

## The Paranasal Sinuses:

The paranasal sinuses are ventilated spaces (series of cavities arranged one after another ) connected to the nasal cavity and lined with same mucosal lining of nasal cavity . They develop as blind ending pouches between the lamina of the bones of the skull.

Sinuses \ Animal	carnivores	Ruminant	Equine
<b>Frontal</b>	+	+	+
<b>Maxillary</b>	+	+	+
<b>Sphenoid</b>	<b>Only cat</b>	<b>Only ox</b>	+
<b>Palatine</b>	–	+	–
<b>Lacrimal</b>	–	+	–
<b>Conchal</b>	–	+	–

## Nasopharynx:

It is part of pharynx which located dorsal to the soft palate and Larynx.

### Openings of pharynx :

Right and left auditory tube (Eustachian tube )-----2  
 Caudal nasal opening (choana)-----2  
 Esophageal opening -----1  
 Laryngeal opening-----1  
 Oropharynx-----1

## Larynx:

It is a **short cartilaginous tube** located between the pharynx and trachea , consist of many cartilages attached to each other , it is called the voice box which act for production of voice and protect the trachea.

### Cartilages of the larynx:

1. Unpaired cartilages these are:

\* Cricoid cartilage: most caudal cartilage of larynx, it is ring in shape.

\* Thyroid cartilage: largest cartilage of larynx consist of two quadrilateral plates (right and left ) fused ventrally .

\*Epiglottis cartilage: most cranial cartilage of larynx caudal to the root of tongue has lingual and pharyngeal surface

2. Paired cartilage (arytenoids cartilage): appeared as three sided pyramid located on each side of cricoids cartilage .

**Trachea** : A flexible cartilaginous and membranous tube which extends from cricoid cartilage of the larynx to the root of lung when it bifurcates into 2 principle bronchi ( right and left ) just dorsal to the base of the heart . It is connect the pharynx and larynx to the lung and it's divided into cervical part and thoracic part according to the region of the body that is traverses . It's also called ( windpipe ).

### Comparative of tracheal cartilages rings :

The number of tracheal cartilages is not constant in all species of animals:

**In horse:** There are 48-60 hyaline cartilages and 70- 80 cm in length. The cartilaginous plates which bent to form incomplete hoops that open dorsally . The free ends overlap, the right end overlying the left .

**In ruminant:** There are 50-60 hyaline cartilages and 65 cm in length, The cartilaginous plates are bent so that their free dorsal ends almost touch and form a dorsal crest.

**In dog:** There are about 42-46 rings.

**In cat:** There are about 38-43 rings.

**In dog and cat** the cartilaginous plates or rings which appear as C shape joined by muscle also free ends is in same level.

**Carina trachea** : a concave vertical ridge project into the lumen of trachea at its bifurcation separated between the right and left principle bronchus it is either cartilaginous and membranous carina which is also called tracheal spur.