

RESPIRATORY SYSTEM

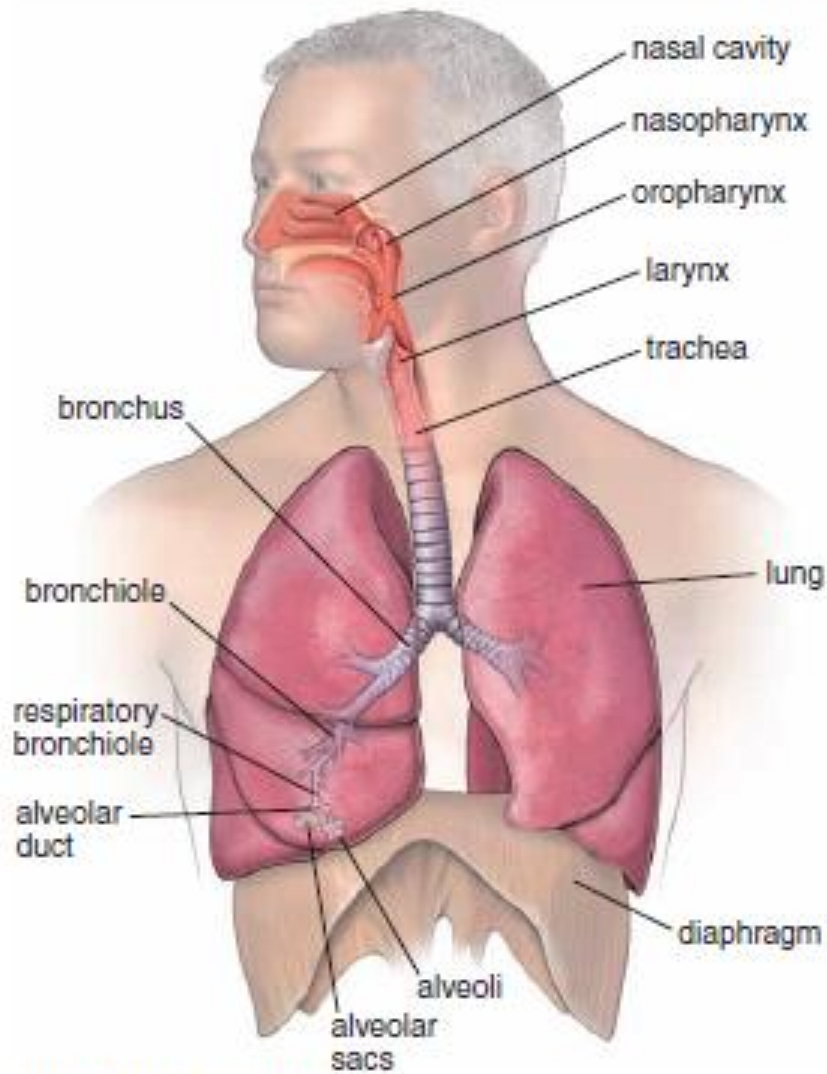


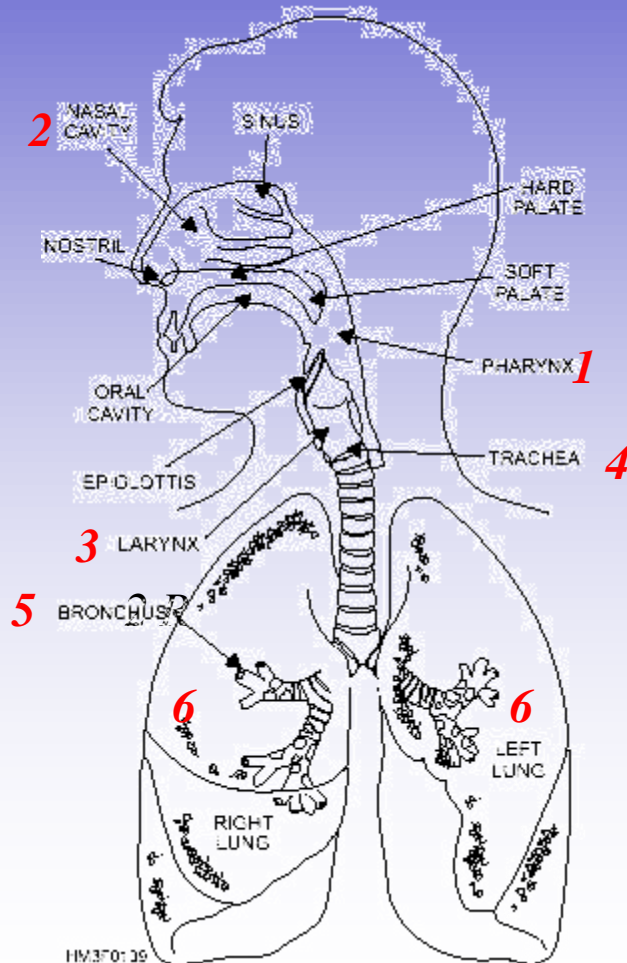
FIGURE 19.1 ▲ Diagram of respiratory passages. The nasal cavities, nasopharynx, oropharynx, larynx, trachea, bronchi, and bronchioles constitute the conducting portion of the respiratory system. The respiratory portion of the system, where gas exchange occurs, is composed of respiratory bronchioles, alveolar ducts, alveolar sacs, and alveoli.

RESPIRATORY SYSTEM

It is responsible for gas exchange between the blood and atmospheric air. It consists of:

AIRWAYS

- 2** Nasal cavities
- 1** Pharynx
- 3** Larynx
- 4** Trachea
- 5** Bronchi



LUNGS

- 6** The lungs represent the site of hematosis (gas exchange)..

RESPIRATORY SYSTEM

PART I

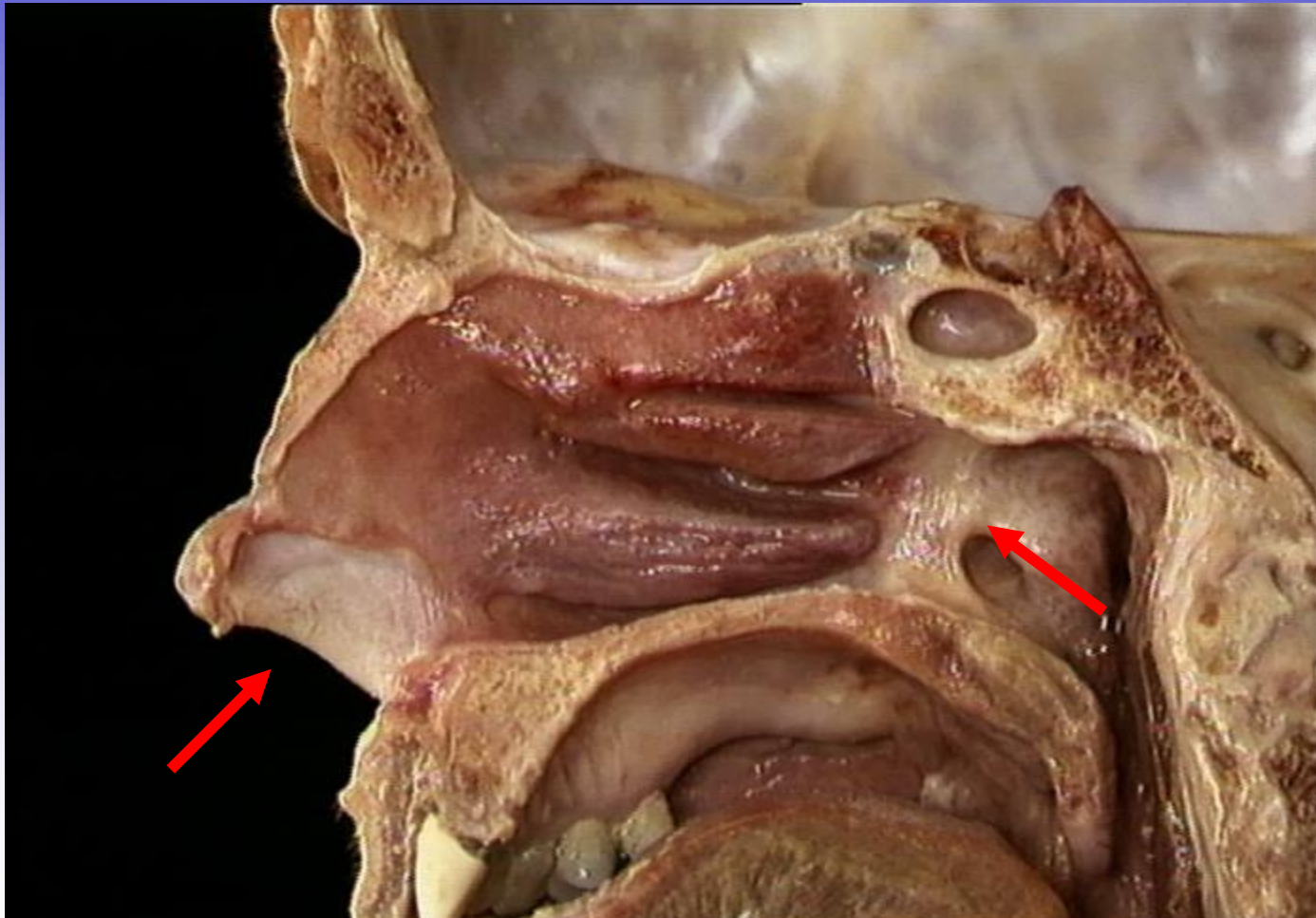
NASAL CAVITIES

The nasal cavities are hollowed out in the facial skeleton dorsally to the hard palate and communicate with the sinuses..



RESPIRATORY SYSTEM

NASAL CAVITIES



RESPIRATORY SYSTEM

NOSTIL AND NASAL VESTIBULE

Each NOSTRIL is located at the rostral end of the head..



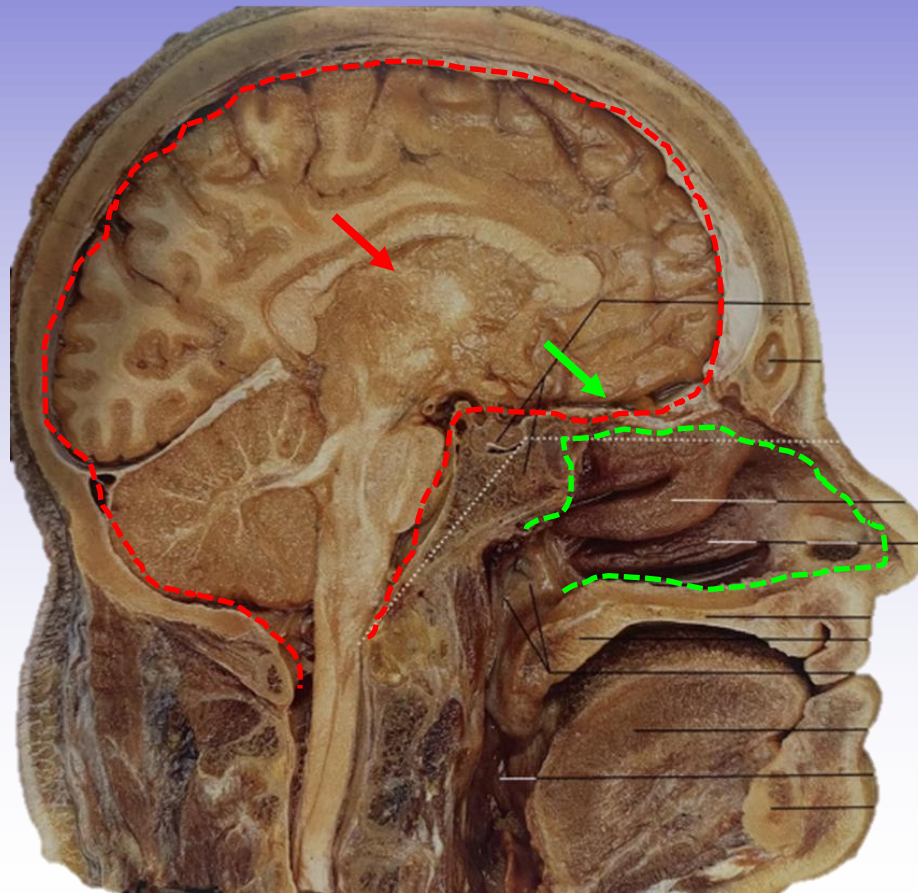
The NASAL VESTIBULE * is located between the nostril and the nasal cavity itself.

RESPIRATORY SYSTEM
NASAL VESTIBULE
OPENING (OSTIUM) OF THE NASOLACRIMAL DUCT



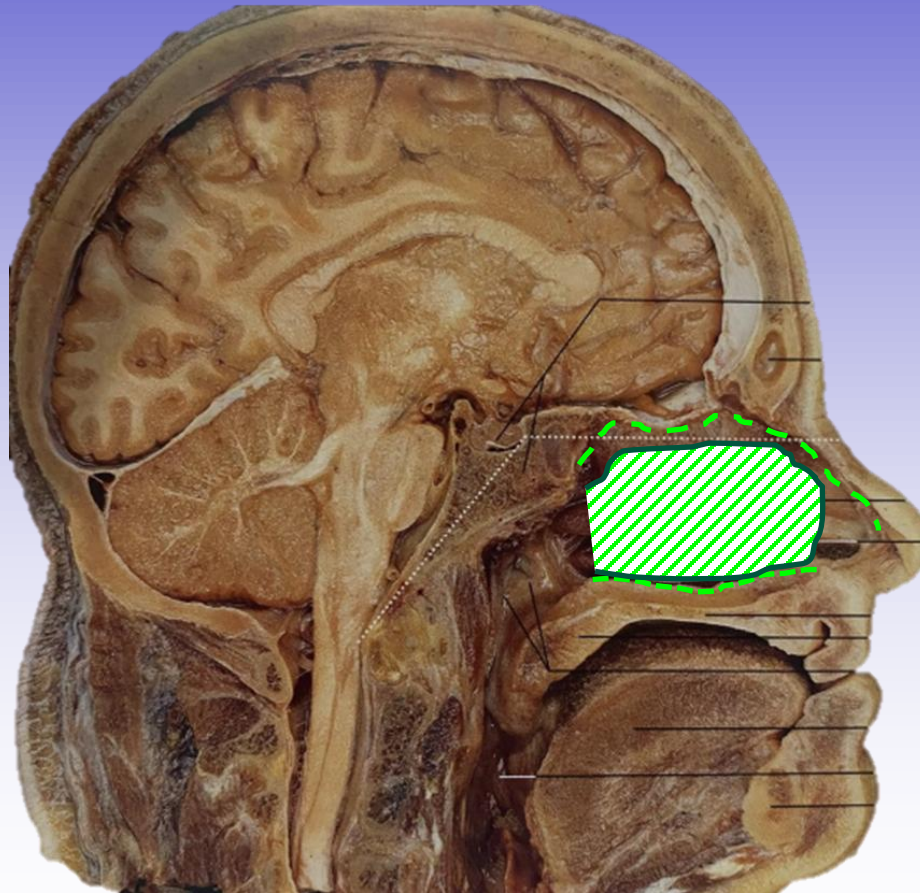
NASAL CAVITY PROPER

The NASAL CAVITY PROPER, or nasal fossa, lies between the vestibule and the choana and is separated from the cranial cavity ↘ from the ethmoid bone ↙ .



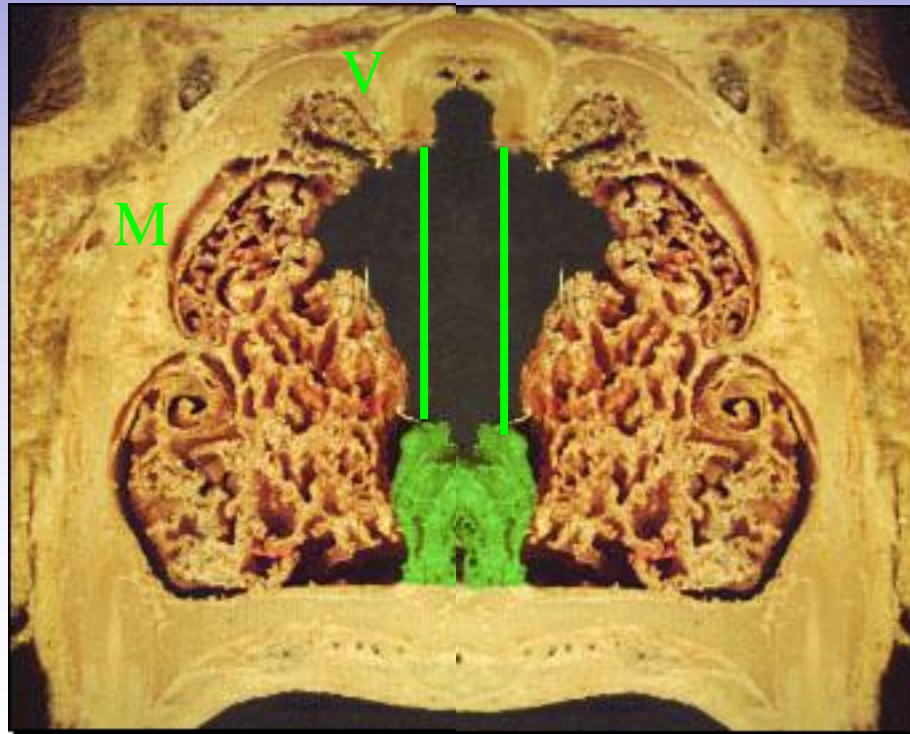
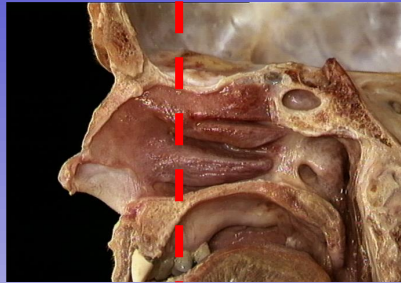
NASAL CAVITY PROPER

It has a medial wall, a lateral wall, a roof, and a floor..



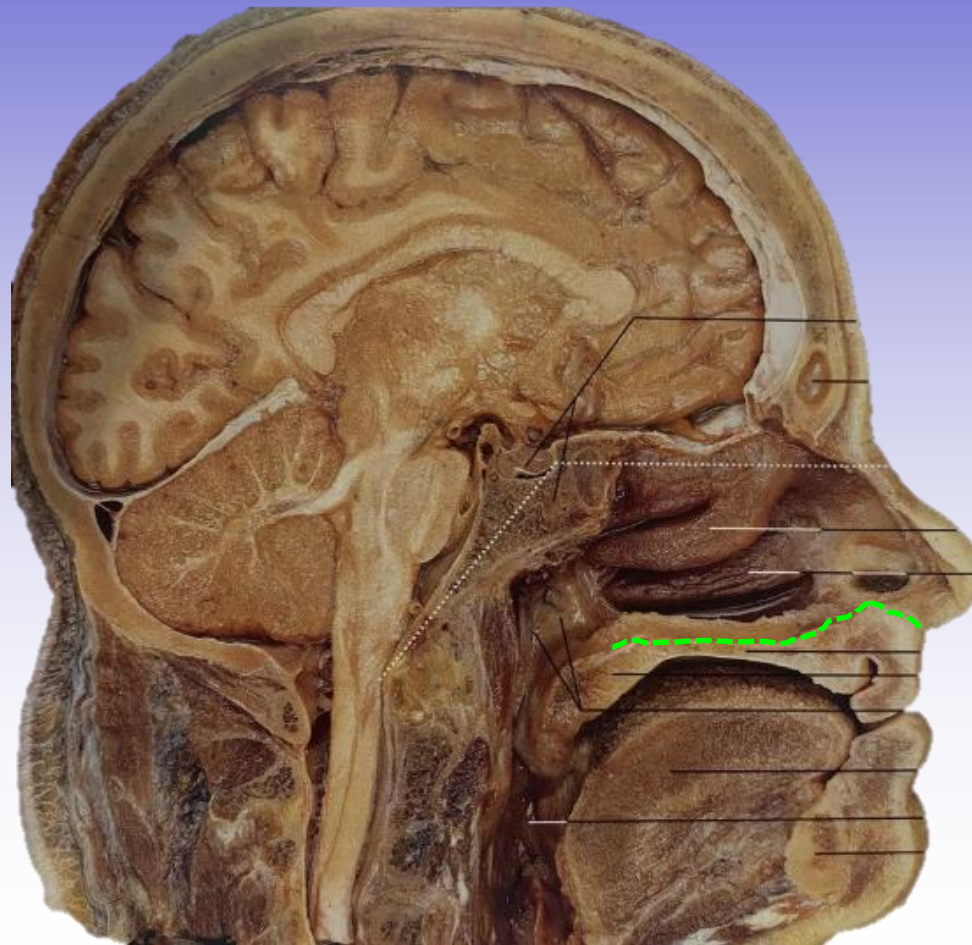
NASAL CAVITY PROPER

View obtained from a cross section.



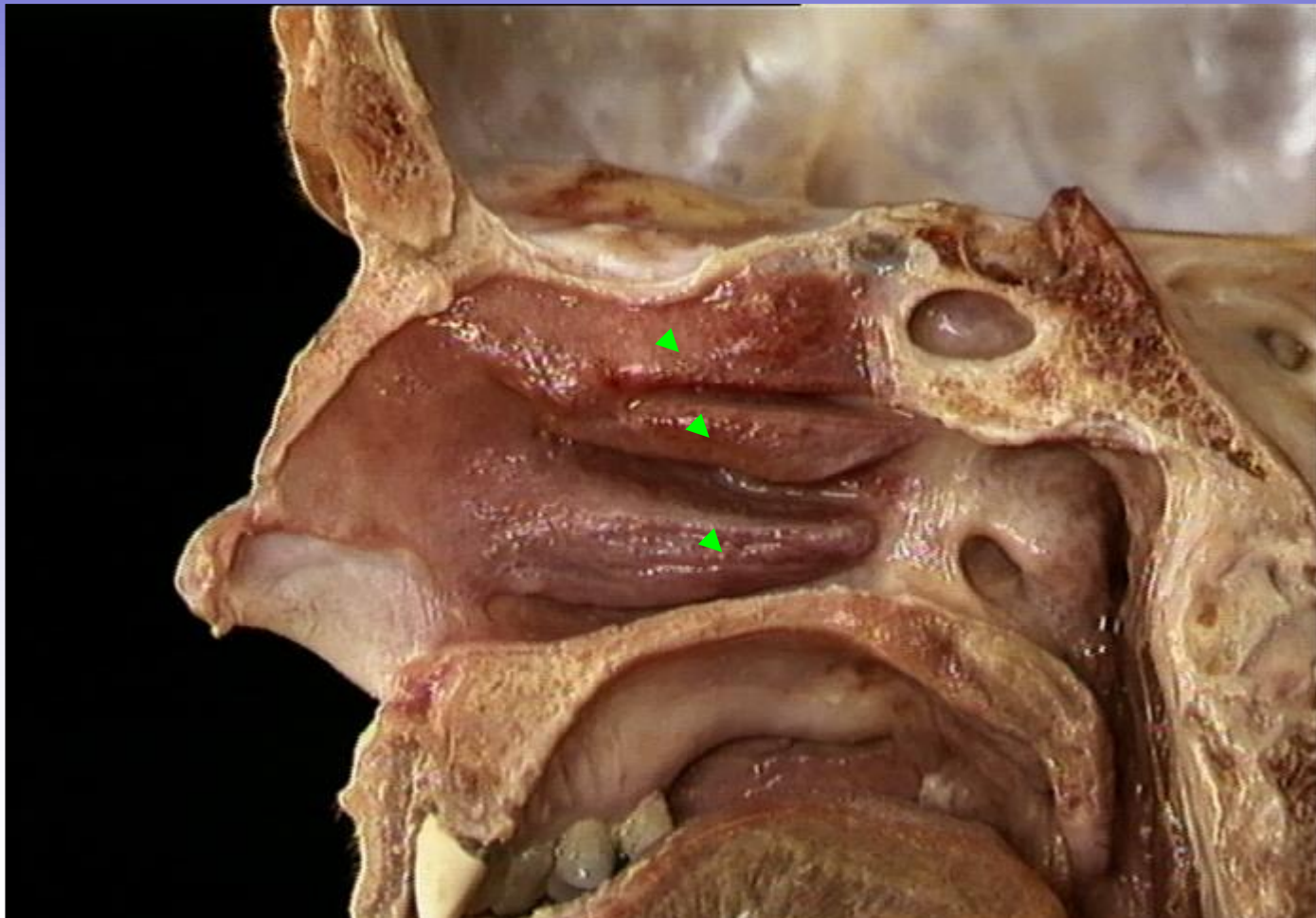
NASAL CAVITY PROPER

The **floor** is formed by the **palatine processes of the incisive bone and the maxillary bone**, and by the **palatine bone with its horizontal plate**.

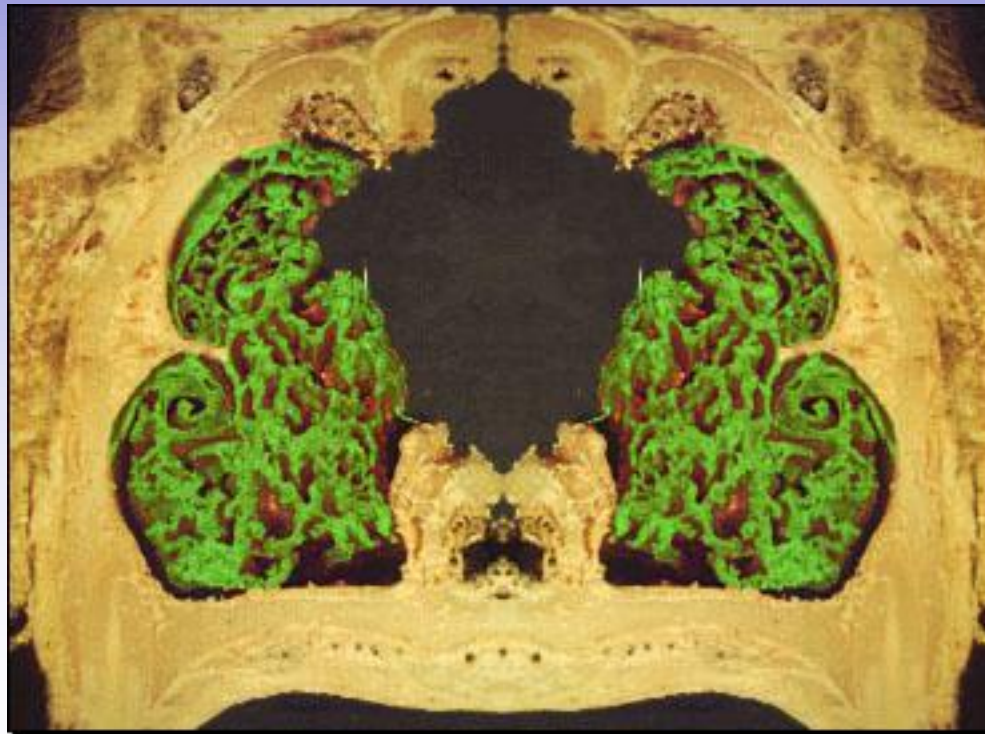
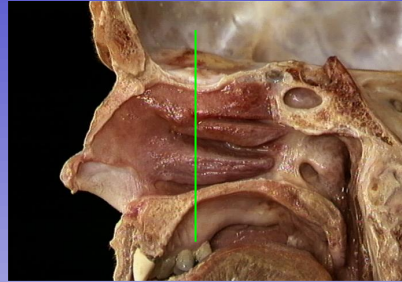


NASAL CAVITIES AND NASAL CONCHAE (TURBINATES)

*Each nasal fossa has an irregular, winding appearance due to the presence of the nasal **conchae** on the **lateral wall**. ▲▲▲*



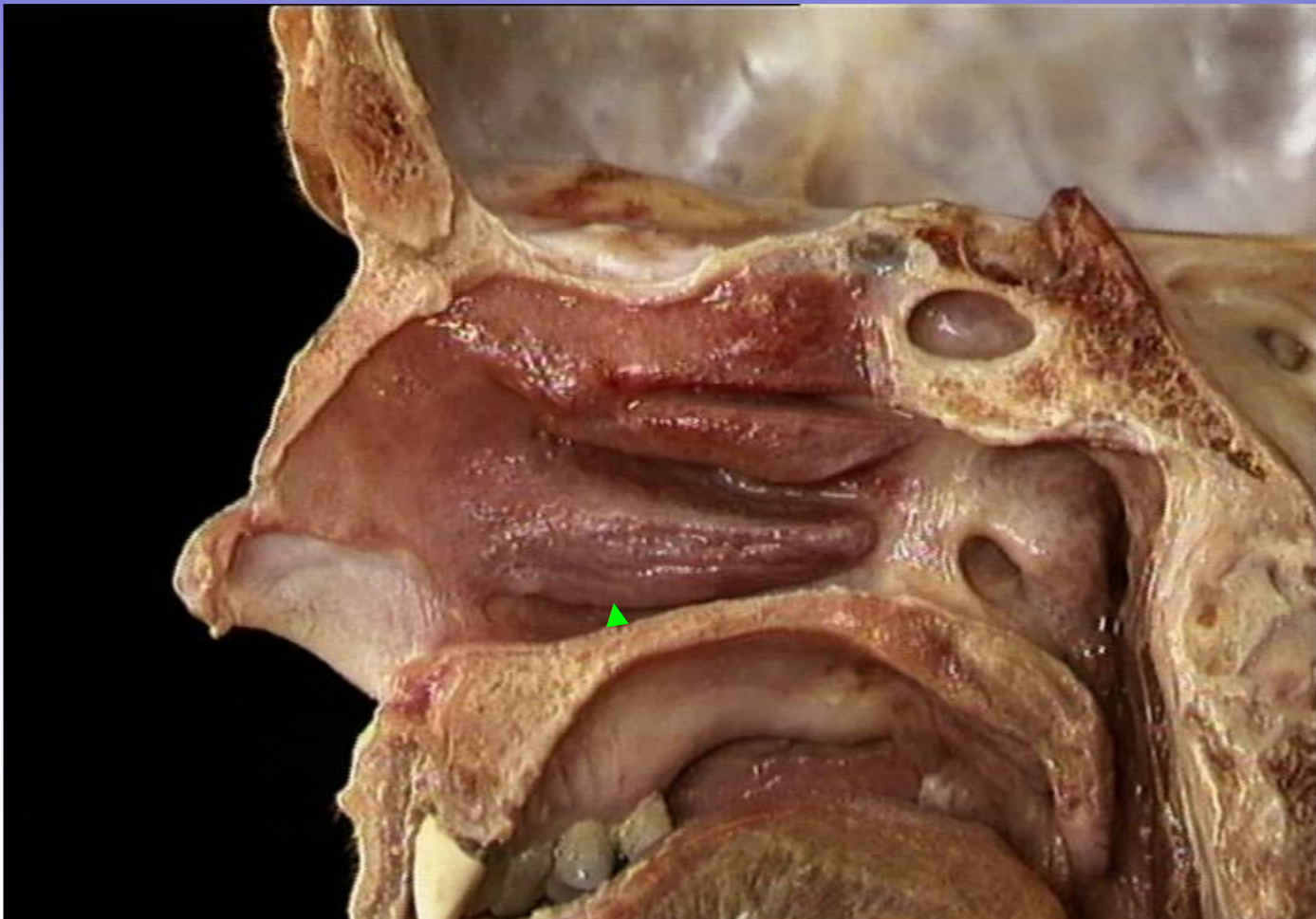
NASAL CAVITIES AND NASAL CONCHAE (TURBINATES)



RESPIRATORY SYSTEM

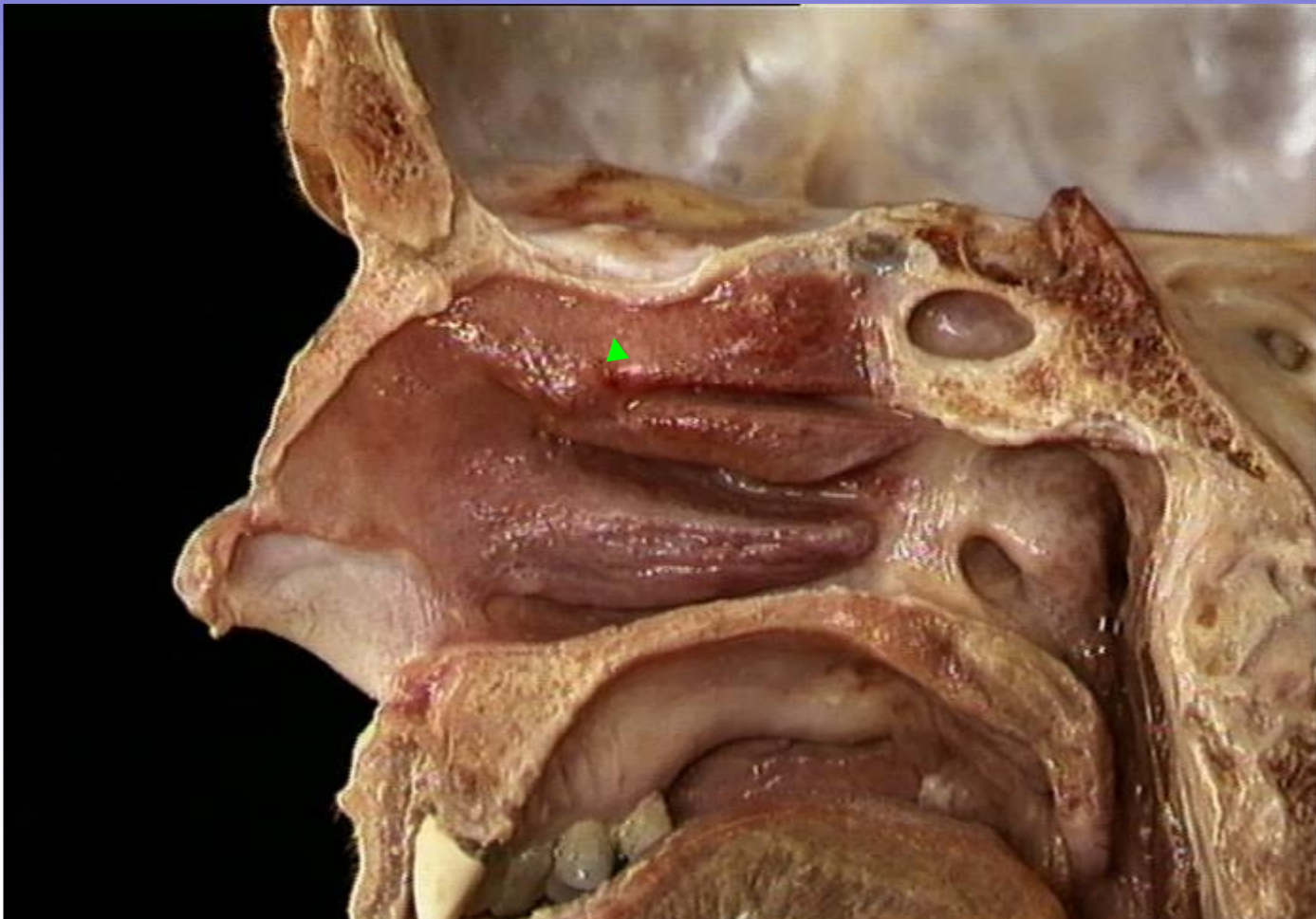
VENTRAL (OR INFERIOR) NASAL CONCHA

The ventral nasal concha ventrally delimits a narrow space extending in a rostro-caudal direction: the ventral nasal meatus. ▲ .



RESPIRATORY SYSTEM DORSAL (OR SUPERIOR) NASAL CONCHA

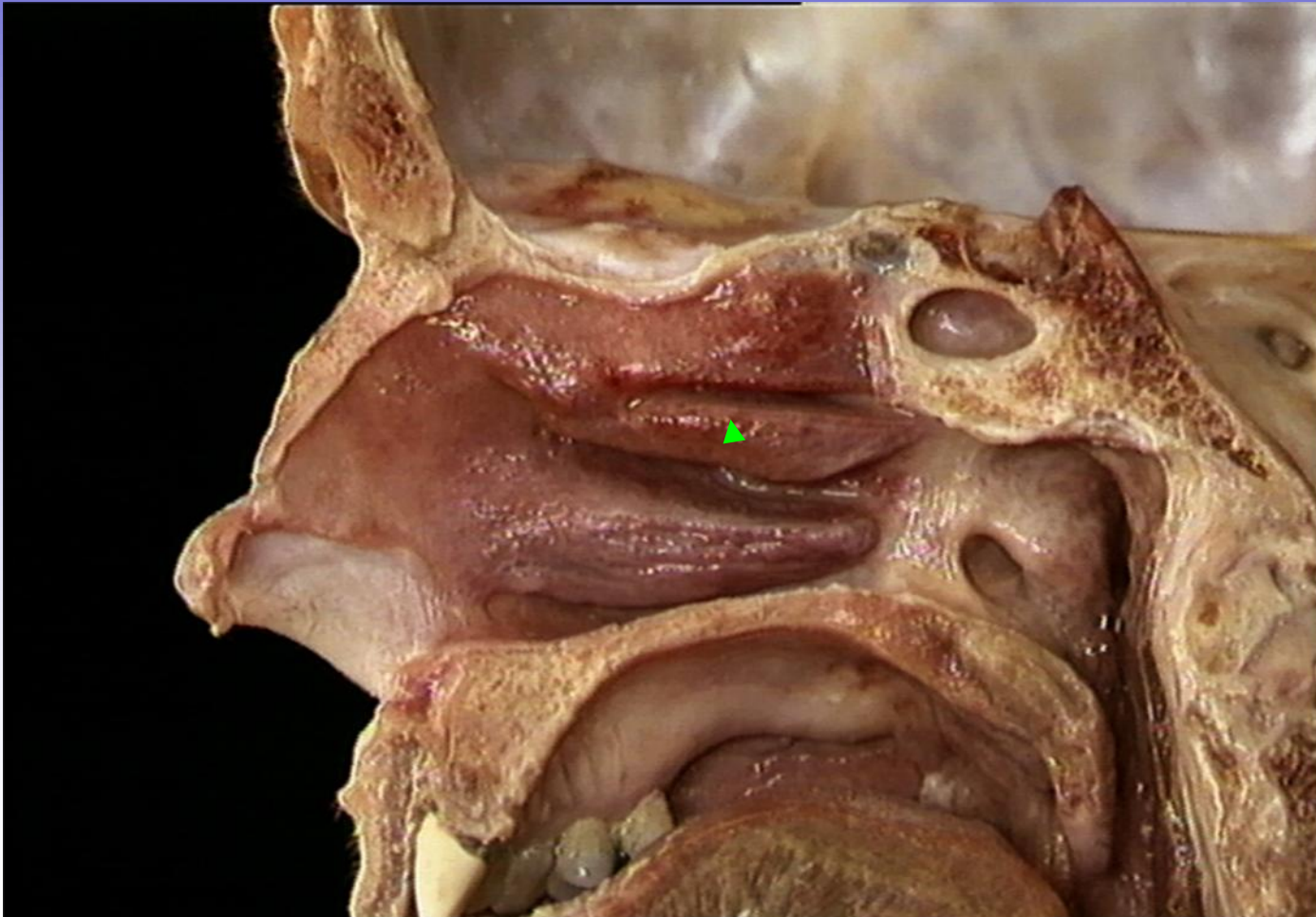
*The dorsal nasal concha dorsally delimits a narrow space extending in a rostro-caudal direction: the **dorsal nasal meatus**.* ▲



RESPIRATORY SYSTEM

MIDDLE NASAL CONCHA

*Between the two nasal conchae lies the large ethmoidal volute, which forms the **middle nasal concha**, although it actually belongs to the ethmoid bone..*

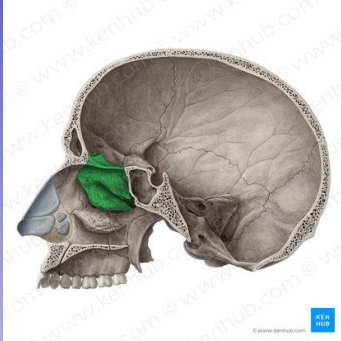


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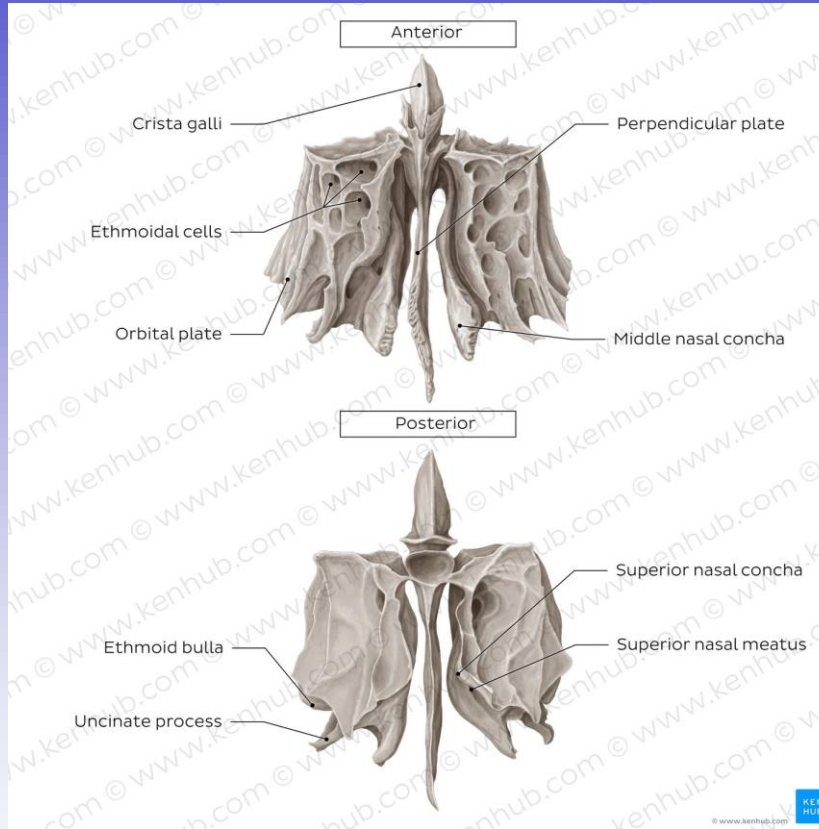
ETHMOID BONE

MIDDLE NASAL CONCHA

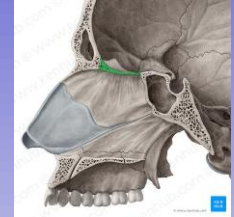
Ethmoid bone



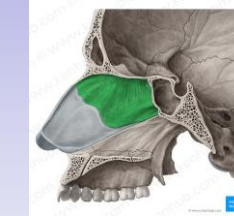
Ethmoid bone (anterior and posterior views)



Cribriform plate of ethmoid bone



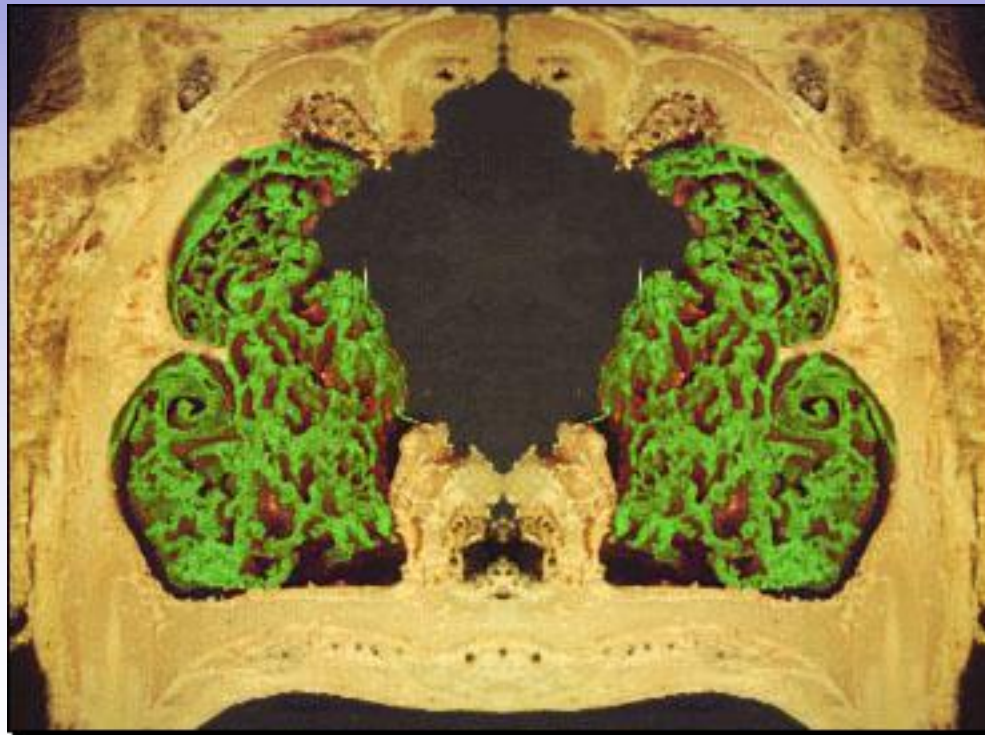
Perpendicular plate of ethmoid bone



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NASAL MEATUSES

*The middle nasal concha contributes to delimiting dorsally and ventrally, together with the other two conchae, a third narrow space extending in a rostro-caudal direction: **the middle nasal meatus.***



Dorsal meatus

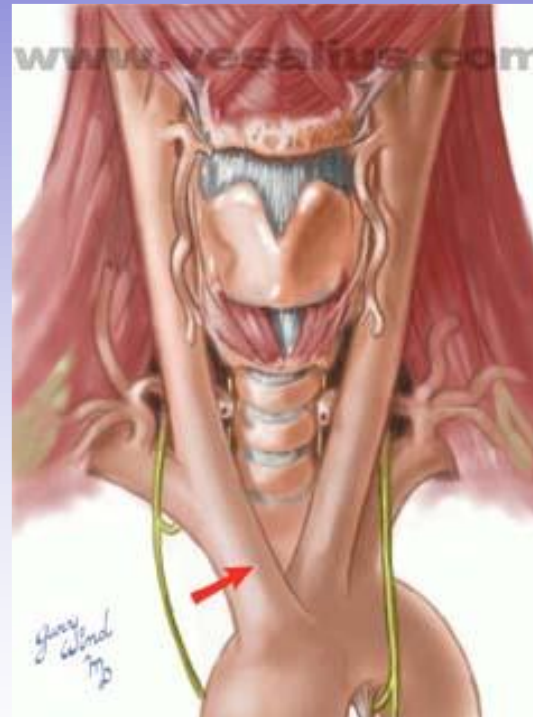
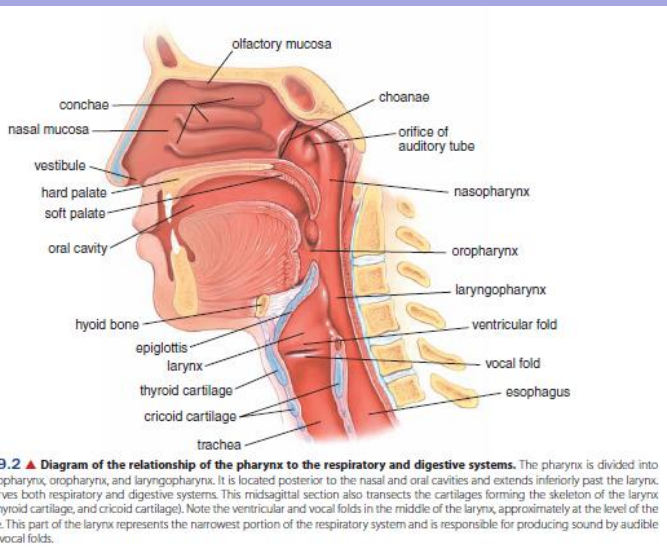
Middle meatus

Ventral meatus

RESPIRATORY SYSTEM

LARYNX

The **Larynx** is a **hollow organ** located between the pharynx and the trachea. In addition to regulating the **flow of air**, it is also the **organ responsible for phonation (voice production)**.



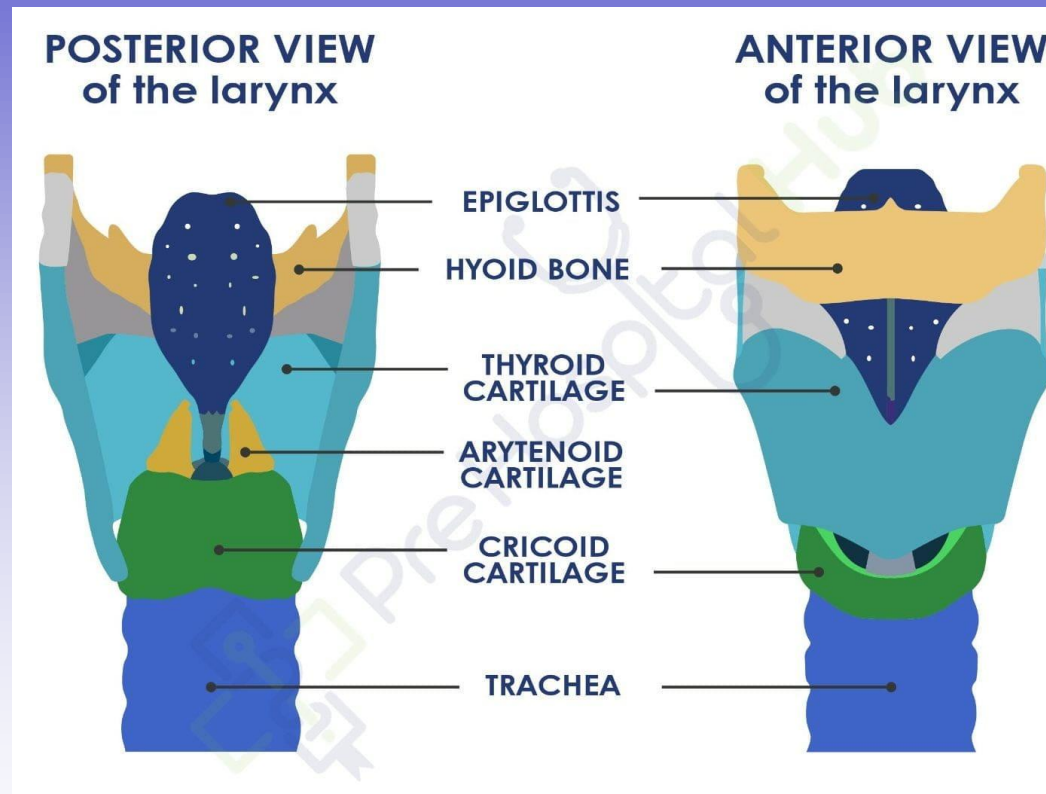
The larynx is situated:

- Caudal to the pharynx
- Cranial to the trachea
- In the ventral region of the neck

It forms the connection between the upper and lower respiratory tract.

APPARATO RESPIRATORIO CARTILAGINI LARINGEEE

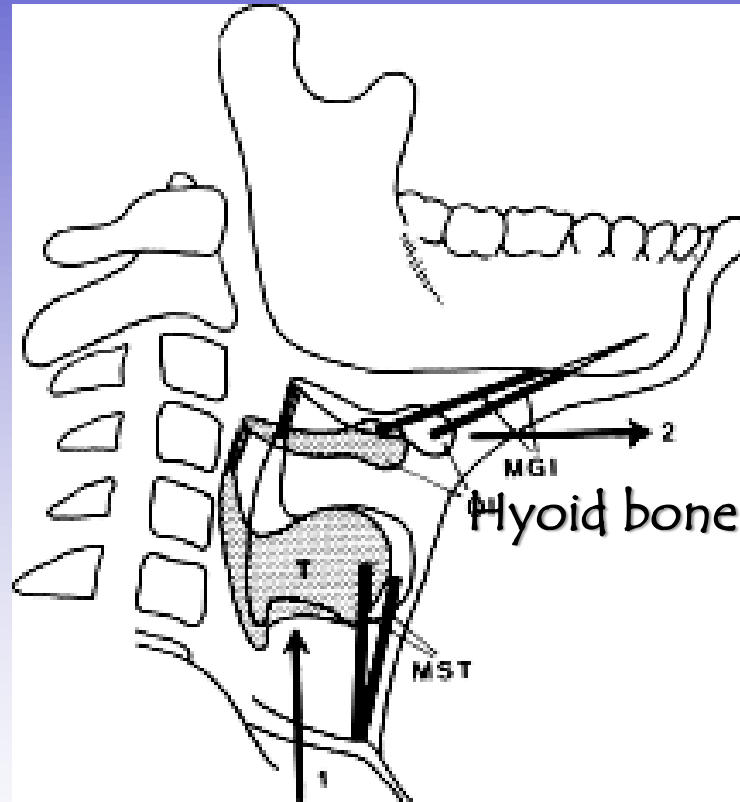
There are five cartilages in the larynx: three unpaired and two paired



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LARYNX AND HYOID BONE

The larynx is supported by the hyoid bone and forms the anatomical base of the throat..



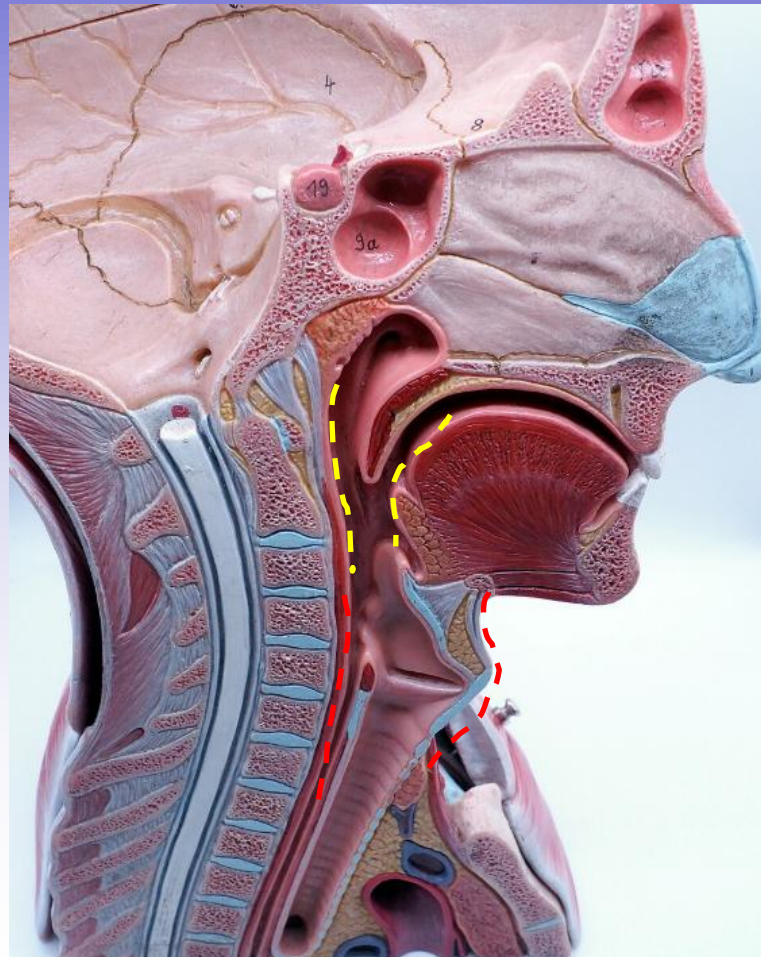
The hyoid bone connects the larynx with the bony skeleton and provides attachment to numerous muscles oriented in multiple directions, which determine the position of the larynx in the neck.

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LARYNX

The larynx is covered::

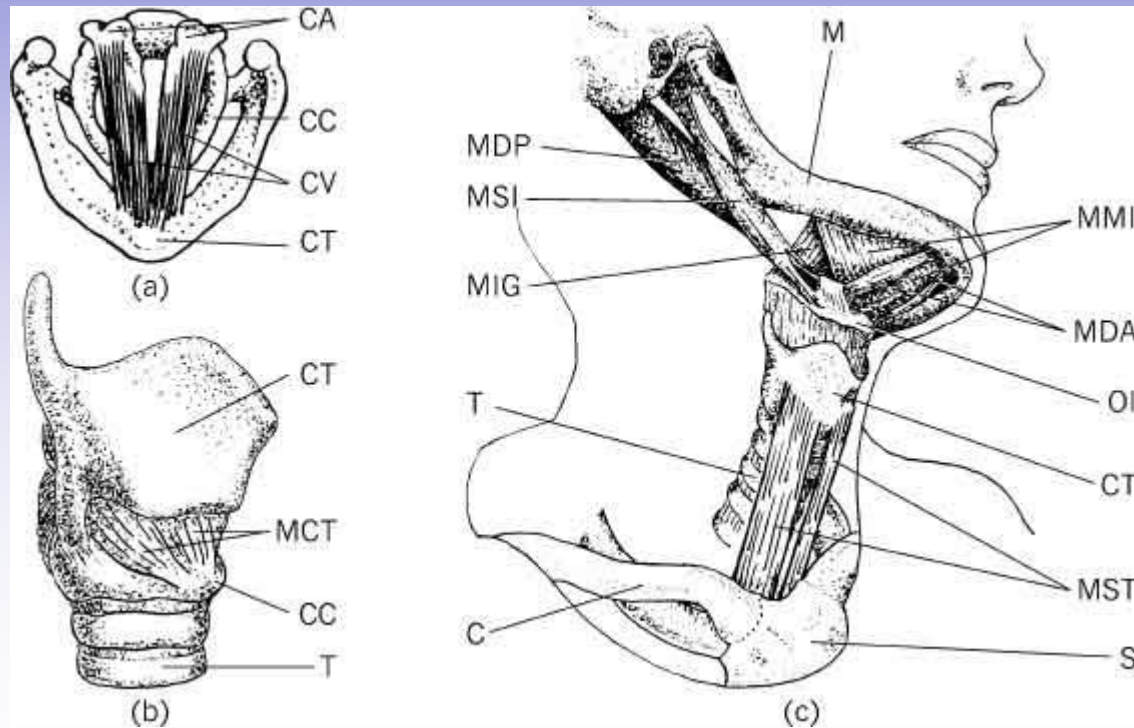
- Superiorly by the pharynx-----
- Anterolaterally by the ventral cervical muscles-----.



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LARYNGEAL MUSCULATURE

The muscles of the larynx can be classified into two groups::
1) **Intrinsic musculature** and 2) **Extrinsic musculature**



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LARYNGEAL MUSCULATURE

The **INTRINSIC MUSCLES** consist of five muscles (four paired and one unpaired) that act on the cartilages that make up the larynx:

- 1 Cricothyroid (paired)
- 2 Posterior cricoarytenoid (paired)
- 3 Lateral cricoarytenoid (paired)
- 4 Thyroarytenoid (paired)
- 5 Transverse and Oblique Arytenoids (unpaired)

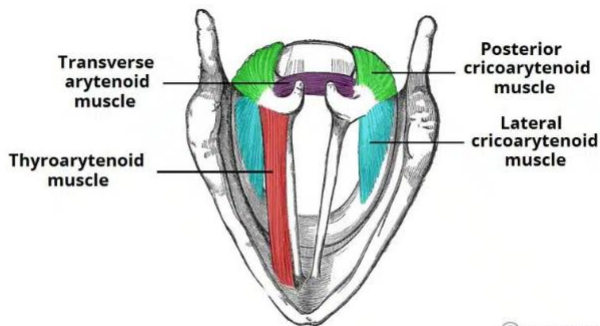


Fig 2

Superior view of the intrinsic muscles of the larynx.

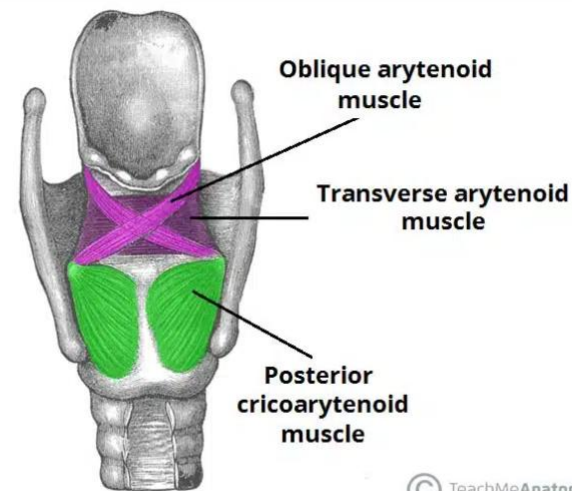


Fig 3

Posterior view of the intrinsic muscles of the larynx.

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Intrinsic Musculature

VOCAL CORDS

Another paired intrinsic muscle, the vocal muscle, contributes to the formation of the vocal cords, together with the thyroarytenoid ligament and the thick covering mucosa.



VOCAL CORDS:

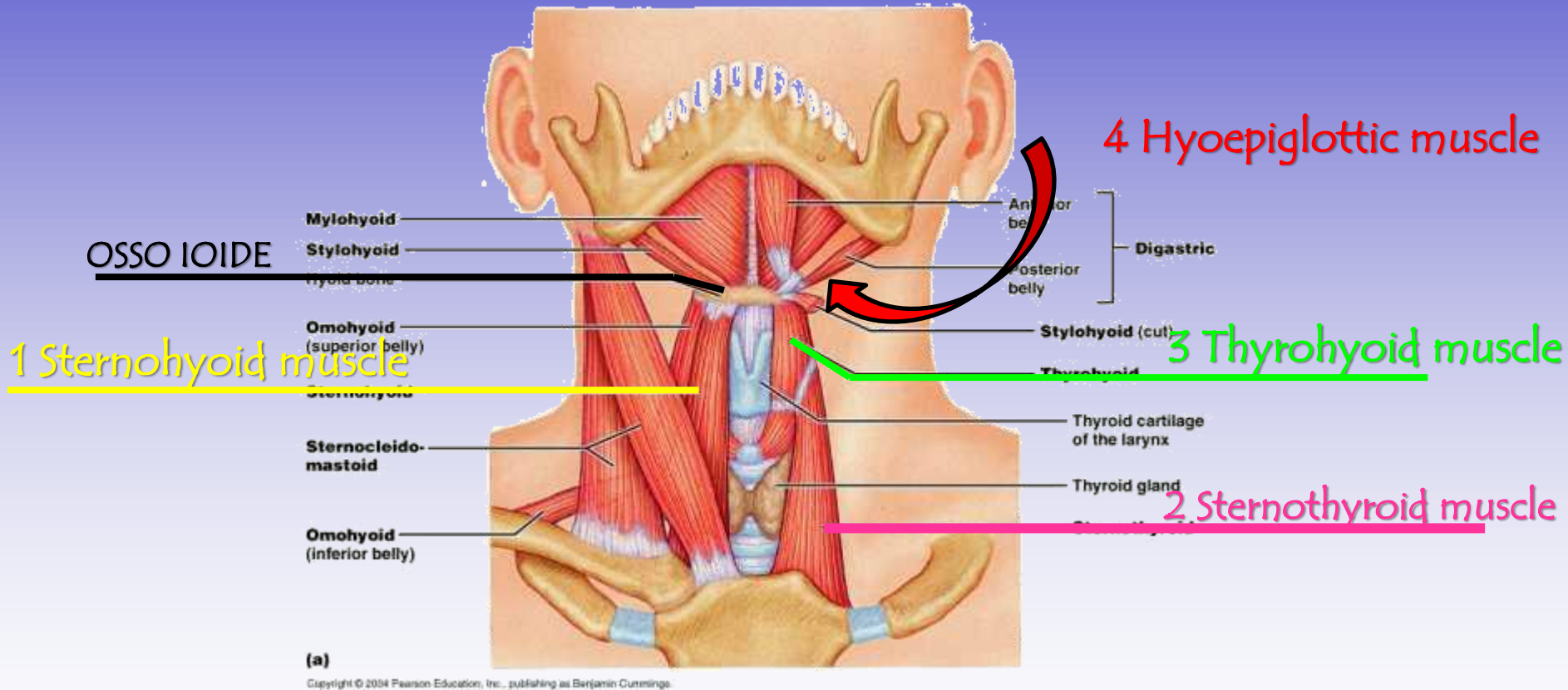
- 1. Thyroarytenoid ligament**
- 2. Mucosa**
- 3. Vocal muscle (part of the thyroarytenoid muscle)**



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Extrinsic Musculature

The **larynx** also has an **EXTRINSIC MUSCULATURE** consisting of muscles that connect it to the **bony skeleton** and that also act on the **vocal cords**.

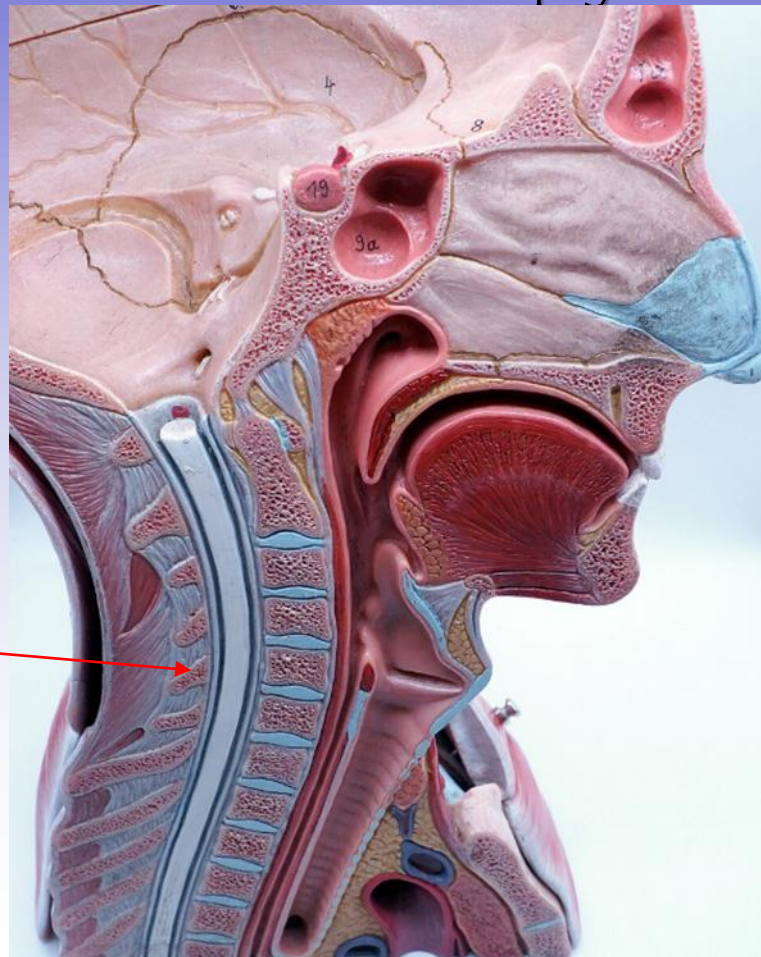


The **extrinsic musculature** moves the larynx as a whole, unlike the intrinsic musculature, which moves the individual cartilages..

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LARYNGEAL TOPOGRAPHY

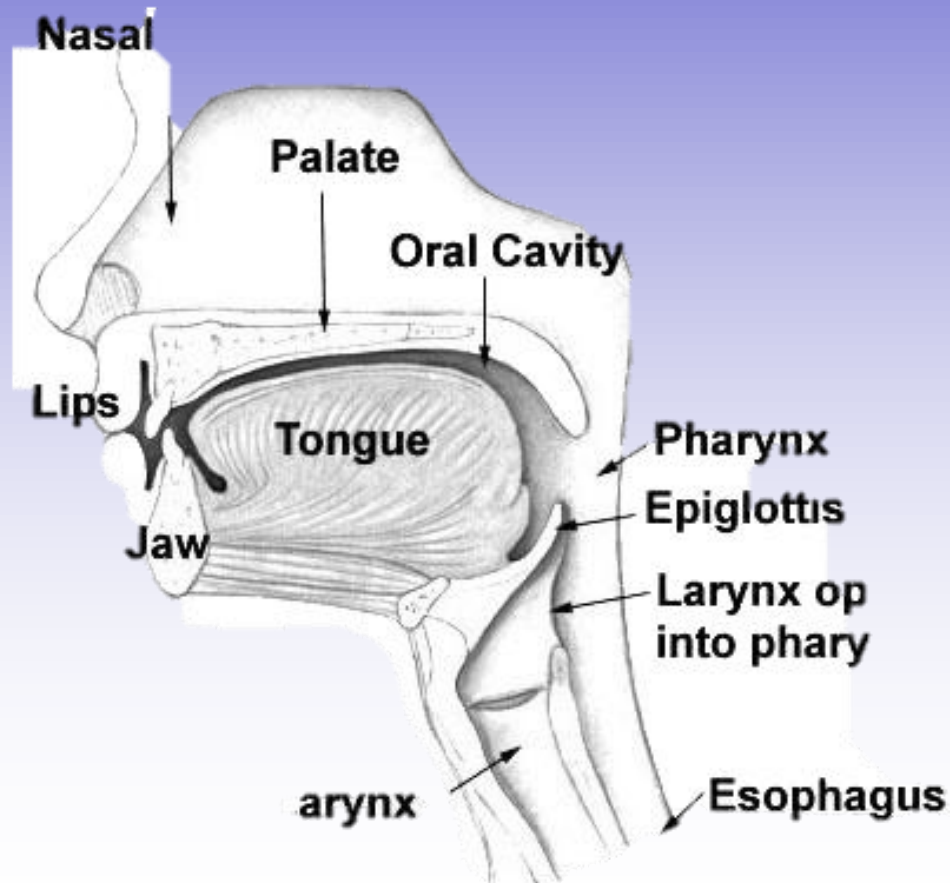
The caudal end of the larynx never extends beyond the 6th cervical vertebra (1st in the horse / 4th in the pig).



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LARYNGEAL TOPOGRAPHY

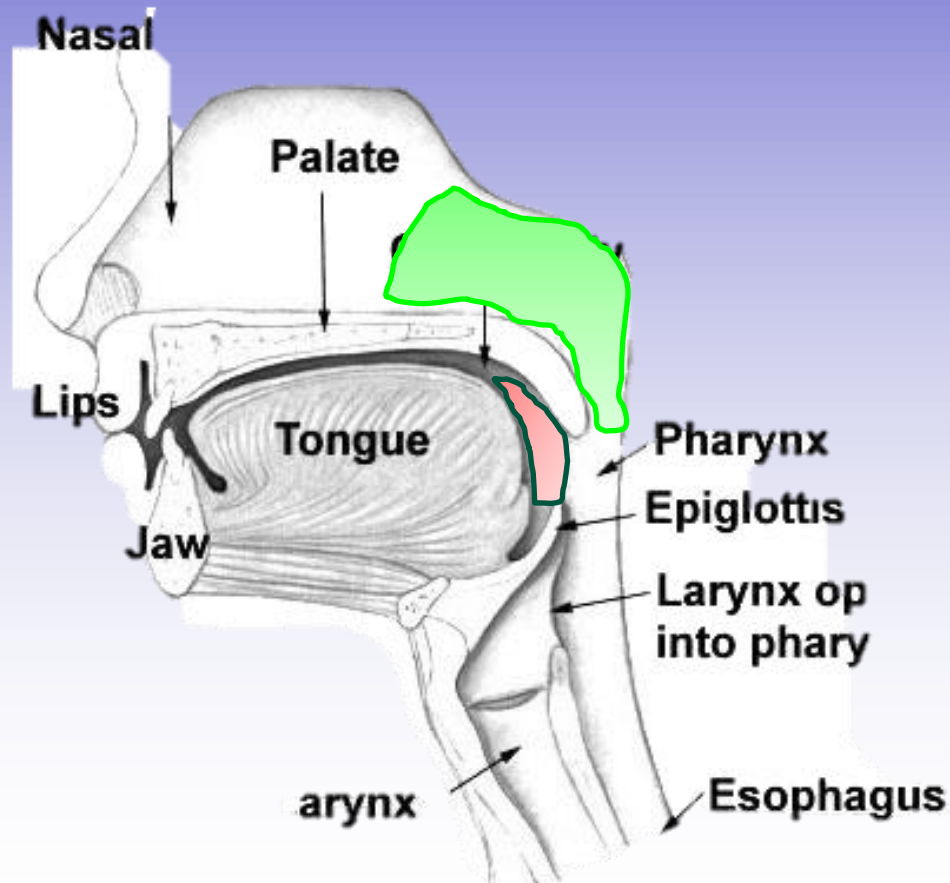
The superior surface of the larynx is covered by the mucosa of the laryngopharynx and posteriorly by the initial portion of the esophagus..



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LARYNGEAL TOPOGRAPHY

The larynx is related rostrally to the **oropharynx** and, through the choanae, to the **nasopharynx**..



RESPIRATORY SYSTEM PART II