

# A gége izmai és működése. A gége kötőszövetes váza és nyálkahártyája.

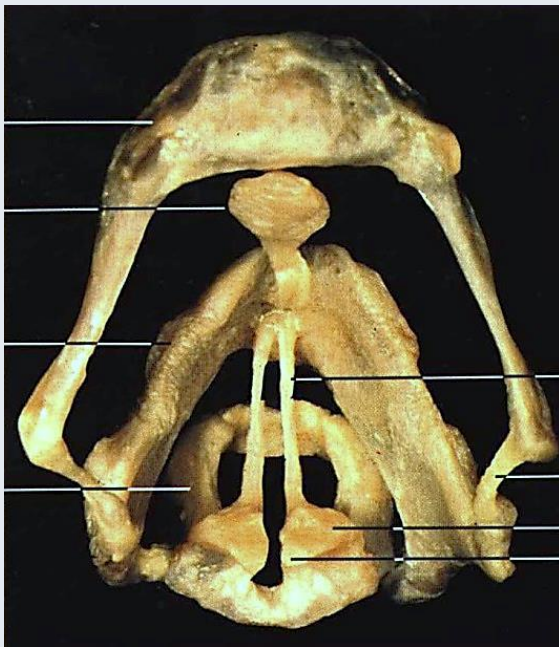
Dr. Baksa Gábor / Dr. Ruttkay Tamás

Anatómiai, Szövet- és Fejlődéstani Intézet

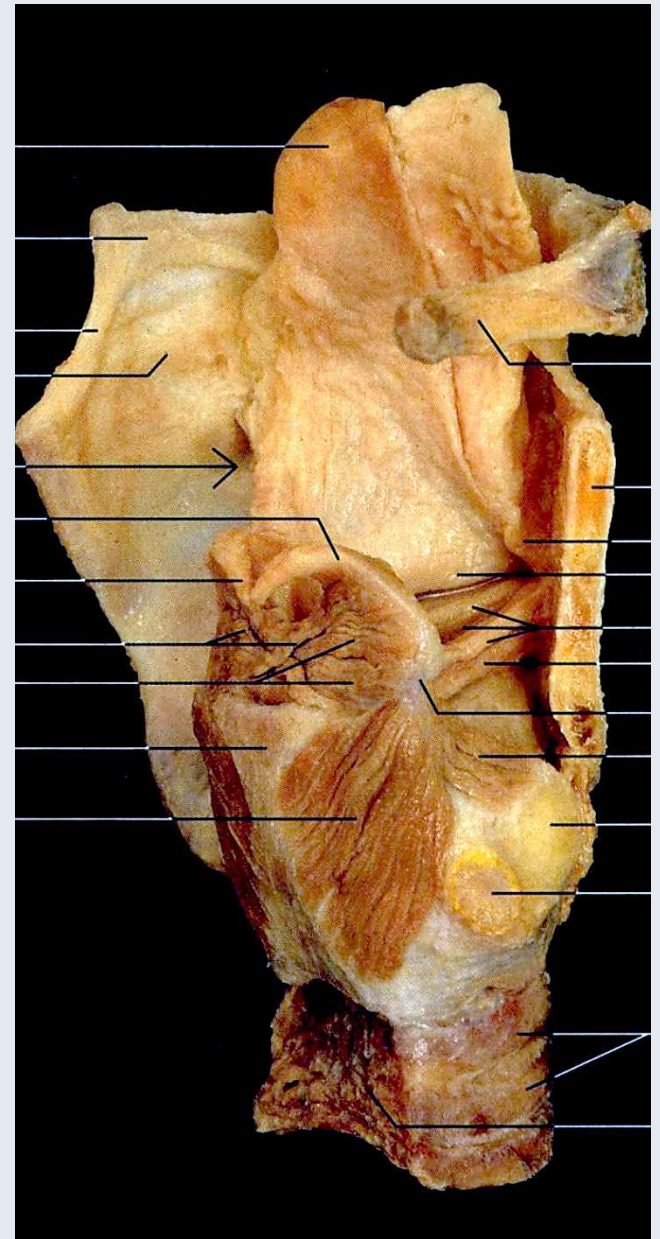
2019.

## Alkotók:

- vázrendszer (porcok)
  - izmok
  - szalagok
  - fibroelasztikus membránok
  - nyálkahártya
  - idegek, erek, nyirokelvezetés
- } ízületek, mozgások



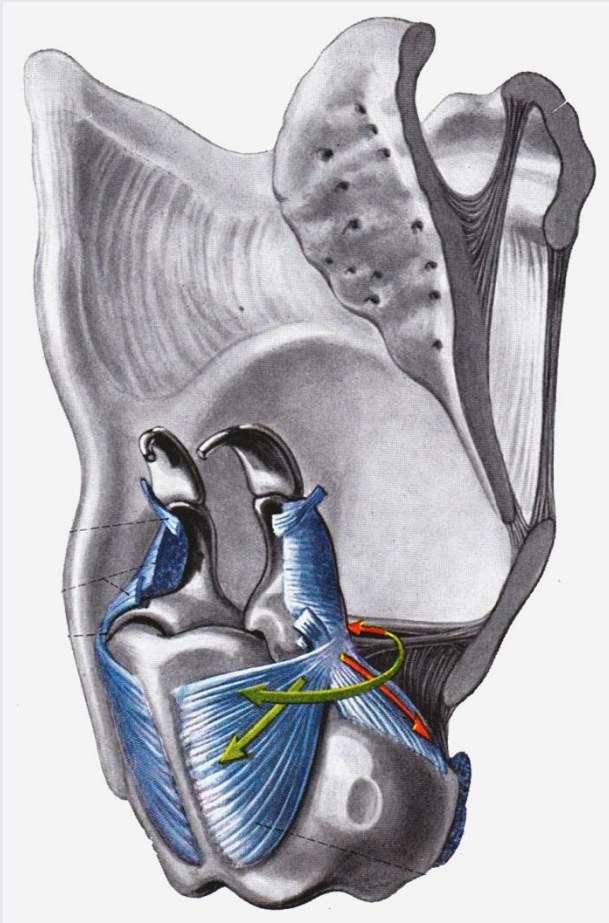
Yokochi



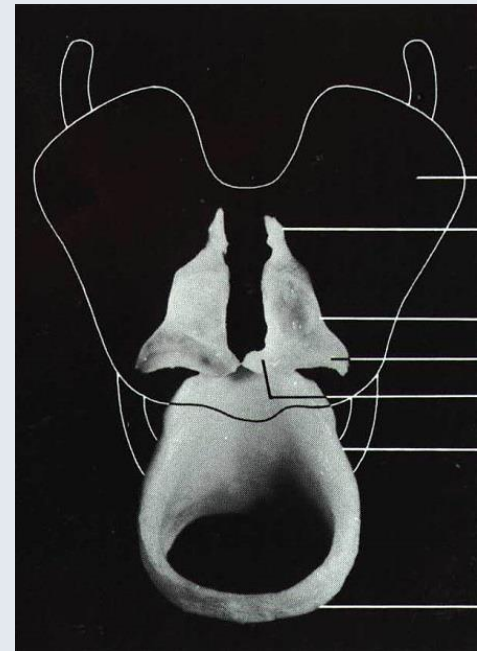
Yokochi

# Porcok

1. pajzsporc = *cartilago thyroidea*
2. gyűrűporc = *cartilago cricoidea*
3. gégefedő = *cartilago epiglottica* vagy *epiglottis*
4. kannaporc = *cartilago aryt(a)enoidea*
5. *cartilago corniculata* (Santorini)
6. *cartilago cuneiforme* (Wrisberg)
7. *cartilago triticea*



Pernkopf

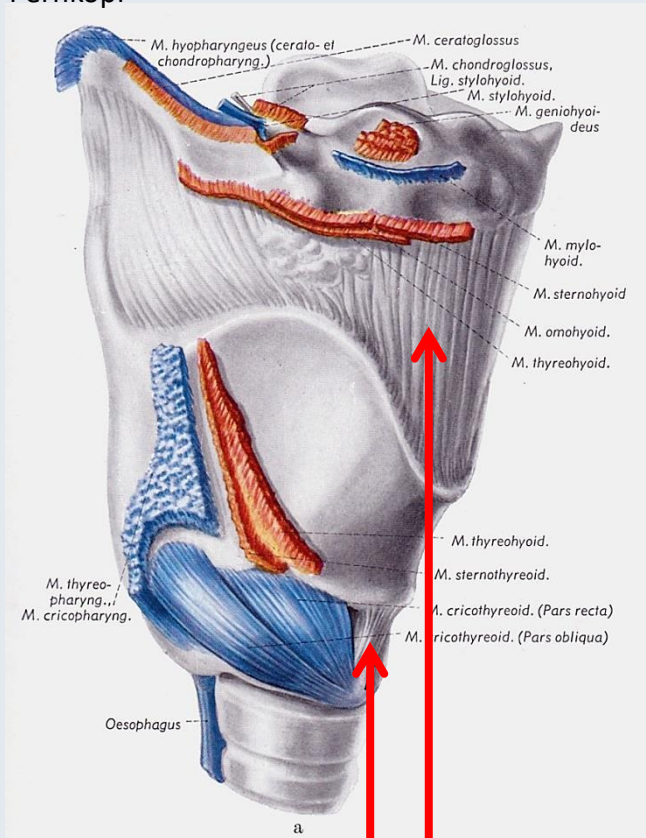


Yokochi

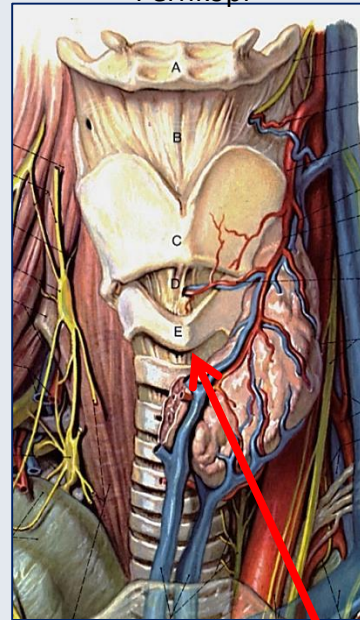


# Szalagok

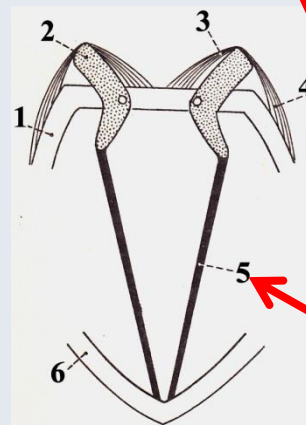
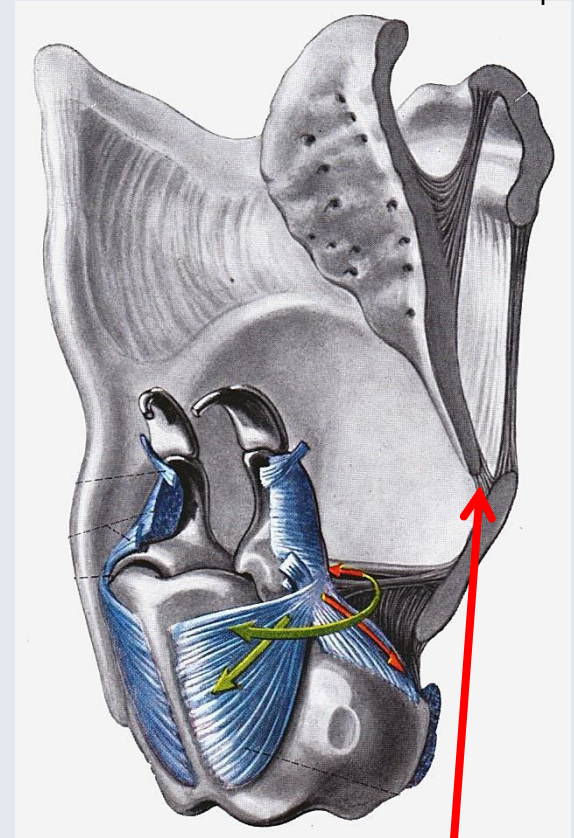
Pernkopf



Pernkopf



Pernkopf



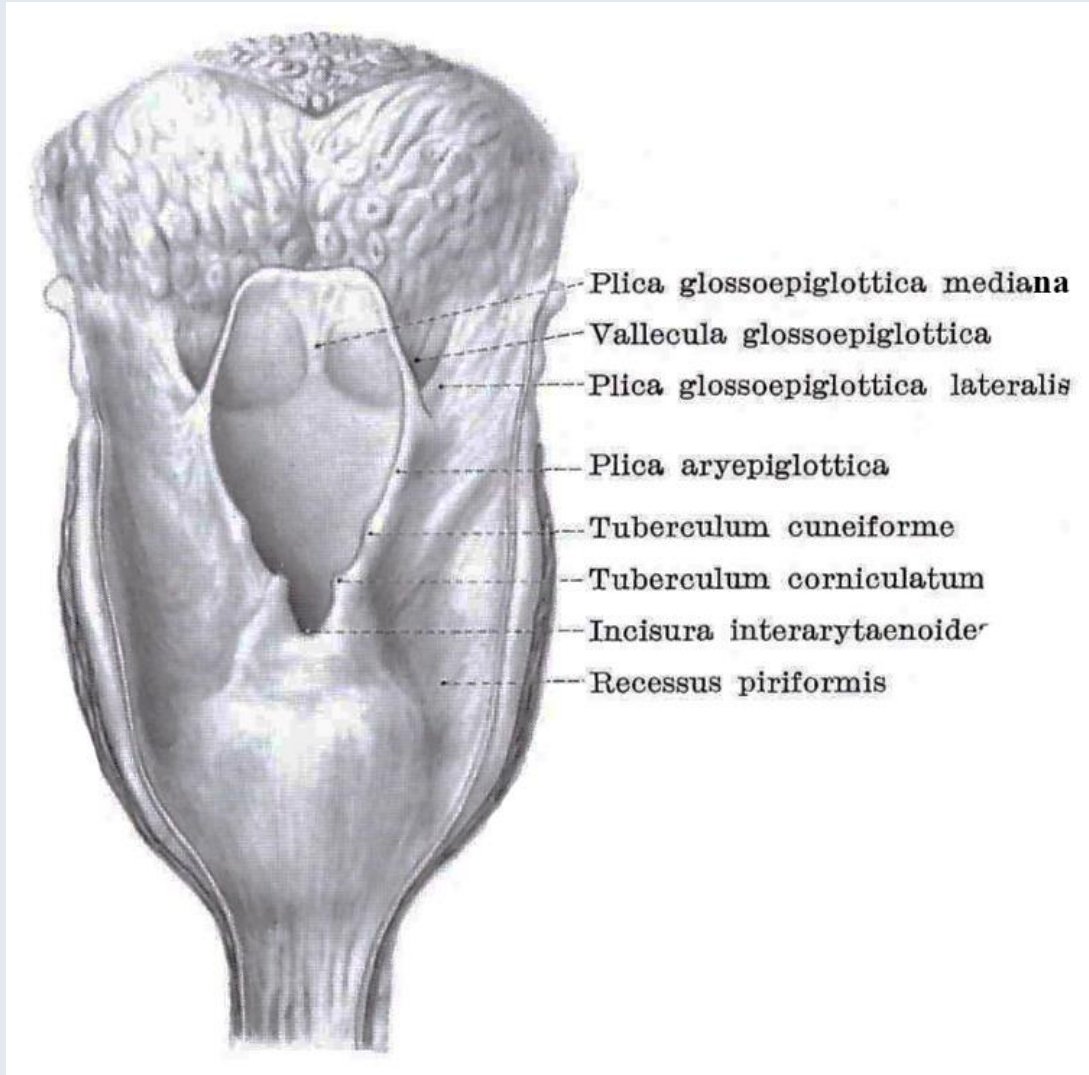
Kiss

membrana thyrohyoidea:  
 lig. thyrohyoideum medianum et laterale  
 conus elasticus:  
 lig. cricothyroideum medianum (conicum)

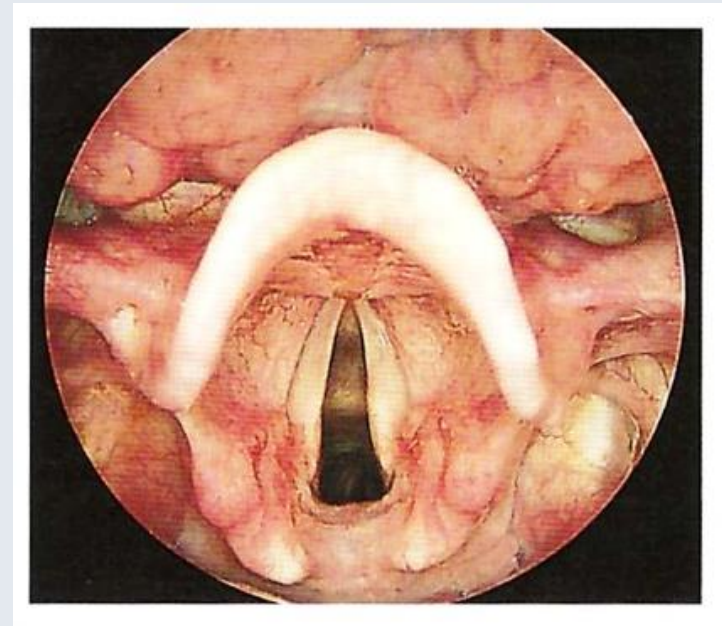
lig. thyroepiglotticum  
 lig. cricopharyngeum  
 lig. cricotracheale  
 lig. vocale

**CONICOTOMIA**

# Aditus laryngis



Lanz-Wachsmuth



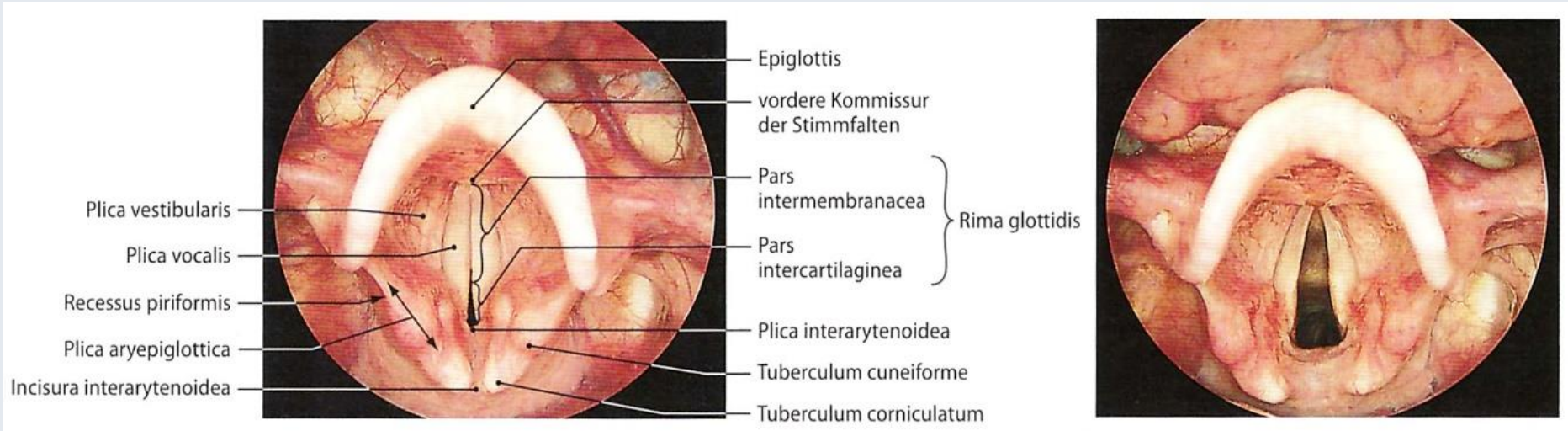
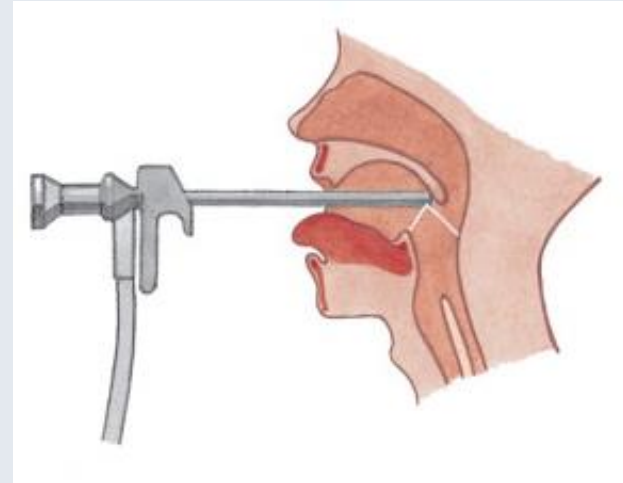
Zilles-Tillmann

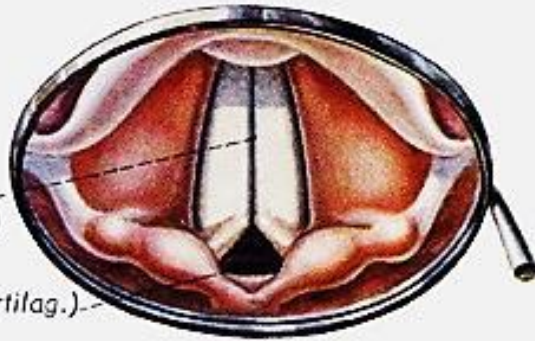


# A hangszalagok vizsgálata (plica vocalis et vestibularis)



Sobotta





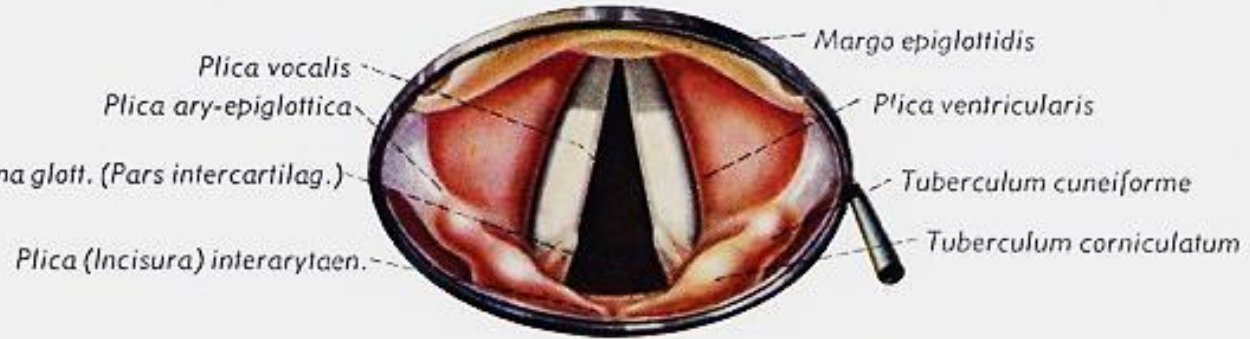
*Plica vocalis, Rima glott. (Pars intermembran.)*

*Rima glott. (Pars intercartilag.)*

**hangrés (rima glottidis) = glottis**

1. pars intermembranacea = glottis phonatoria
2. pars intercartilaginea = glottis respiratoria

Pernkopf



*Processus voc. cartil. aryt., Rima glott. (Pars intercartilag.)*

*Plica (Incisura) interarytaen.*

*Margo epiglottidis*

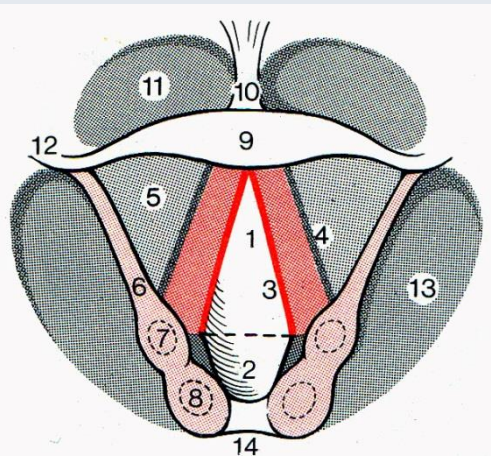
*Plica vocalis*

*Plica ary-epiglottica*

*Plica ventricularis*

*Tuberculum cuneiforme*

*Tuberculum corniculatum*



7. cartilago cuneiformis → tuberculum cuneiforme

8. cartilago corniculata → tuberculum corniculatum

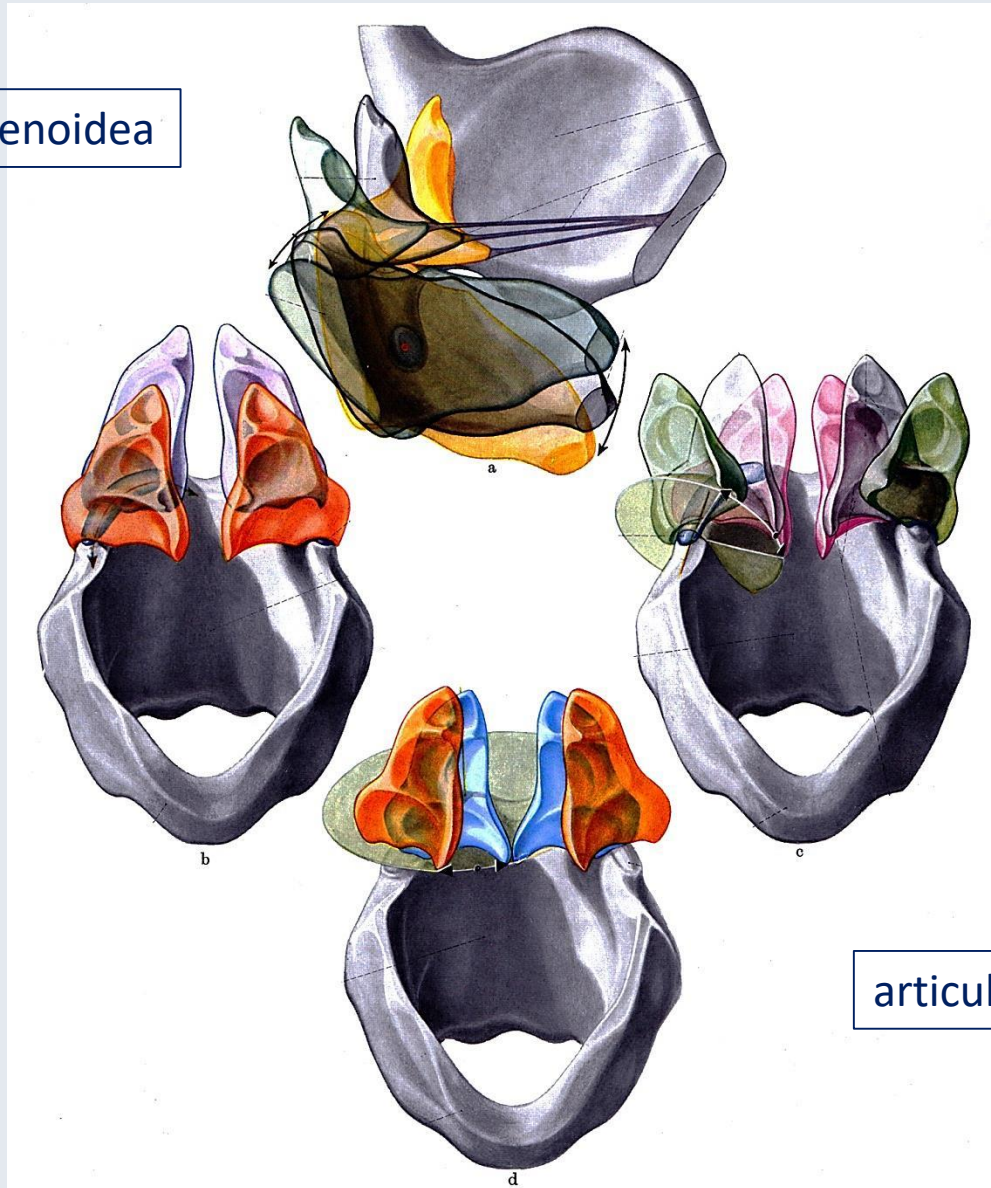
9. epiglottis

10. plica glossoepiglottica mediana

Faller

# Ízületek és mozgások

articulatio cricoarytenoidea



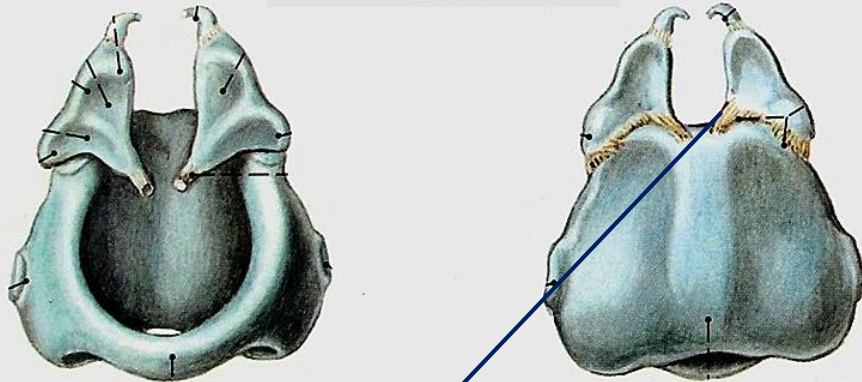
articulatio cricothyroidea



# Articulatio cricoarytenoidea



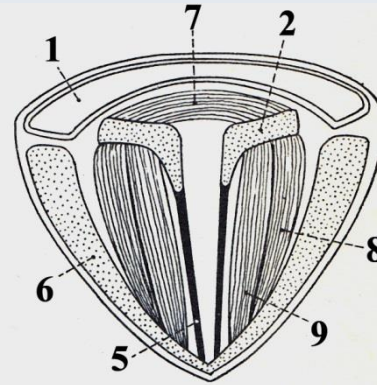
Sobotta



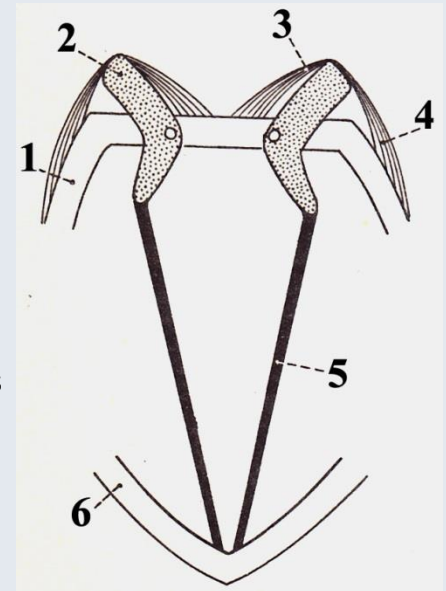
lig. cricoarytenoideum posterius

lapos ízületi felszínek:  
rotáció és transzlációs mozgás

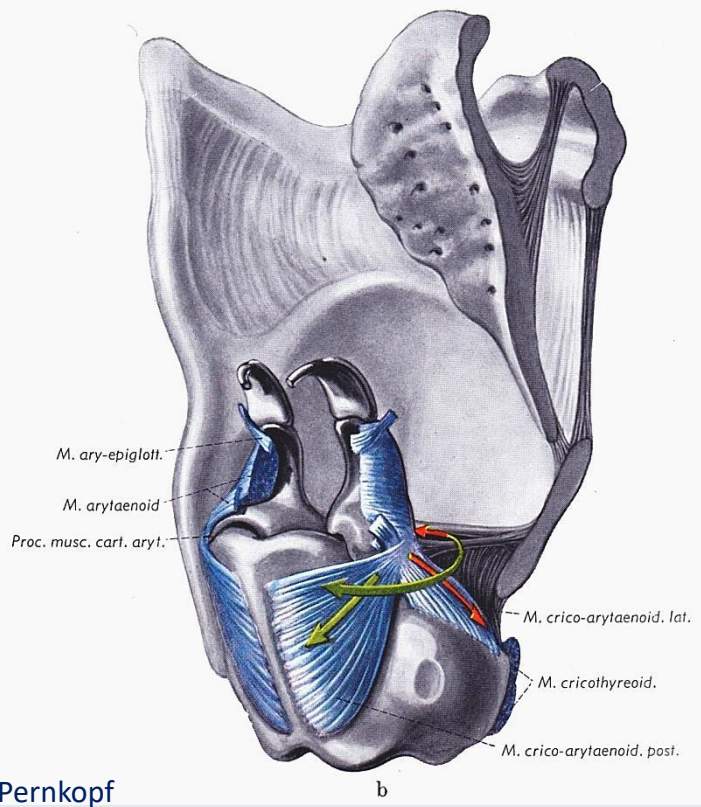
**m. cricoarytenoideus posterior:**  
→ a hangrés egyedüli nyitója! (légzés!)



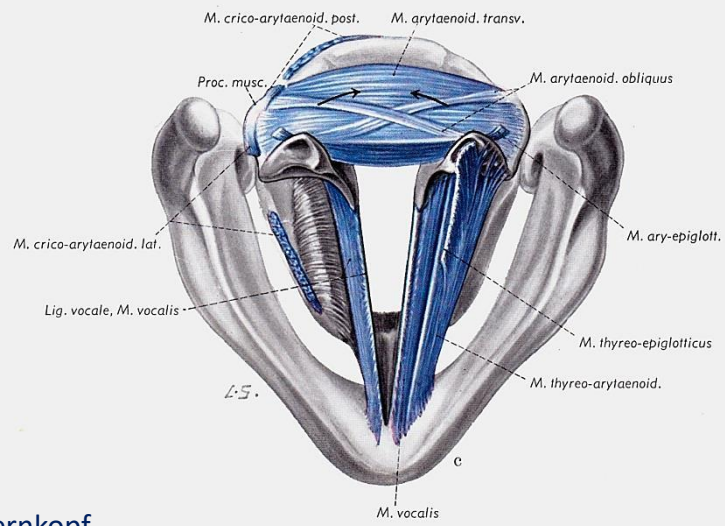
Kiss



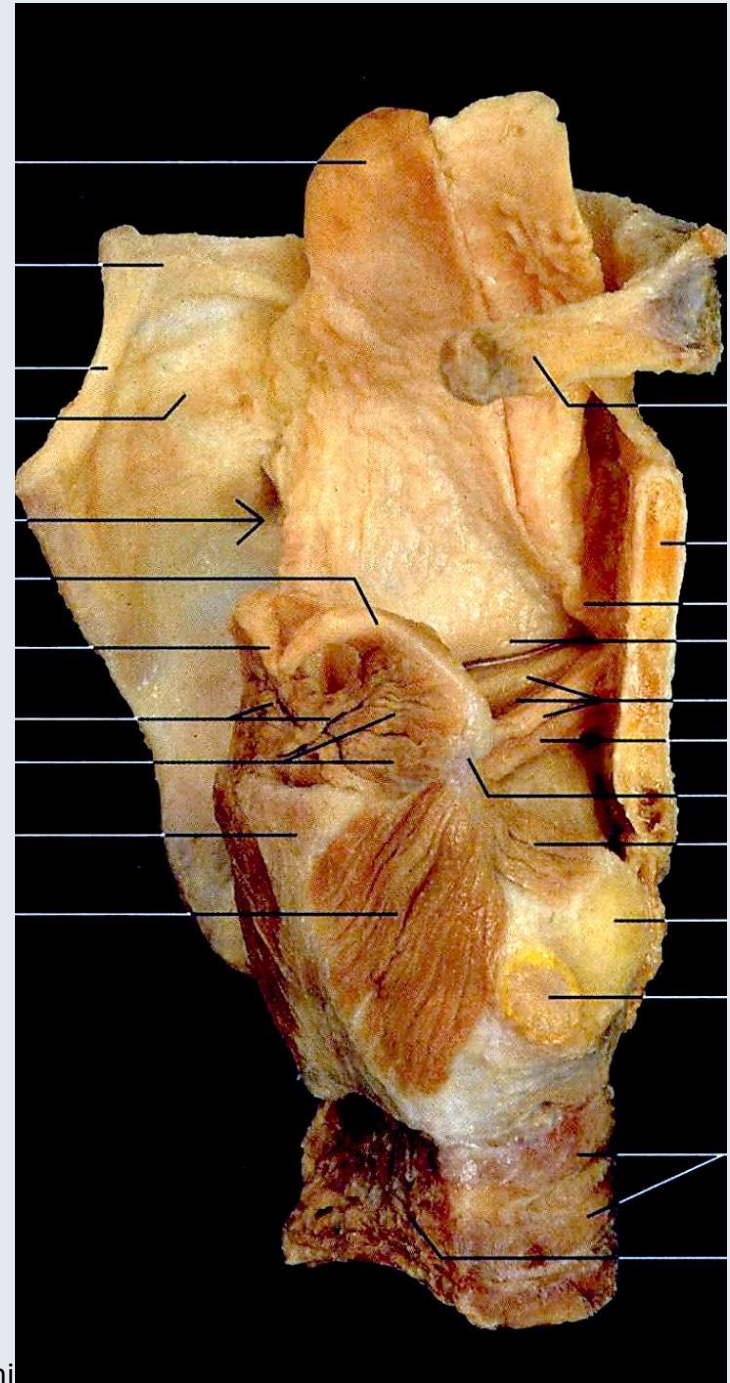
1. gyűrűporc
2. kannaporc
3. **m. cricoarytenoideus posterior („Posticus”)**
4. m. cricoarytenoideus lateralis
5. hangszalag (lig. vocale)
6. pajzsporc
7. m. arytenoideus transversus/obliquus
8. m. thyroarytenoideus lateralis
9. m. thyroarytenoideus medialis (m. vocalis)



Pernkopf



Pernkopf



Yokochi



# Articulatio cricoarytenoidea

(3) m. cricoarytenoideus posterior („Posticus“): nyitja a pars intermembranacea glottidist

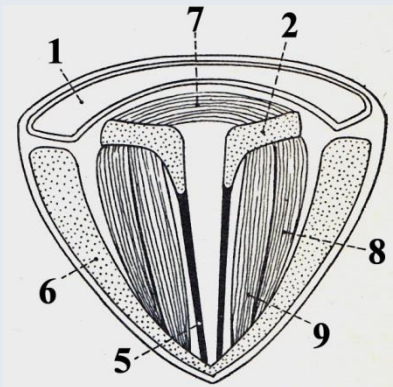
→ a hangrés egyedüli nyitója! (légzés!)

(4) m. cricoarytenoideus lateralis: zárja a pars intermembranacea glottidis-t

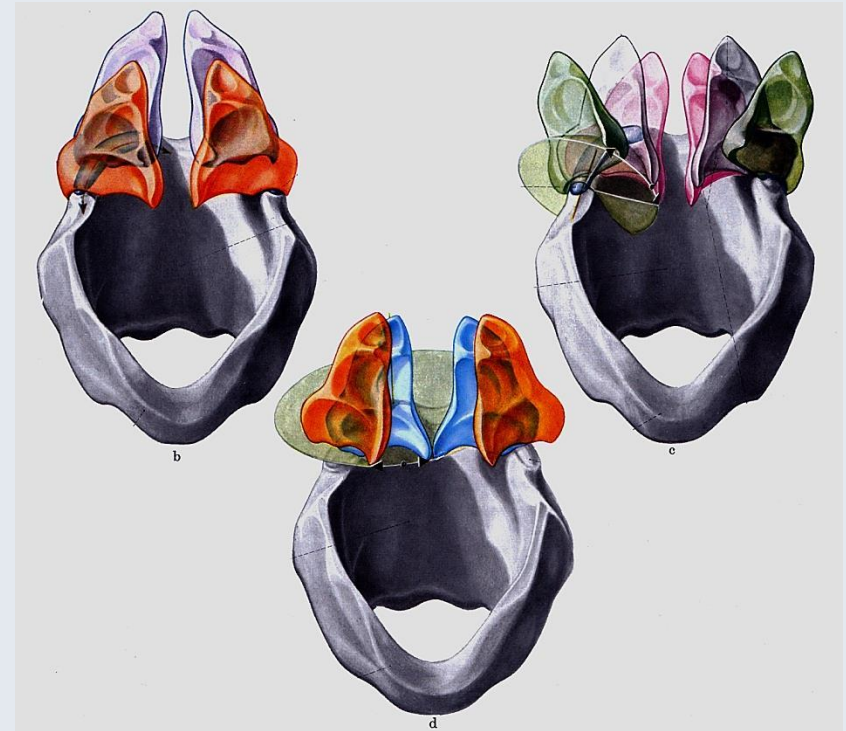
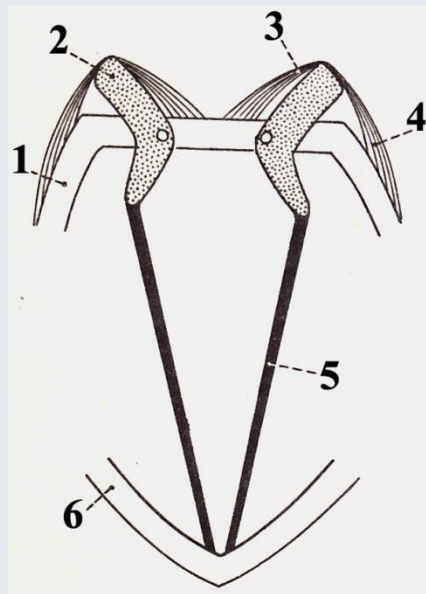
(7) mm. arytenoidei: zárják a pars intercartilaginea glottidis-t

(8) m. thyroarytenoideus lateralis

(9) m. thyroarytenoideus medialis (m. vocalis): a hangszalagok finomhangolását végzi

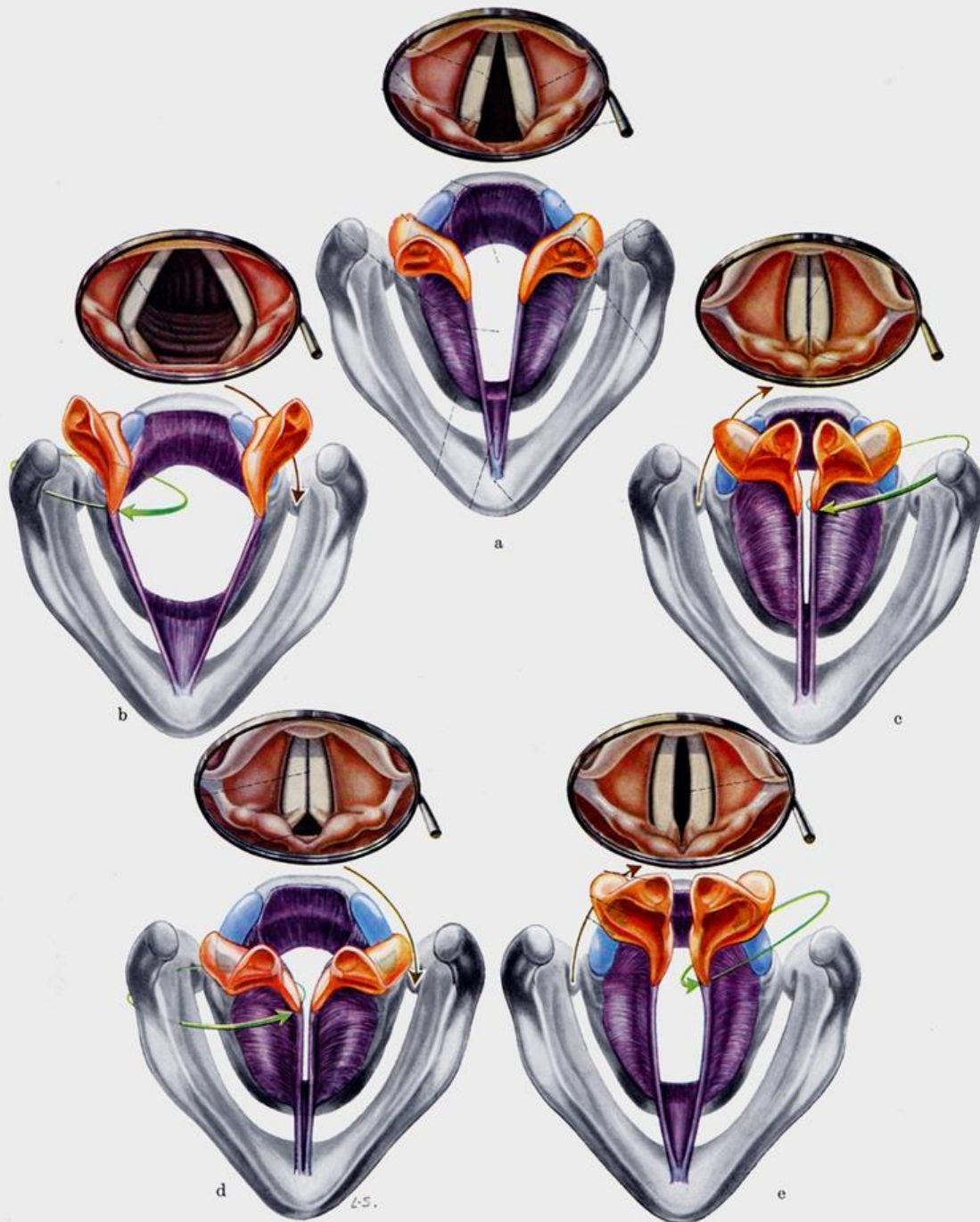


Kiss

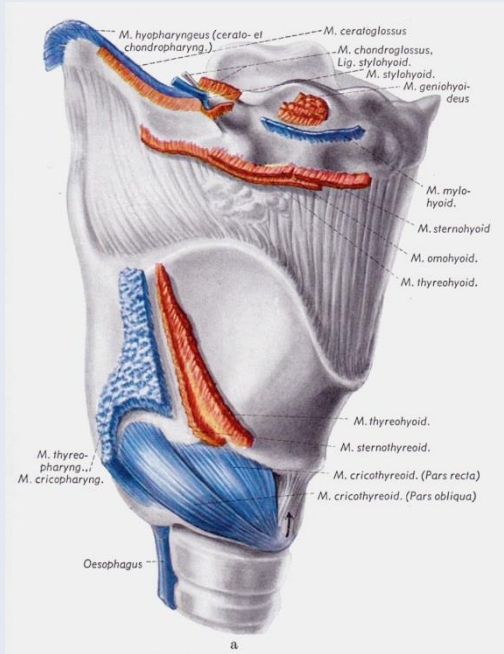


Pernkopf

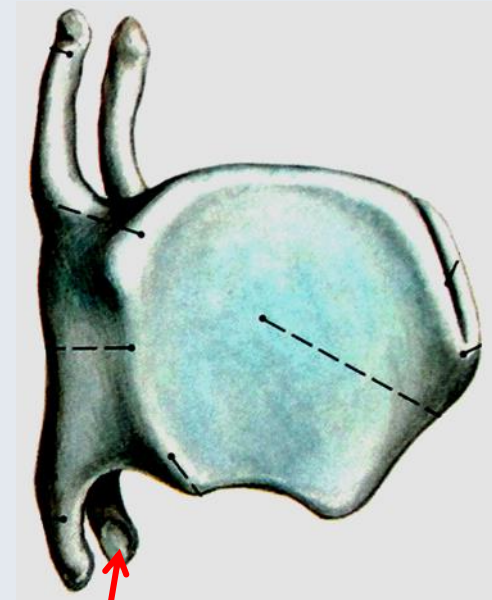




# Articulatio cricothyroidea



Pernkopf



Sobotta

→ közös haránttengely körül billen előre a pajzsporc és feszül meg ezáltal a hangszalag:

→ a hangszalagok durva beállítása

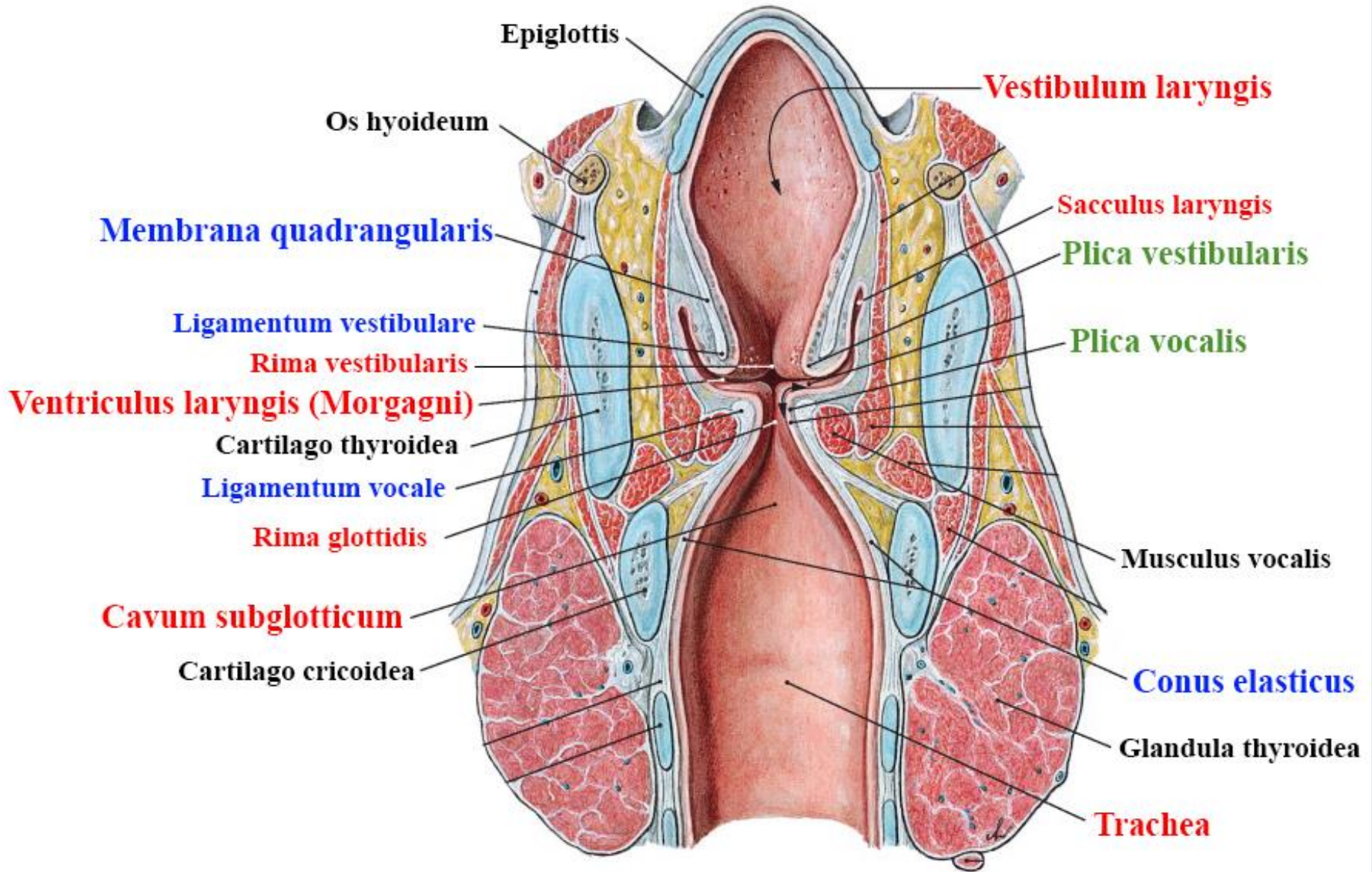
izom: m. cricothyroideus (pars obliqua et pars recta )

(*ligg. ceratocricoidea a tokon belül*)



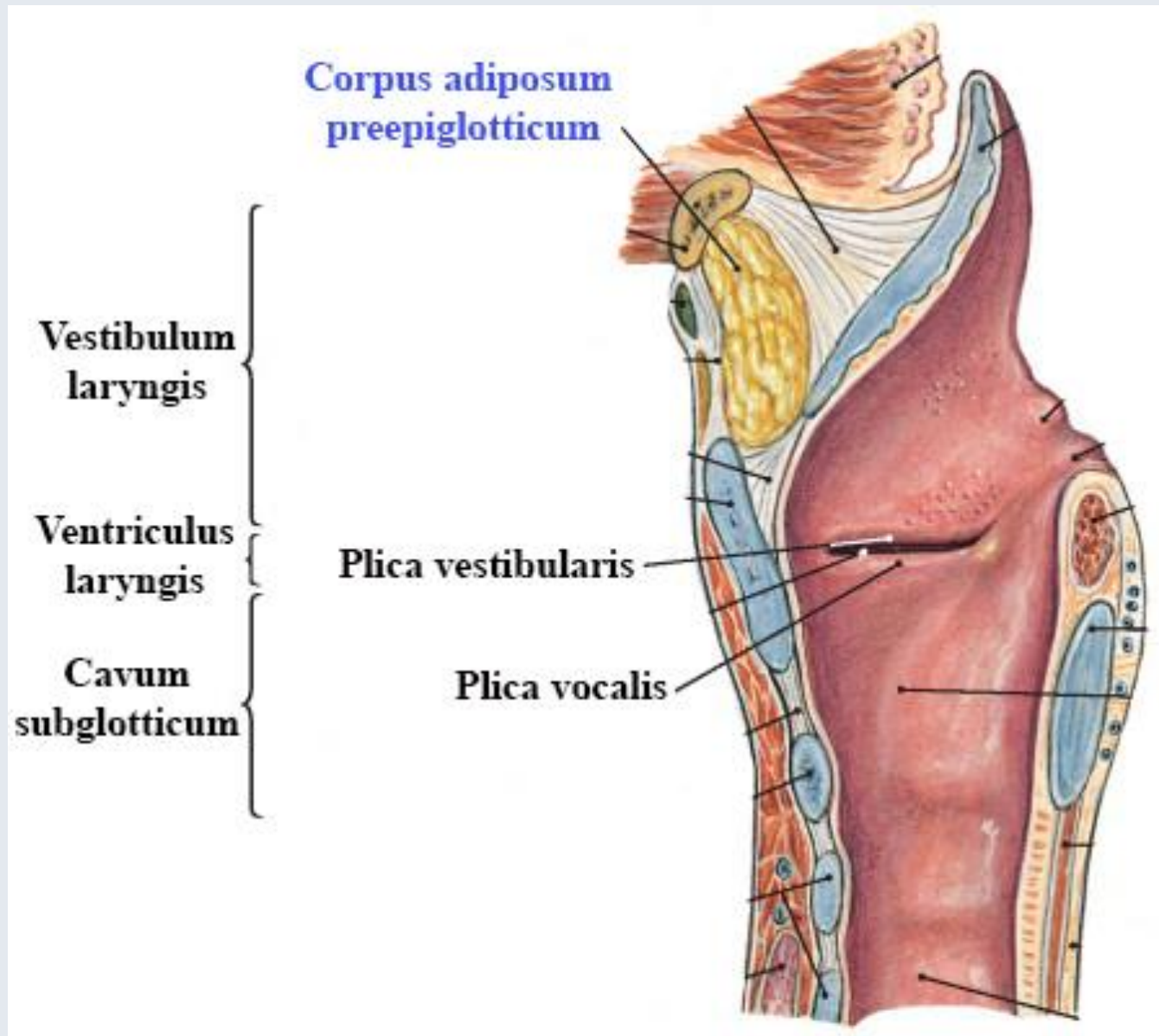


# A gége ürege (lumene)





# A gége ürege (lumene)



# Membrana fibroelastica laryngis

Corpus adiposum  
preepiglotticum

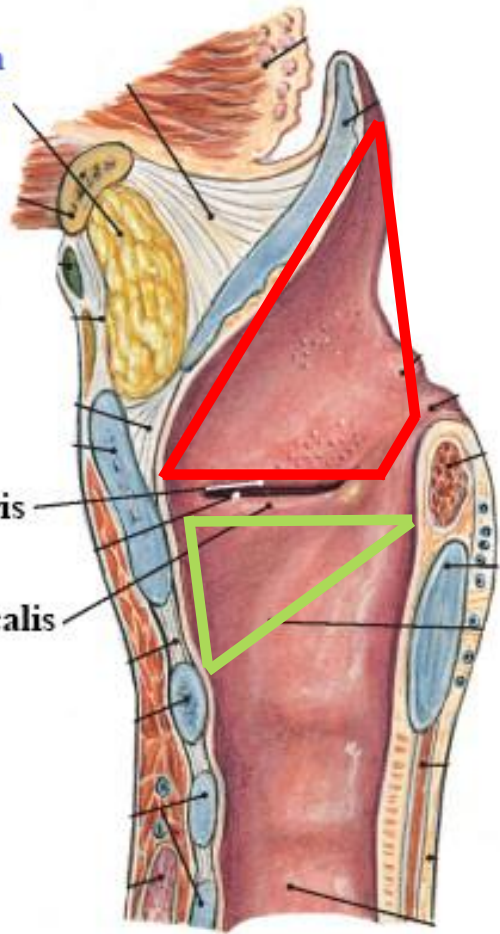
Vestibulum  
laryngis

Ventriculus  
laryngis

Cavum  
subglotticum

Plica vestibularis

Plica vocalis



Membrana quadrangularis:

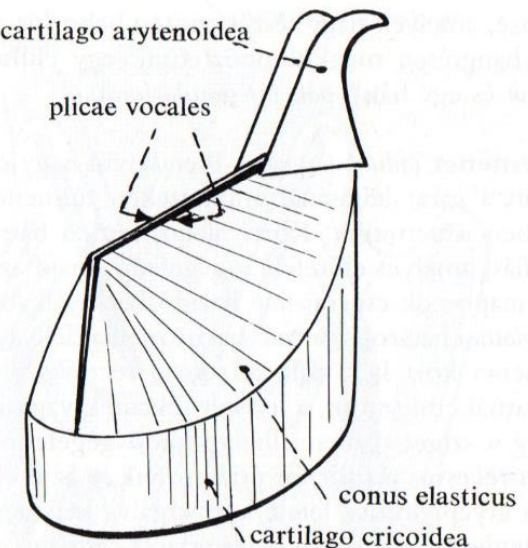
- epiglottis széle
- ligamentum vestibulare
- kannaporc elülső éle
- plica aryepiglottica

Sobotta

Szentágothai-Réthy

cartilago arytenoidea

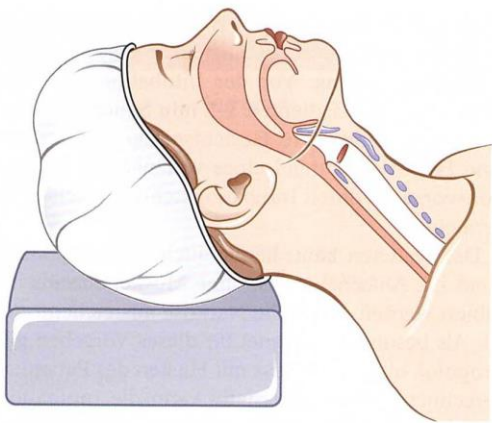
plicae vocales



Conus elasticus:

- pajzsporc középső alsó része – lig. conicum
- gyűrűporc felső szabad széle
- ligamentum vocale

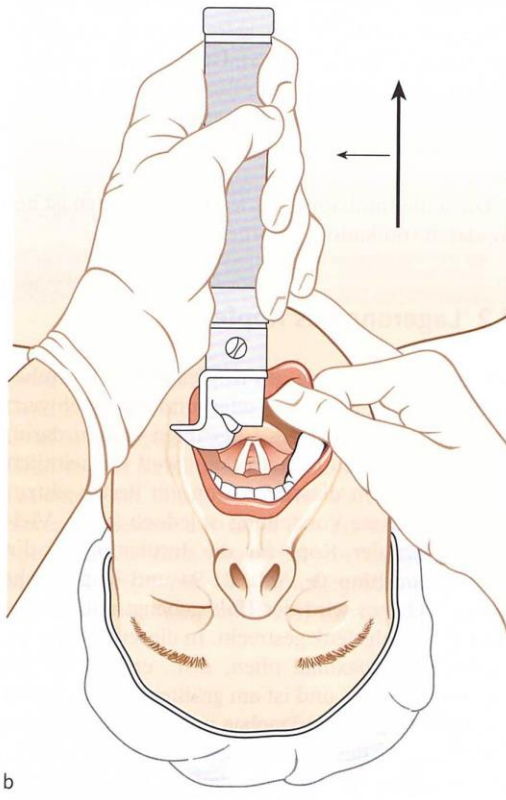
# Endotrachealis intubáció



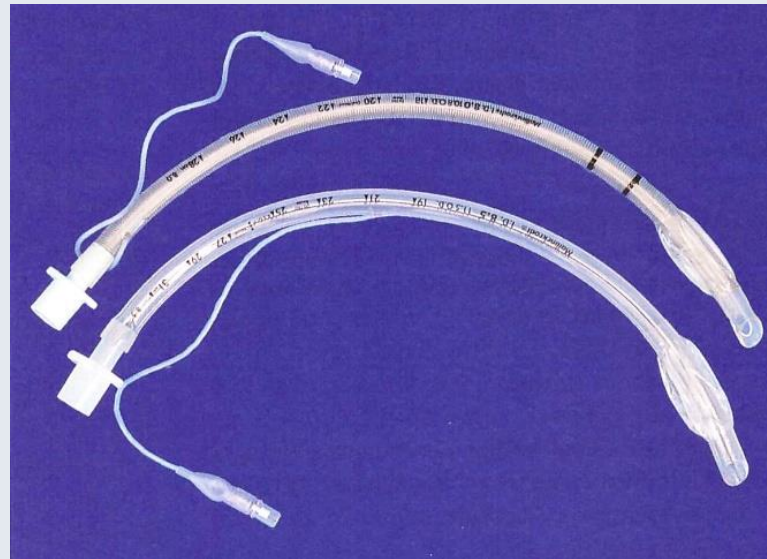
a



laringoszkóp



b



tubusok



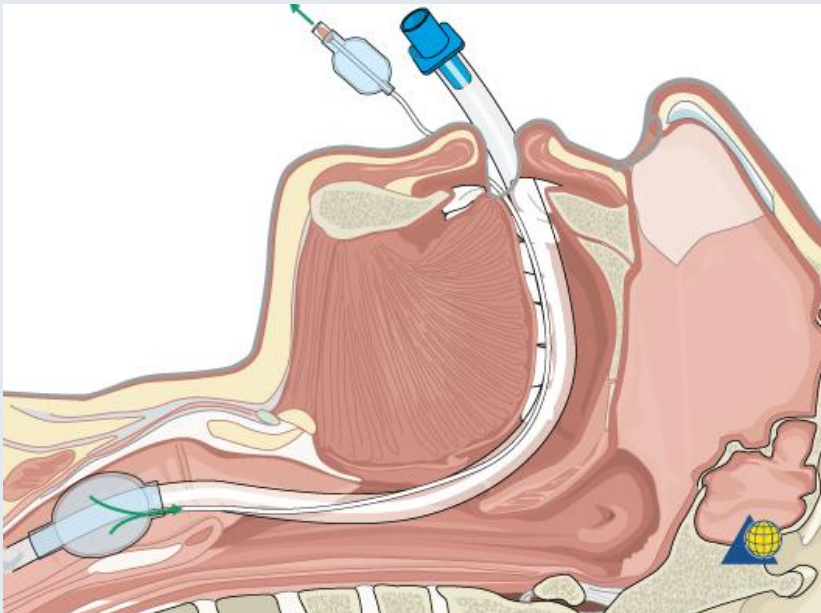
# Endotrachealis intubáció és laryngealis maszk



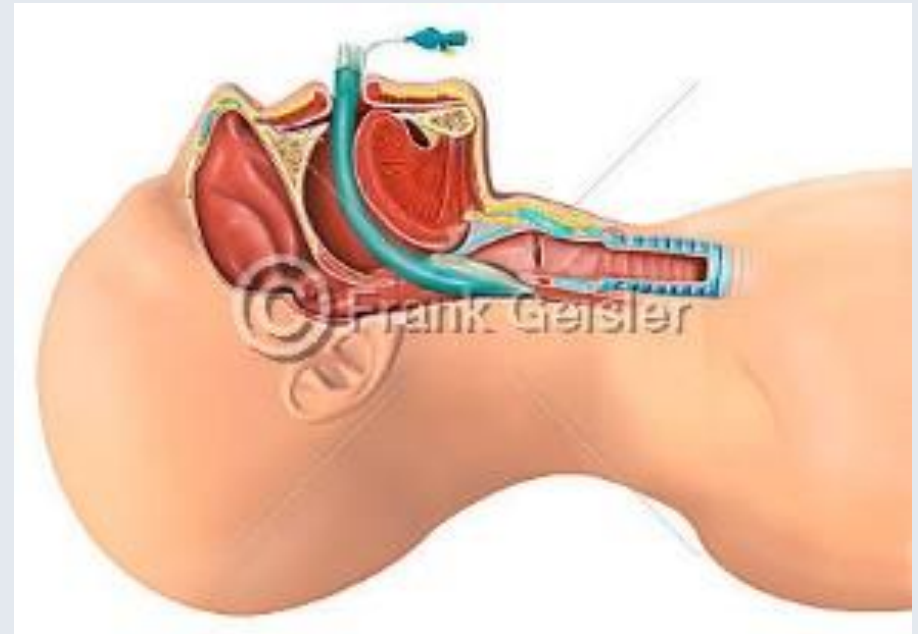
<https://www.youtube.com>



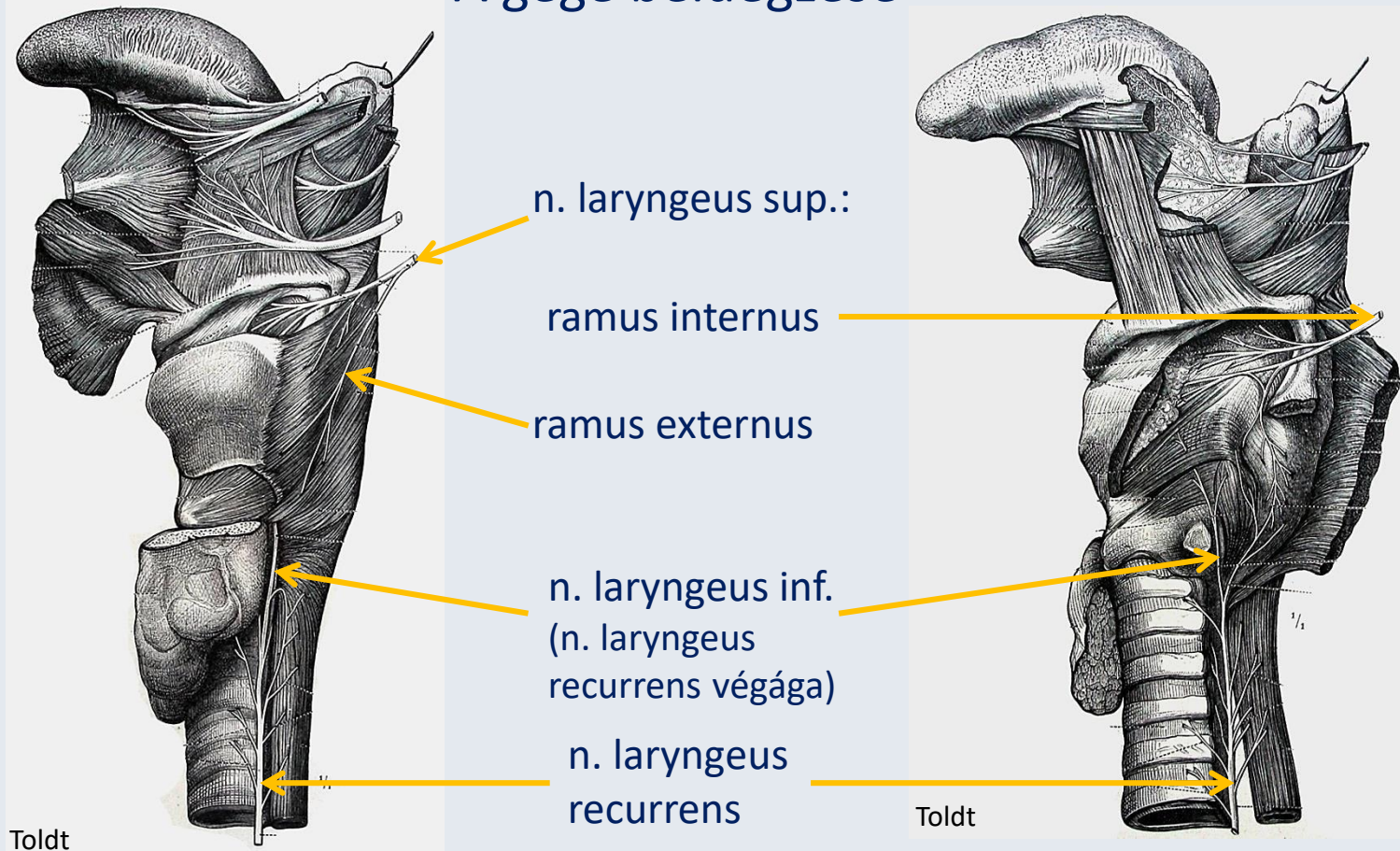
<https://www.medida-shop.de>



<https://www2.aofoundation.org>



## A gége beidegzése



### ***n. laryngeus sup. et recurrens a nervus vagusból (X.):***

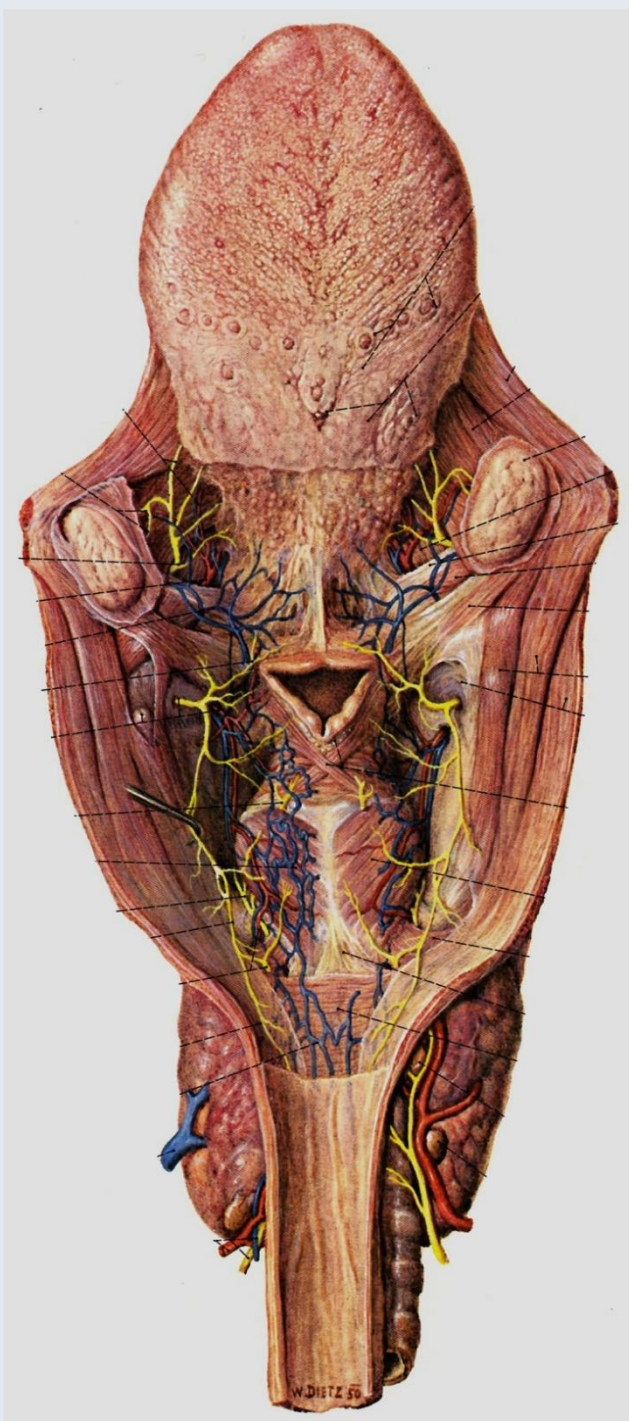
- n. laryngeus superior, *ramus externus*: m. cricothyroideus

*ramus internus*: az aditus és vestibulum laryngis nyálkahártyája,  
a plica vocalis hátsó része

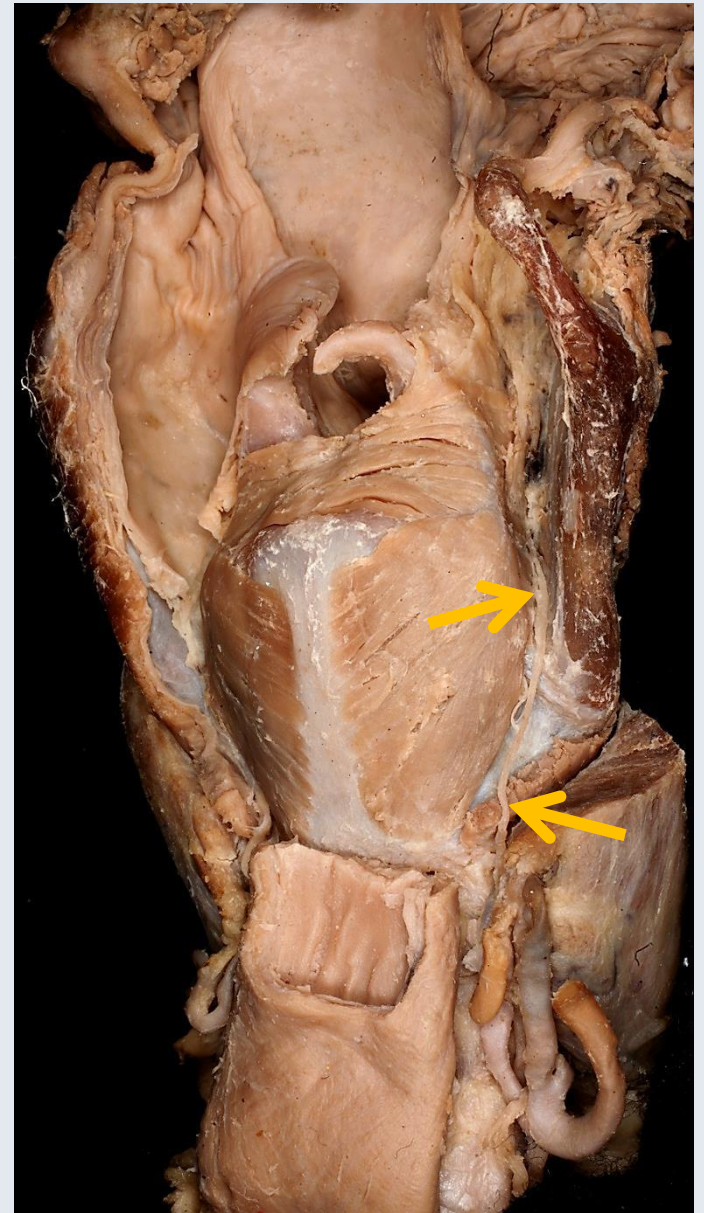
- n. laryngeus inferior, *ramus anterior et posterior*: gégeizmok a m. cricothyroideus kivételével;  
cavum infraglotticum nyálkahártyája

- n. accessorius: részt vesz a belső gégeizmok, főleg a m. arytenoideus beidegzésében





Pernkopf



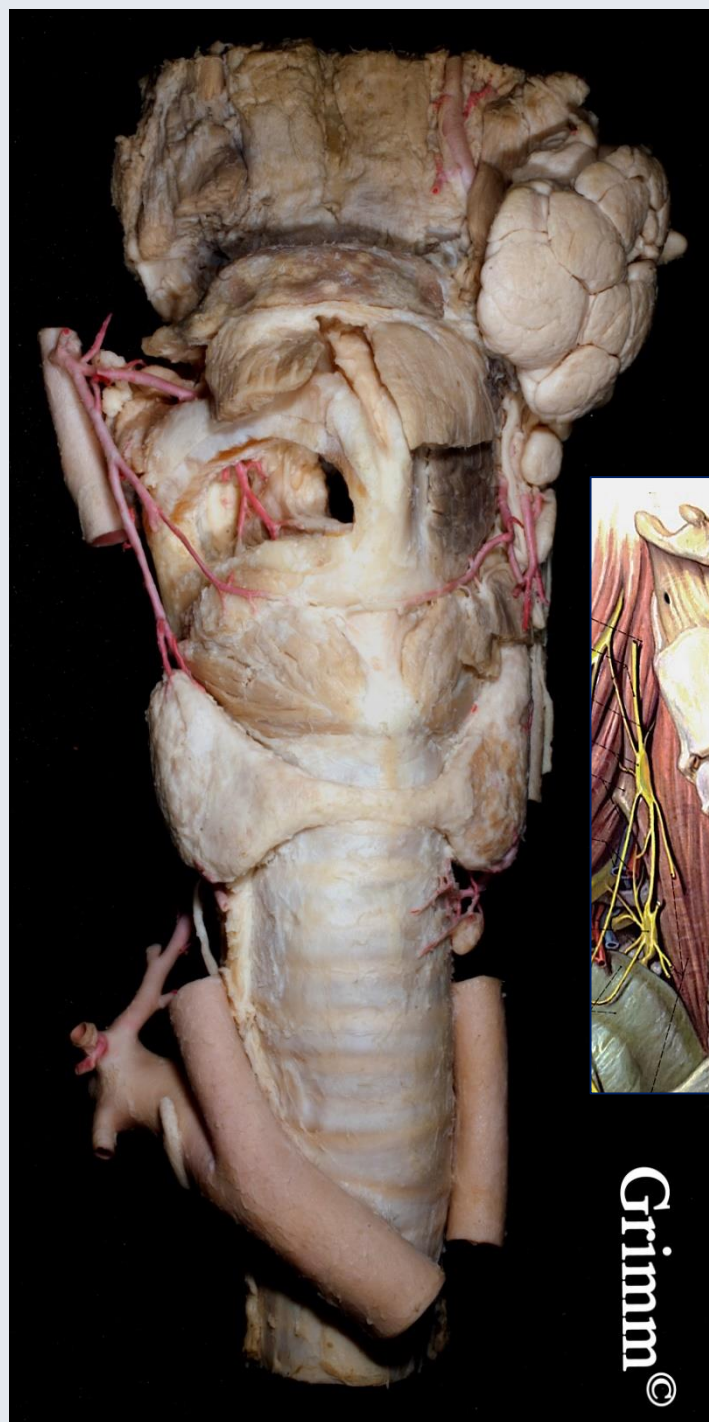
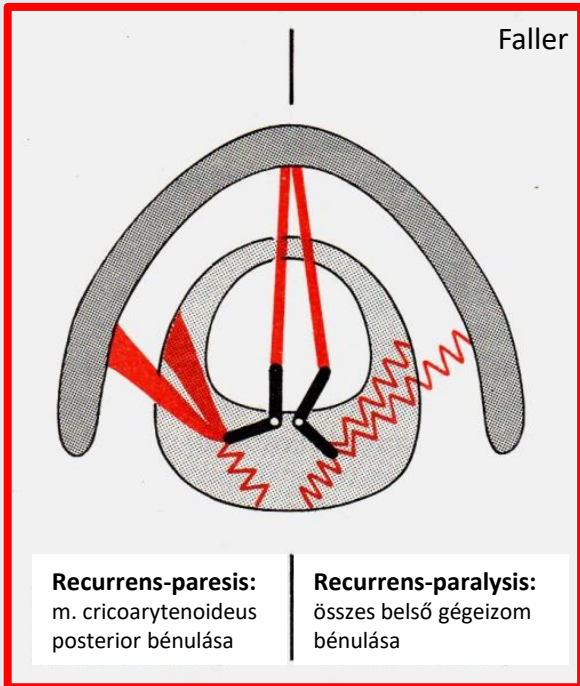
**Nervus laryngeus inferior**



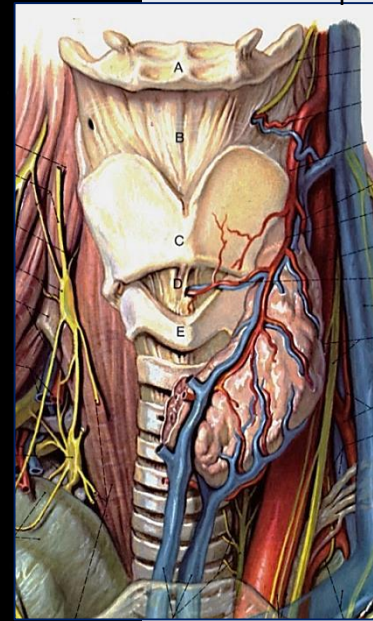
# Pajzsmirigyműtétek



<https://www.androgyn.org>

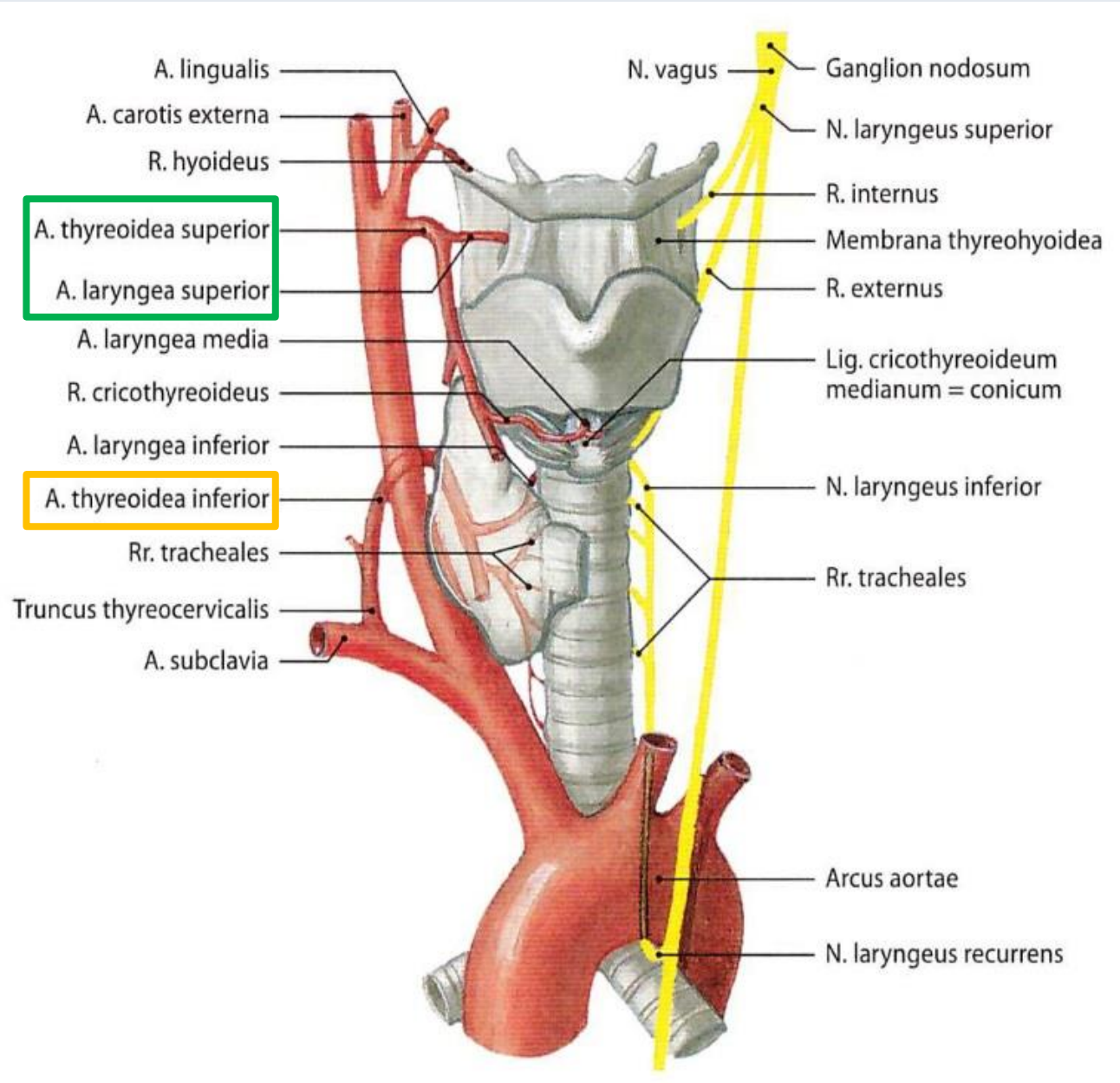


Pernkopf



Grimm ©

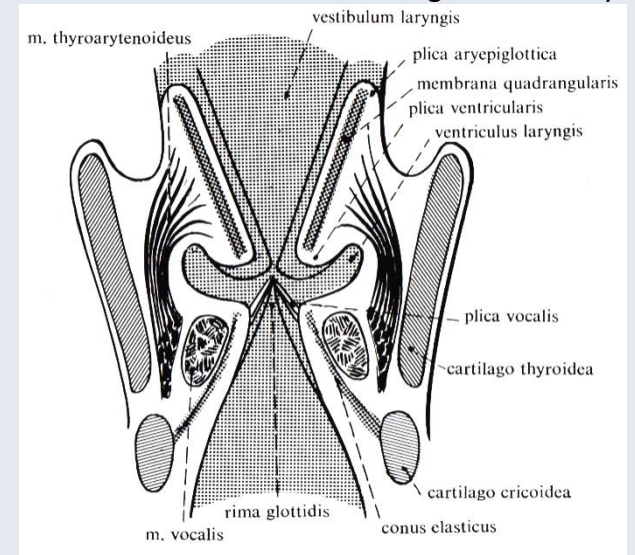
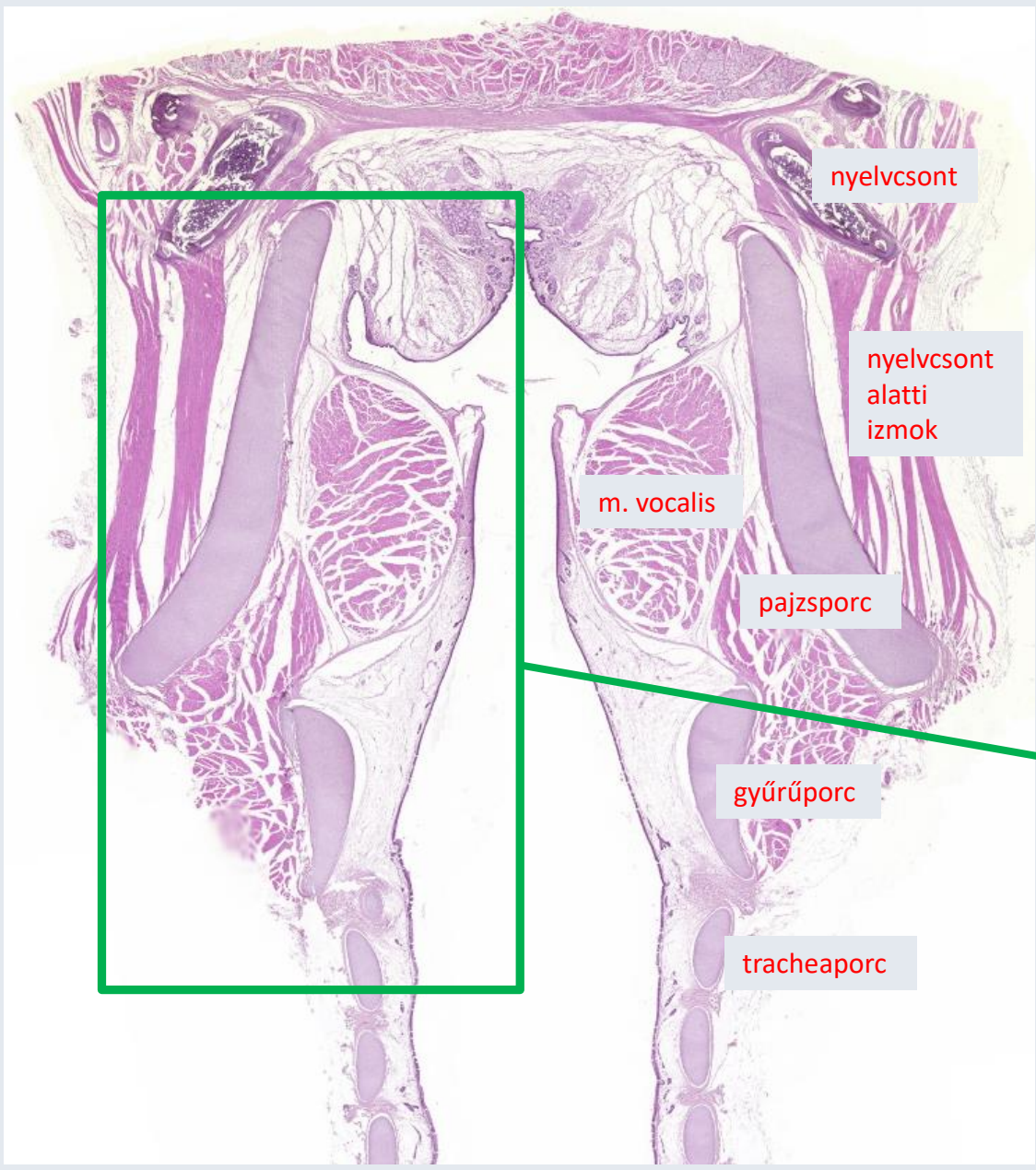
# A gége vérellátása





# A gége nyálkahártyája (tunica mucosa respiratoria)

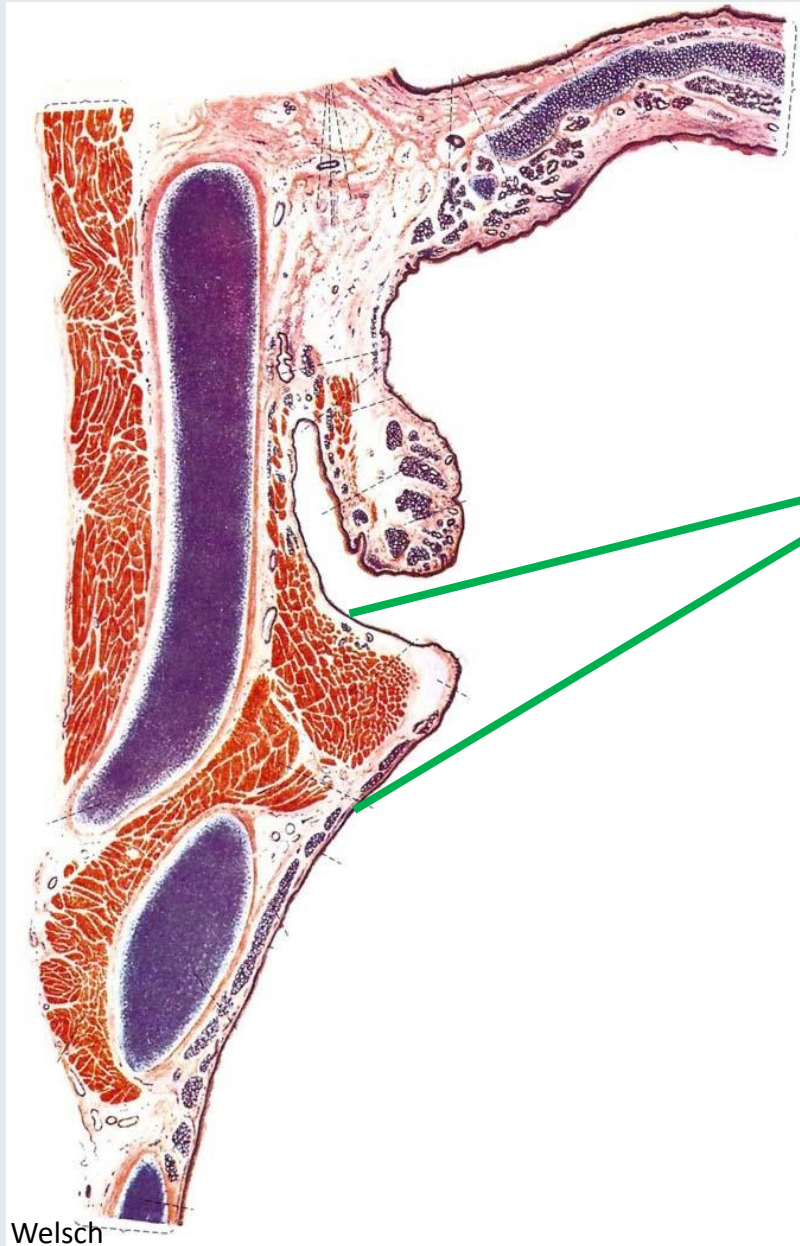
Szentágotthai-Réthelyi



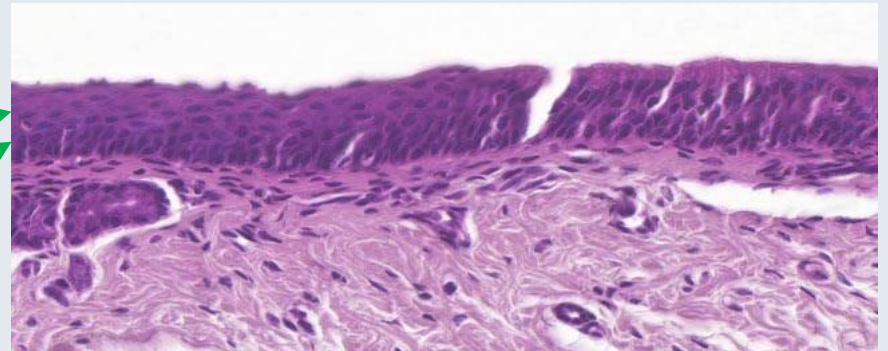
Welsch



# A gége nyálkahártyájának fedőhámja (epithelium mucosae)



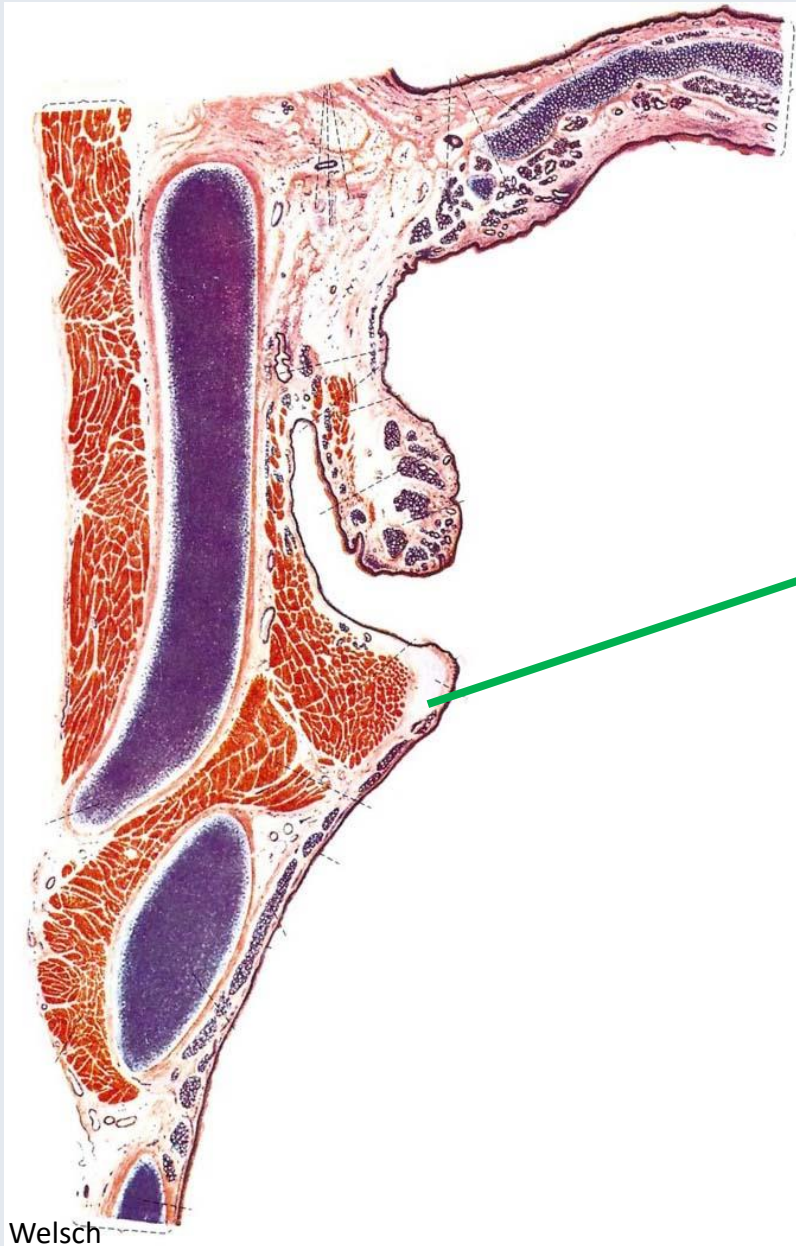
**egyrétegű többmagsoros csillós hengerhám**  
→ a gége nyálkahártyájának döntő részét borítja



átmenet jól megfigyelhető

**többrétegű el nem szarusodó laphám**  
→ a plica vocalist borítja  
(bizonyos hatásokra, pl. dohányzás elszarusodhat)

# A subepithelialis kötőszövet (lamina propria mucosae)



***laza rostos kötőszövet***

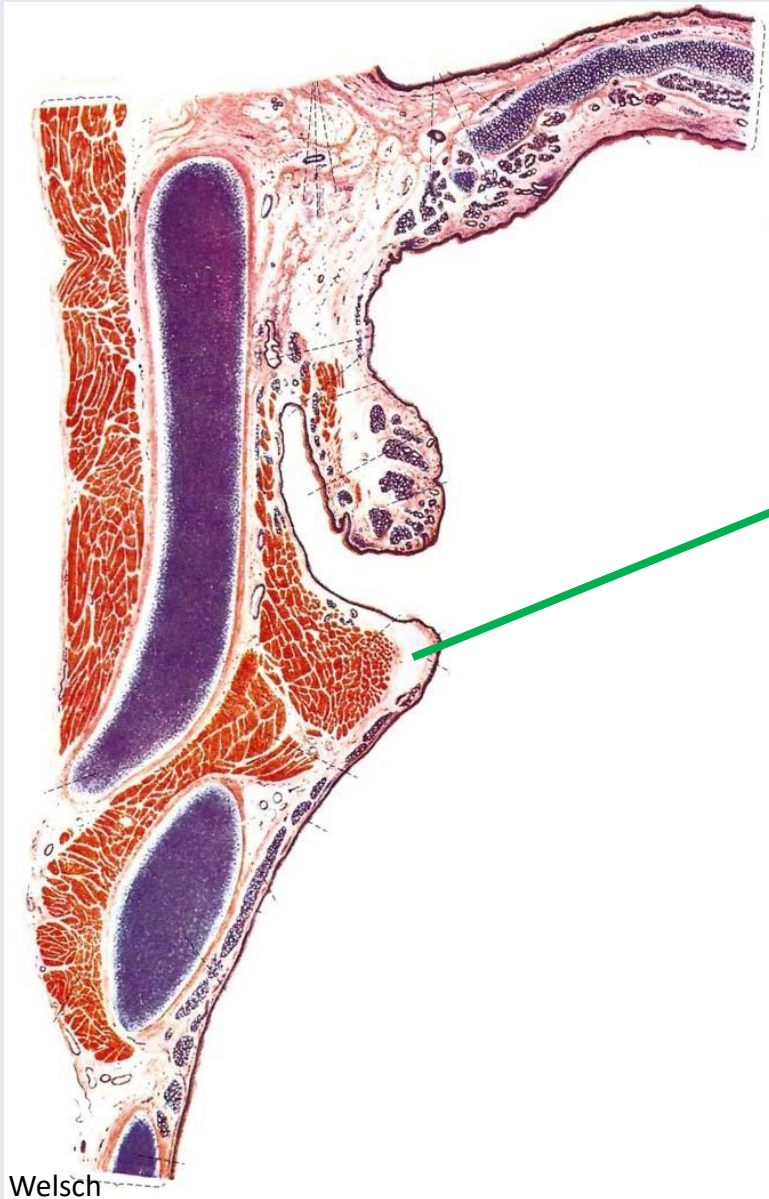
→ a plica vocalis esetében a leginkább fellazult réteg: **Reinke-tér**

(Klinikum: Reinke-ödéma)



# Tunica fibro-musculo-cartilaginea

## A subepithelialis kötőszövet (membrana fibroelastica)

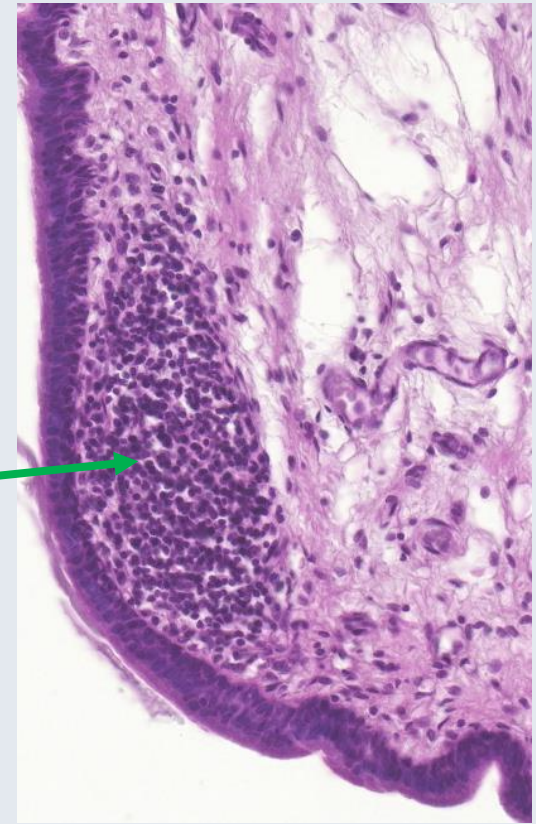
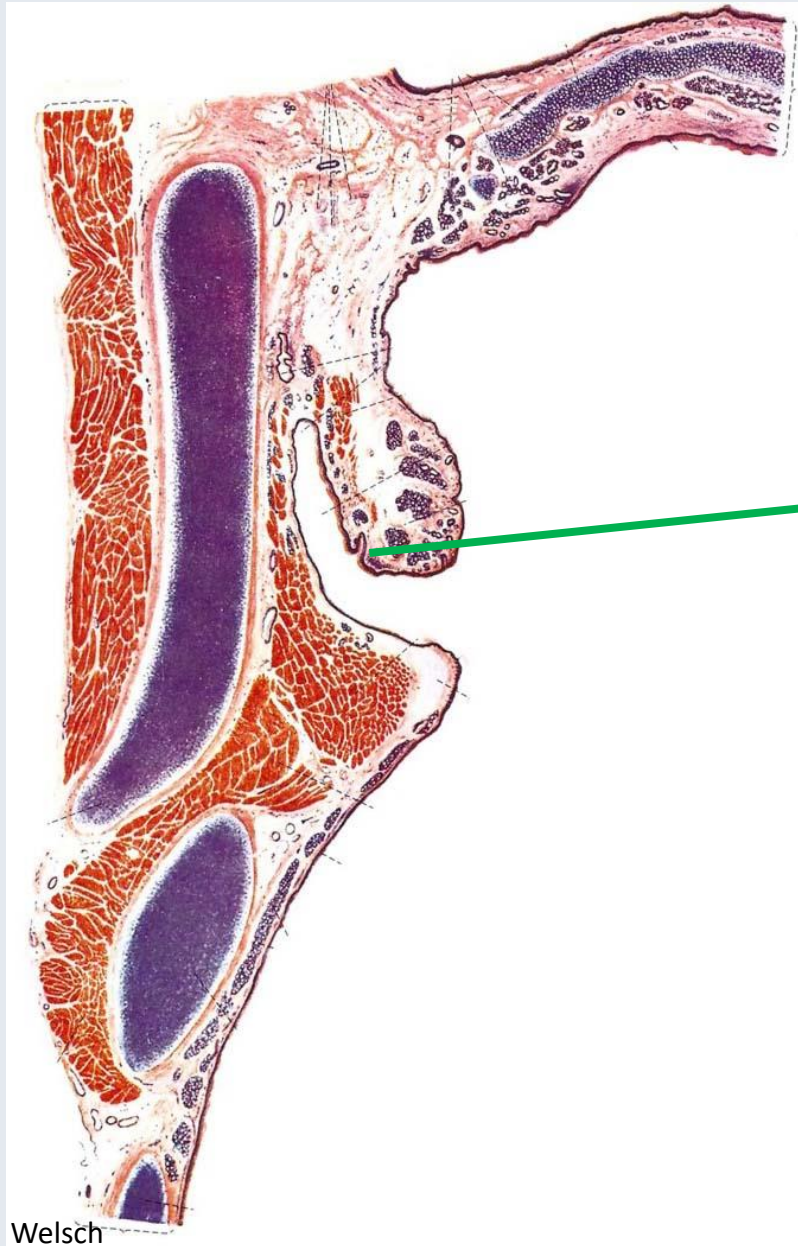


***rendezetlen tömötrostos kötőszövet  
elasztikus rostokkal***

→ membrana quadrangularis,  
conus elasticus



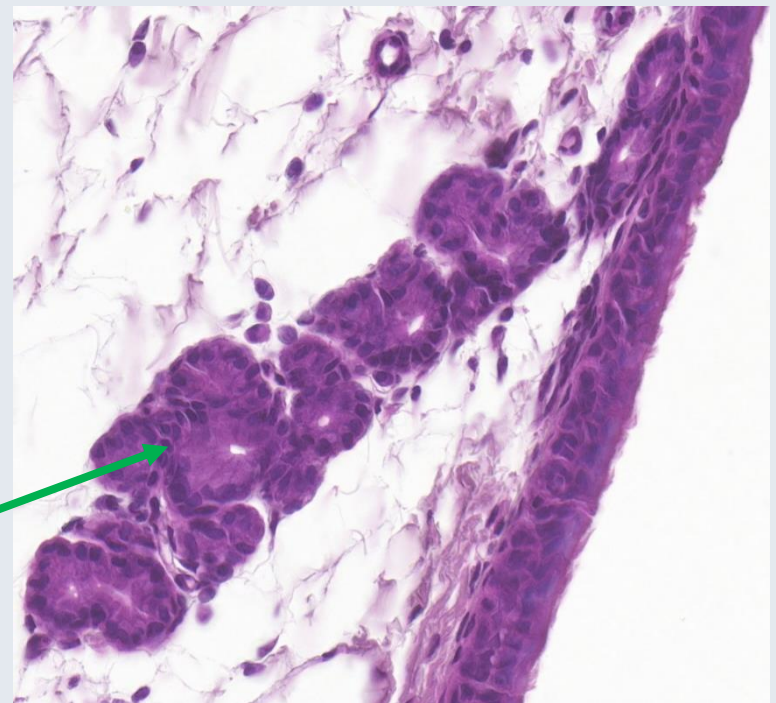
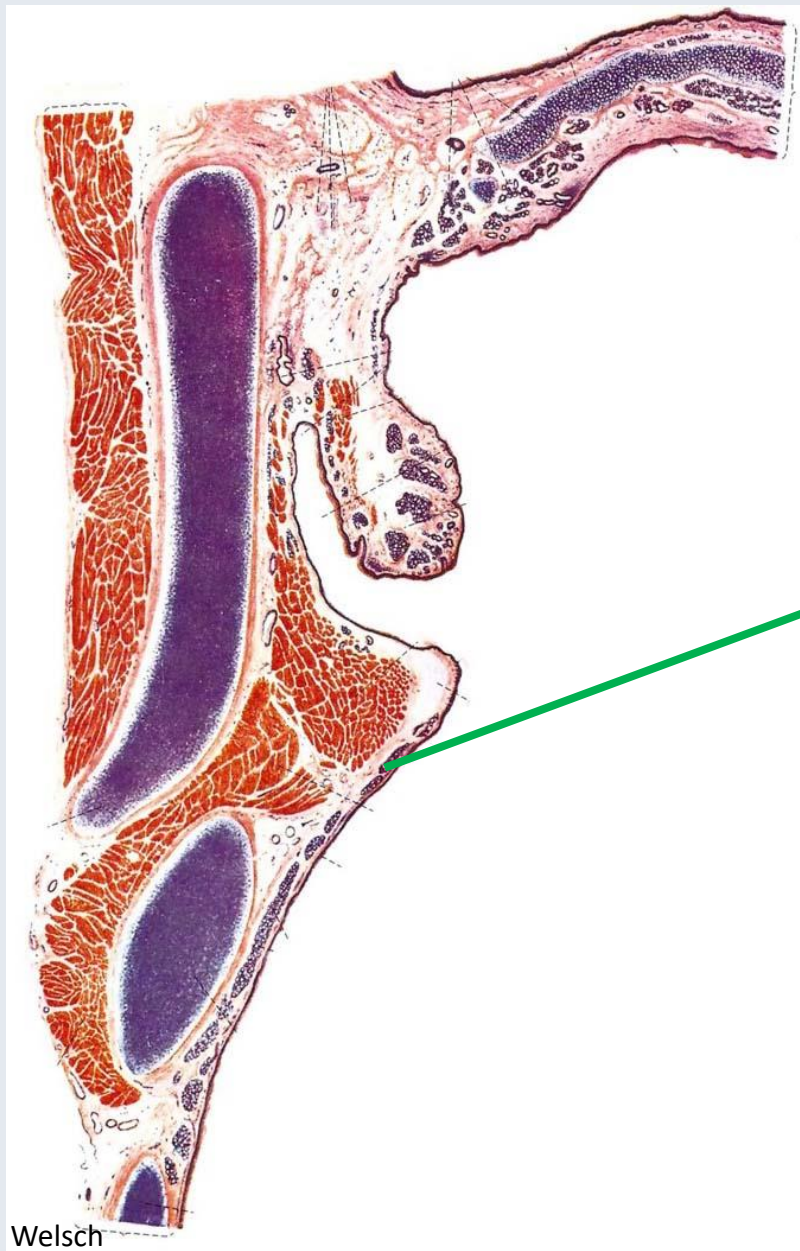
# Lymphaticus szövet a nyálkahártyában



## ***nyiroktüszők***

→ főként az epiglottis, ventriculus laryngis és a plica vestibularis nyálkahártyájában

# Mirigyek előfordulása a nyálkahártyában



***seromucosus mirigyek***

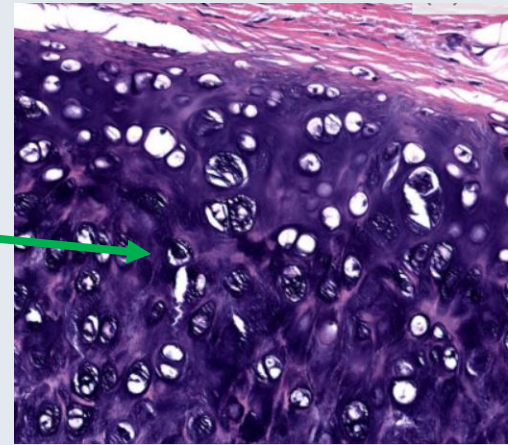
→ a lamina propria mucosae-ban

→ a plica vocalis területén

**nem** fordulnak elő

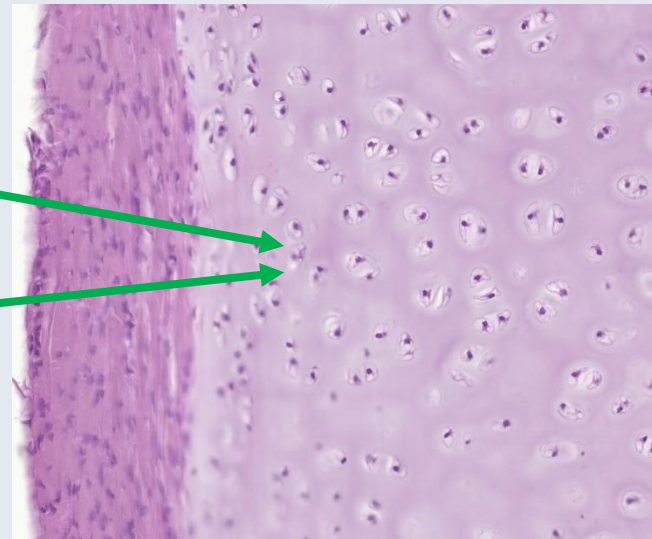


# A gége porcai



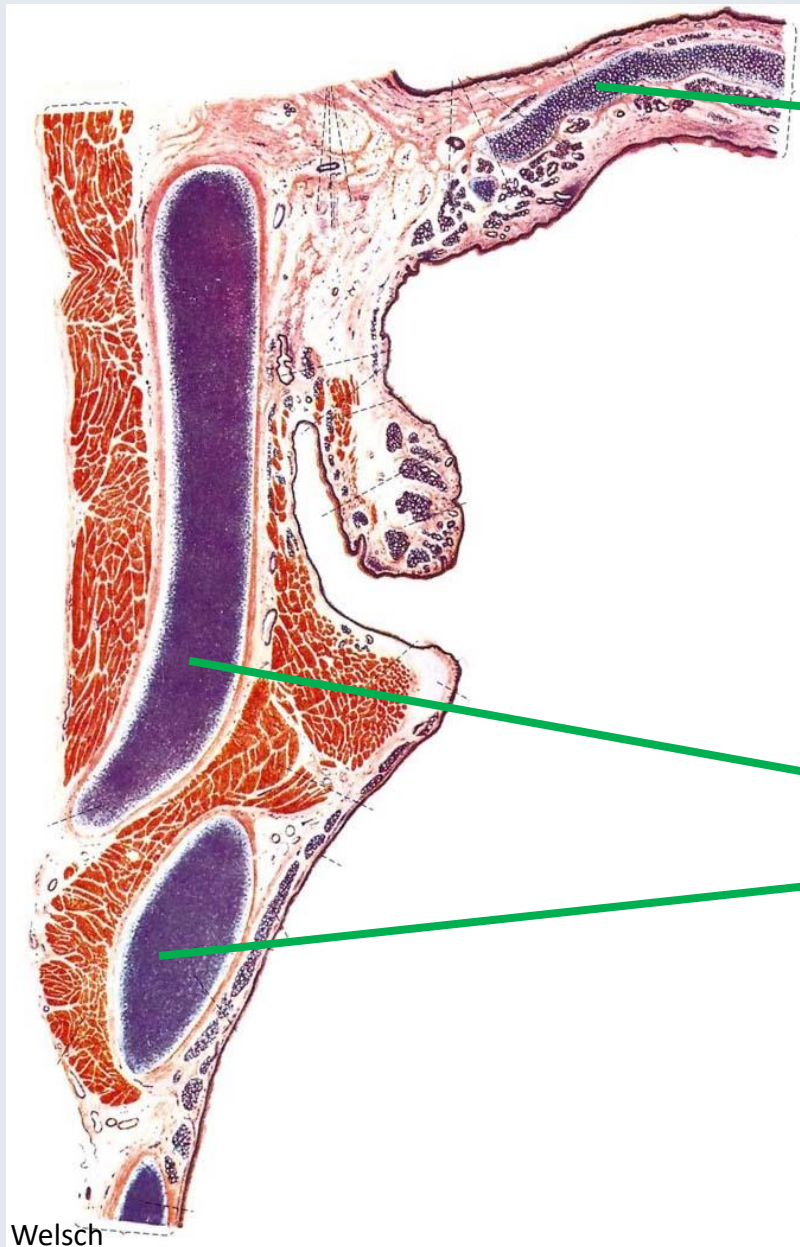
***rugalmas porc***

→ epiglottis, a kannaporc processus vocalis, Santorini- és Wrisberg-porcok



***hyalinporc***

→ pajzsporc, gyűrűporc, kannaporc

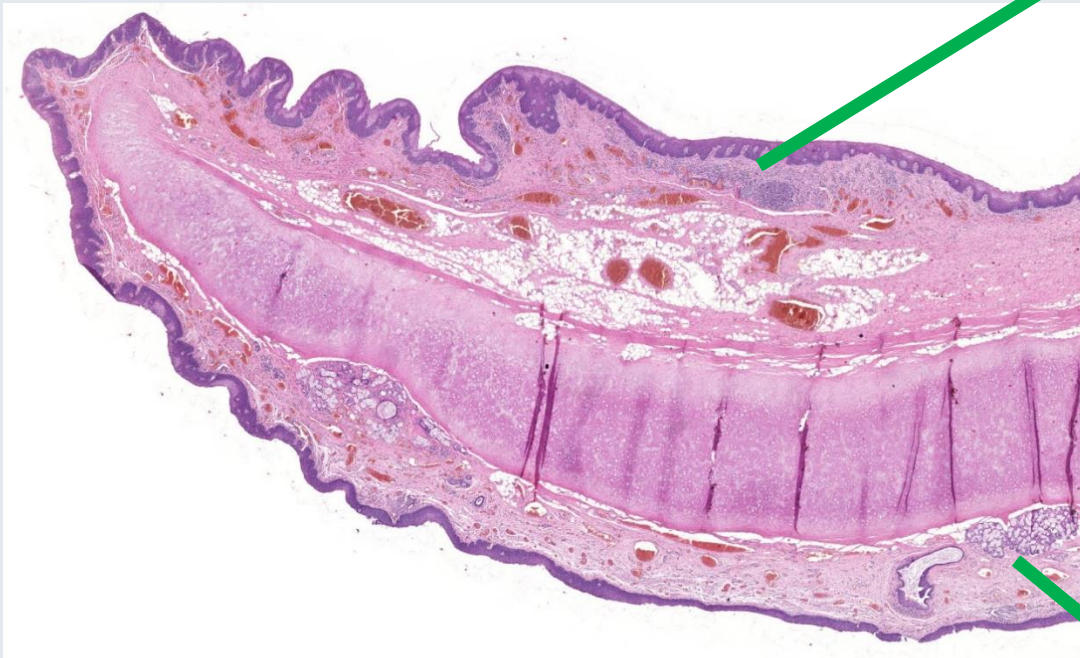
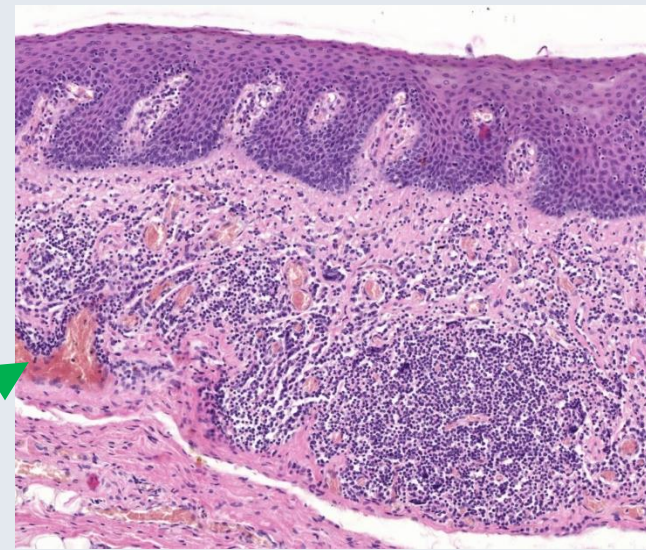




# Az epiglottis

## pharyngealis felszín:

többrétegű el nem szarusodó laphám  
+ kötőszövetes papillák



## laryngealis felszín:

többrétegű el nem szarusodó laphám  
+ **nincsenek** kötőszövetes papillák  
+ kevert nyálmirigyek

