



Lecture title: Respiratory System /The trachea

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The trachea:

Is a non-collapsible tube which continues the respiratory part from cricoid cartilage of the larynx to the root of the lung, where it bifurcates to form the right and left principal bronchi.

Trachea consists of cartilaginous rings connected by annular ligaments. It covered by adventitia and lined with mucus membrane (respiratory epithelium & goblet cells).

-Tracheal bifurcation: is the splitting of trachea into right & left bronchi, it's above the base of the heart right to the midline.

-The tracheal cartilages: are C-shaped cartilaginous rings, incomplete dorsally, they make up the skeleton of trachea and keep it always open.

-Annular ligament: is a fibroelastic tissue unite the tracheal cartilaginous rings, making the trachea a flexible tube.



-Trachealis muscle: is a smooth muscle connect the opened (free) dorsal ends of each tracheal cartilages together.

The trachea of **horse** is about **70-80 cm** in length and have **48-60** tracheal ring, the ring have circular shape compressed dorsoventrally.

-The trachea of **ruminant** is about **65cm** in length in **ox** and about **25cm** in length in **sheep & goat** .The number of tracheal rings in ruminants is about **48-60 ring** with oval shape in sheep and dog, circular shape in goat, and with U-shape in ox.

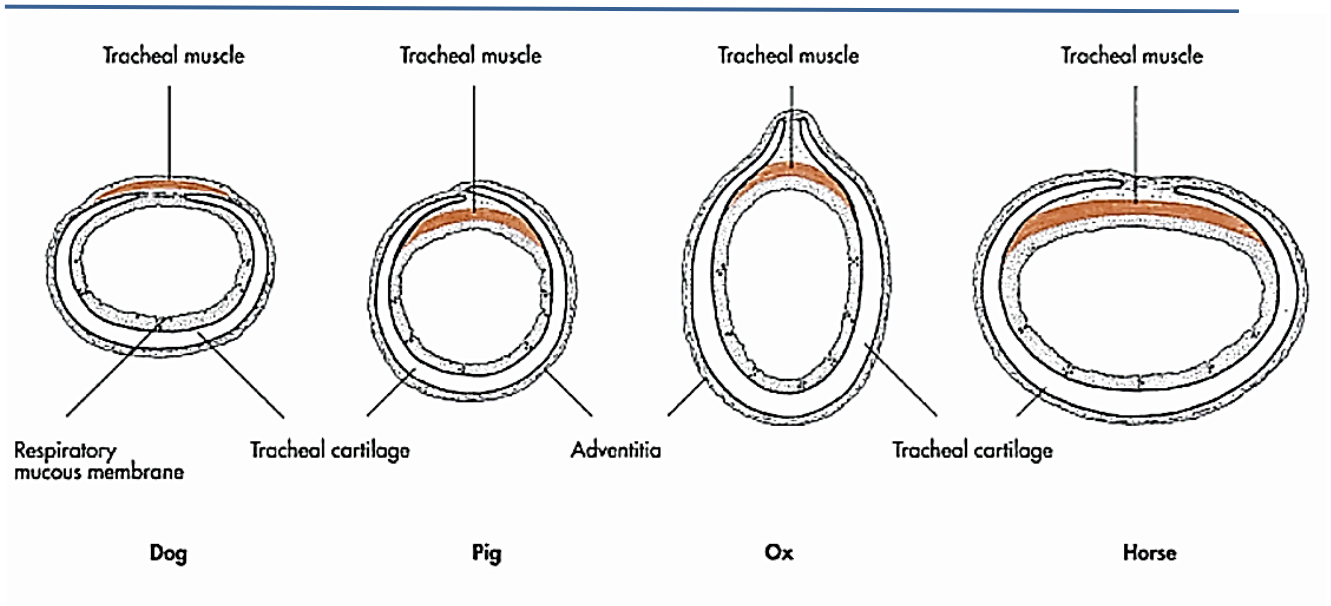
-In horse & ruminants the trachealis muscle which is smooth in type connect the two free ends of each tracheal ring internally but in dog it connect the free ends of each tracheal ring externally.

-Arteries that supply the trachea are:

Branches of common carotid artery, and bronchoesophageal artery.

-Nerve supply to trachea are:

Parasympathetic and sensory nerve fibers from recurrent laryngeal nerve and sympathetic nerve.



8-25. Transverse section of the trachea of the different domestic species (schematic).

Bronchial Tree:

1-Right & left primary (principal) bronchi: short thick segment entering each lung's hilus to divide into lobar bronchi.

2-Lobar (secondary) bronchi: is the divided continuation of the principal bronchi that ventilate one lobe and give rise to segmental bronchi (tertiary bronchi).

3-Bronchioles: are small tubes with no cartilaginous support arising from the segmental bronchi(tertiary bronchi).

4-Terminal bronchiole & respiratory bronchiole :are the respiratory part of respiratory system. The wall of respiratory bronchiole contain some alveoli.

5-Alveolar sacs: the terminations of the alveolar ducts, surrounded by alveoli.

6-Alveoli: thin walled sacs for gas exchange.



-**The tracheal bronchus:** is the bronchus that arise cranially to tracheal bifurcation to supply the cranial lobe of right lung (present in ruminant only).

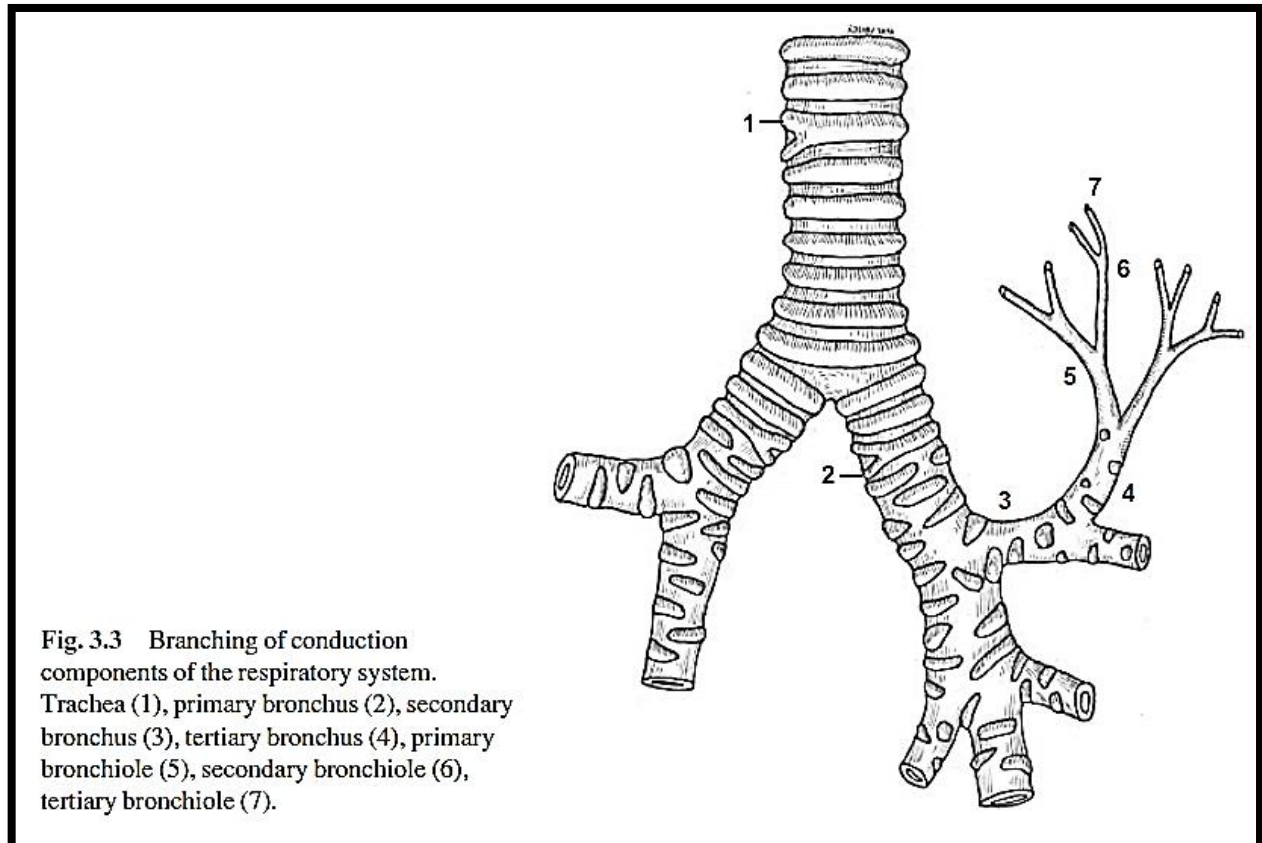


Fig. 3.3 Branching of conduction components of the respiratory system. Trachea (1), primary bronchus (2), secondary bronchus (3), tertiary bronchus (4), primary bronchiole (5), secondary bronchiole (6), tertiary bronchiole (7).