

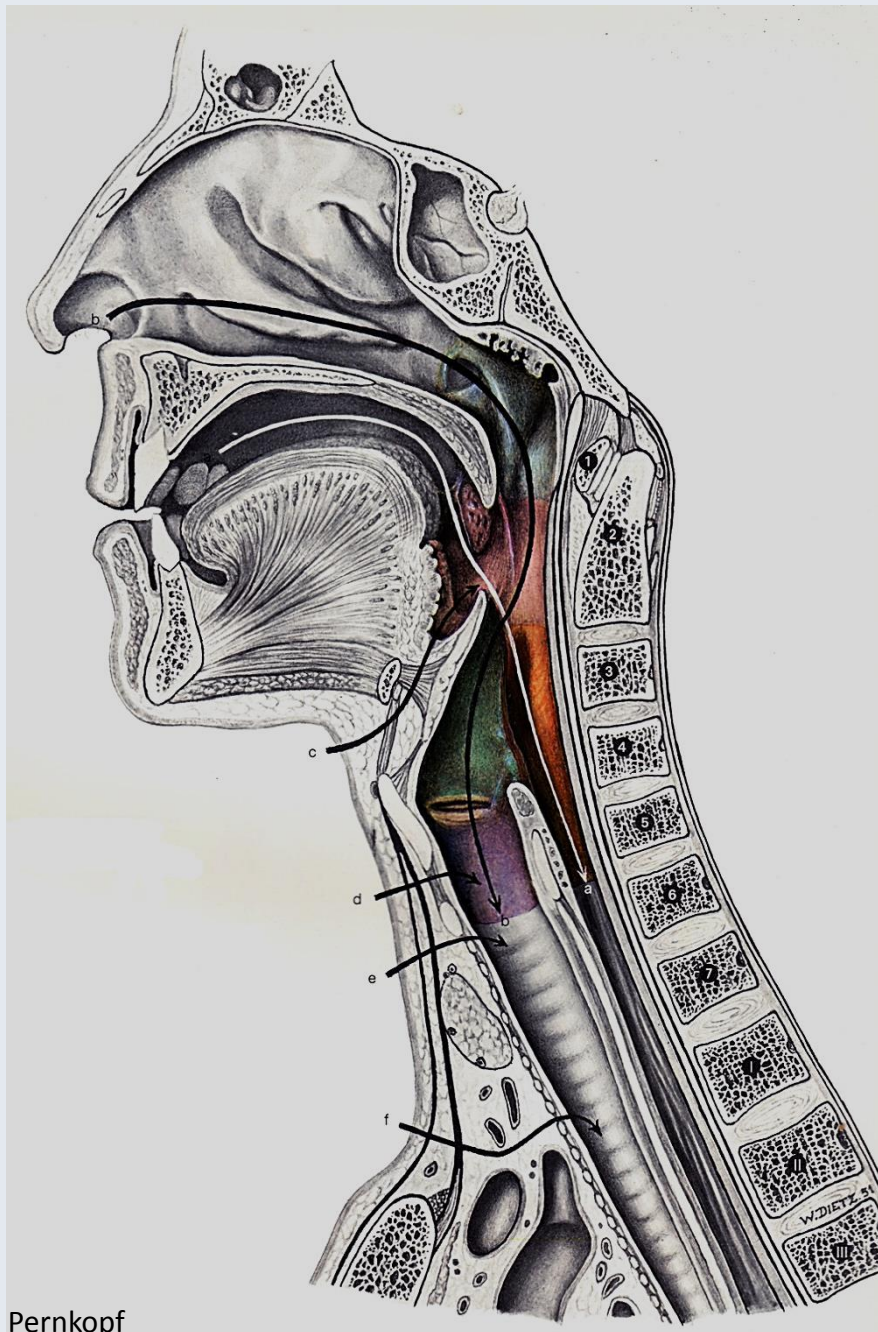
Larynx, Cartiliges, Joints, Muscles



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Anatomy, Histology and Embryology Institute

2018.



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Larynx:

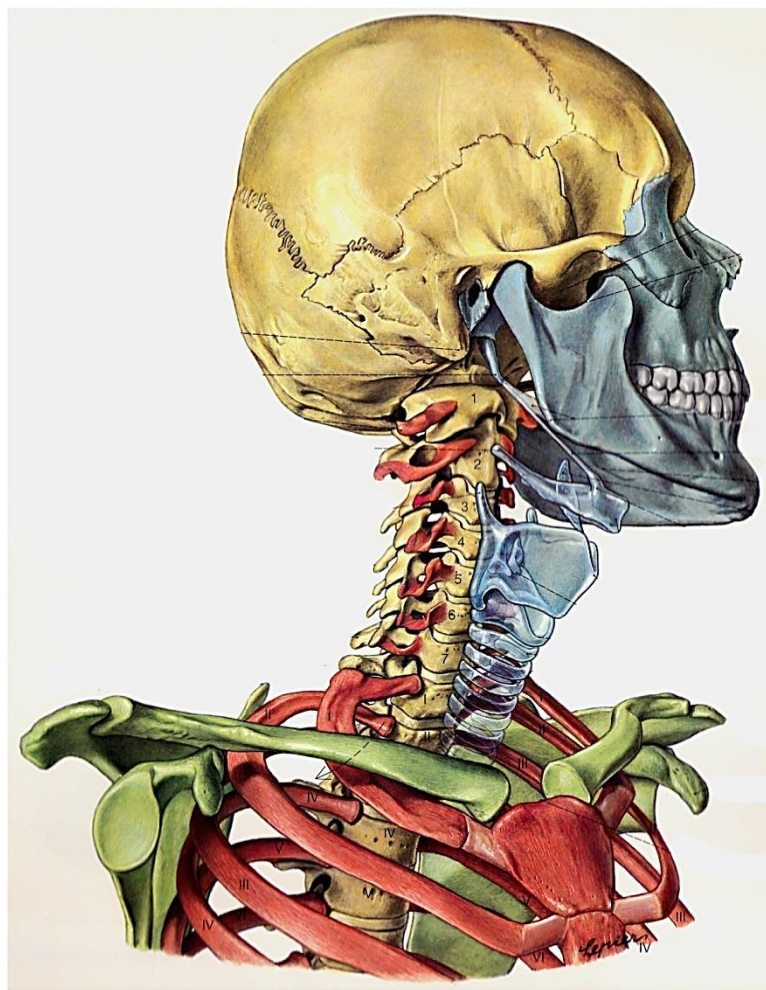
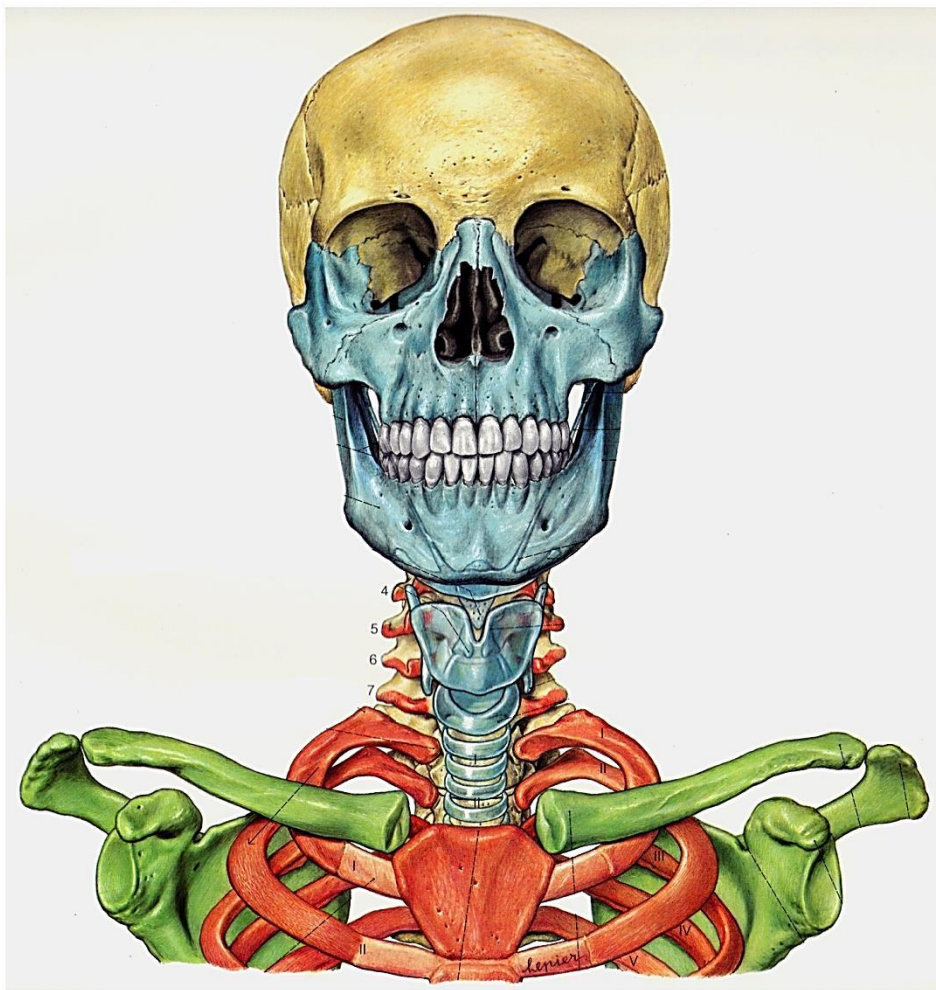
Separation of breathing and nutrition tract,
first section of the lower respiratory tract

- phonation
- breathing
- cough
- abdominal pressure

Diverse medical significance

e.g.:

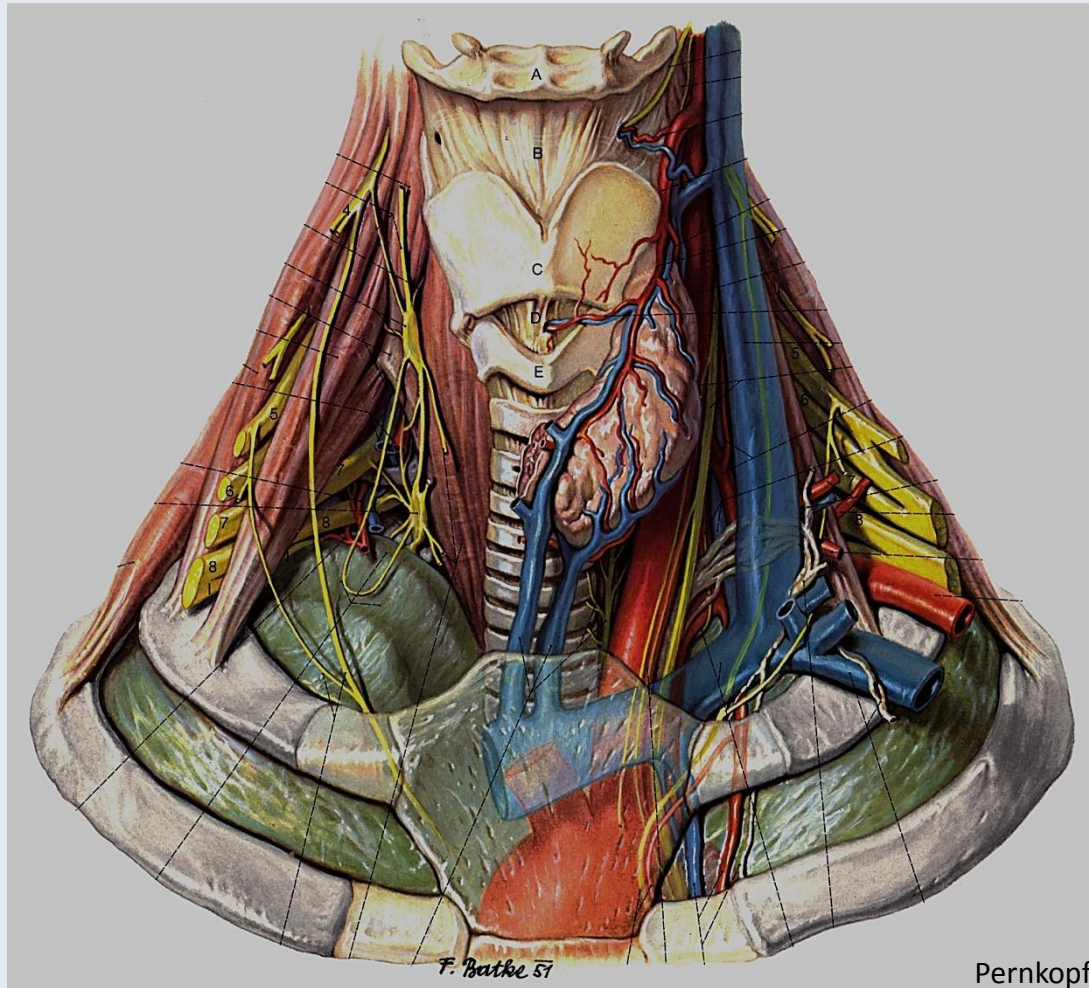
- loose submucosa (edema!)
- oncology
- ventilation of patients (coniotomy,
intubation etc.)



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The descent of the larynx:

- By newborns C3-4;
- By adults: Upper margin of the thyroid cartilage C4/5 transition , ring cartilage C6;
- By elderly: ring cartilage C7



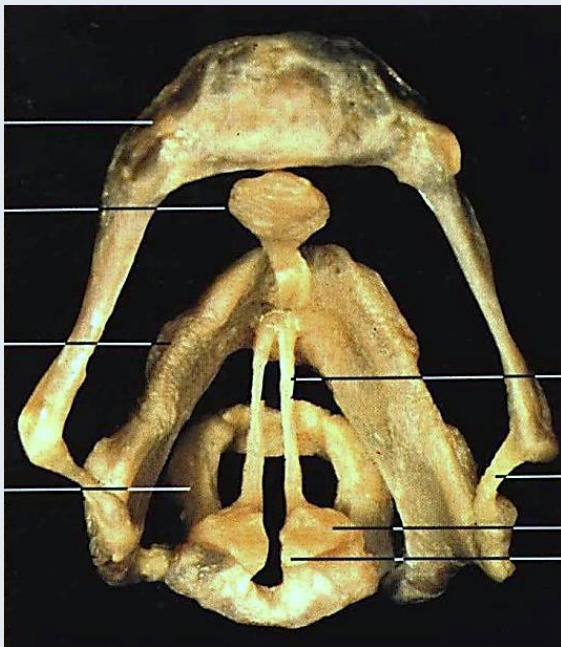
closely adjacent to the thyroid gland:

- common fascia, innervation and blood supply (see pharyngeal pouches)
- protect the **laryngeal nerves during thyroid surgery !!**

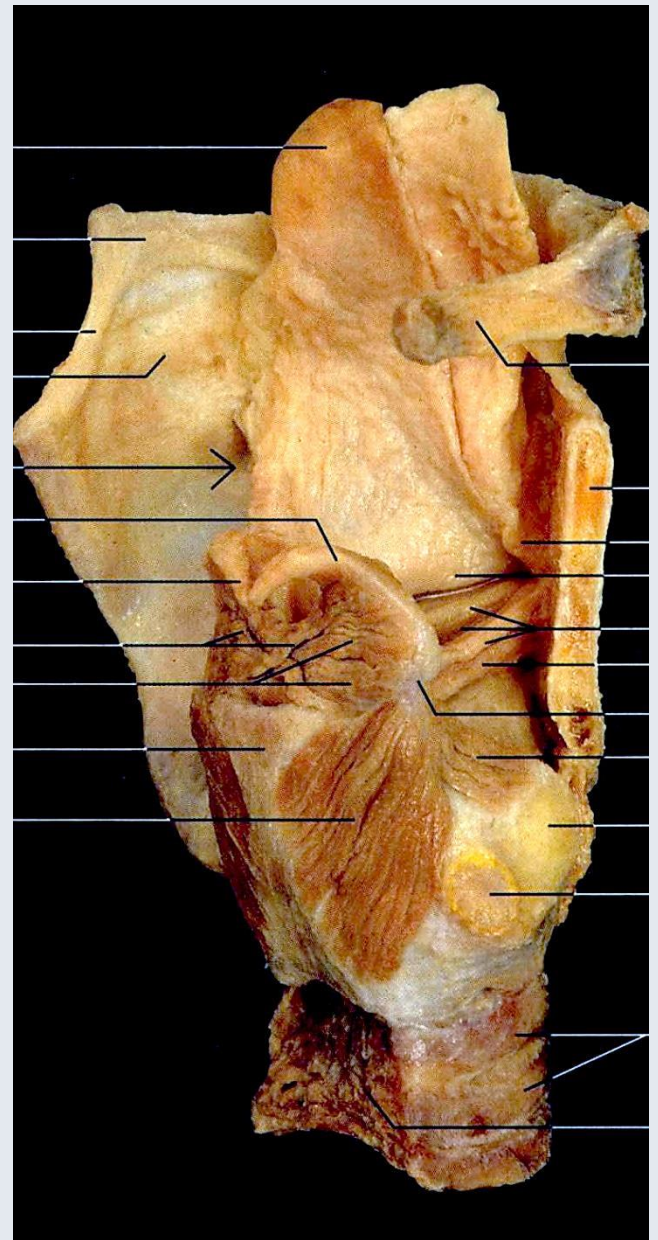
Parts:

- **Skeleton** (laryngeal cartilage)
- **Muscles**
- **Ligaments**
- Fibroelastic Membrane
- Mucosa
- Nerves, blood vessels and lymphatic vessels

} **Joints,
Movements**



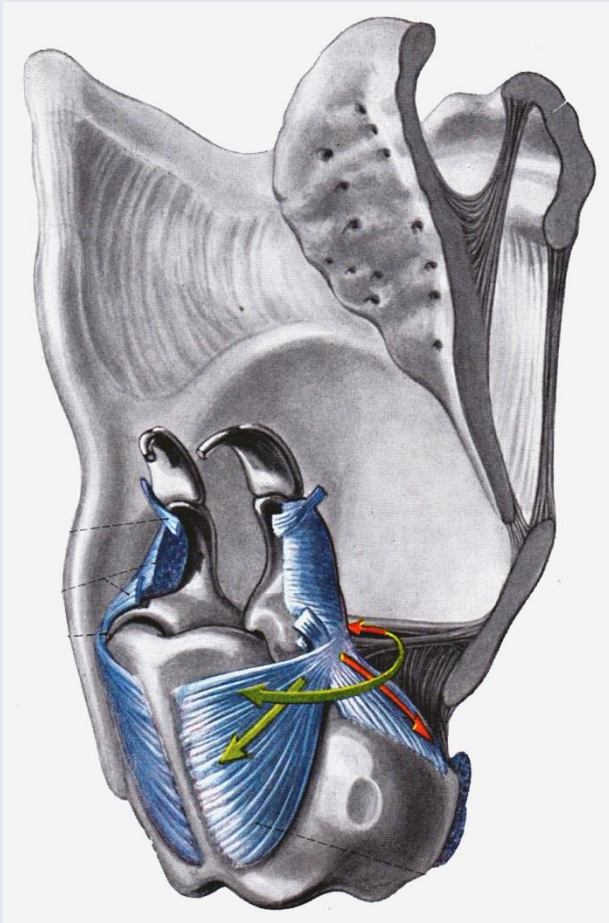
Yokochi



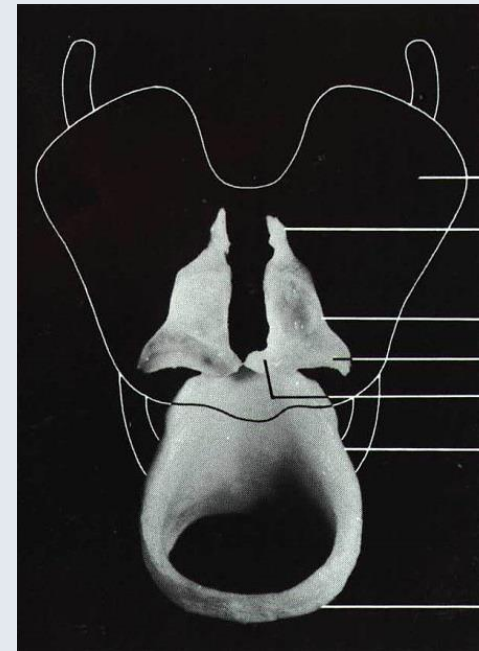
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Cartilages

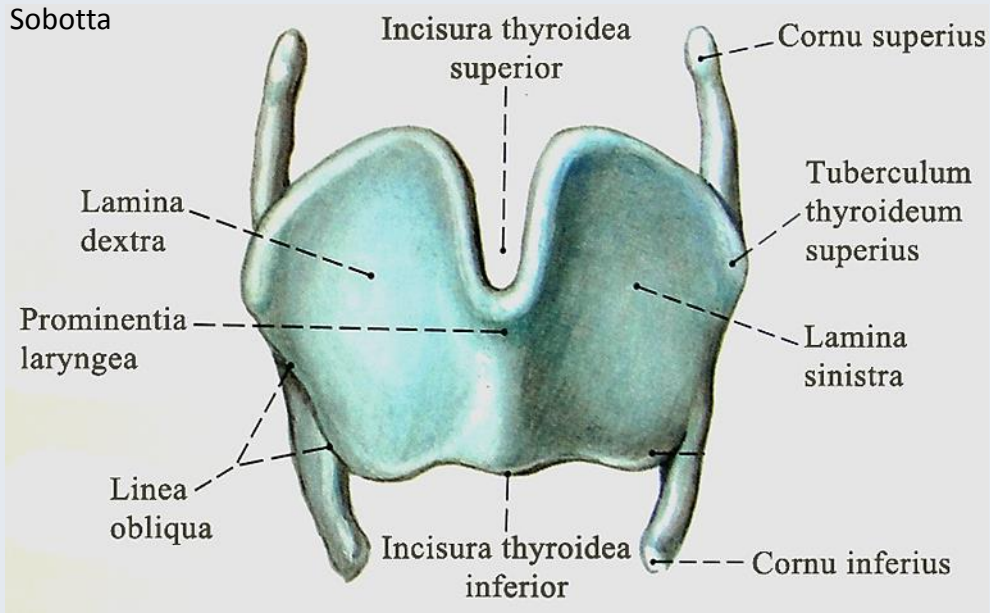
1. Thyroid cartilage = *Cartilago thyroidea*
2. Ring cartilage = *Cartilago cricoidea*
3. Epiglottis = *Cartilago epiglottica* bzw. *Epiglottis*
4. Arytenoid cartilage = *Cartilago aryt(a)enoidea*
5. *Cartilago corniculata* (Santorini)
6. *Cartilago cunieforme* (Wrisberg)
7. *Cartilago tritricea*



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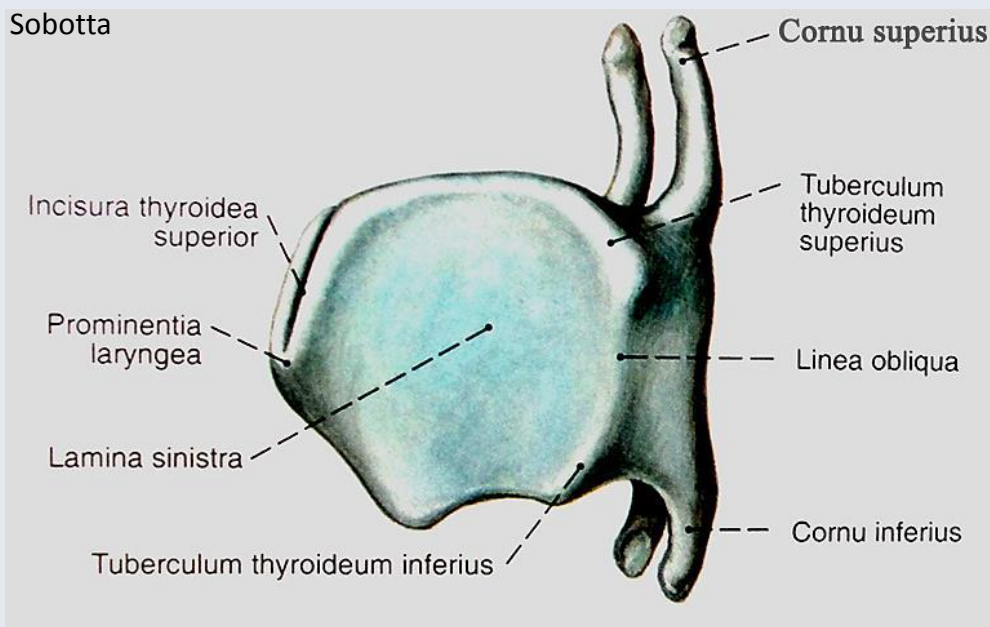
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Thyroid cartilage (Cartilago thyroidea)



Ansicht: posterolateral rechts



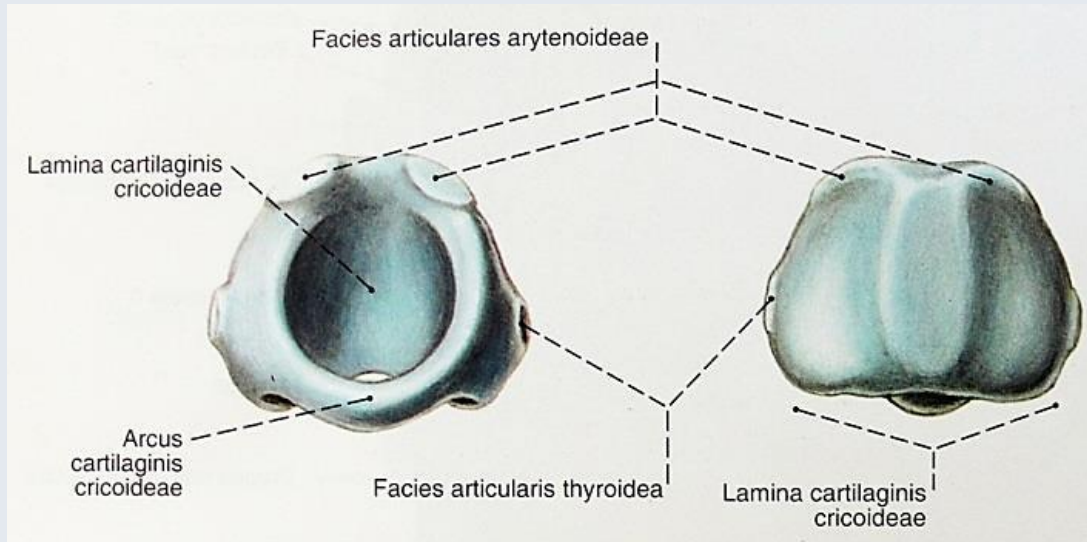
Prominentia laryngea =
Adams apple (Pomum Adami)

Incisura thyroidea superior:
Important orientation: level C4/5!



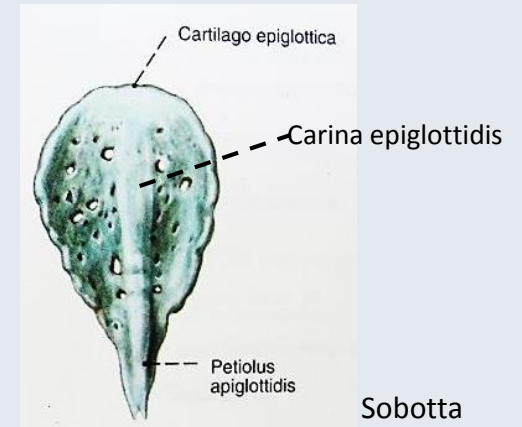
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Ring cartilage (Cartilago cricoidea)



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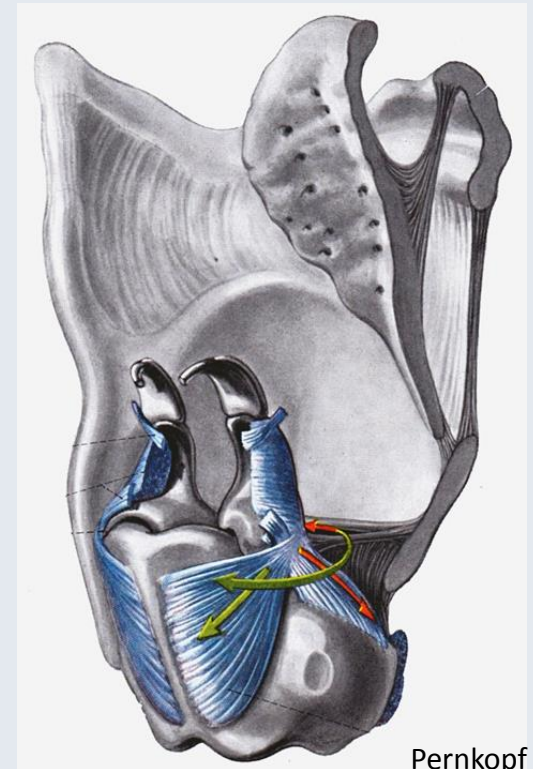
Epiglottis



Sobotta



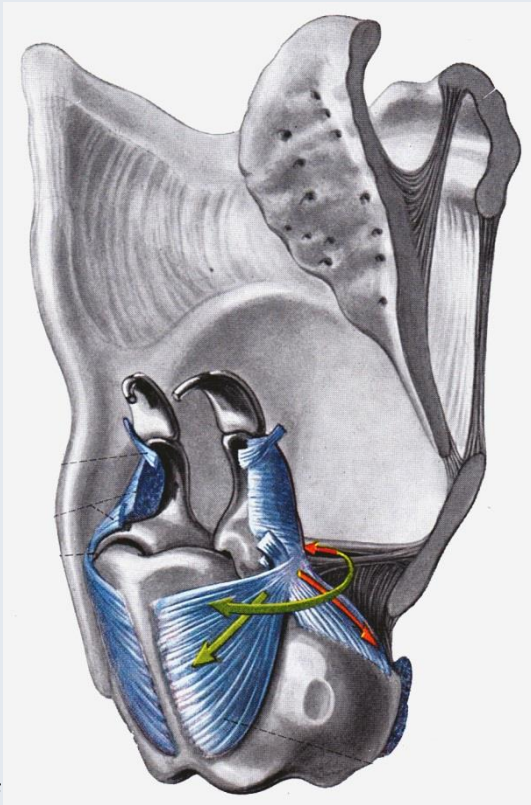
Aspect: posterolateral right



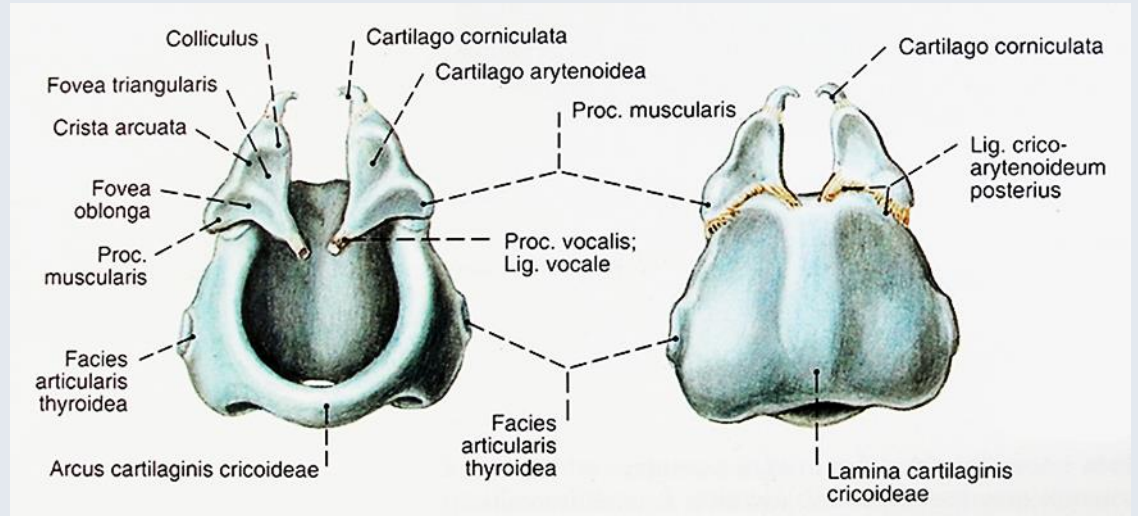
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Arytenoid

(Cartilago aryt(a)enoidea)

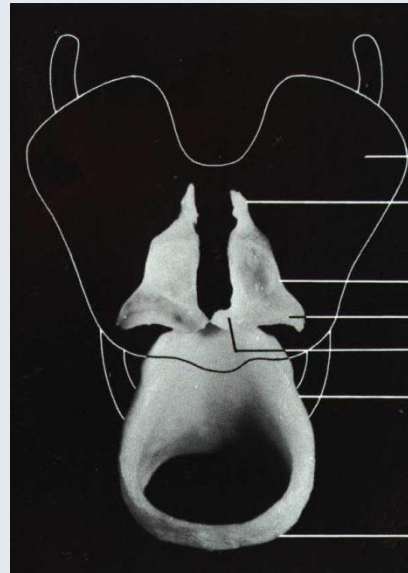


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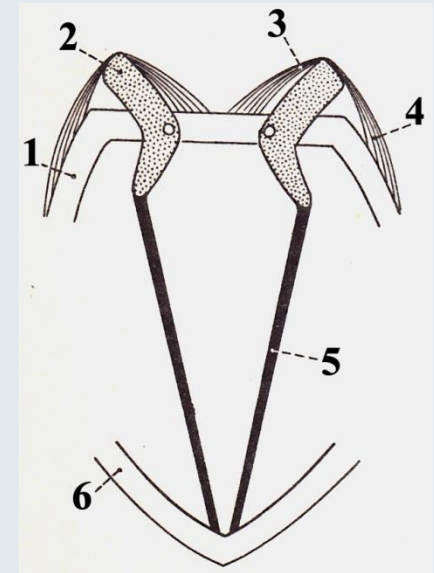


Sobotta

1. medial side („glottis respiratoria”)
vocal process
2. anterolaterale side (muscle origin)
muscular process
3. dorsale side (muscle insertion)



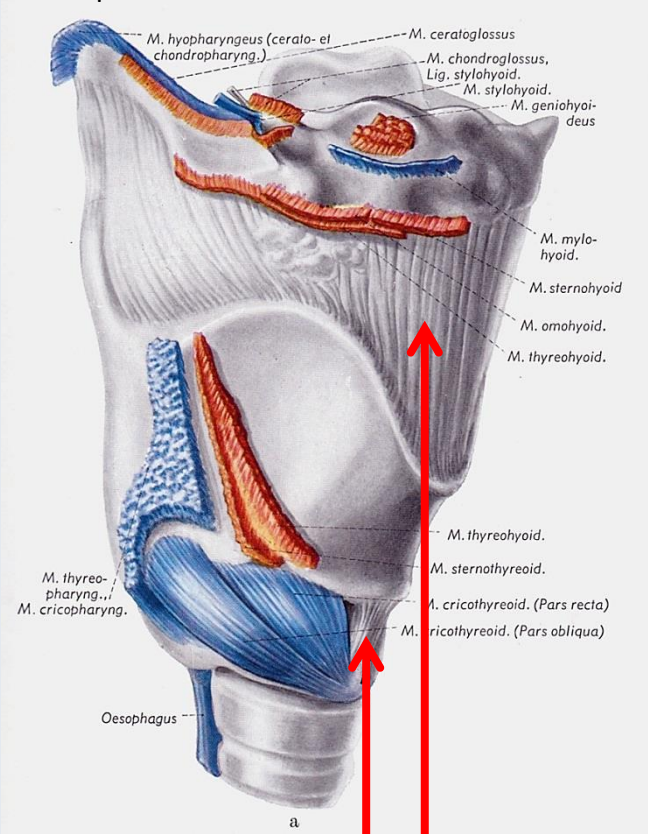
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Kiss

Ligaments

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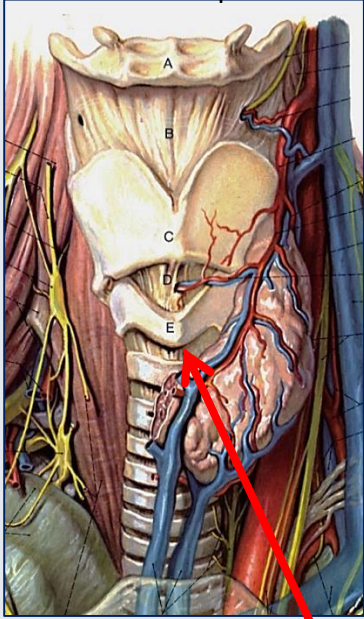


Thyrohyoid membrane with:
Thyrohyoid lig. medium and laterale

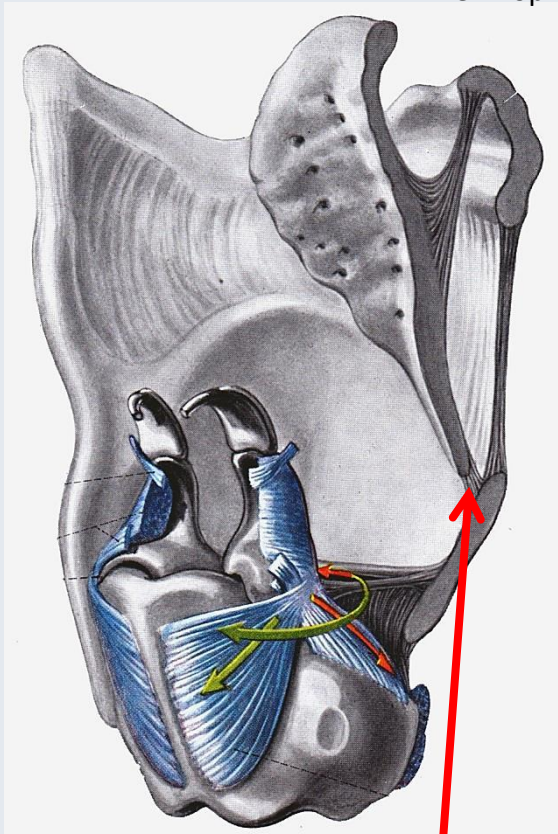
Conus elasticus with:
Cricothyroid lig. medium (conic)

CONIOTOMY

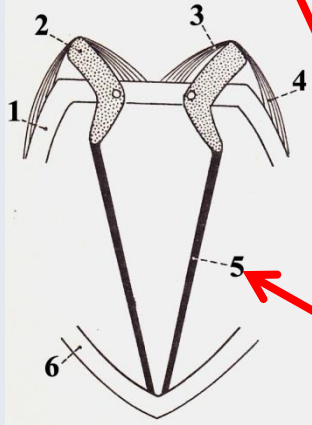
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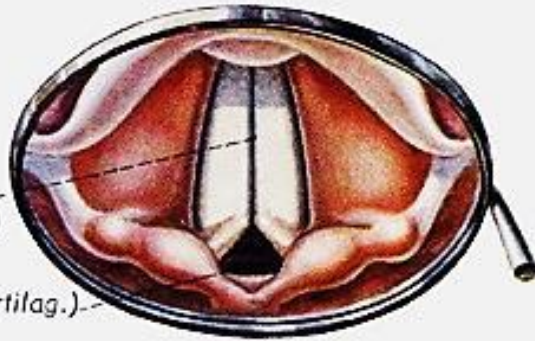
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Thyroepiglottic lig.
Corniculopharyngeal lig.
Cricotracheal lig.
Vocal lig.



Kiss



Plica vocalis, Rima glott. (Pars intermembran.)

Rima glott. (Pars intercartilag.)

Rima glottidis = **Glottis**

1. Pars intermembranacea = Glottis Phonatoria
2. Pars intercartilaginea = Glottis Respiratoria

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

Plica (Incisura) interarytaen.

Margo epiglottidis

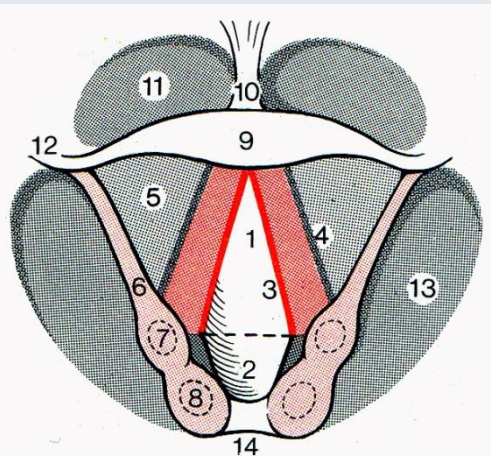
Plica vocalis

Plica ary-epiglottica

Plica ventricularis

Tuberculum cuneiforme

Tuberculum corniculatum



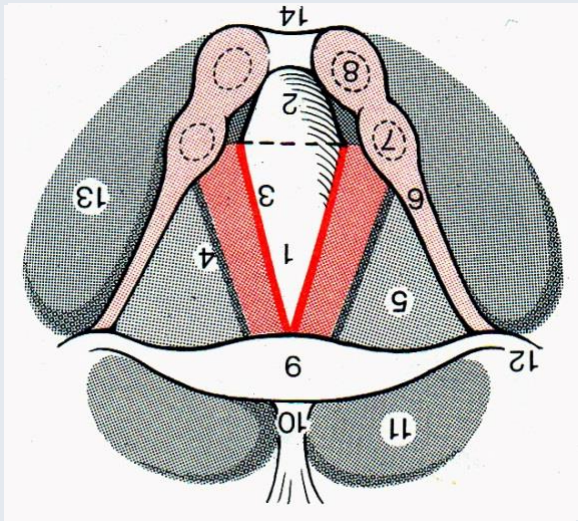
7. Cuneiform cartilage → cuneiform tuberculum

8. Corniculata cartilage → corniculate tuberculum

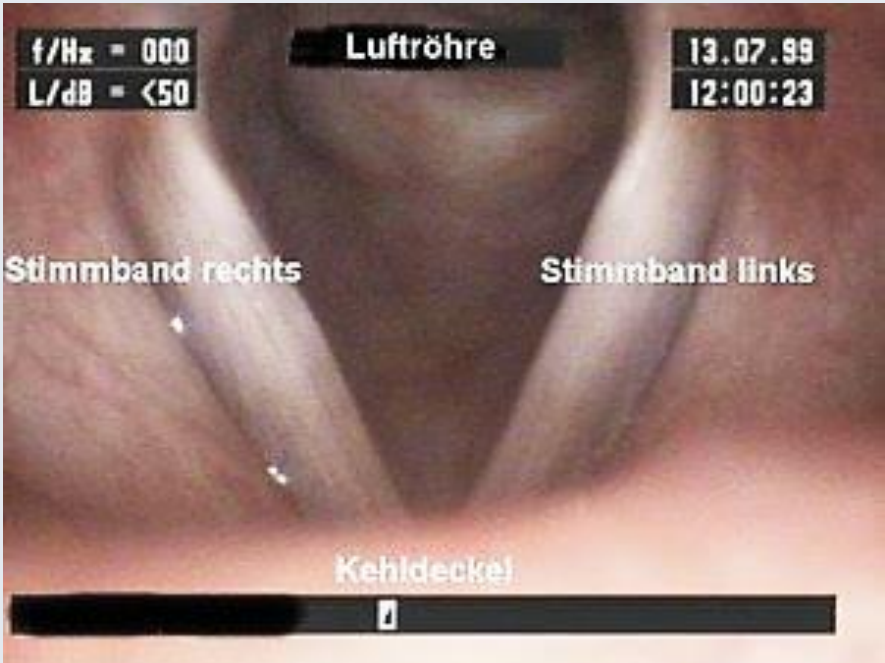
9. Epiglottis

10. Median glossoepiglottic fold

Faller



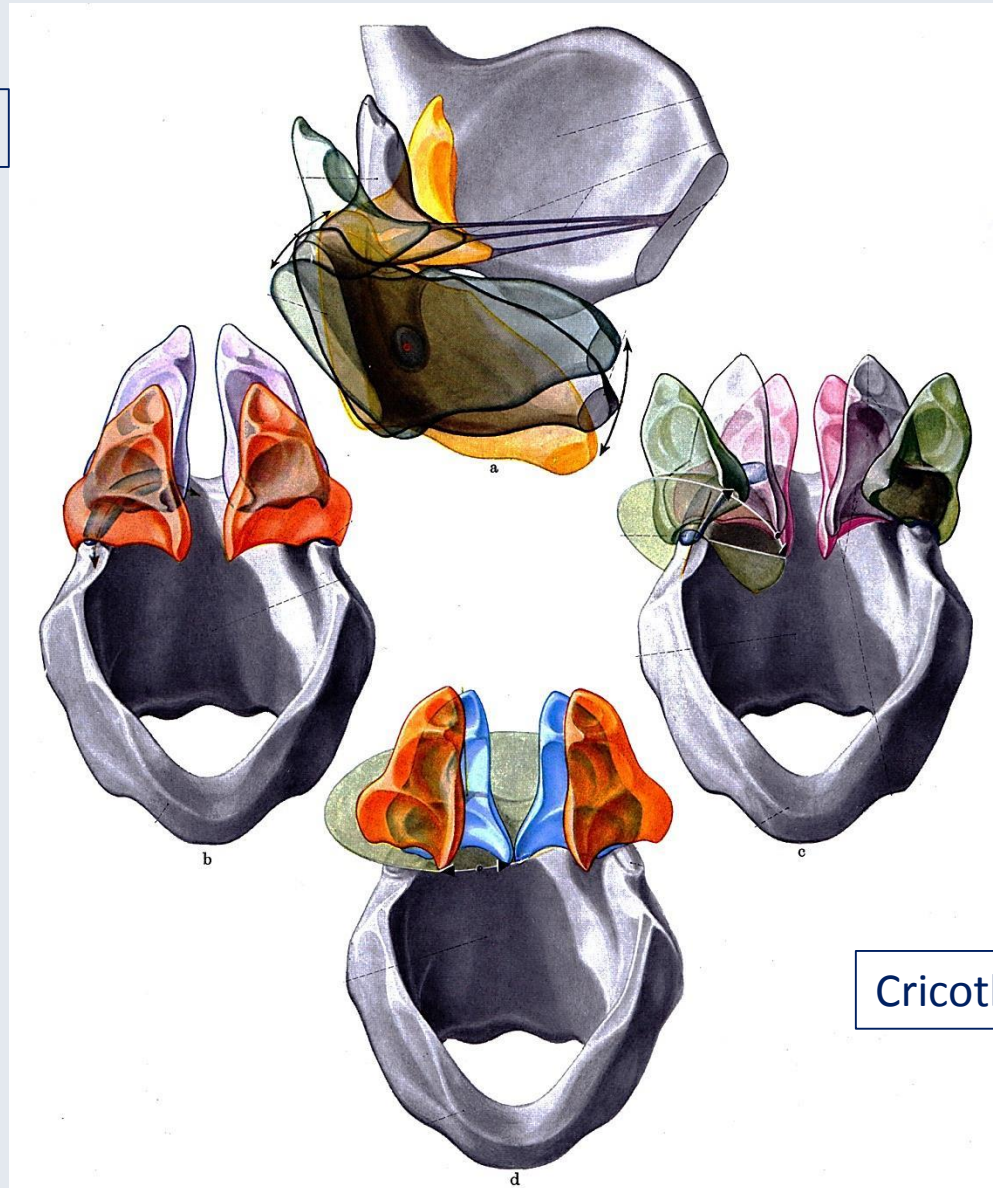
Faller



die-hno-plus-aerzte

Joints and movements

Cricoarytenoid art.

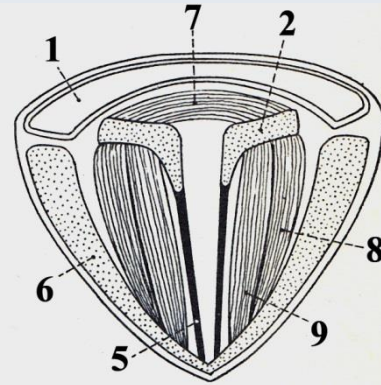
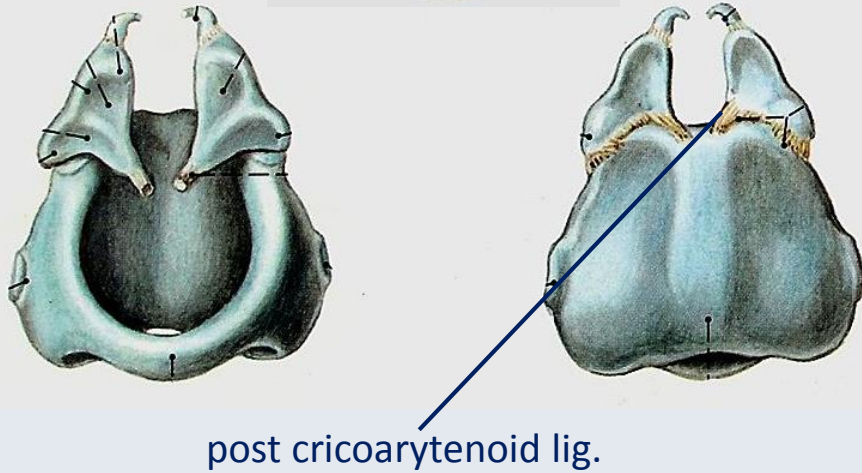


Cricothyroid art.

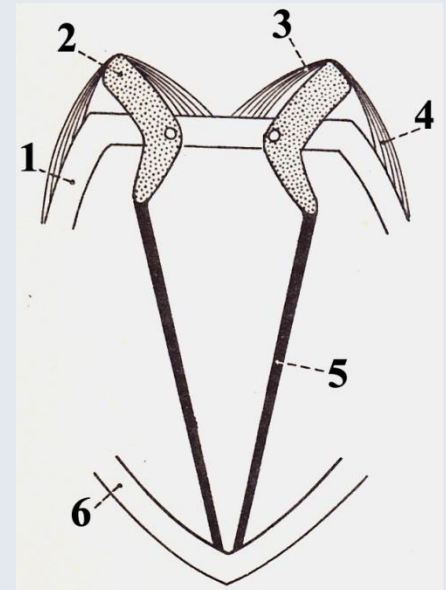
Cricoarytenoid articulation



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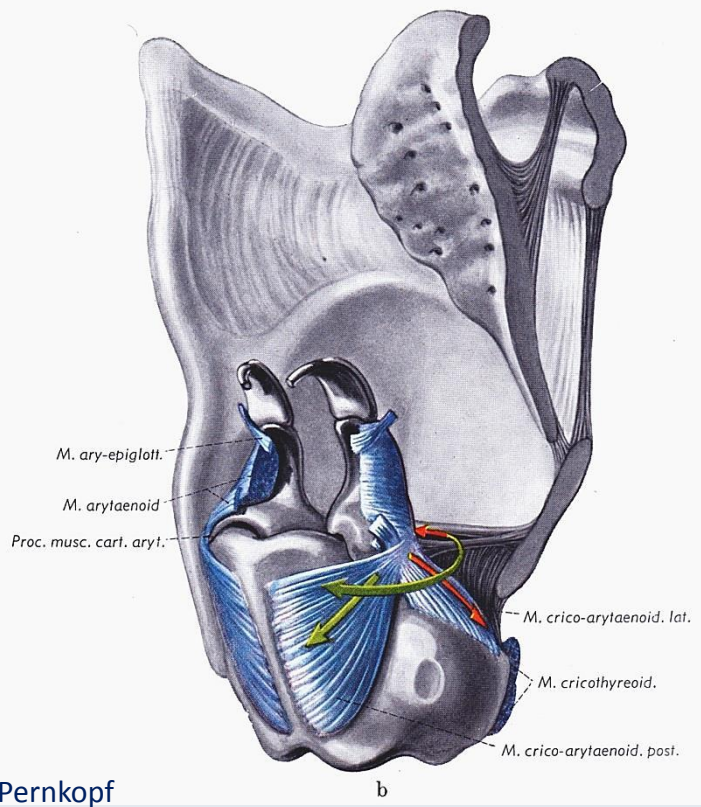
Kiss



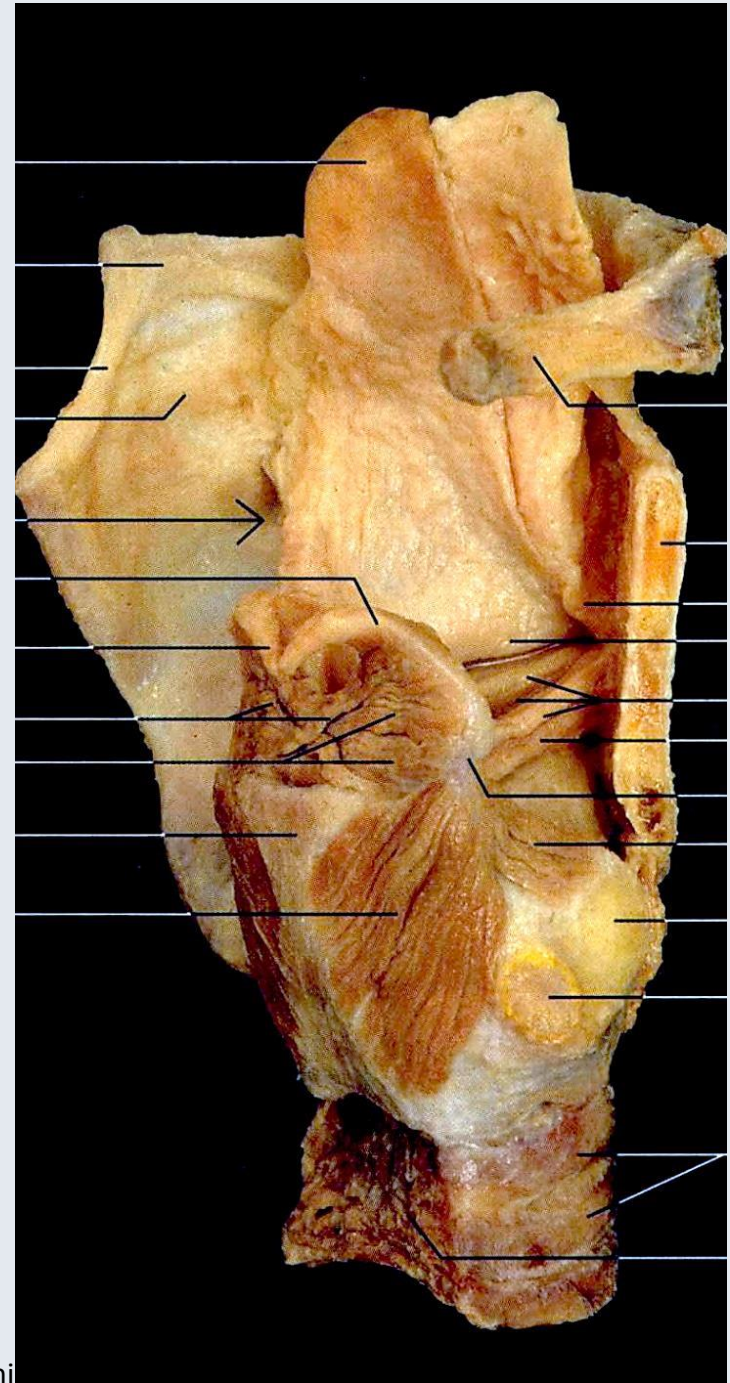
1. Ring cartilage
2. Arytenoid cartilage
3. **Post. cricoarytenoid m. („Posticus“)**
4. Lat. cricoarytenoid m.
5. Vocal cord
6. Thyroid cartilage
7. Arytenoid mm.
8. Lateral thyroarytenoid m.
9. Medial hyroarytenoid m. (vocalis m.)

Flat joints: rotation and displacement

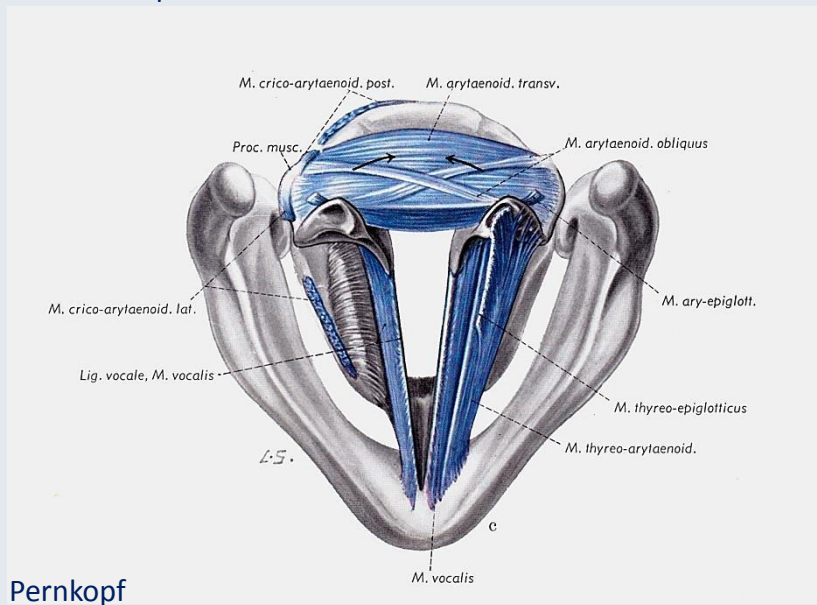
Posterior cricoarytenoid m. :
The only opener of the glottis (Breathing!)



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Articulatio cricoarytenoidea

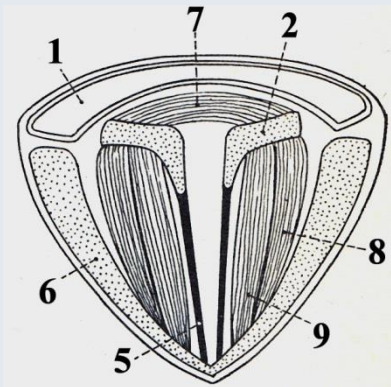
(3) Post. cricoarytenoid m. („Posticus“): **the only opener of the glottis (Breathing!)**

(4) Lateral cricoarytenoid m.: closes the intermembranacea part of the glottis

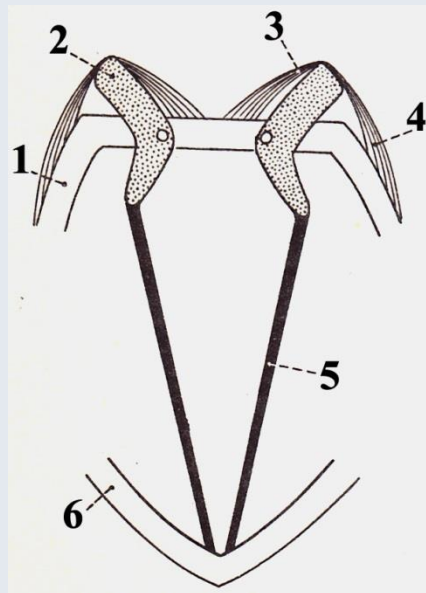
(7) Arytenoidei mm.: closes the intercartilaginea part of the glottis

(8) *Lateral thyroarytenoid m.*: closes the intercartilaginea part of the glottis

(9) *Medial thyroarytenoideus m. (vocal m.)*: closes the intercartilaginea part of the glottis, fine tuning of the vocal cords



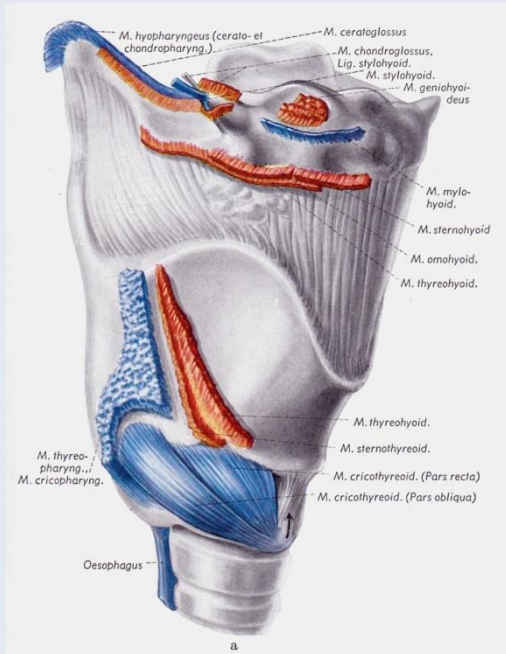
Kiss



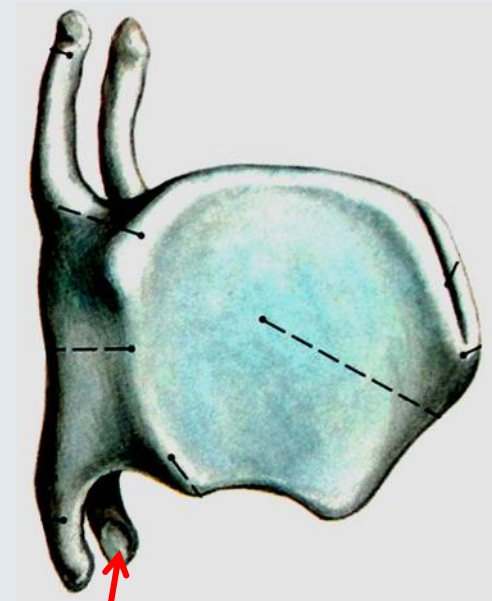
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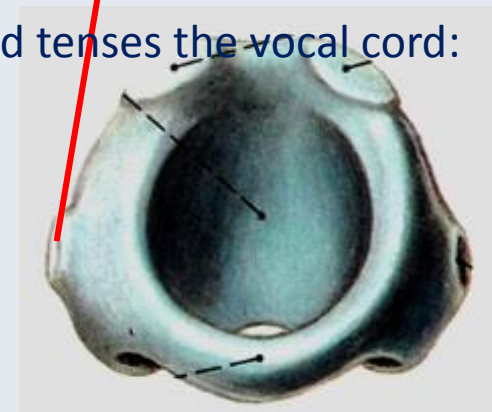
Cricothyroid joint



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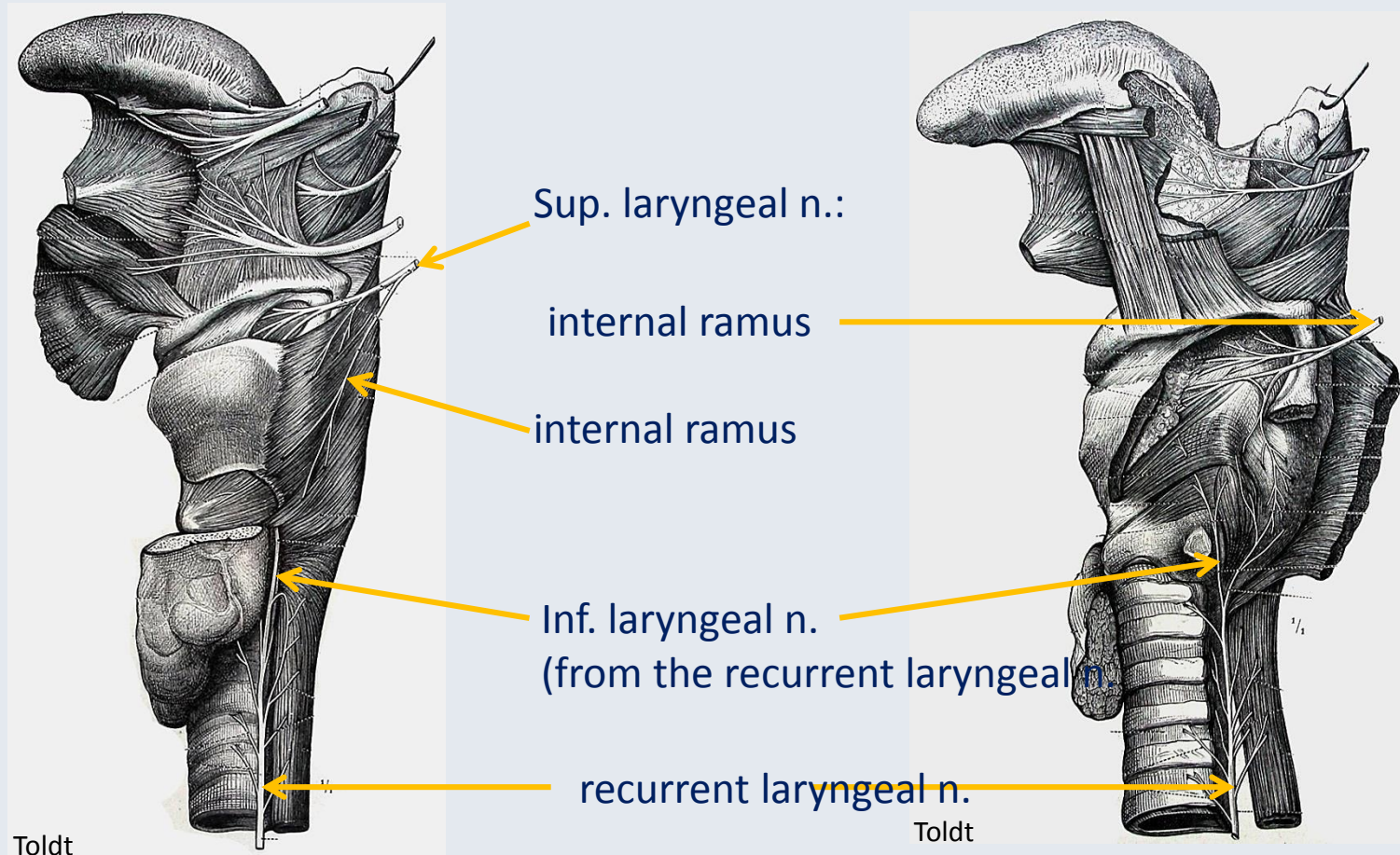


Through a common transverse axis tilts thyroid cartilage and tenses the vocal cord:
 Rough adjustment of the vocal cords

Muscle: cricothyroideus m. (Pars obliqua and Pars recta)

(ceratocricoidea Lig. in the capsule)

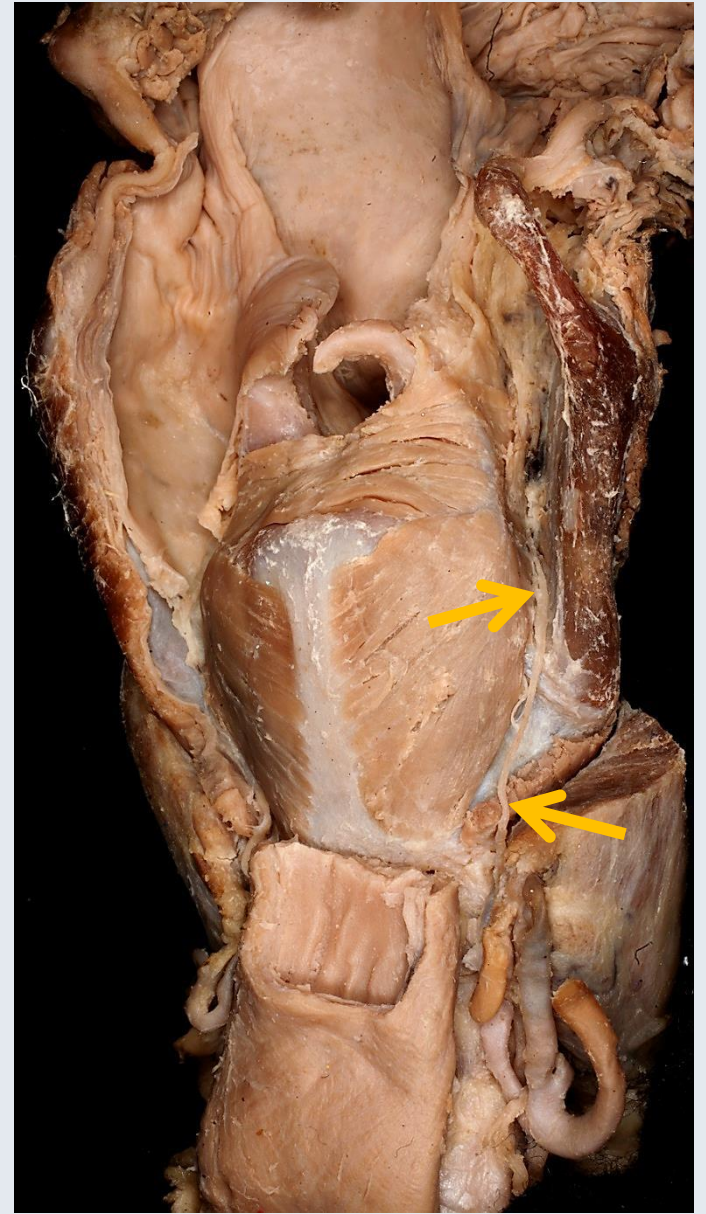
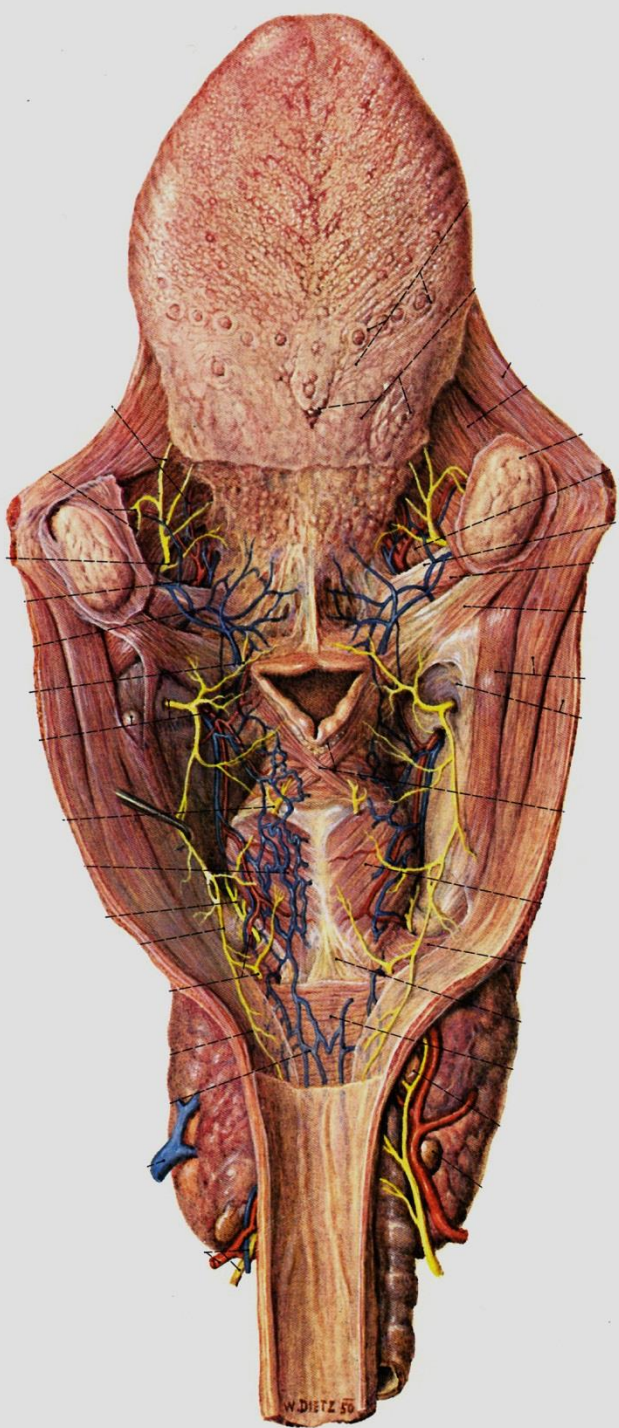
Innervation of the muscles



sup. and recurrens laryngeal nn. from vagus nerve (X.)

Inferior laryngeal n.: Innervates all the laryngeal muscles except the cricothyroideus m.

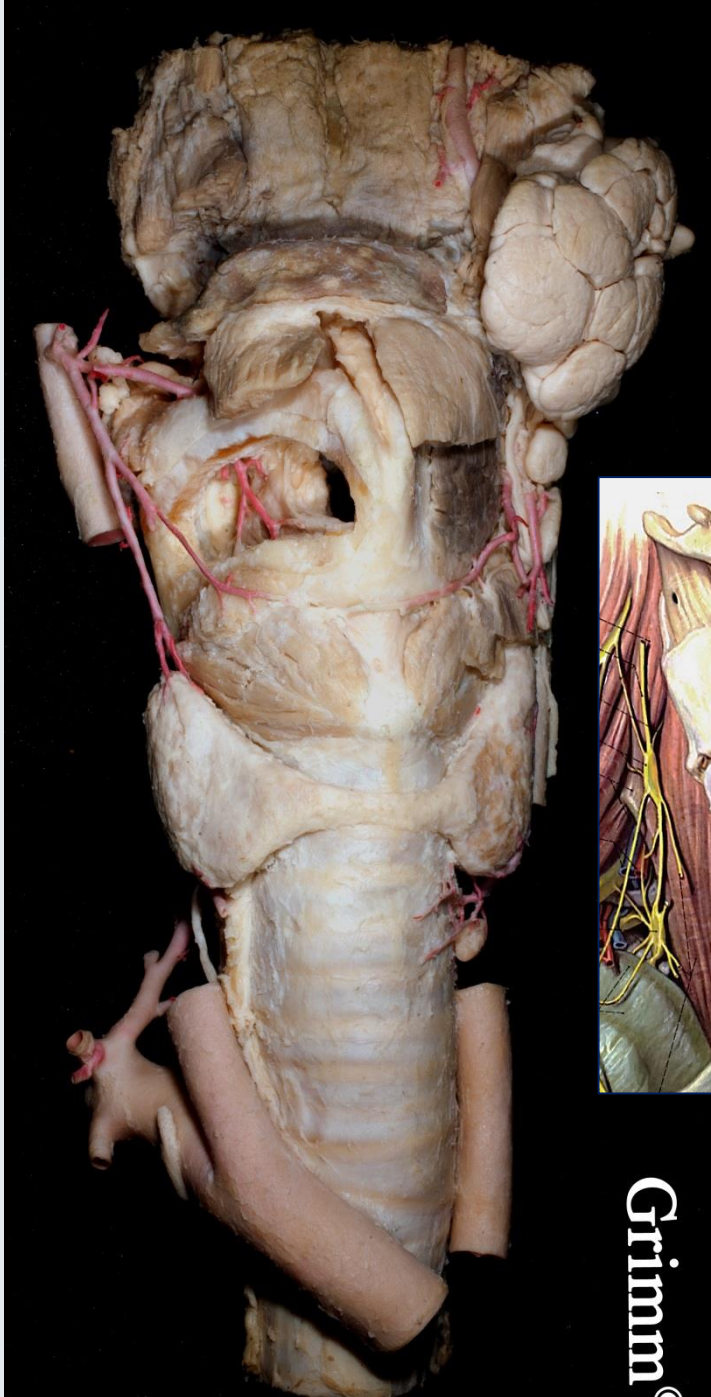
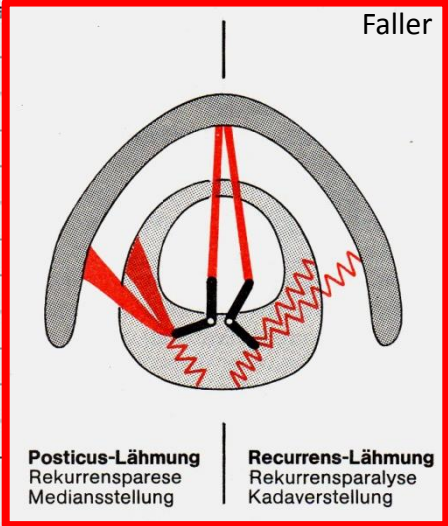
Cricothyroideus m.: sup. laryngeal m., external ramus



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Tabelle 2
Beklagte Komplikationen und Haftung bei vorgeworfenen Schilddrüsenoperationen der abgeschlossenen Begutachtungsverfahren der Jahre 2002 bis 2007

Zeitraum 1.1.2002 – 31.12.2007	absolut	in % v. n	BF* bejaht	Haftung	
				bejaht	in % v. Sp. 2
Vorwürfe zu Schilddrüsenoperationen	80	100,0	19	19	24,0
davon**					
Rekurrensparese	54	67,5	15	14	26,0
- einseitig	33	41,3	6	6	18,2
- beidseitig	21	26,3	9	8	38,1
Andere Nervenläsion (Homer-Syndrom, Plexus Hypoästhesie)					
Kalziummangelsyndrom					
Rev.-OP					
Nachblutung/Hämatom					
Belassenes Gewebe/Rezidiv					
Narbenprobleme					
Infektion mit Folgen					
Kardiale Rhythmusstörungen					
Erdulden der unnötigen OP					
Therapieverzögerung p. o.					
Ösophagusläsion bei Tumorfiltration					
Tiefe Venenthrombose					



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Over 200,000 thyroid operations annually in Germany

Literature

Faller: Anatomie in Stichworten (Enke 1980.)

Kiss F.: Rendszeres bonctan (Medicina 1960.)

Pernkopf: Atlas der topographischen und angewandten Anatomie des Menschen (Urban & Schwarzenberg 1963.)

Rohen – Yokochi: Anatomie des Menschen (Schattauer 1982.)

Sobotta: Az ember anatómiájának atlasza (Urban & Fischer 2000.)

Toldt: Az emberboncolástan atlasza (Universitas 1920.)

www.die-hno-plus-aerzte.de

Röhler – Weber - Smentkowski : Fehler und Gefahren bei Schilddrüsenoperationen (www.aekno.de)

Eingeweidekomplex vom Hals: Dr. András Grimm (I. Preis, Mihálovics-Wettbewerb 2011.)

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