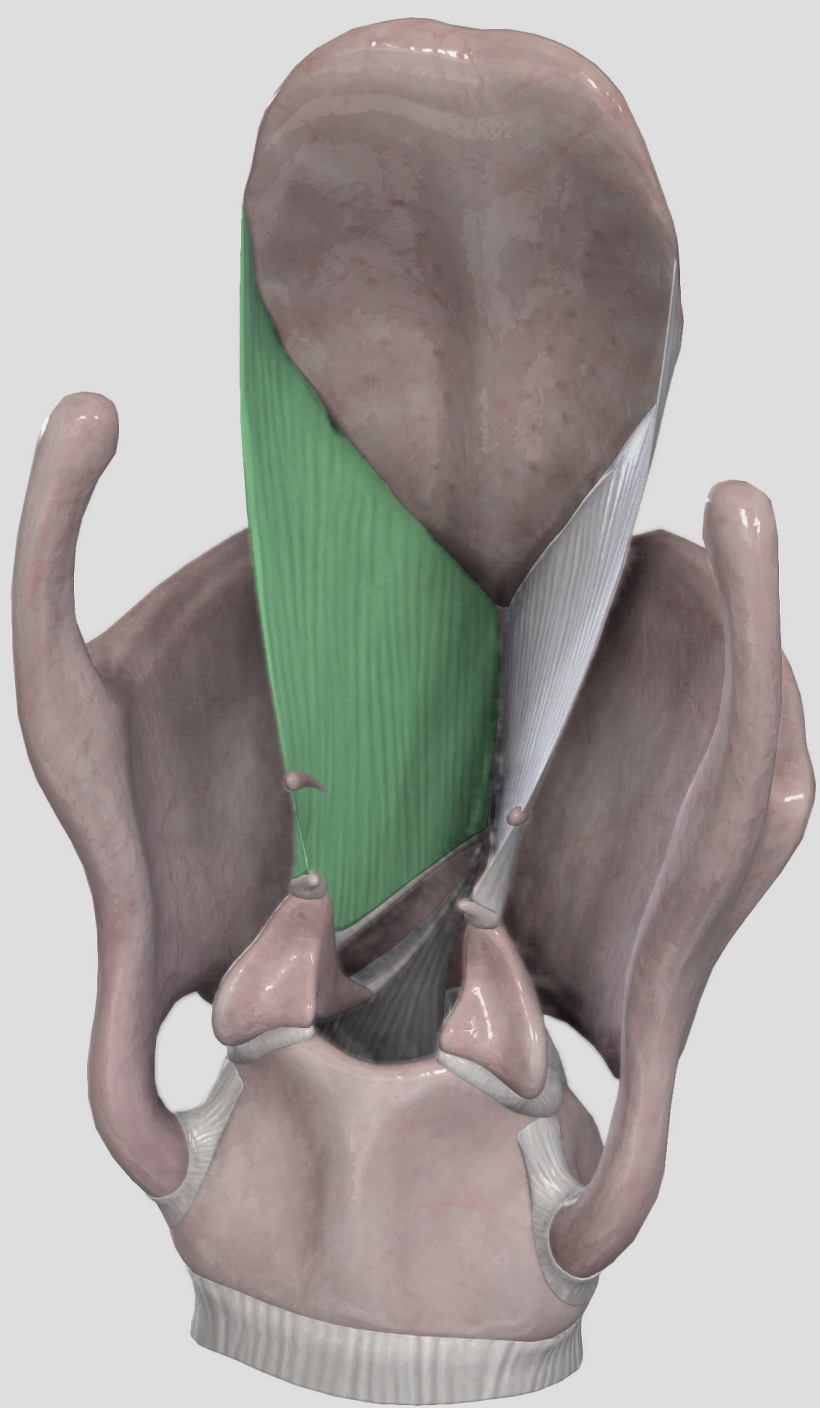
- ♦ Conus elasticus – **coniotomie**
- ♦ *Lig. cricothyroideum medianum*
- ♦ *Ligamentum vocale*



intrinsic ligamenta

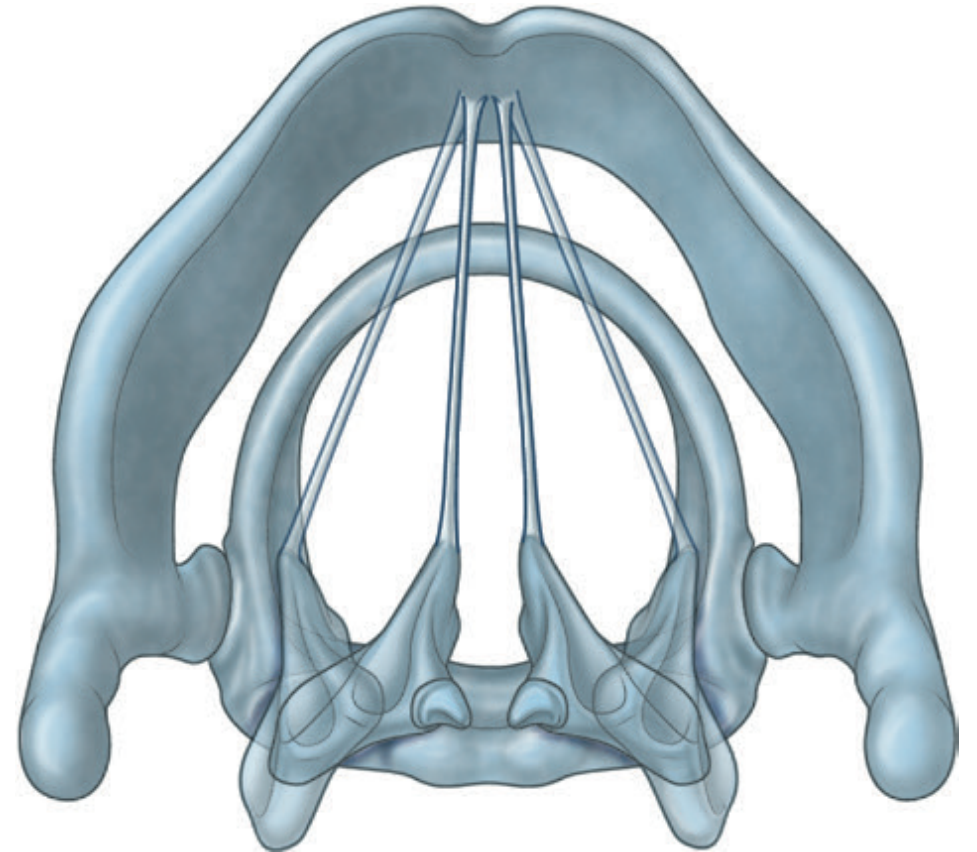
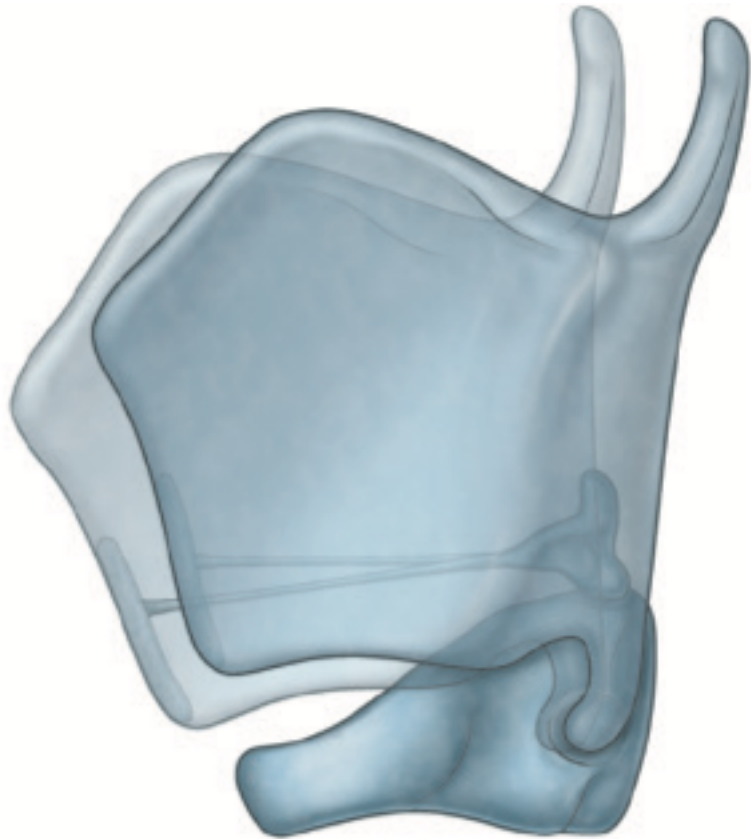
- ♦ Ligamentum hyo-epiglotticum
- ♦ Lamina quadrangularis
- ♦ Ligamentum vestibulare
 - ♦ False vocal ligament
- ♦ Ligamentum vocale
 - ♦ Vocal ligament





Articulationes laryngis

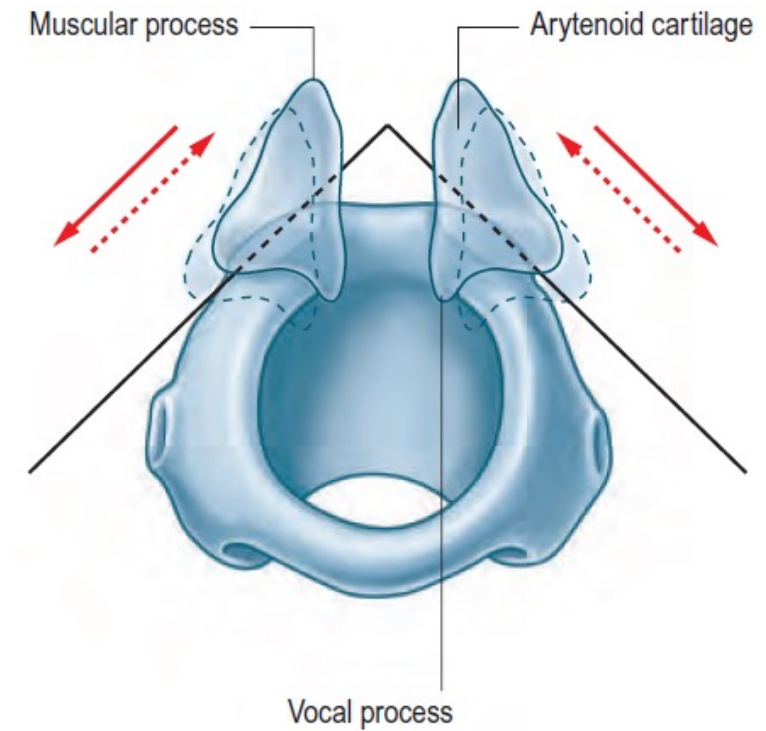
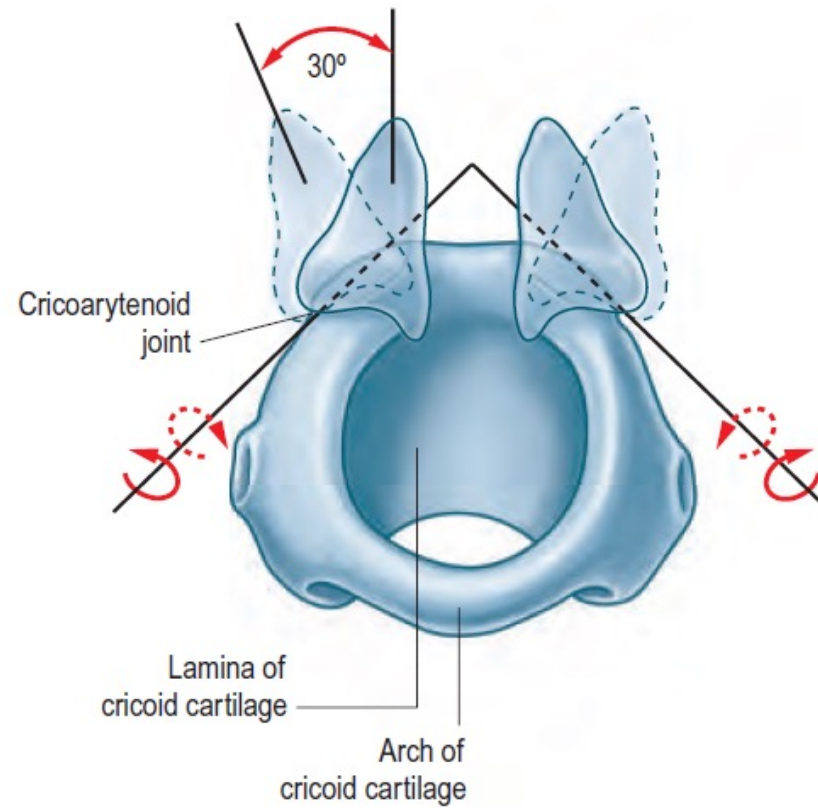
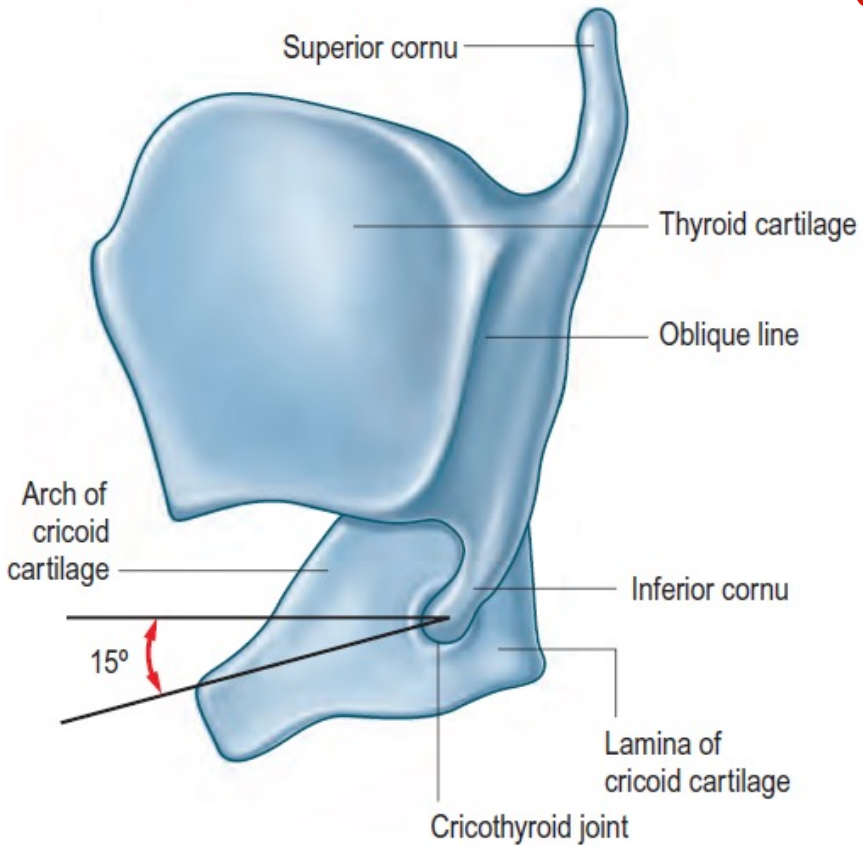
- ♦ **Articulatio cricothyroidea**
- ♦ ***Articulatio cricoarytenoidea***



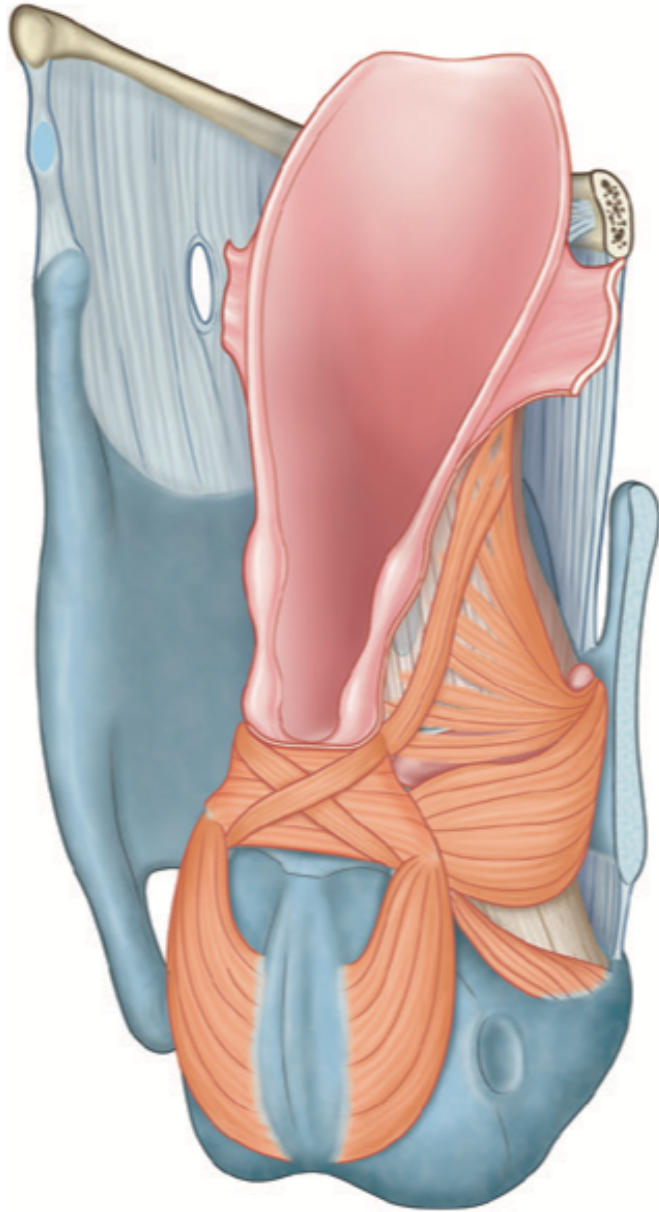
Articulationes laryngis

♦ **Articulatio cricothyroidea**

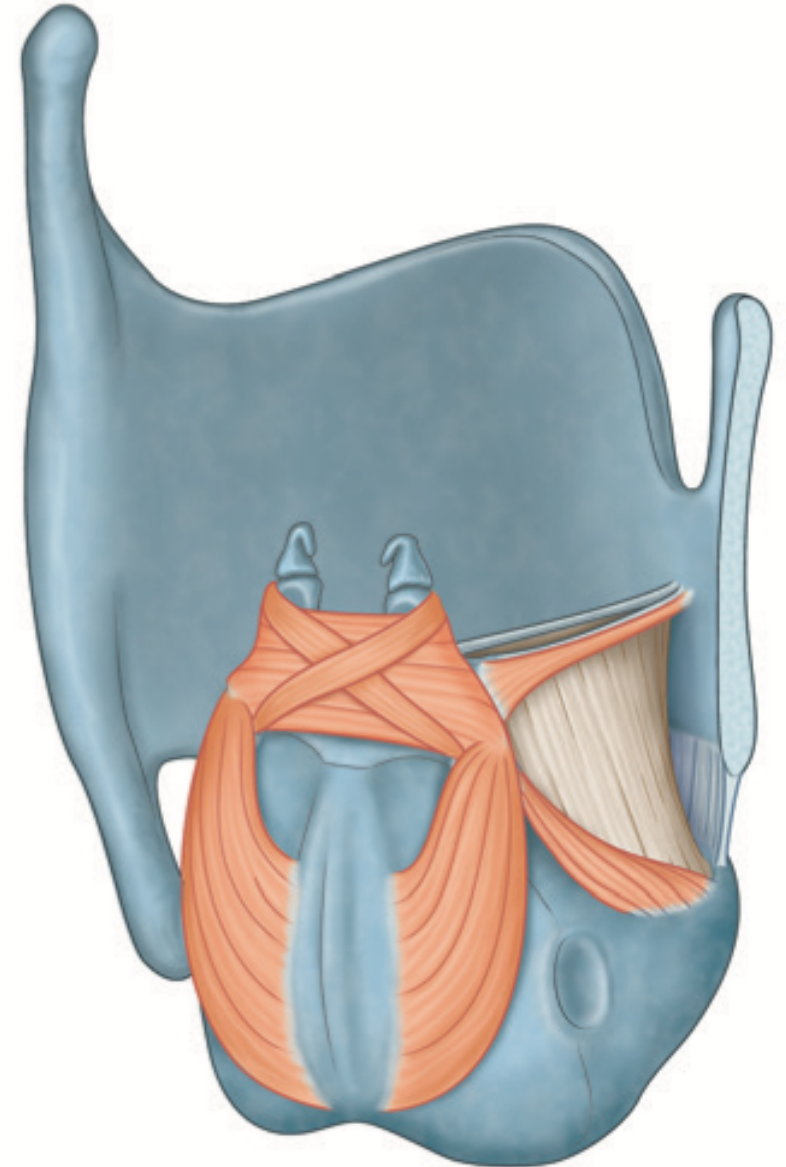
♦ ***Articulatio cricoarytenoidea***



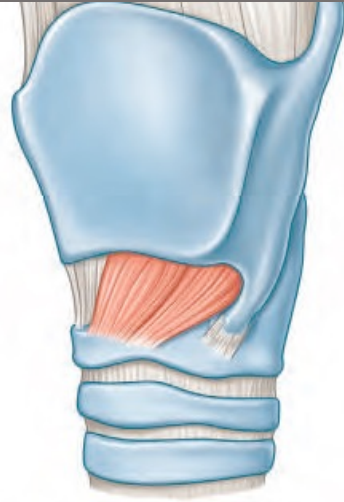
Musculi laryngis



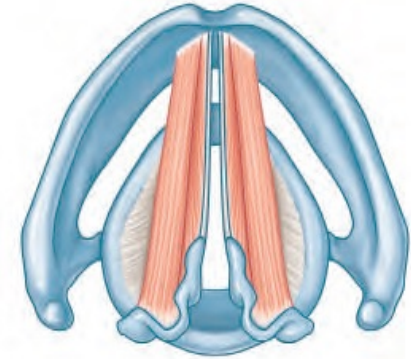
- ♦ **M. cricothyroideus**
 - ♦ Bars recta
 - ♦ Pars obliqua
 - ♦ ! N. laryngeus superior (N. X)
- ♦ **M. arytenoideus transversus**
- ♦ **M. arytenoideus obliquus**
 - ♦ Pars ary-epiglottica
- ♦ **M. vocalis**
- ♦ **M. cricoarytenoideus posterior**
- ♦ **M. cricoarytenoideus lateralis**
- ♦ **M. thyroarytenoideus**
 - ♦ Pars thyroepiglottica
- ♦ **!! N. laryngeus recurrens (N. X)**



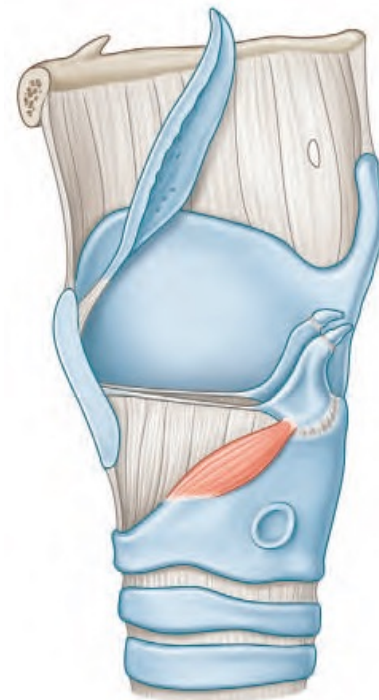
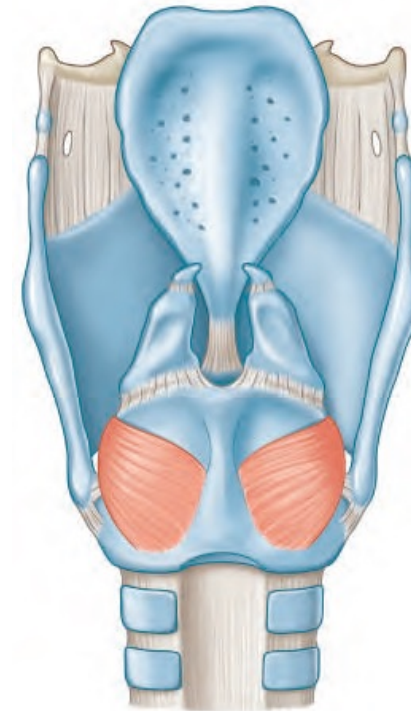
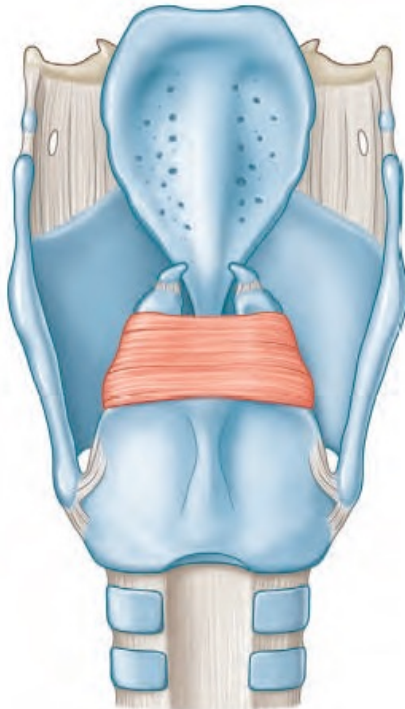
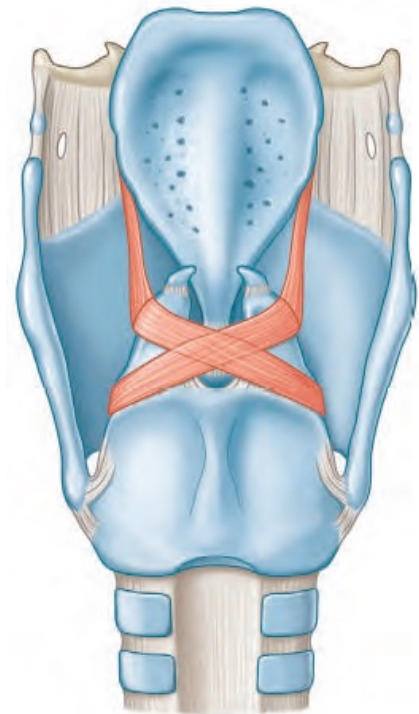
Musculi laryngis



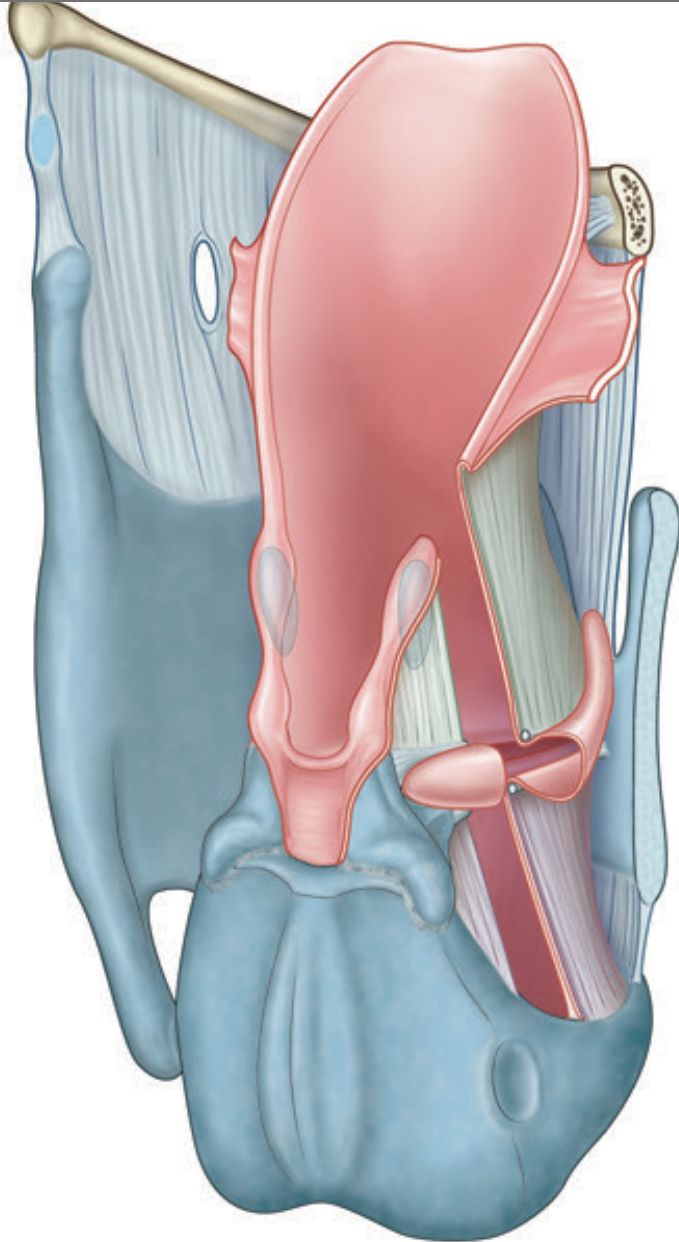
- ♦ **M. cricothyroideus**
 - ♦ Bars recta
 - ♦ Pars obliqua
 - ♦ ! N. laryngeus superior (N. X)



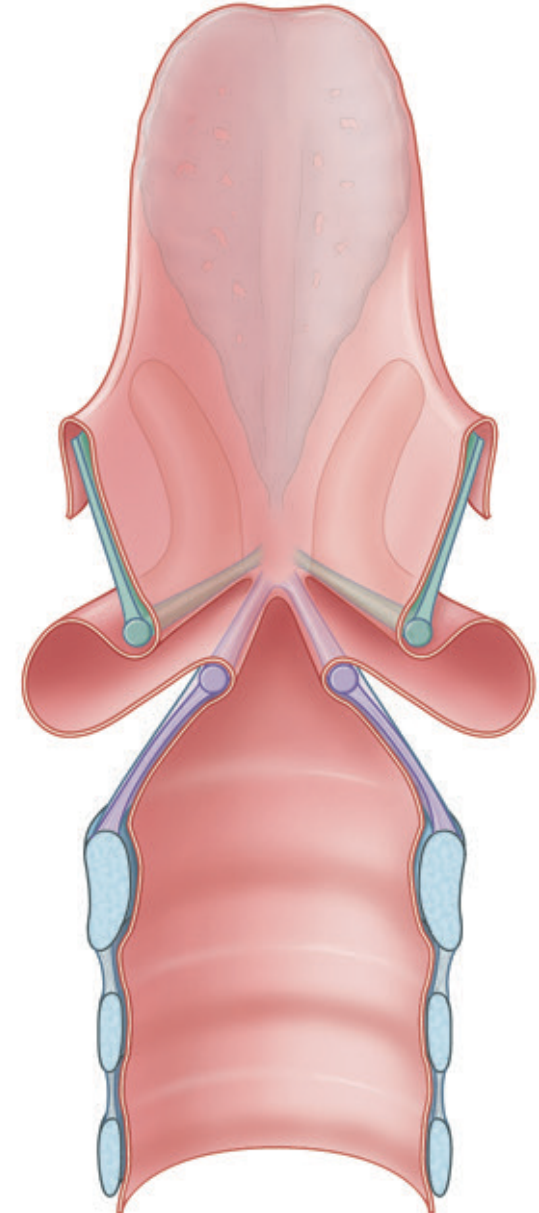
- ♦ **M. arytenoideus transversus**
- ♦ **M. arytenoideus obliquus**
 - ♦ Pars ary-epiglottica
- ♦ **M. vocalis**
- ♦ **M. cricoarytenoideus posterior**
- ♦ **M. cricoarytenoideus lateralis**
- ♦ **M. thyroarytenoideus**
 - ♦ Pars thyroepiglottica
- ♦ **!! N. laryngeus recurrens (N. X)**



Cavitas laryngis

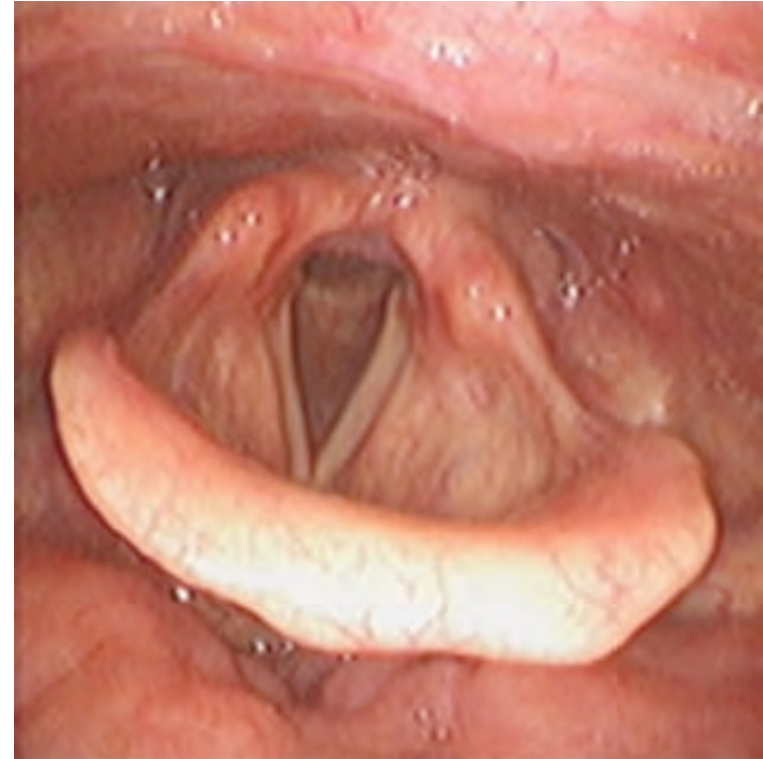
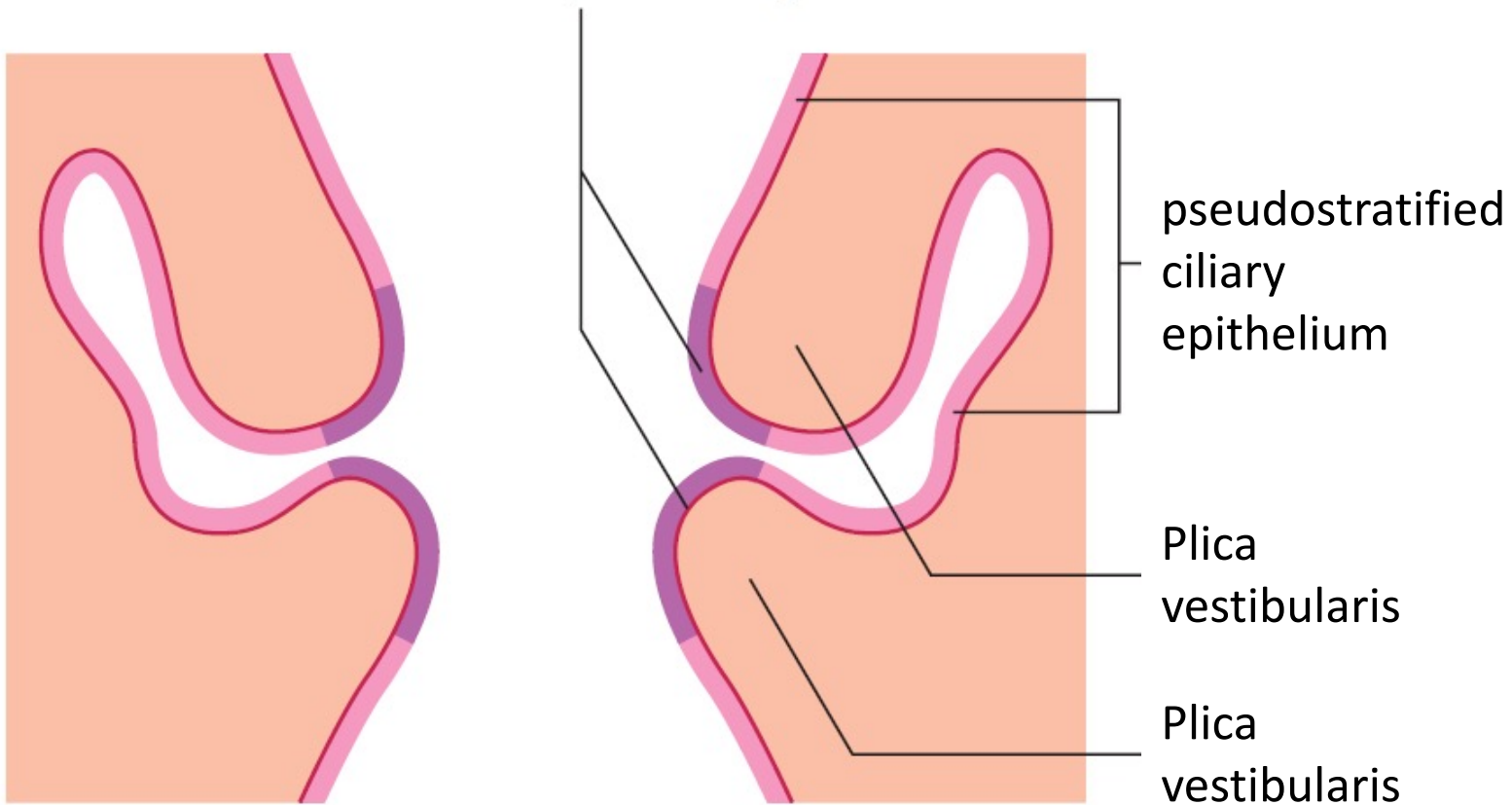


- ♦ Plica aryepiglottica
- ♦ Vestibulum
- ♦ Rima vestibuli
- ♦ Ventriculus
 - ♦ *Saculus*
- ♦ Supraglottic space
- ♦ Rima glottidis
 - ♦ *Incissura interarytenoidea*
 - ♦ *Plica interarytenoidea*
- ♦ Infraglottic space

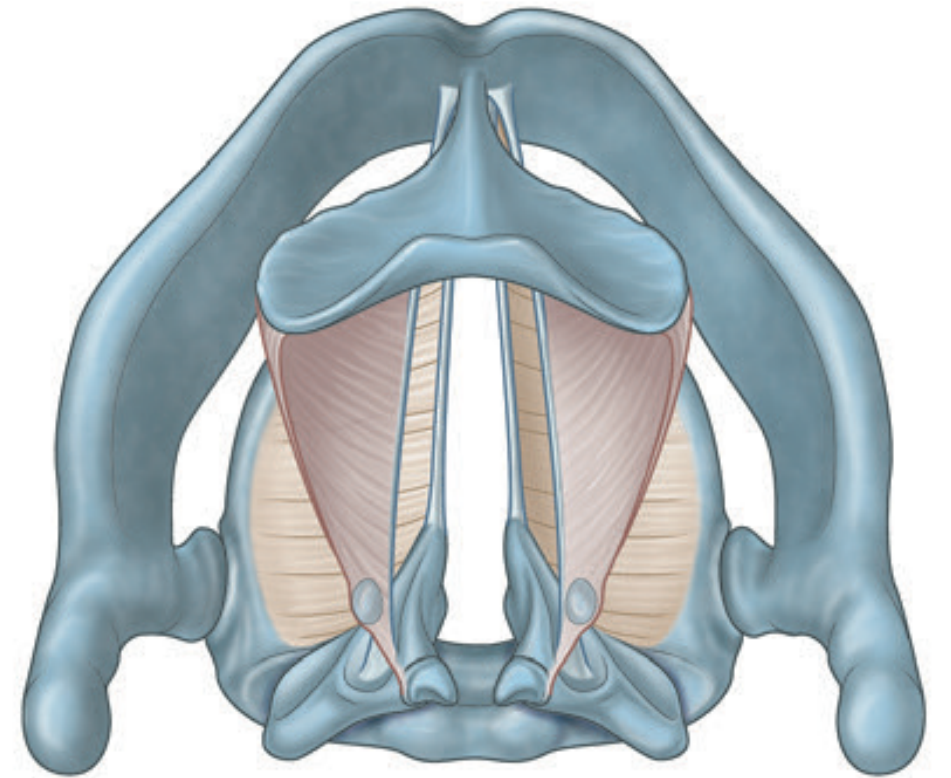
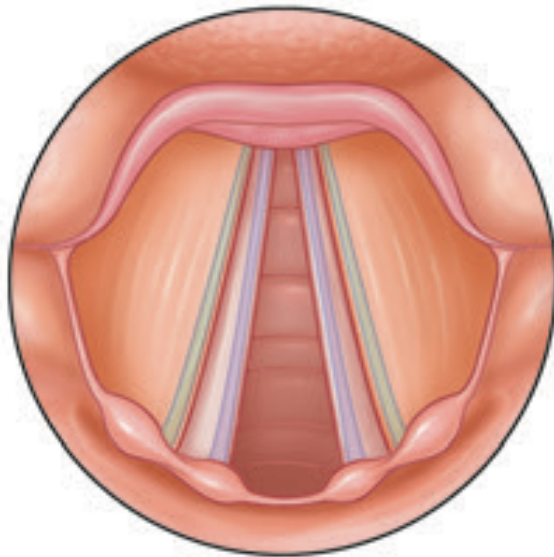
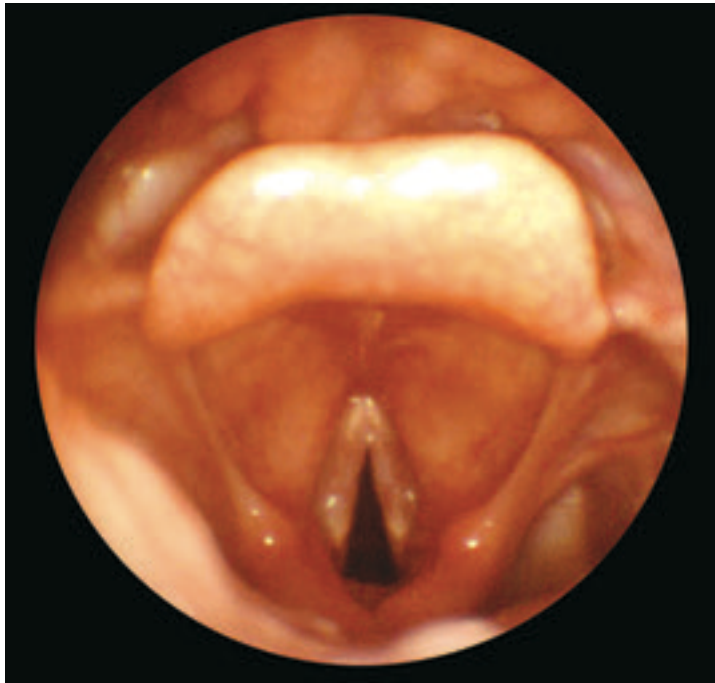


Rima glottidis

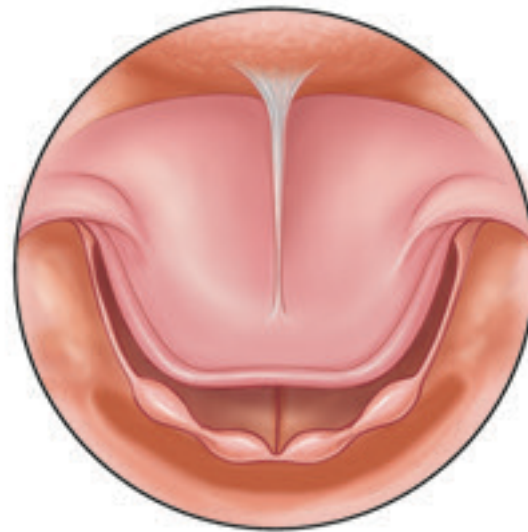
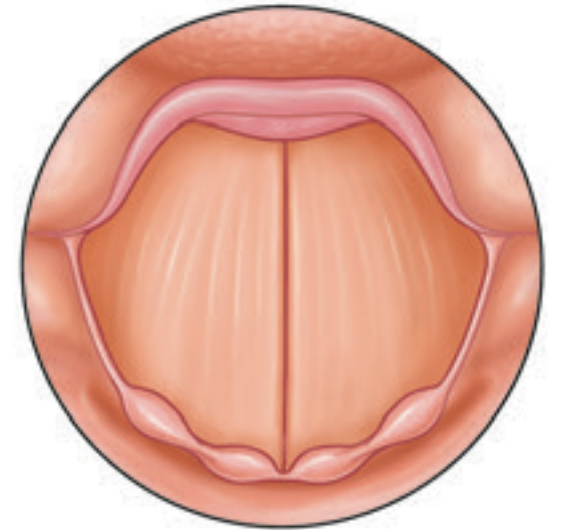
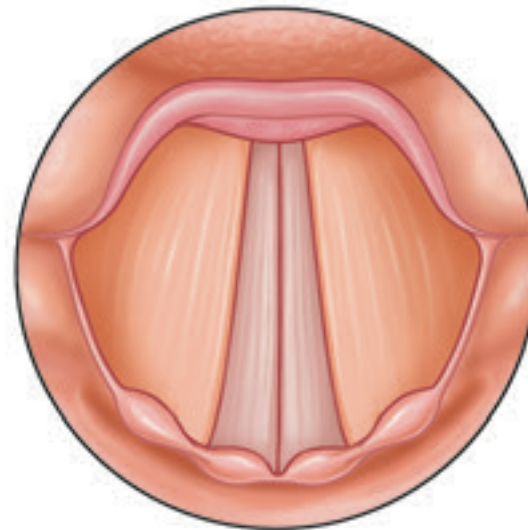
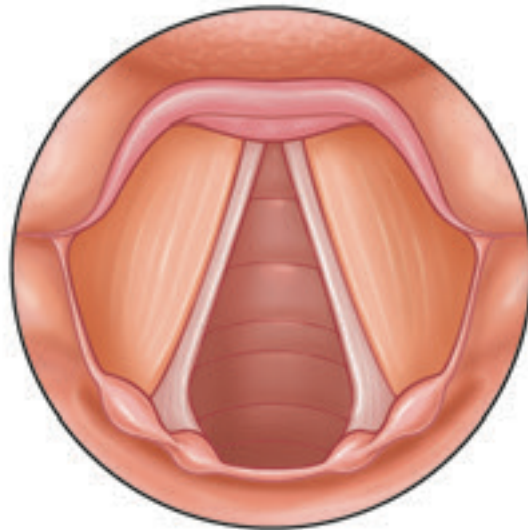
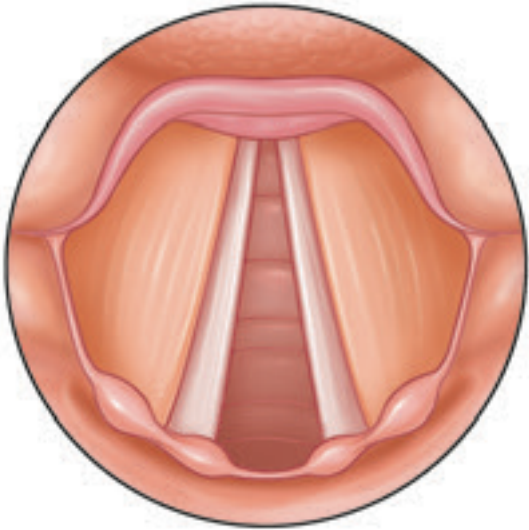
Nonkeratinized squamous epithelium



laryngoscopy

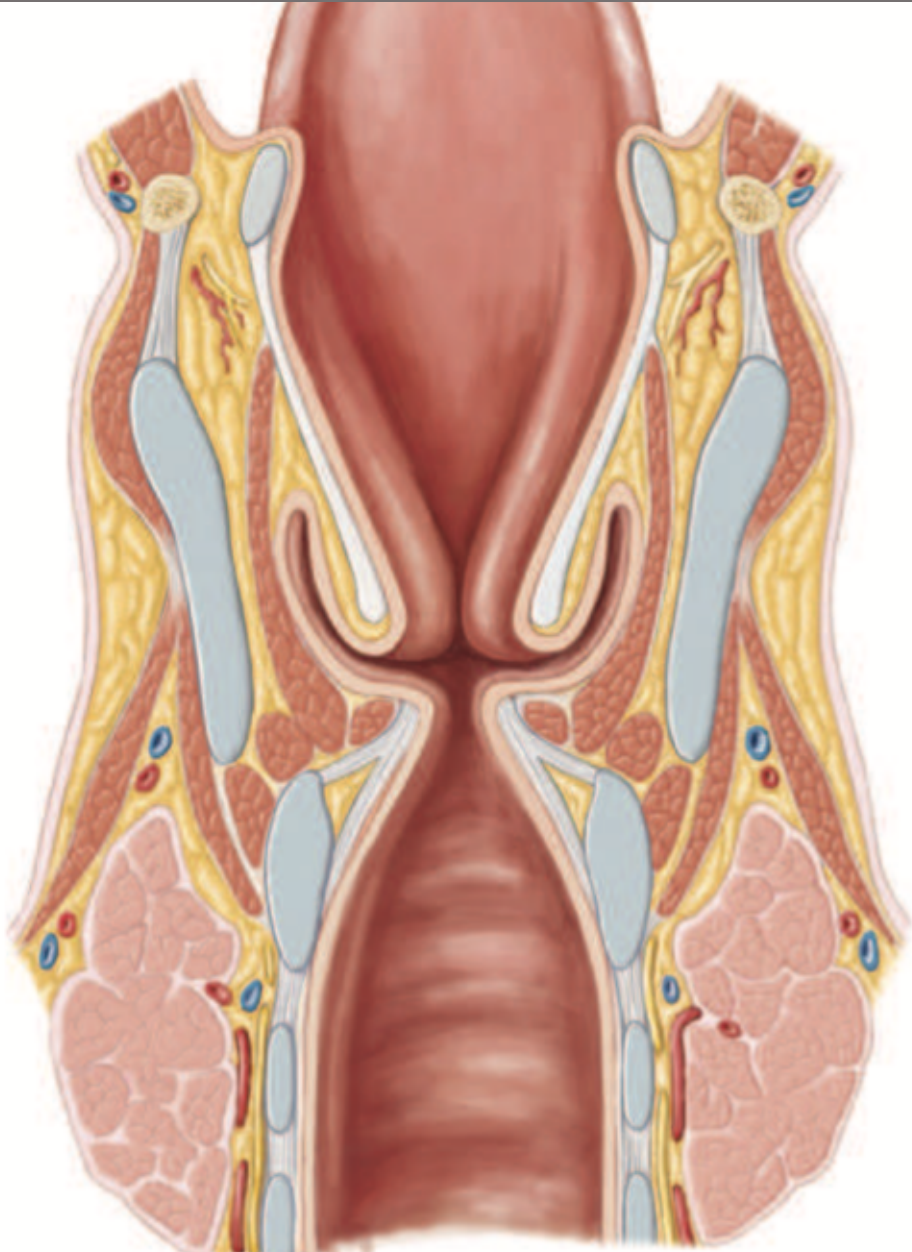


laryngoscopy



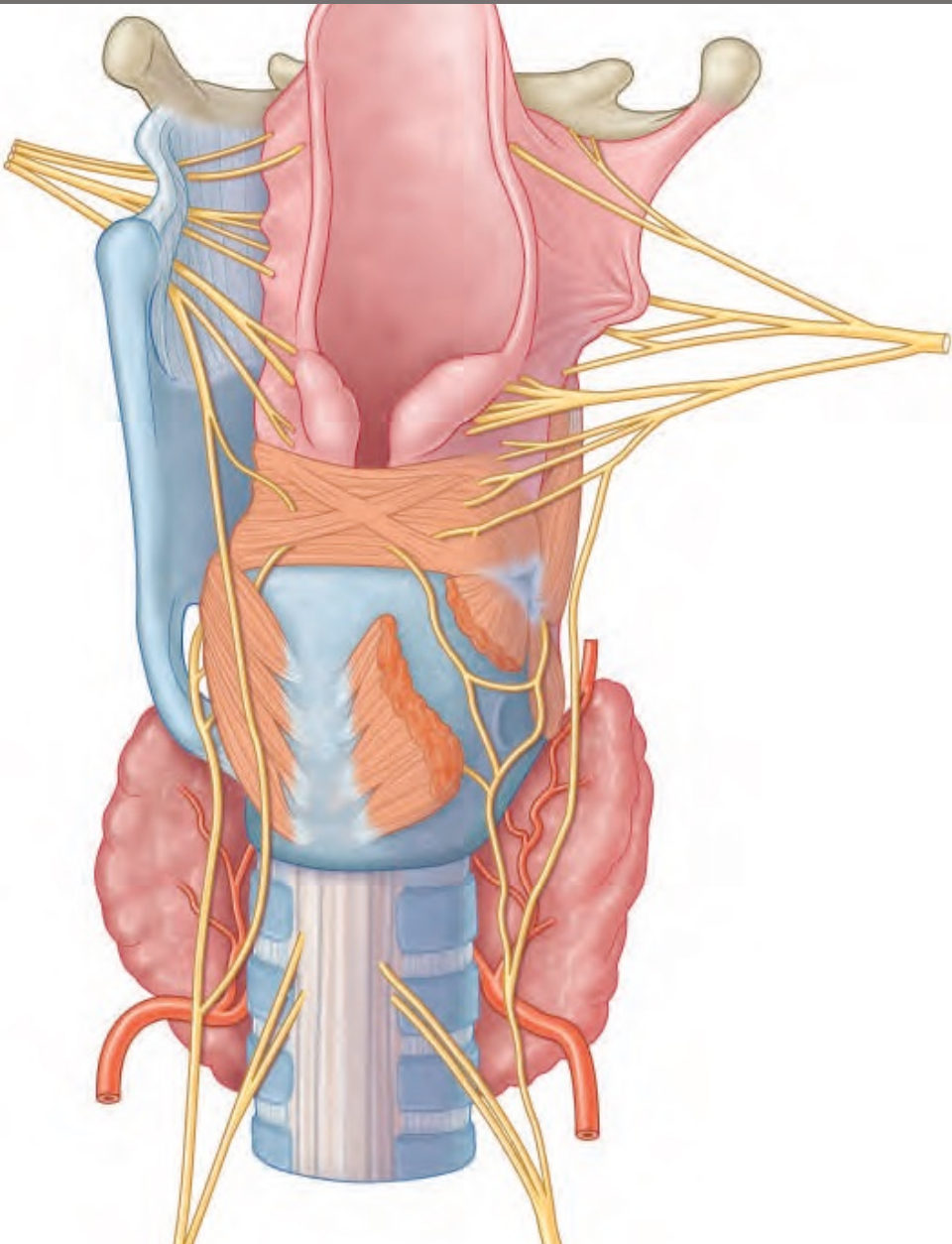
- Normal breathing
- Forced inspiration
- phonation
- Forced occlusion – Valsalva manoeuvre
- swallowing

Larynx

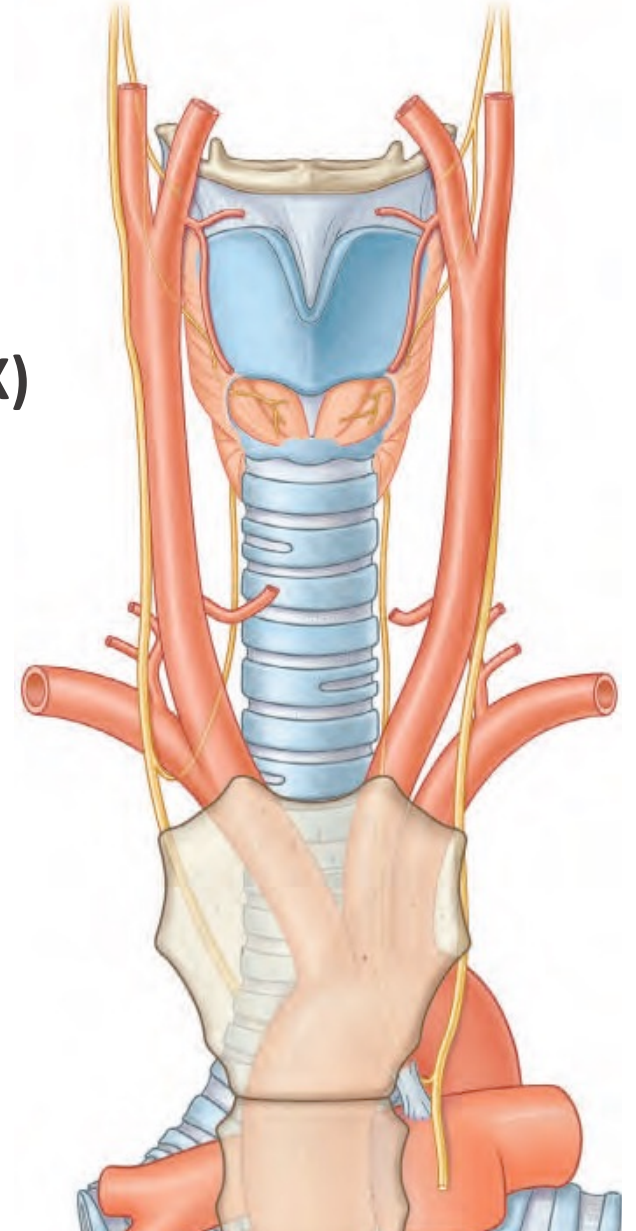


- ♦ **M. thyrohyoideus**
- ♦ **M. sternohyoideus**
- ♦ **M. constrictor pharyngis inferior**
- ♦ **M. cricothyroideus**
- ♦ **M. cricoarytenoideus lateralis**
- ♦ **M. arytenoideus obliquus (pars aryepiglottica)**
- ♦ **M. vocalis**
- ♦ **Plica vocalis**
- ♦ **Plica vestibularis**
- ♦ **Conus elasticus**
- ♦ **Cartilago cricoidea**
- ♦ **Cartilago thyroidea**
- ♦ **Os hyopodeum**

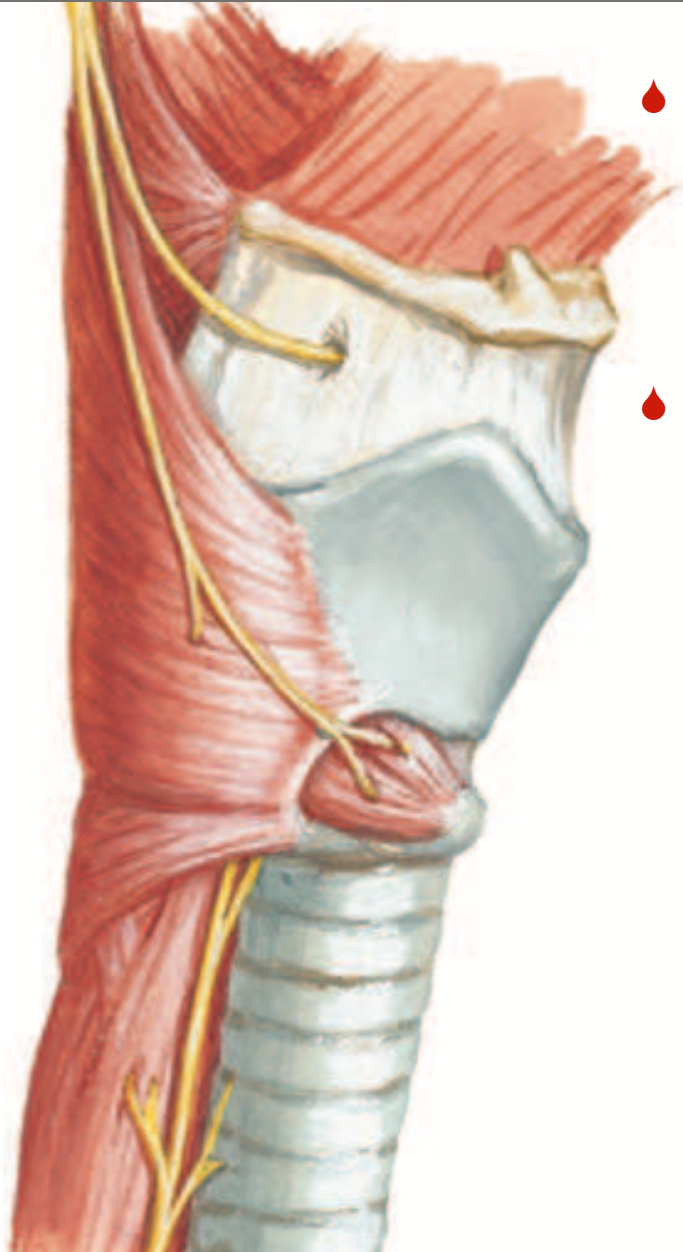
Inervace laryngu



- ♦ **N. laryngeus superior (n. X)**
 - ♦ N.l.s. externus
 - ♦ N.l.s. internus
 - ♦ M. cricothyroideus
- ♦ **N. laryngeus recurrens (n. X)**
 - ♦ All others muscles



Inervace laryngu



- ♦ **N. laryngeus superior (n. X)**

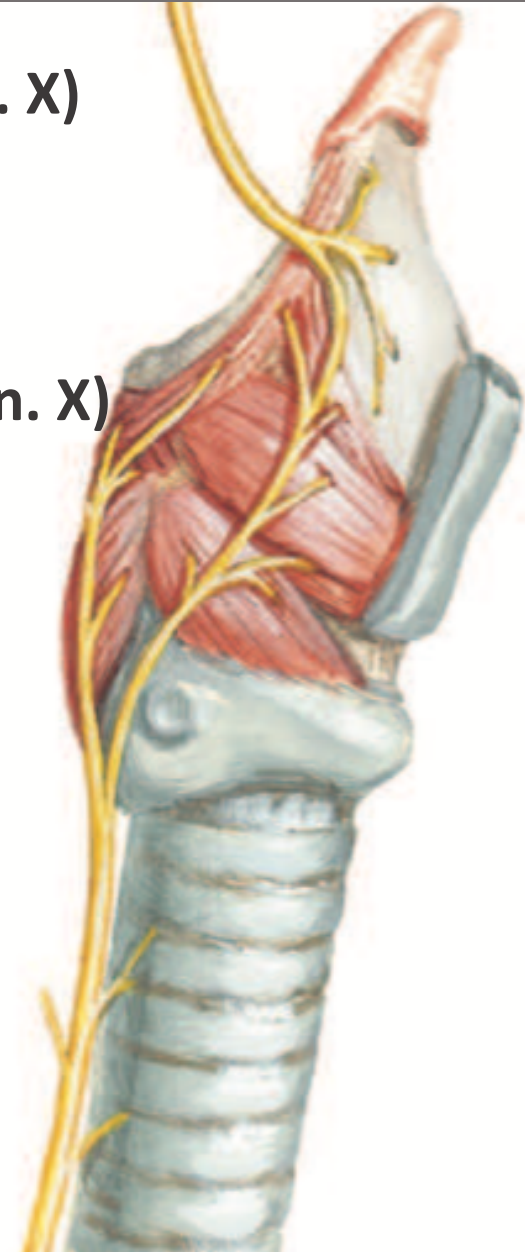
- ♦ N.l.s. externus

- ♦ N.l.s. internus

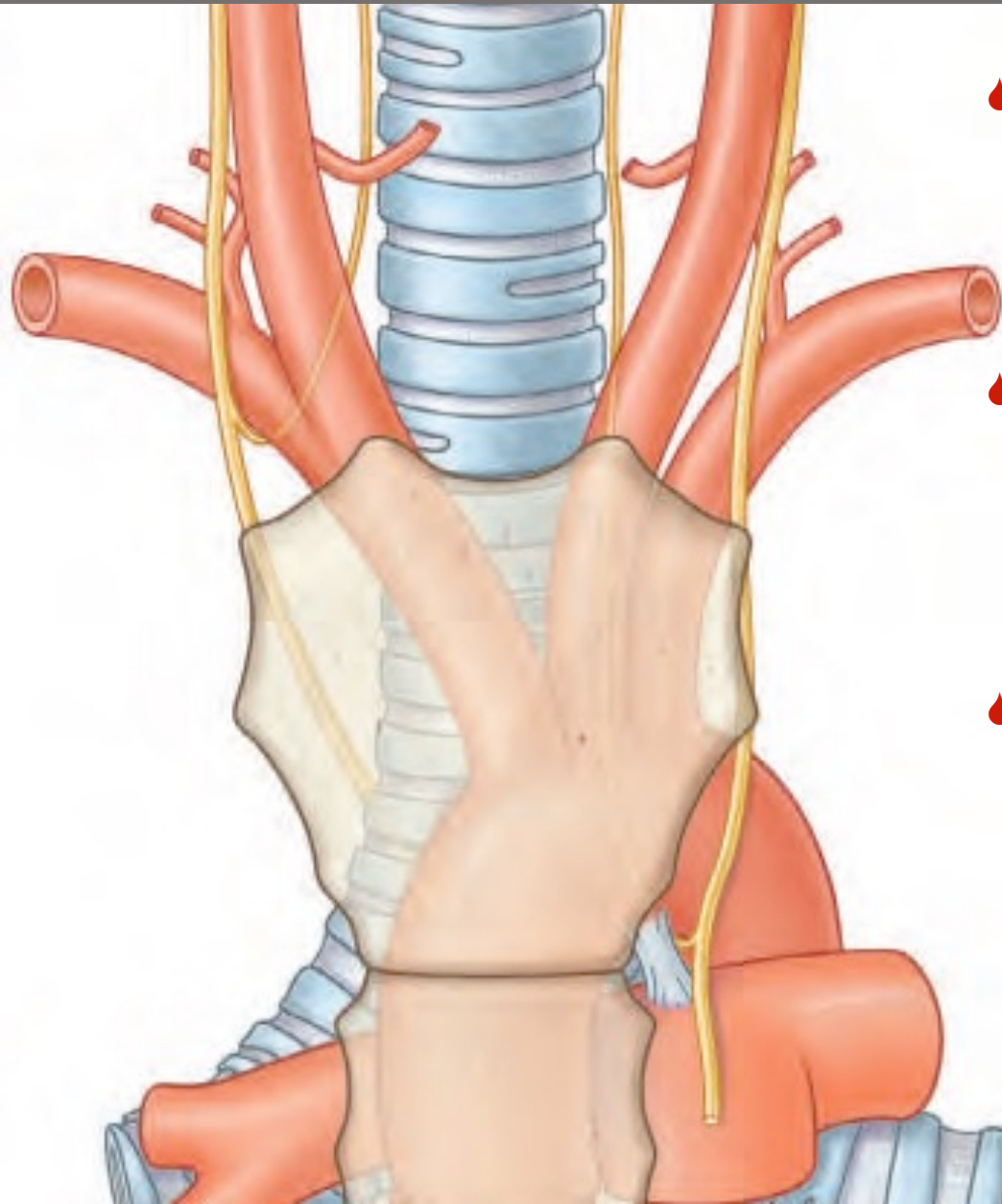
- ♦ M. cricothyroideus

- ♦ **N. laryngeus recurrens (n. X)**

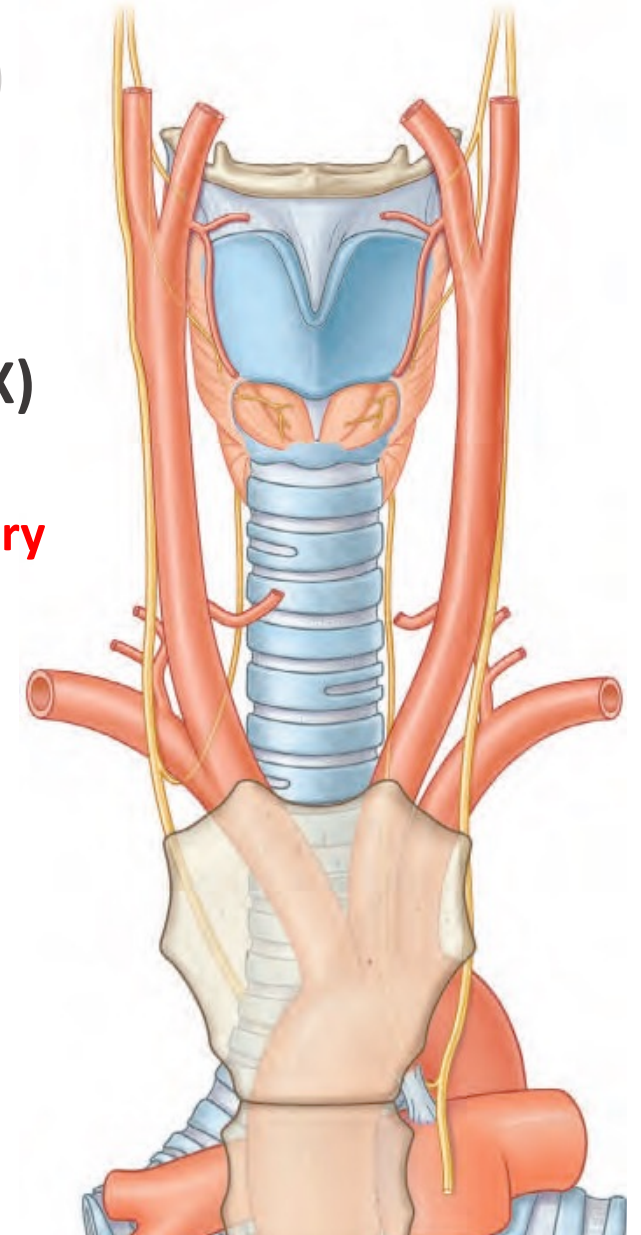
- ♦ All others muscles



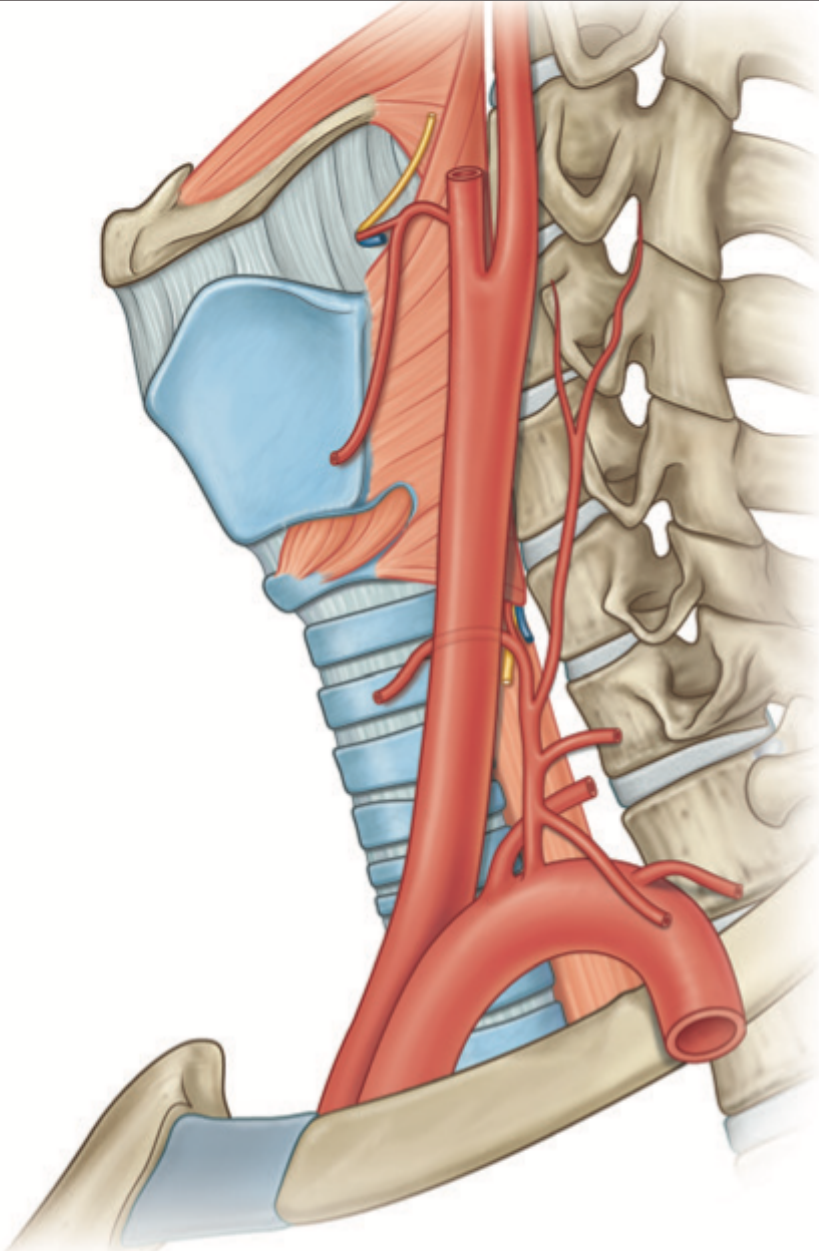
Nervus laryngeus recurrens



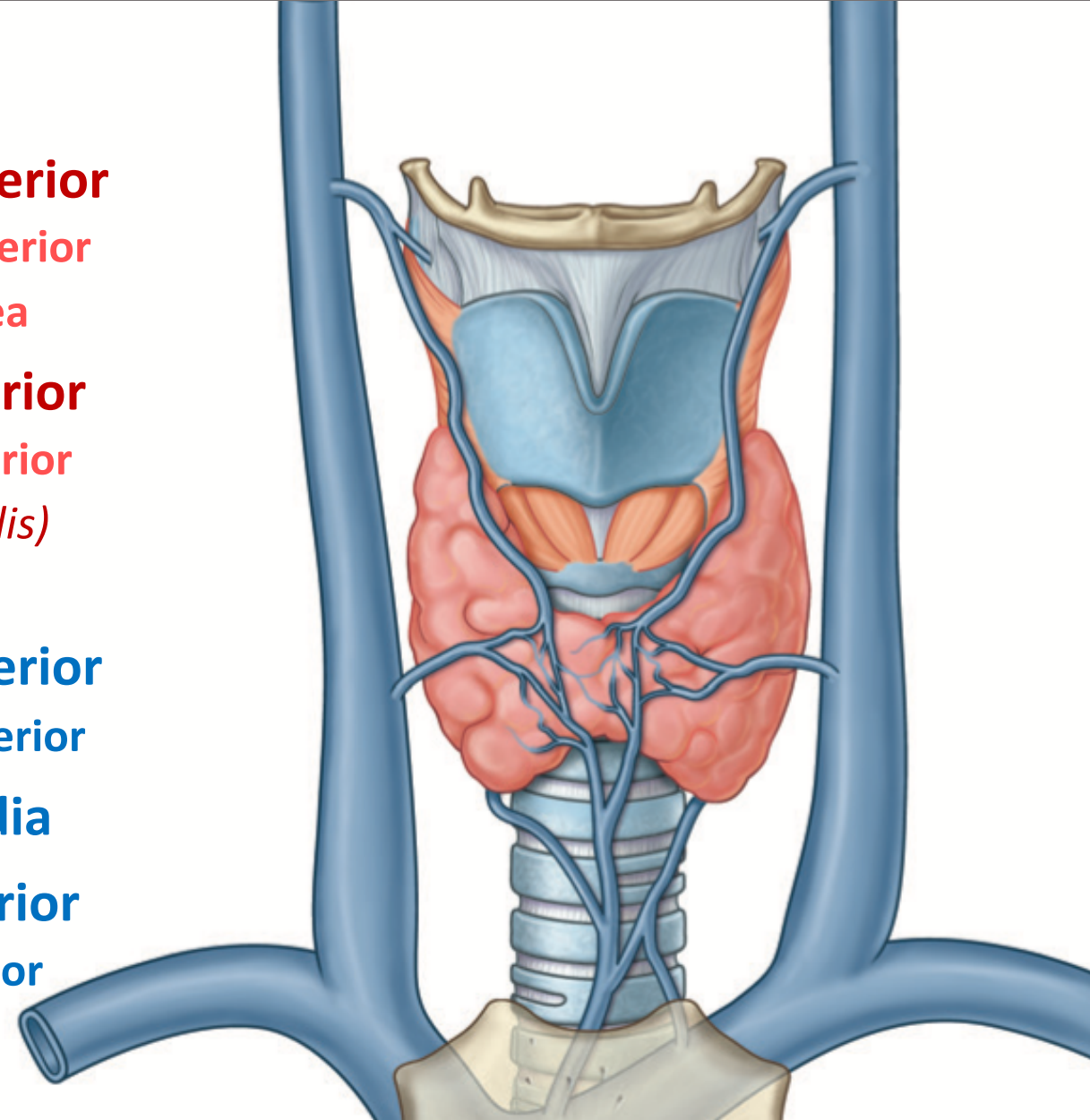
- ♦ N. laryngeus superior (n. X)
 - ♦ N.l.s. externus
 - ♦ N.l.s. internus
 - ♦ M. cricothyroideus
- ♦ N. laryngeus recurrens (n. X)
 - ♦ Left – below aortic arch
 - ♦ Right below right subcl. artery
- ♦ Motor fibers
 - ♦ N. XI PARS CRANIALIS
 - ♦ Accompanied to N. VAGUS
 - ♦ VI. branchial arch

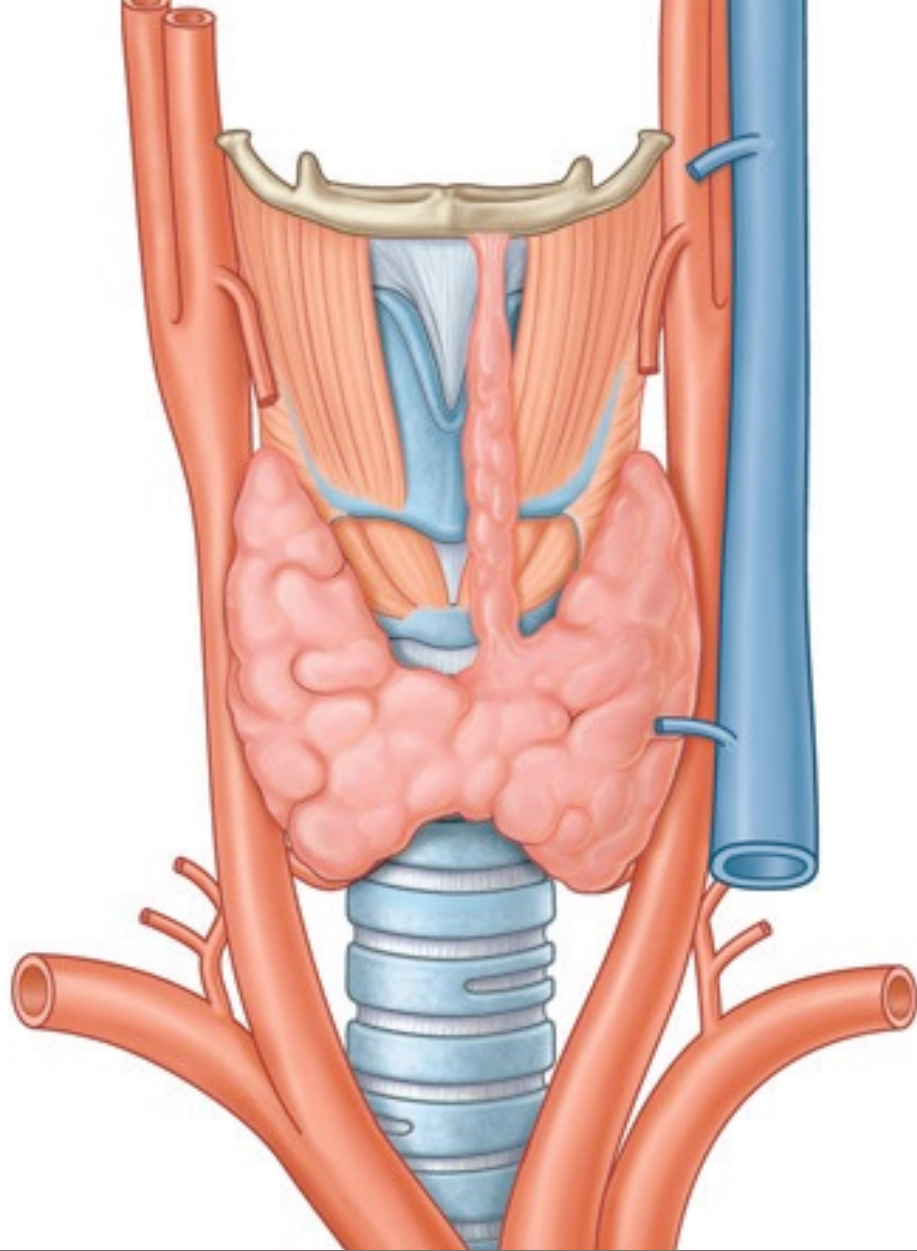


Laryngeal vessels

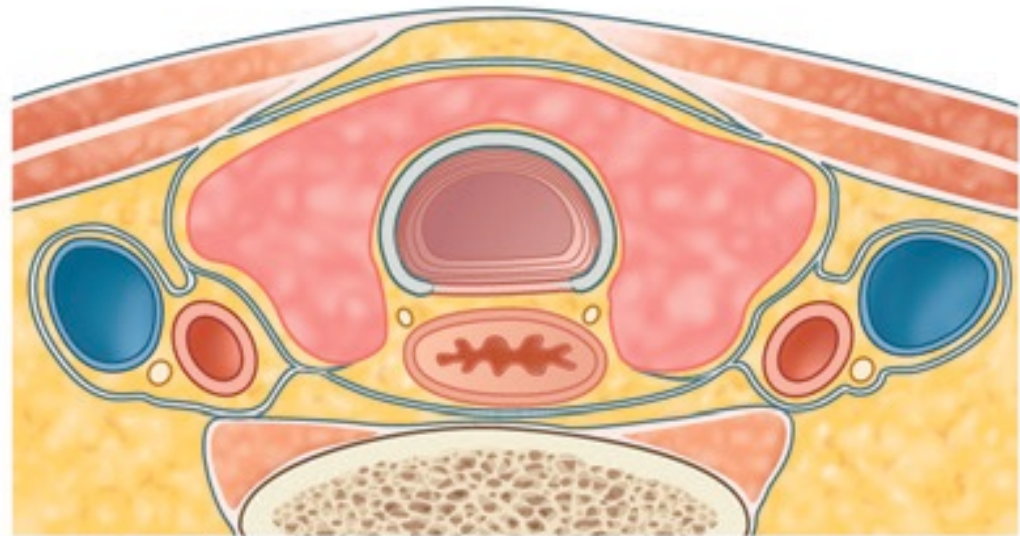


- ♦ **A. thyroidea superior**
 - ♦ A. laryngea superior
 - ♦ A. cricothyroidea
- ♦ **A. thyroidea inferior**
 - ♦ A. laryngea inferior
 - ♦ (*tr. thyrocervicalis*)
 - ♦ (*A. subclavia*)
- ♦ **V. thyroidea superior**
 - ♦ V. laryngea superior
- ♦ **V. thyroidea media**
- ♦ **V. thyroidea inferior**
 - ♦ V. laryngea inferior

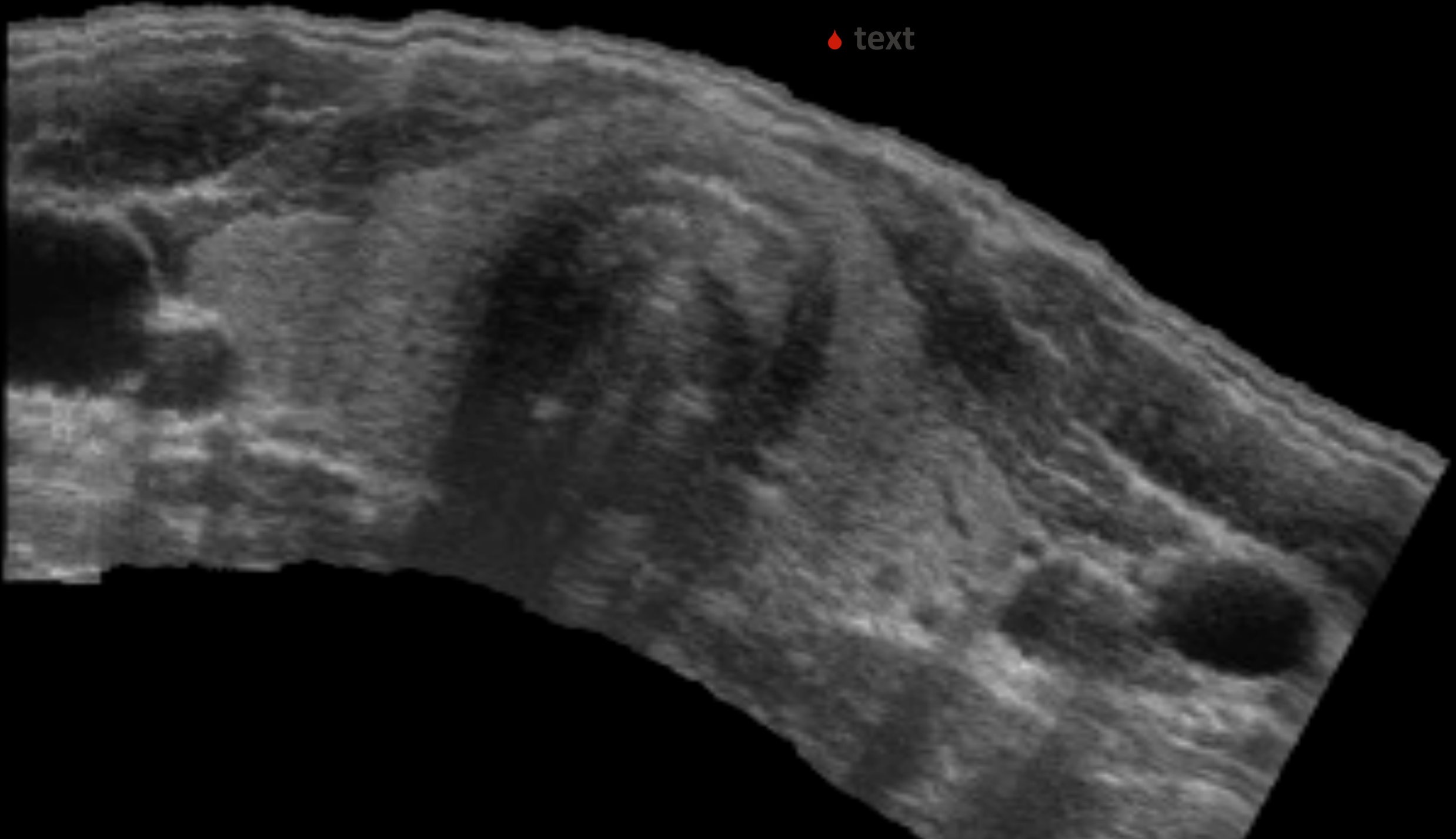


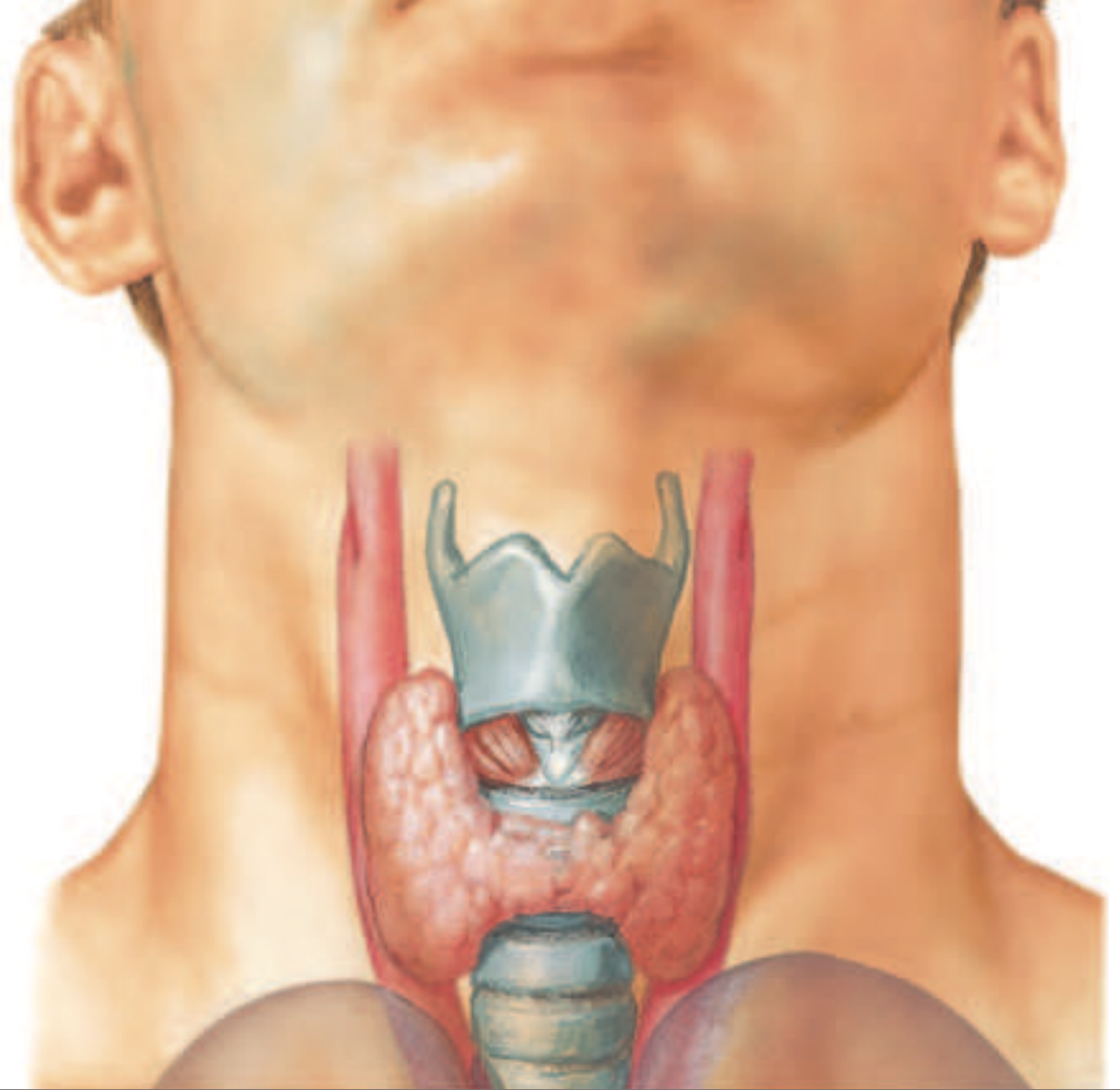
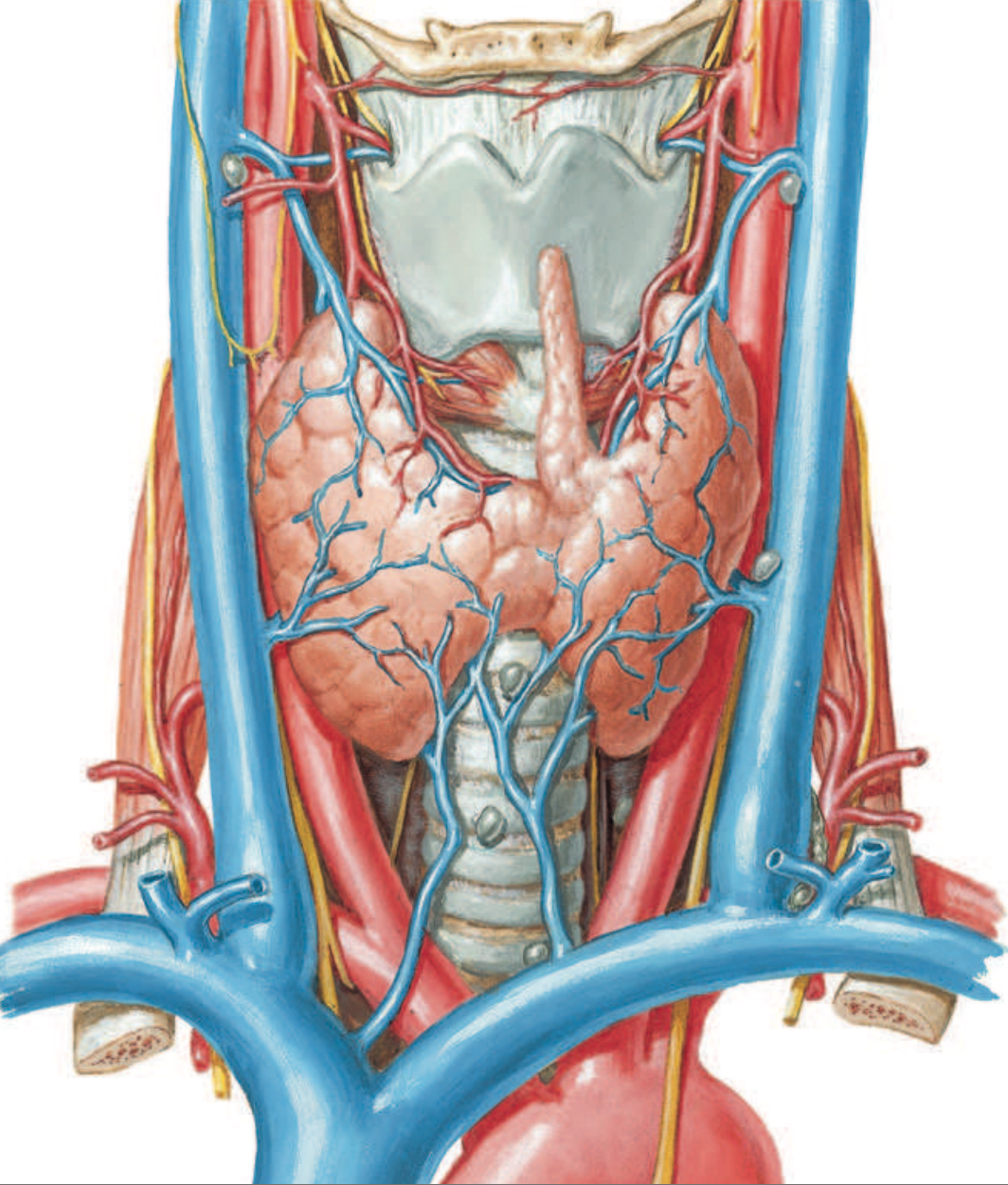


- Lobus dexter
- Lobus sinister
- Isthmus
- Lobus pyramidalis
- T3, T4, calcitonin - parafollicular cells

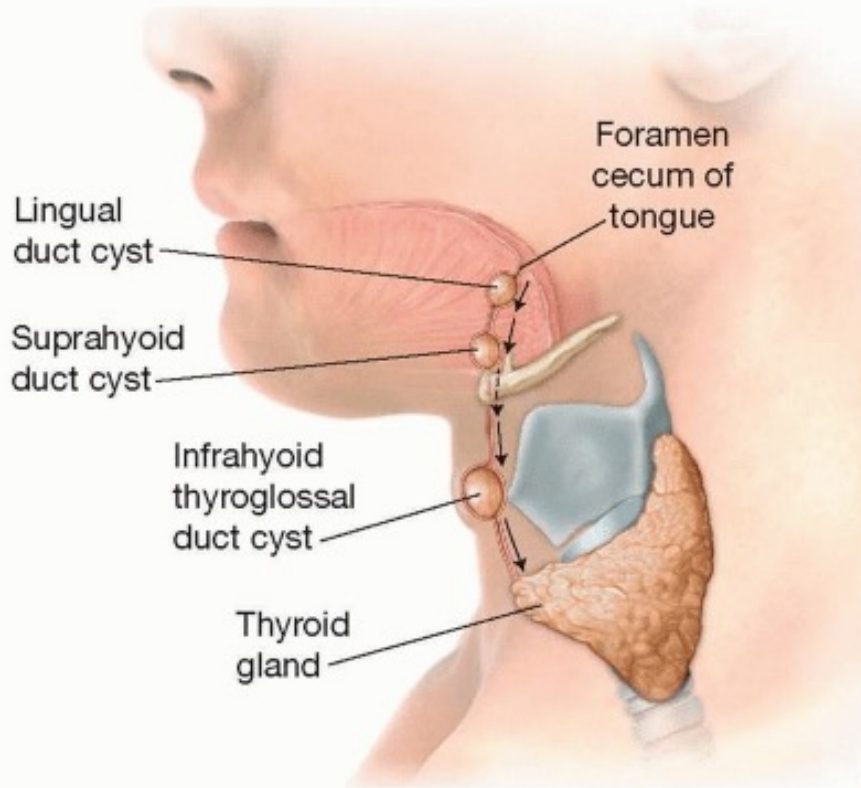


Glandula thyroidea





Glandula thyroidea

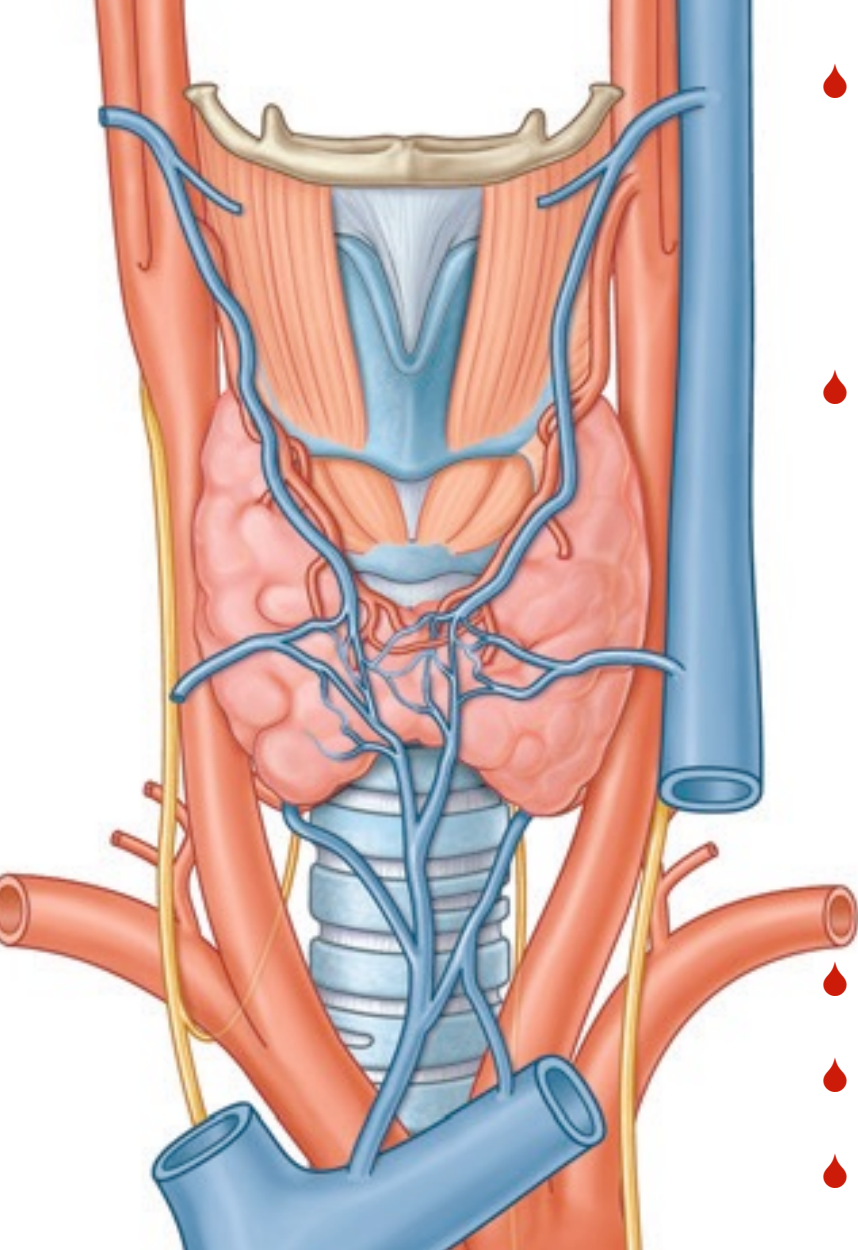


- Foramen caecum linguae
- Isthmus gl. thyreoideae
- ***Residua***
- Gl. thyroidea aberrans
- Struma linguae
- Cysta ductus thyreoglossi



<https://plasticsurgerykey.com/thyroglossal-duct-cysts/>

Ductus thyreoglossus



♦ A. thyroidea superior

♦ *A. carotis externa*

♦ *R. glandularis anterior*

♦ *R. glandularis posterior*

♦ A. thyroidea inferior

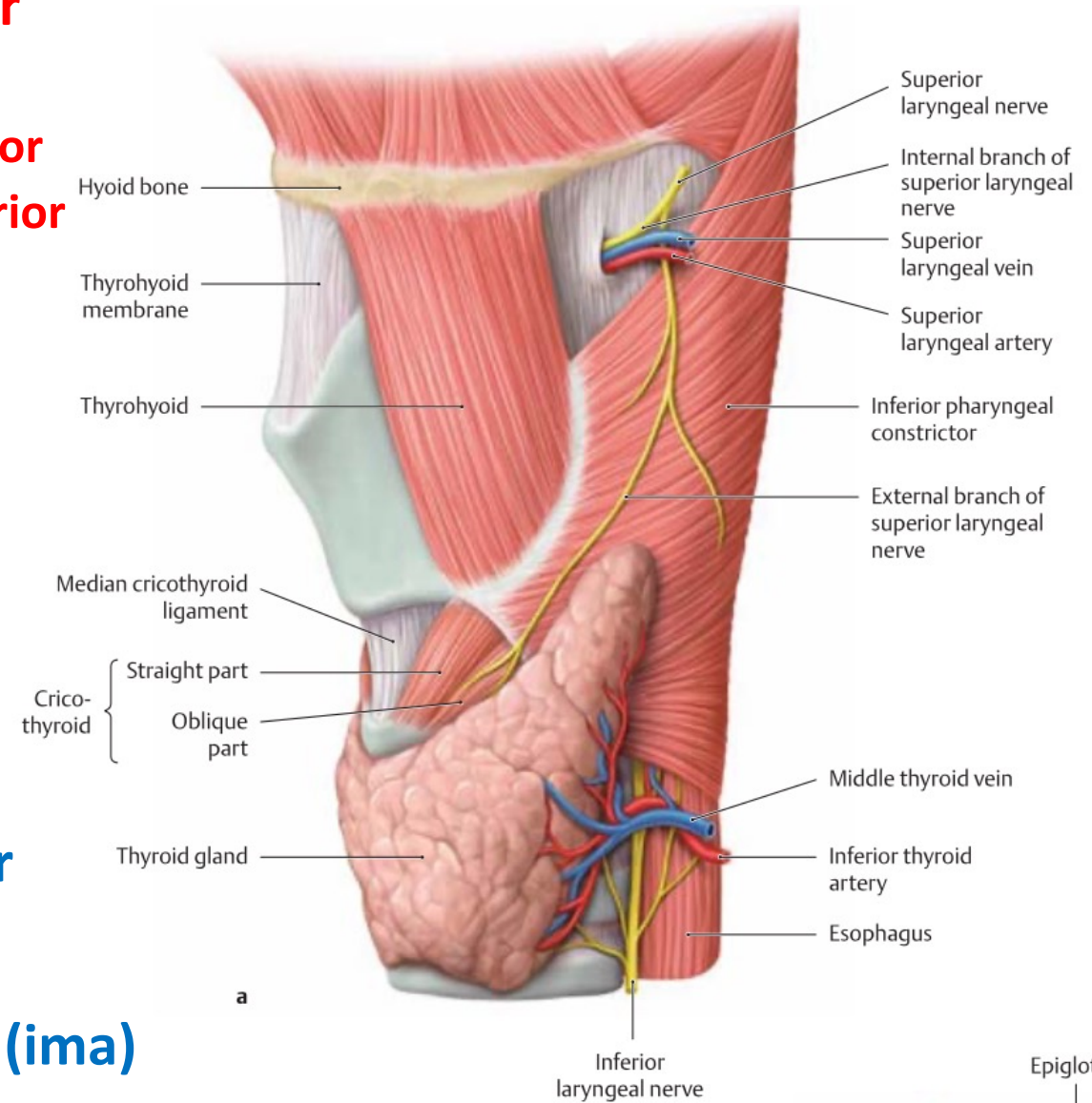
♦ *Tr. thyrocervicalis*

♦ *A. subclavia*

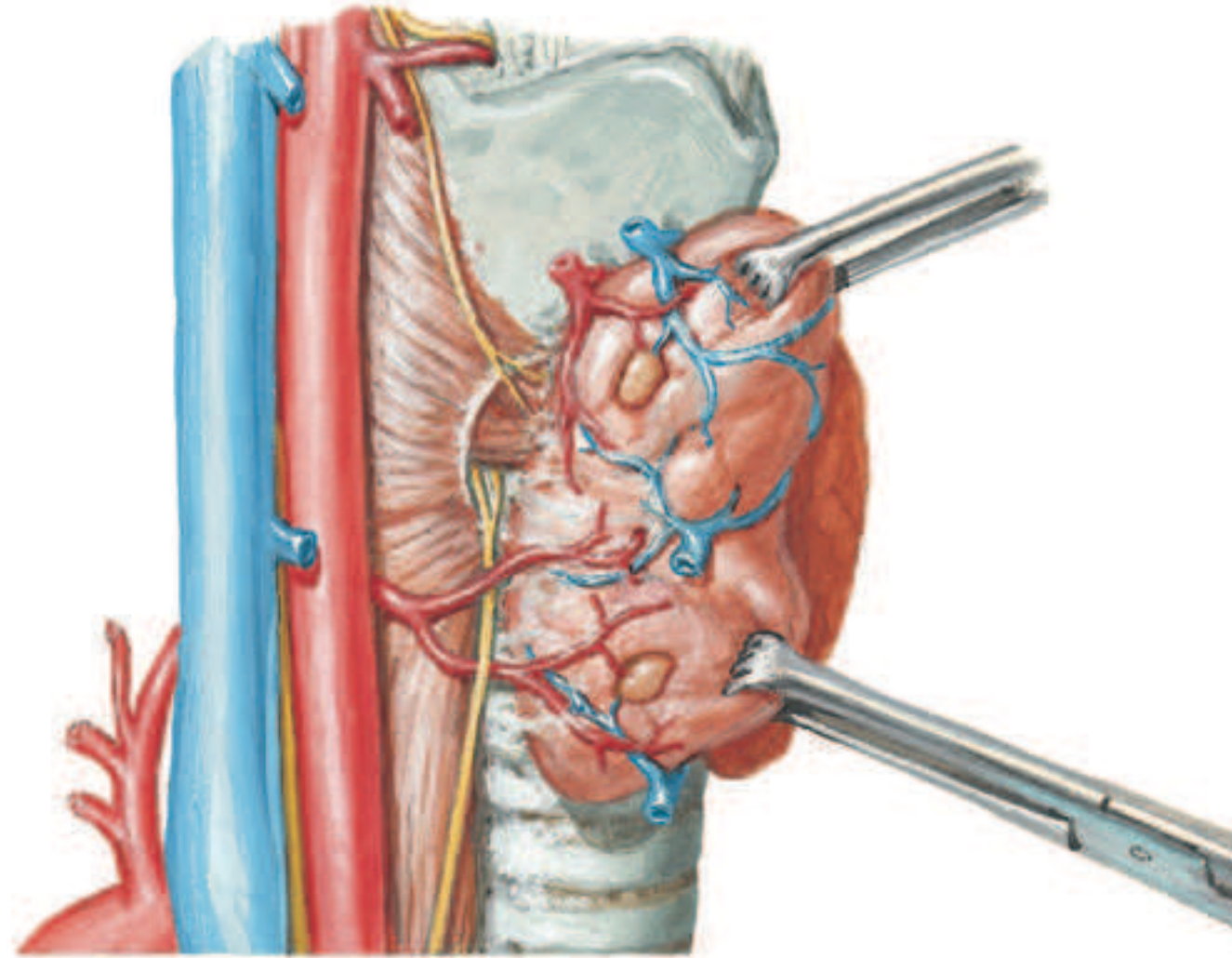
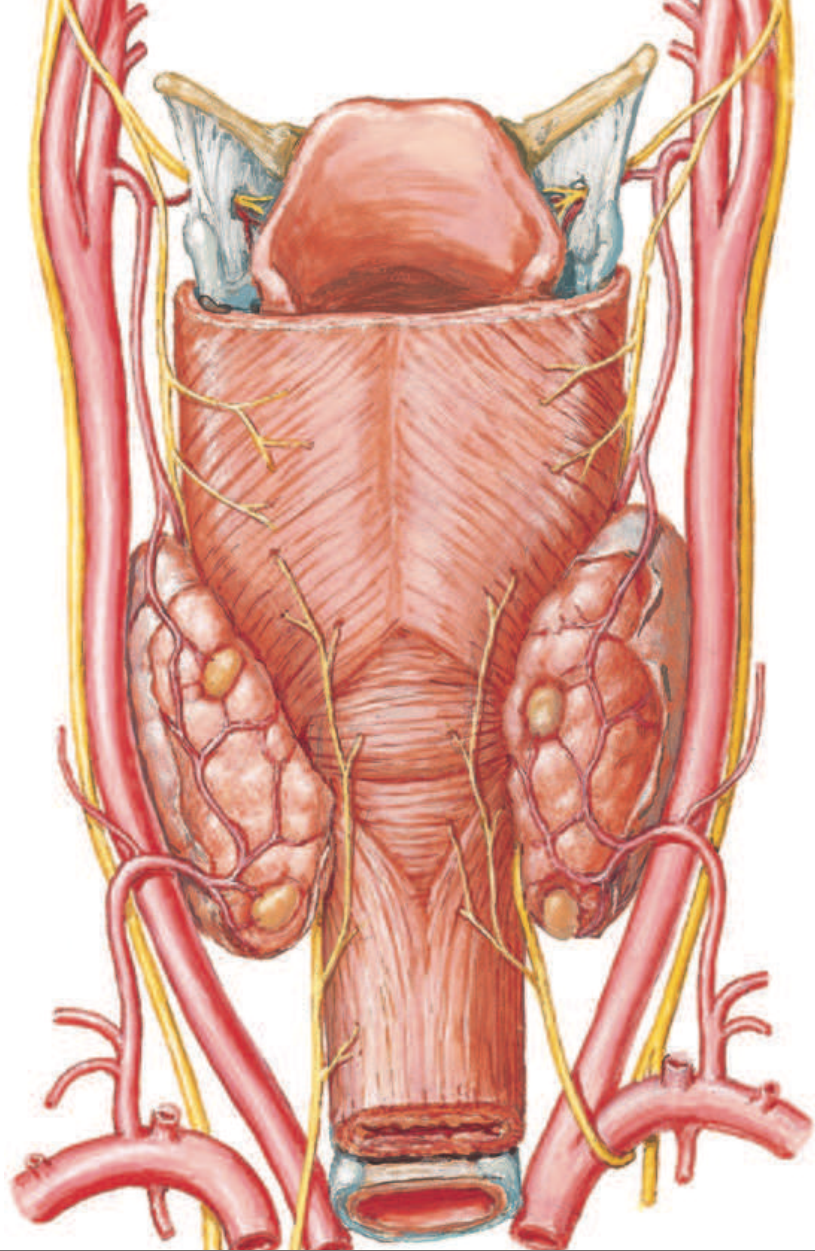
♦ V. thyroidea superior

♦ V. thyroidea media

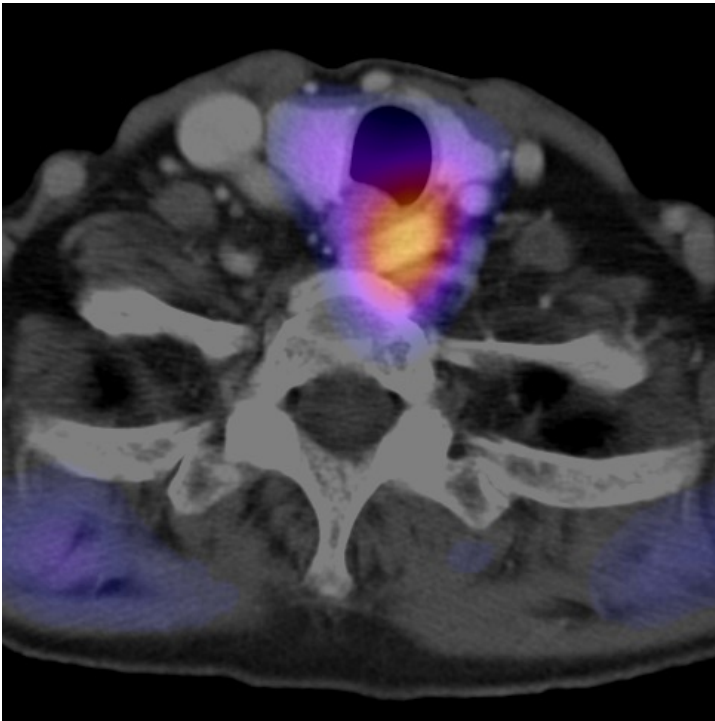
♦ V. thyroidea inferior (ima)



Vasa thyroidea



Glandula parathyroidea



🔴 upper

🔴 *IV. brachial*

🔴 *Pharyngeal pouch*

🔴 lower

🔴 *III. brachial*

🔴 *Pharyngeal pouch*

🔴 migration

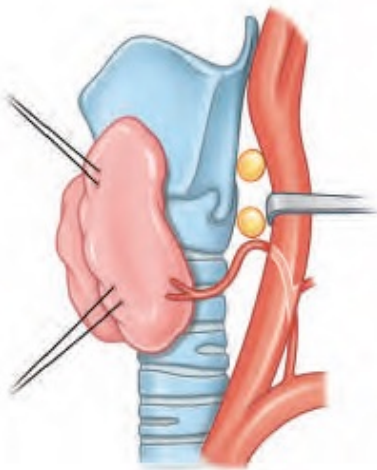
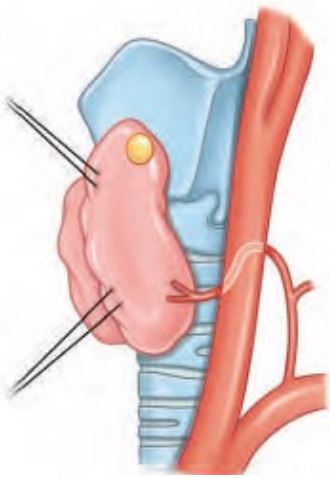
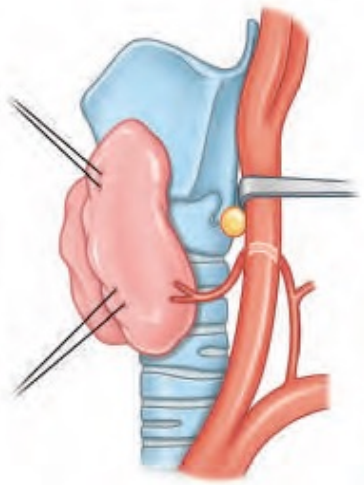
🔴 dystopy



🔴 Adenoma

🔴 hyperparathyroidismus

Glandula parathyroidea



◆ gll. PTH superiores

◆ *Cricothyroidealis juxtacricoidalis* (77%)

◆ *Retrolobaris superior* 22%

◆ *Retropharyngealis, retrooesophagealis* (1%)

◆ gll. PTH inferiores

◆ *Cricothyroidealis juxtacricoidalis* (77%)

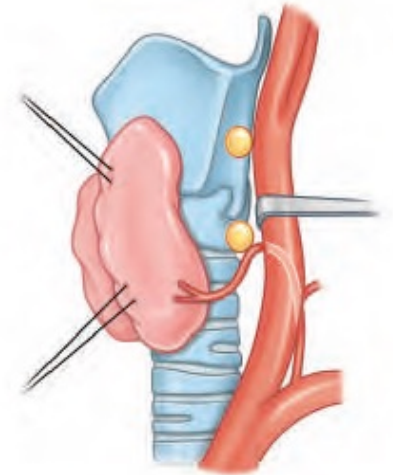
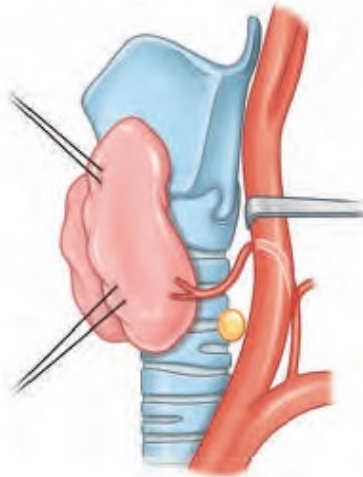
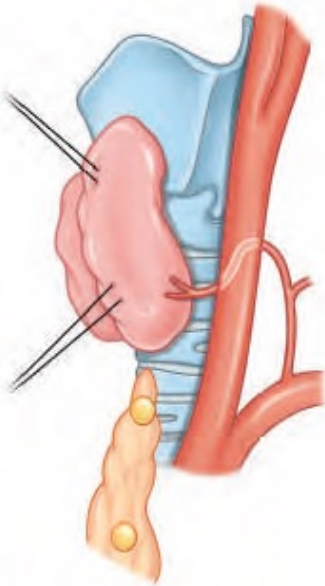
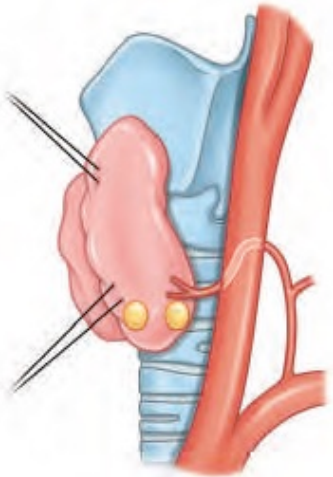
◆ *Thyroidealis inferior* (42%)

◆ *Linguae thymi* (39%)

◆ *Intrathymica* (2%)

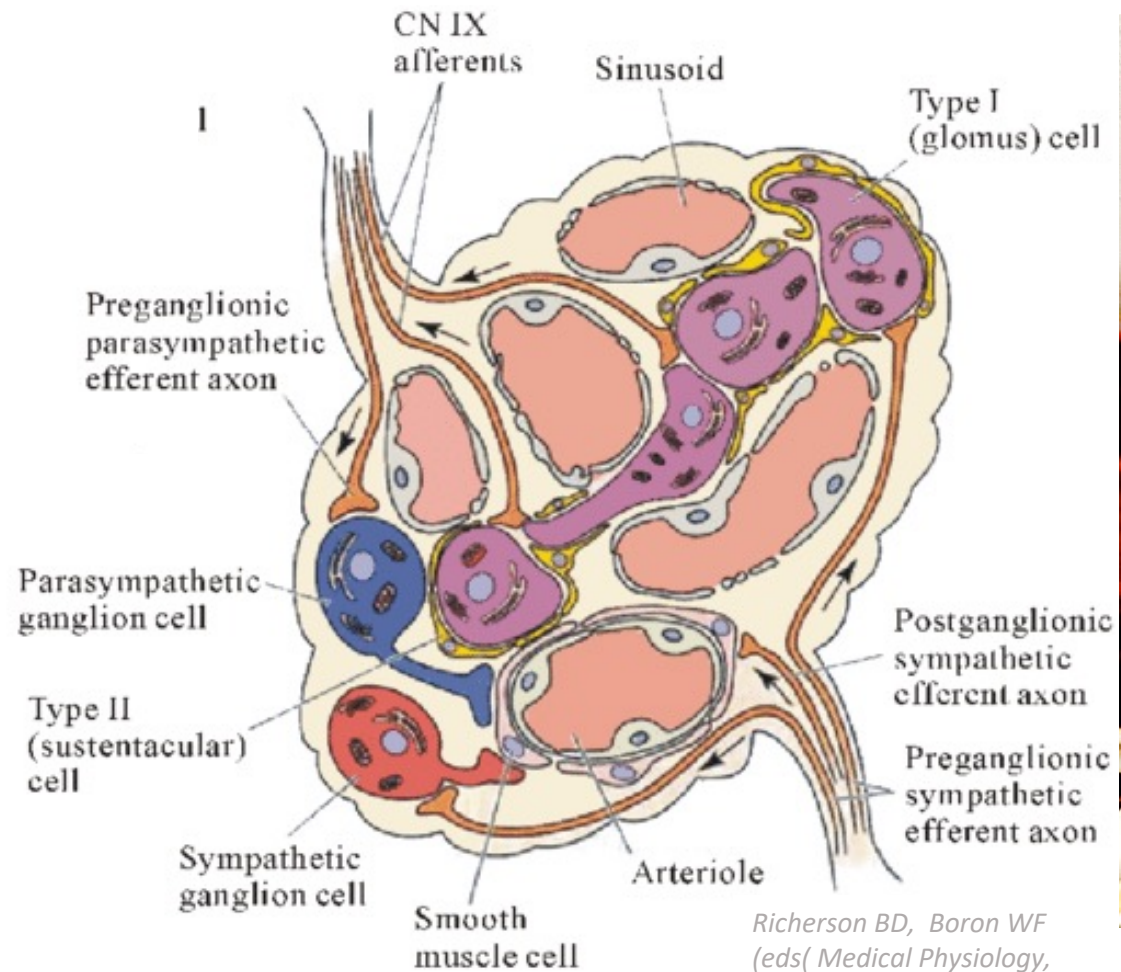
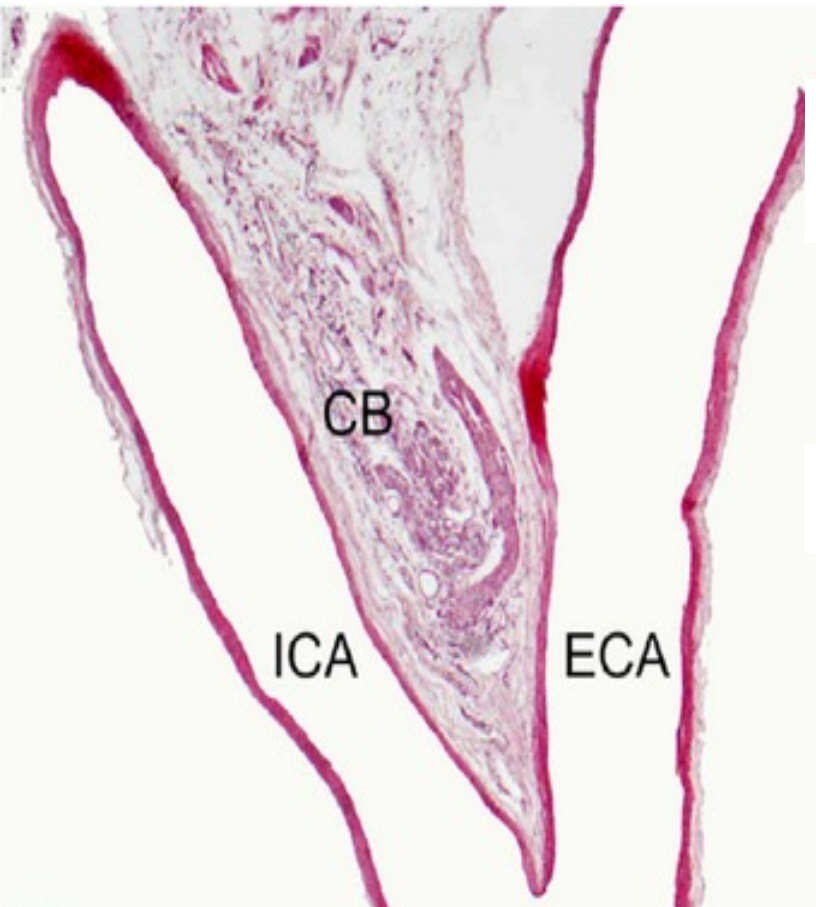
◆ *Juxtathyroidalis* (15%)

◆ *Superior ectopia* (2%)

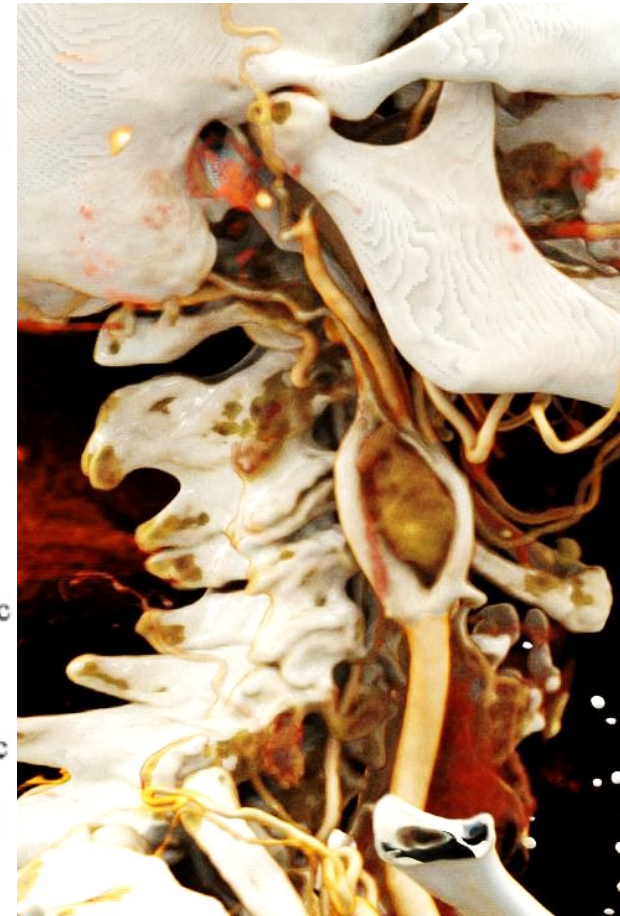


Glandula parathyroidea - dystopia

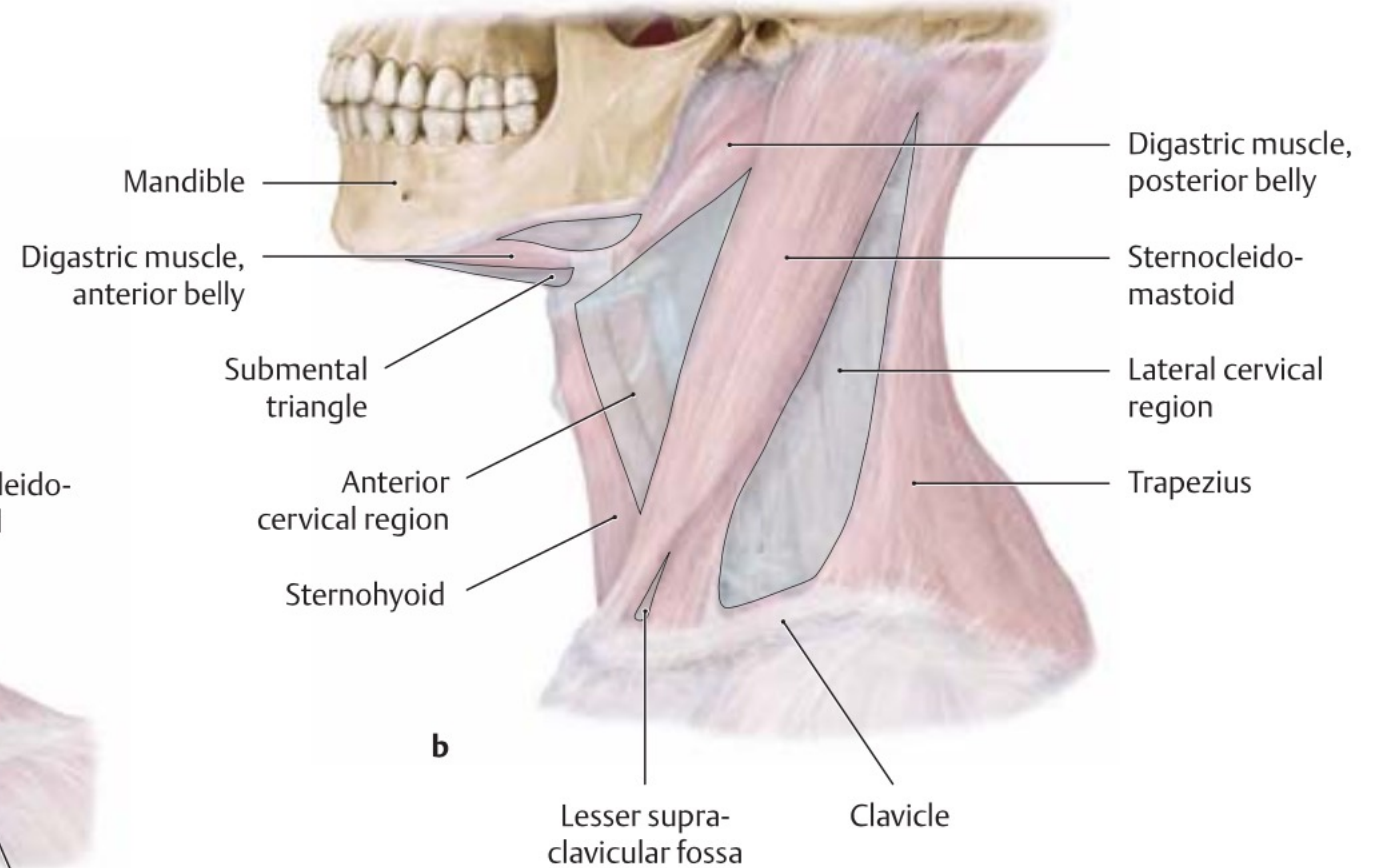
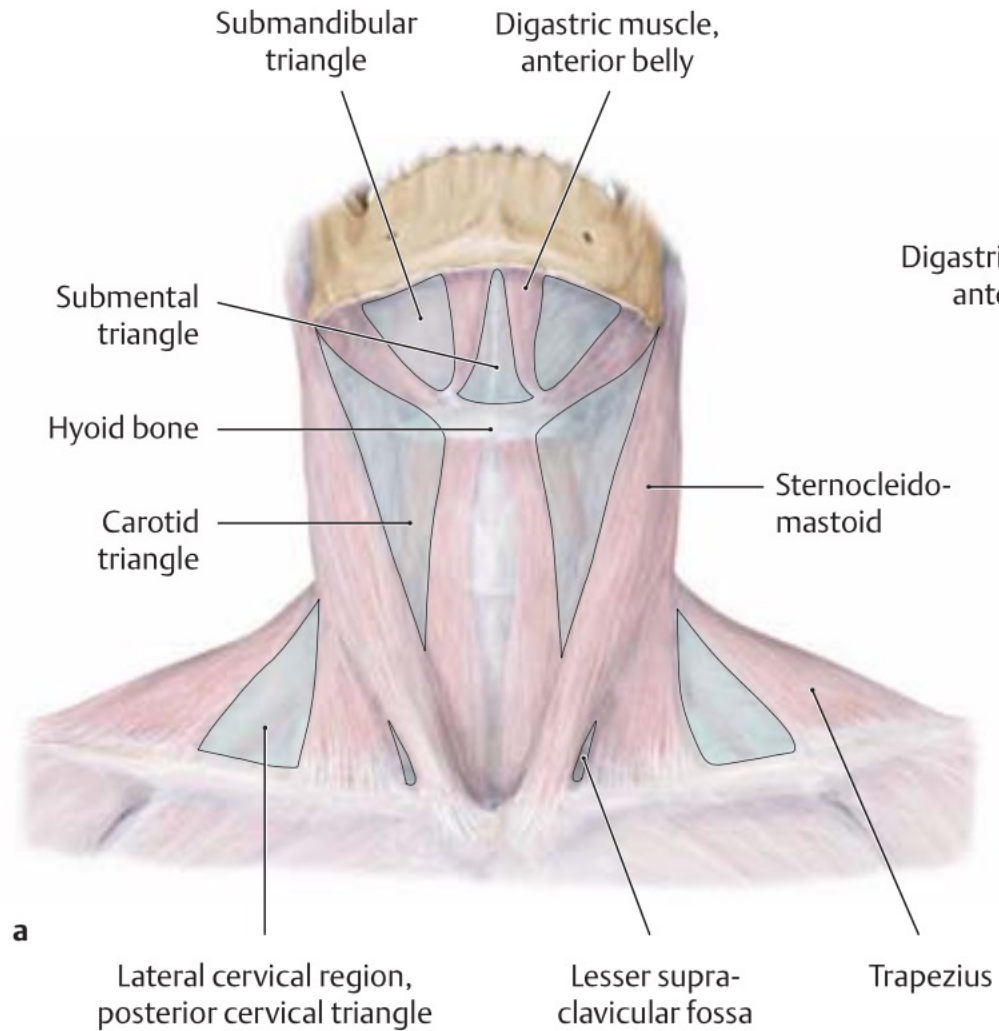
Glomus caroticum



Richerson BD, Boron WF
(eds) Medical Physiology,
Elsevier, 2016



Trigona cervicis

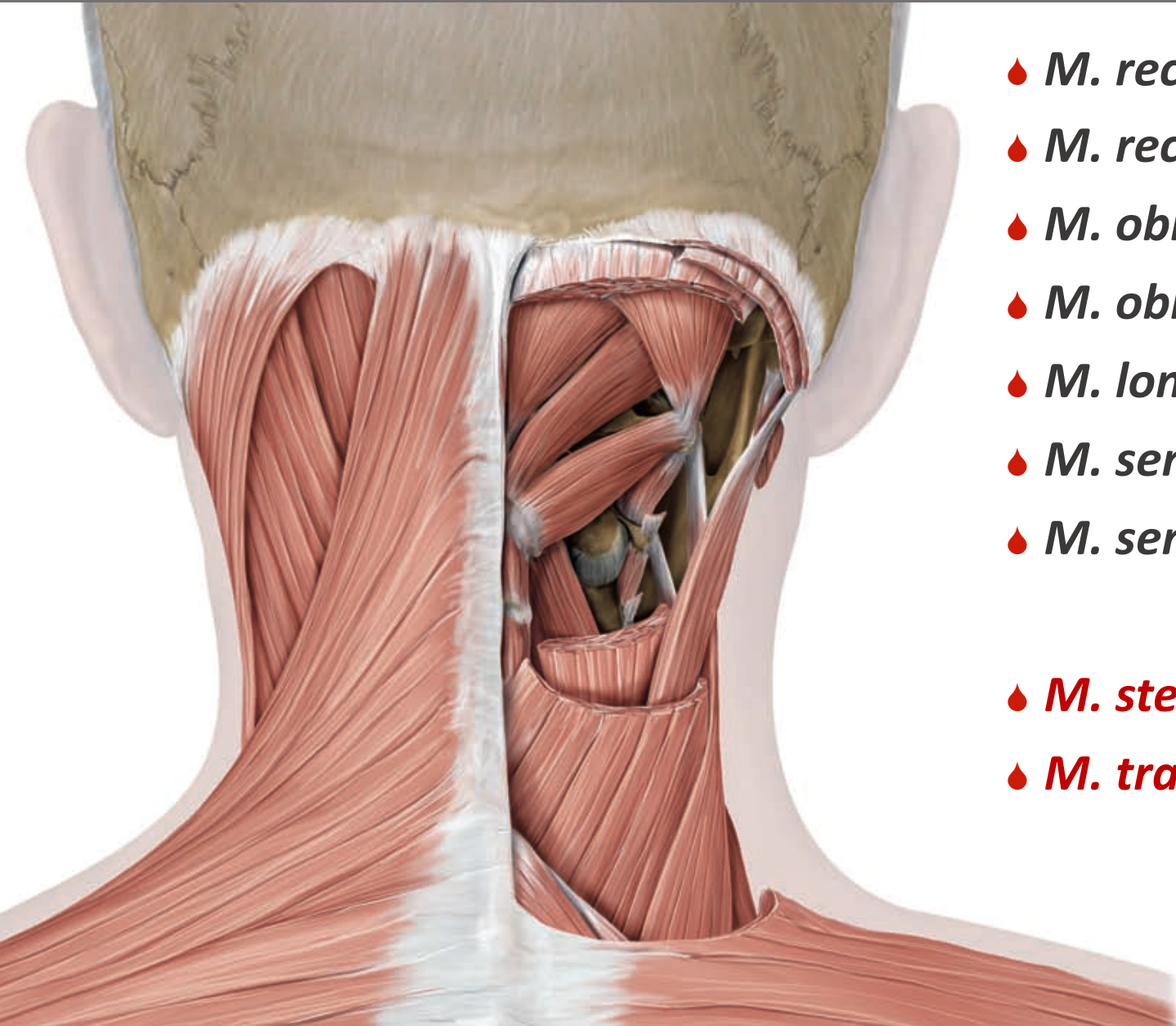


B Muscle dissection of the neck, with the cervical regions outlined

a Anterior view with the head slightly extended.

b Left lateral view.

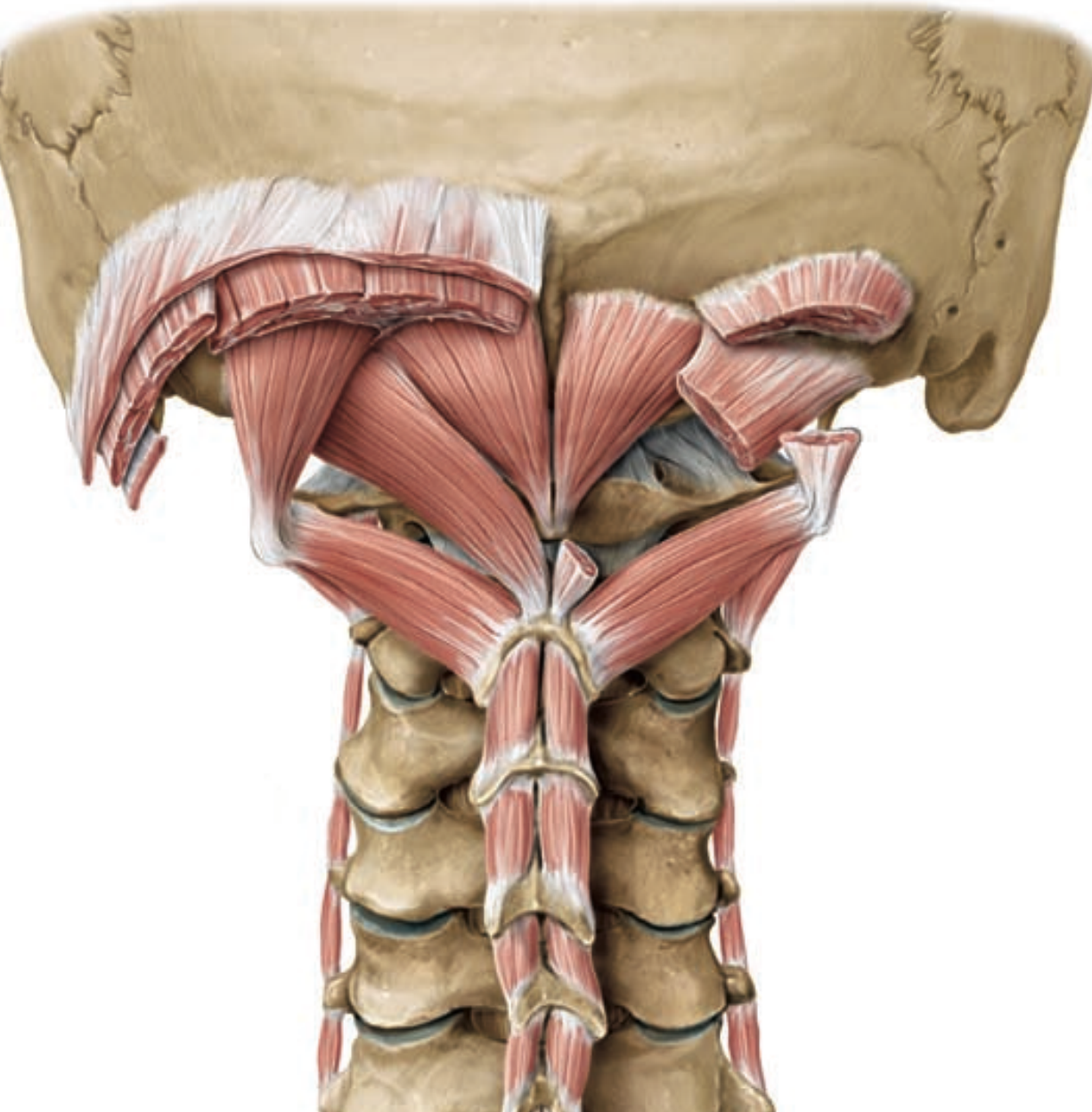
Intrinsic muscles of back - neck



- ♦ *M. rectus capitis posterior minor*
- ♦ *M. rectus capitis posterior major*
- ♦ *M. obliquus capitis superior*
- ♦ *M. obliquus capitis superior*
- ♦ *M. longissimus capitis*
- ♦ *M. semispinalis capitis*
- ♦ *M. semispinalis cervicis*

- ♦ *M. sternocleidomastoideus*
- ♦ *M. trapezius*

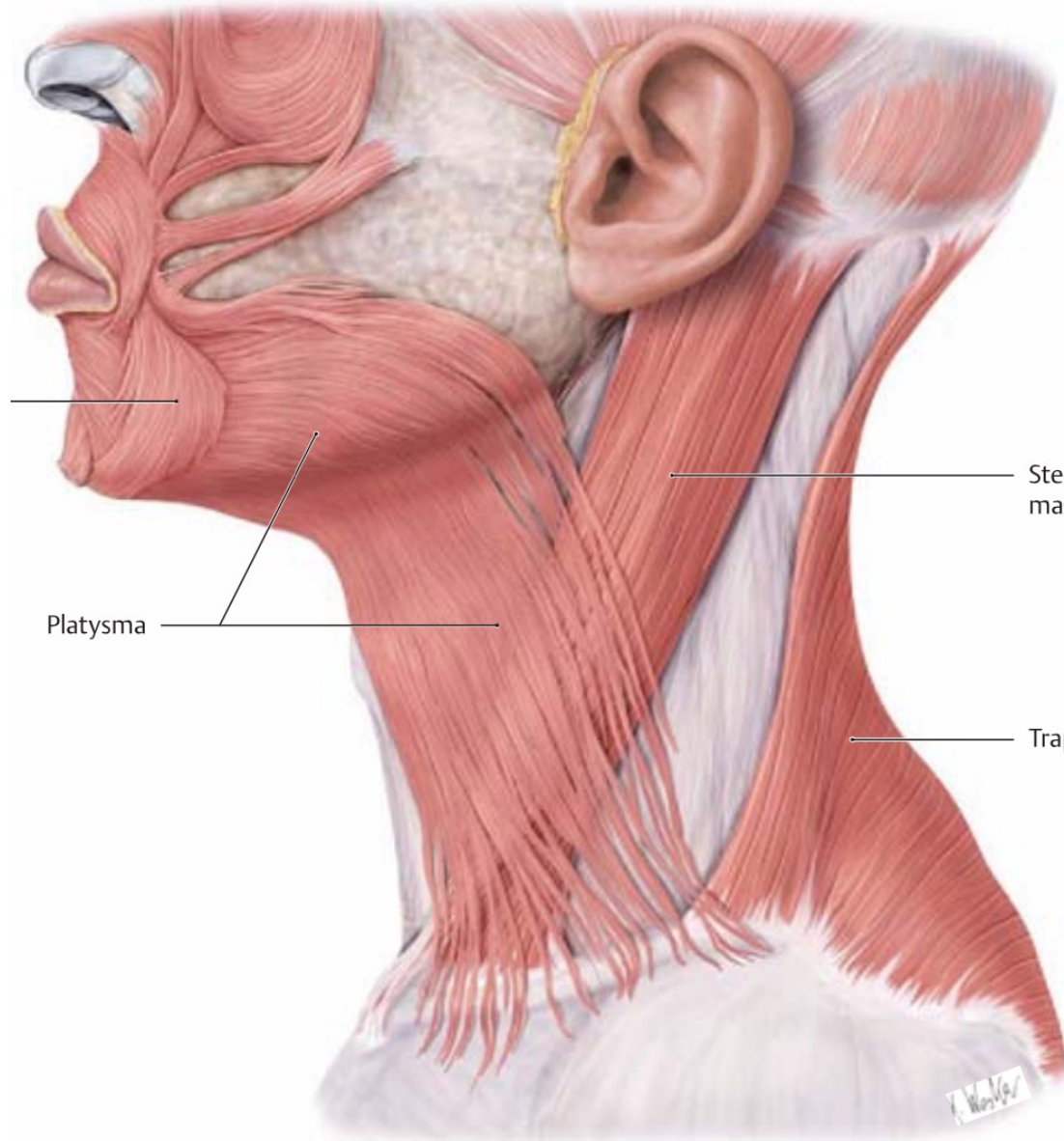
Intrinsic muscles of back - neck



- ♦ *M. rectus capitis posterior minor*
- ♦ *M. rectus capitis posterior major*
- ♦ *M. obliquus capitis superior*
- ♦ *M. obliquus capitis superior*
- ♦ *M. longissimus capitis*
- ♦ *M. semispinalis capitis*
- ♦ *M. semispinalis cervicis*

- ♦ *M. sternocleidomastoideus*
- ♦ *M. trapezius*

Neck muscles



♦ ***M. sternocleidomastoideus***

- ♦ ***Caput sternalis***
- ♦ ***Caput clavicularis***
- ♦ ***insertion***
 - ♦ ***proc. mastoideus + linea nuchae superior***
- ♦ ***N. accessorius + C1 – C4***

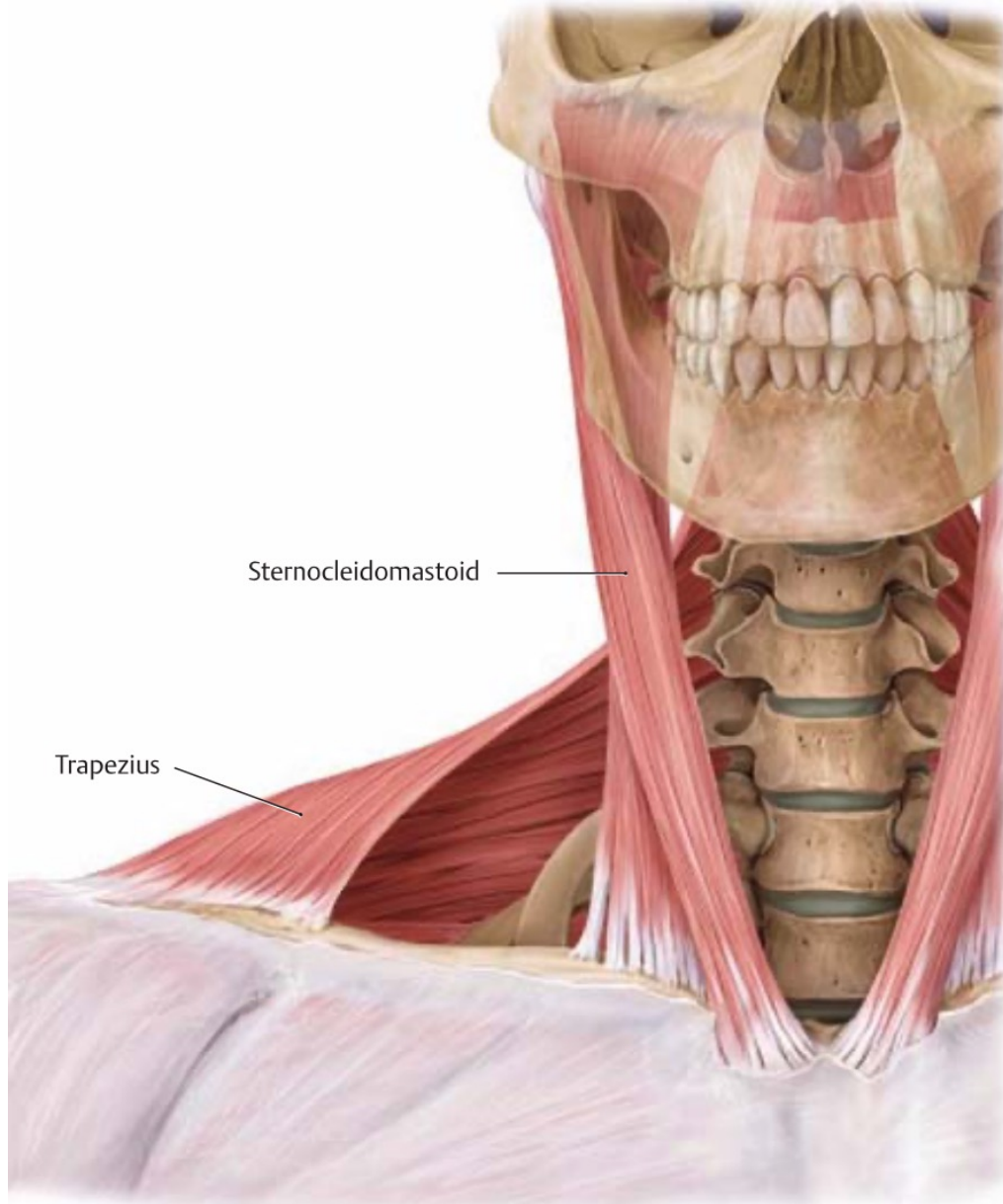
♦ ***M. trapezius***

- ♦ ***Protuberantia occipitalis externa***
- ♦ ***Linea nuchae superior***
- ♦ ***Aponeurosis lata – Th1 – Th4***
- ♦ ***Th5-Th12***
- ♦ ***insertion – clavilula, acromion, spina scapulae***
- ♦ ***N. accessorius + C2 – C4***

♦ ***M. platysma***

- ♦ ***N. facialis***

Neck muscles



- ♦ ***M. sternocleidomastoideus***

- ♦ *Caput sternalis*
- ♦ *Caput clavicularis*
- ♦ *Insertion*
 - ♦ *proc. mastoideus + linea nuchae superior*
- ♦ *N. accesorius + C1 – C4*

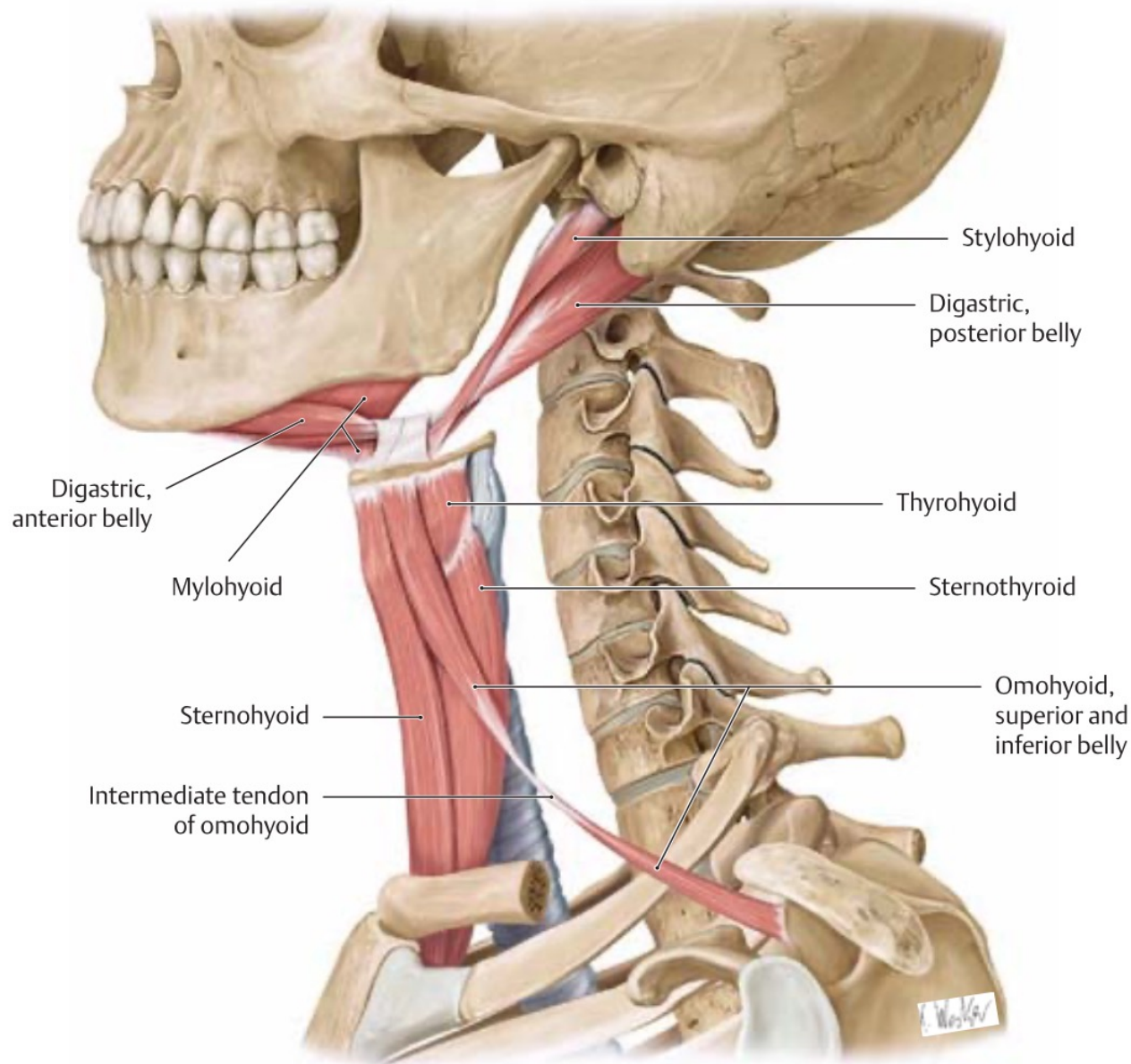
- ♦ ***M. trapezius***

- ♦ *Protuberantia occipitalis externa*
- ♦ *Linea nuchae superior*
- ♦ *Aponeurosis lata – Th1 – Th4*
- ♦ *Th5-Th12*
- ♦ *insertion – clavilula, acromion, spina scapulae*
- ♦ *N. accesorius + C2 – C4*

- ♦ ***M. platysma***

- ♦ *N. facialis*

Neck muscles – suprahyoid, infrahyoid



♦ ***M. digastricus***

♦ ***Venter anterior – n. V3***

♦ ***Venter posterior – N. VII***

♦ ***M. stylohyoideus. - n. VII***

♦ ***M. mylohyoideus – n. V3***

♦ ***M. geniohyoideus – ramus ventralis C1***

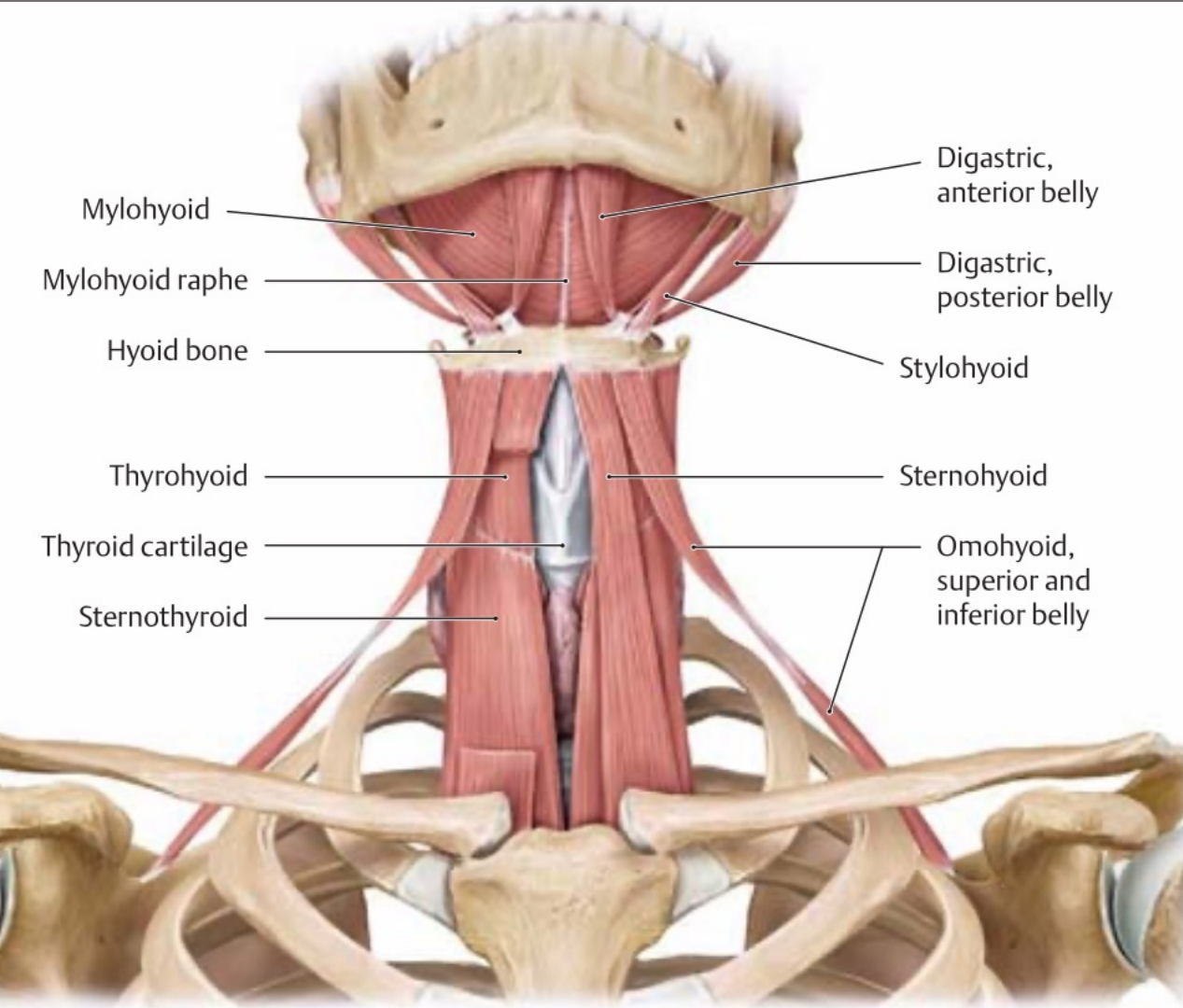
♦ ***M. thyrohyoideus – ramus ventralis C1***

♦ ***M. sternohyoideus – ansa cervicalis C1-3***

♦ ***M. sternothyroideus - ansa cervicalis C1-3***

♦ ***M. omohyoideus - ansa cervicalis C1-3***

Neck muscles – suprahyoid, infrahyoid



♦ *M. digastricus*

♦ *Venter anterior – n. V3*

♦ *Venter posterior – N. VII*

♦ *M. stylohyoideus. - n. VII*

♦ *M. mylohyoideus – n. V3*

♦ *M. geniohyoideus – ramus ventralis C1*

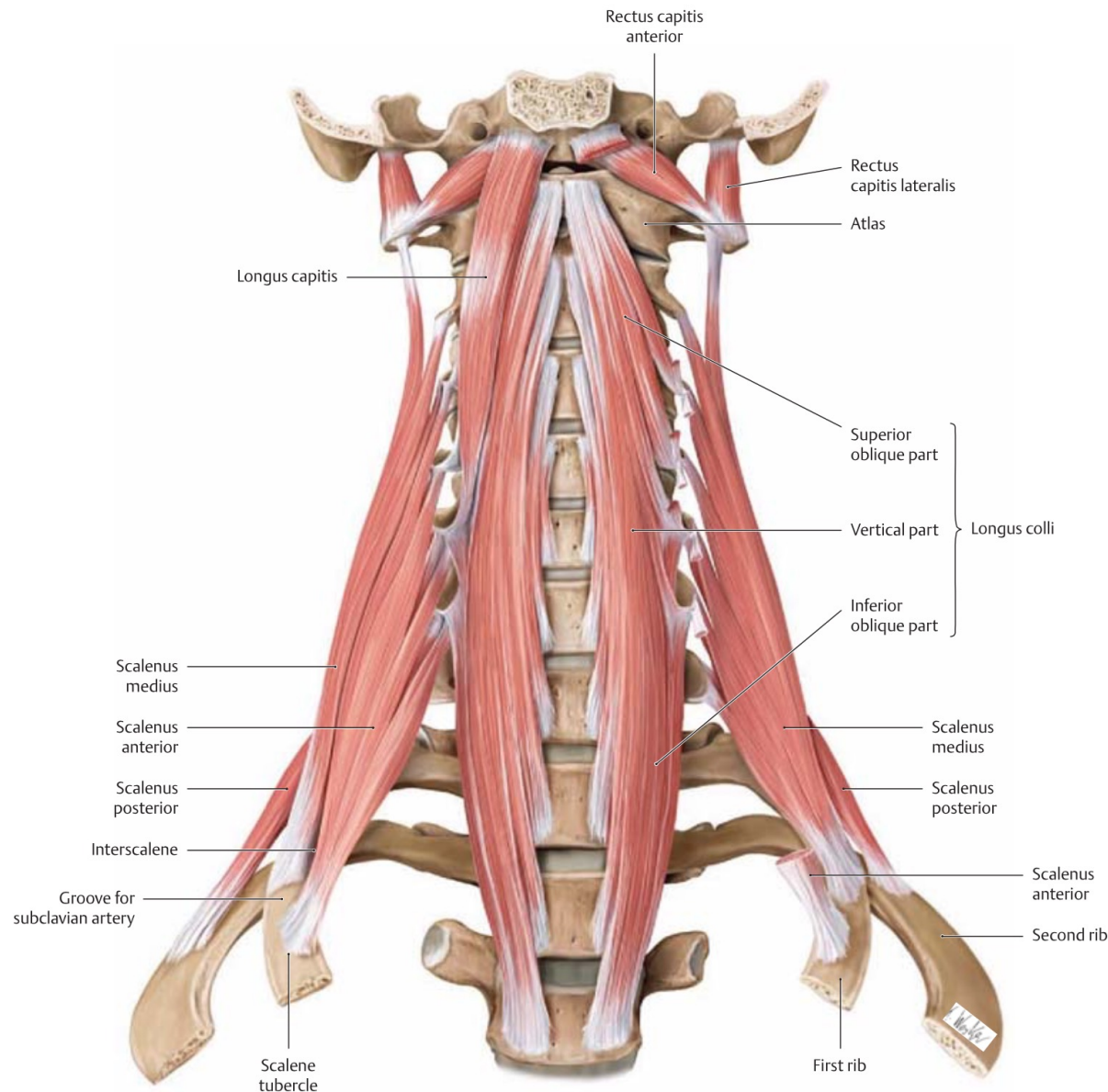
♦ *M. thyrohyoideus – ramus ventralis C1*

♦ *M. sternohyoideus – ansa cervicalis C1-3*

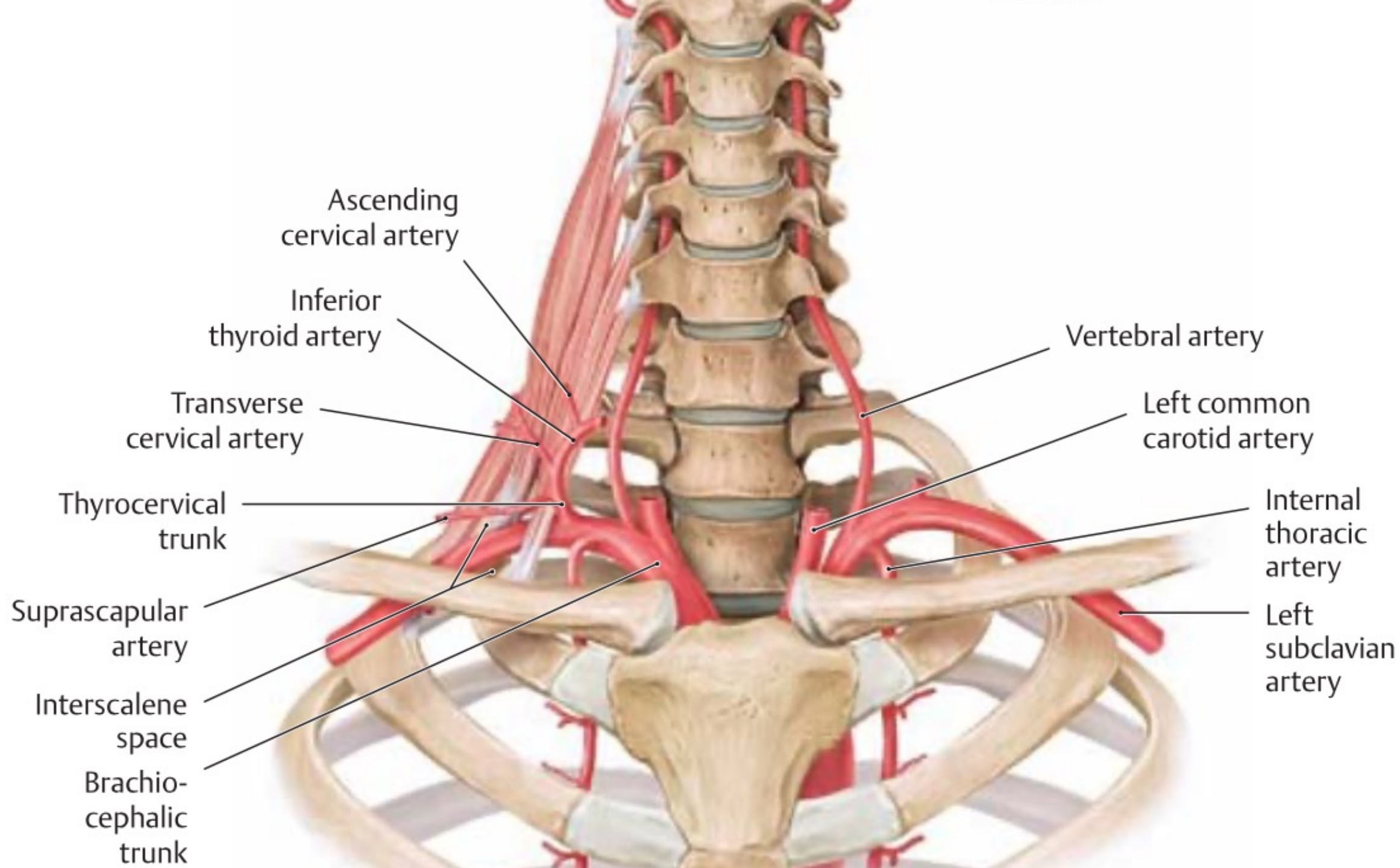
♦ *M. sternothyroideus - ansa cervicalis C1-3*

♦ *M. omohyoideus - ansa cervicalis C1-3*

Neck muscles - prevertebral and deep lateral



- ♦ ***M. longus capitis – C1-3 – plexus cervicalis***
- ♦ ***M. longus cervicis – C2-6 – plexus cervicalis***
- ♦ ***M. rectus capitis anterior – rami ventr. C1-2***
- ♦ ***M. rectus capitis lateralis – rami ventr. C1-2***
- ♦ ***M. scalenus anterior – C3-C8 pl. cerv+brach***
 - ♦ ***Tuberculi anteriores proc. transversi C3 -6***
 - ♦ ***Costa I., in the front of sulcus a. subcl.***
- ♦ ***M. scalenus medius – C3-C8 pl. cerv+brach***
 - ♦ ***Proc. transversus C1 – C7***
 - ♦ ***Costa I., behind sulcus a. subcl.***
- ♦ ***M. scalenus posterior – C3-C8 pl. cerv+brach***
 - ♦ ***Tuberculi posteriores proc. Transversi C5 – C7***
 - ♦ ***Outer margin costa II.***



Larynx, thyroidea, parathyroidea, mm. cervicis

Prof. MUDr. Jiří Ferda, Ph.D.

