

Affection of Esophagus

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5th stage

Esophagus:-

It is a musculo-membranous tube serves to carry food, water and saliva from the pharynx to the stomach. It is divided into cervical, thoracic and short abdominal part.

Structure of esophagus or layers of esophagus:-

The esophageal wall consist of 3 layers:-

1-Tunica adventitia:-

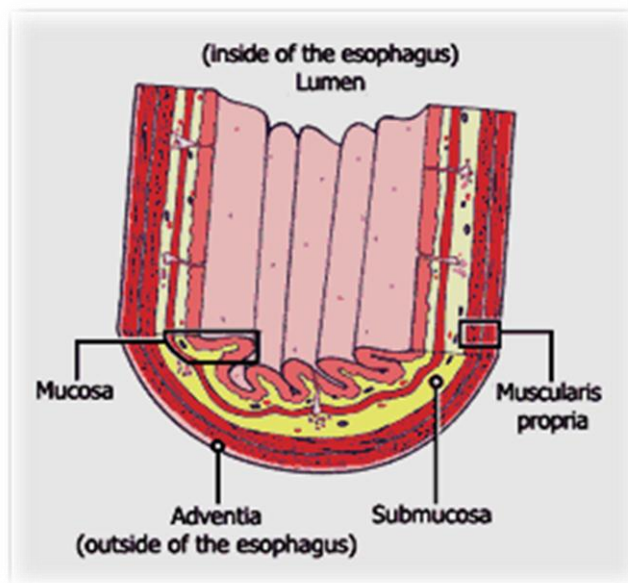
Loosely connects the esophagus to neighboring structures and allows freedom to move during swallowing and when the animal bends its neck

2-Tunica muscularis (muscular coat):-

By a wave like contraction moves the bolus toward the stomach or during regurgitation in ruminants toward the mouth

3-Tunica mucosa (mucous membrane):-

Covered with stratified squamous epithelium, which is cornified particularly in herbivores.



Blood supply of esophagus:-

Cervical part → supplied by branches of the right and left common carotid arteries

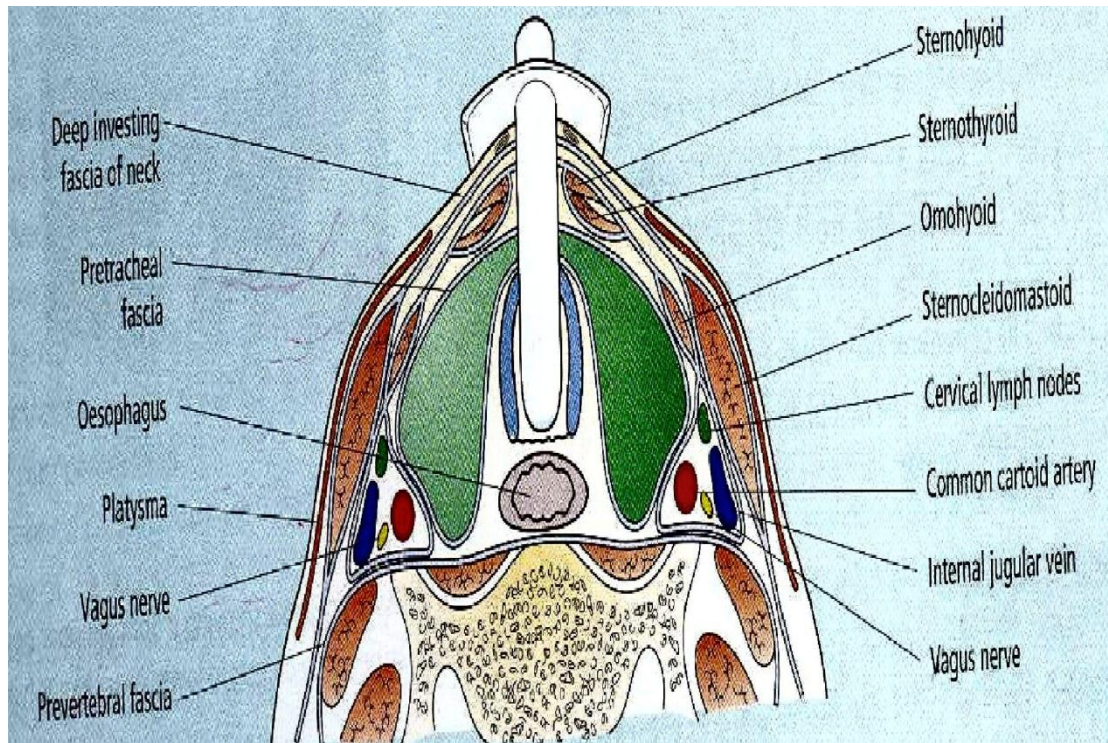
Thoracic part → by the bronchoesophageal artery.

Innervations of esophagus:-

derived from the vagus and sympathetic trunk.

The most important relations of the cervical part:-

- 1-Common carotid artery
- 2-Jugular vein
- 3-Trachea
- 4-Cervical lymph nodes
- 5-Vagosympathatic trunk
- 6-Caudal (recurrent) laryngeal nerve
- 7-Thymus in young animals.



Factors contributed to the high complication rate of esophageal surgery:-

- 1-lack of serosa.
- 2-the segmental nature of blood supply.
- 3-lack of omentum.
- 4-the constant motion of swallowing & respiration.
- 5-tension at the surgical site.

Principles which successes the esophageal surgery:-

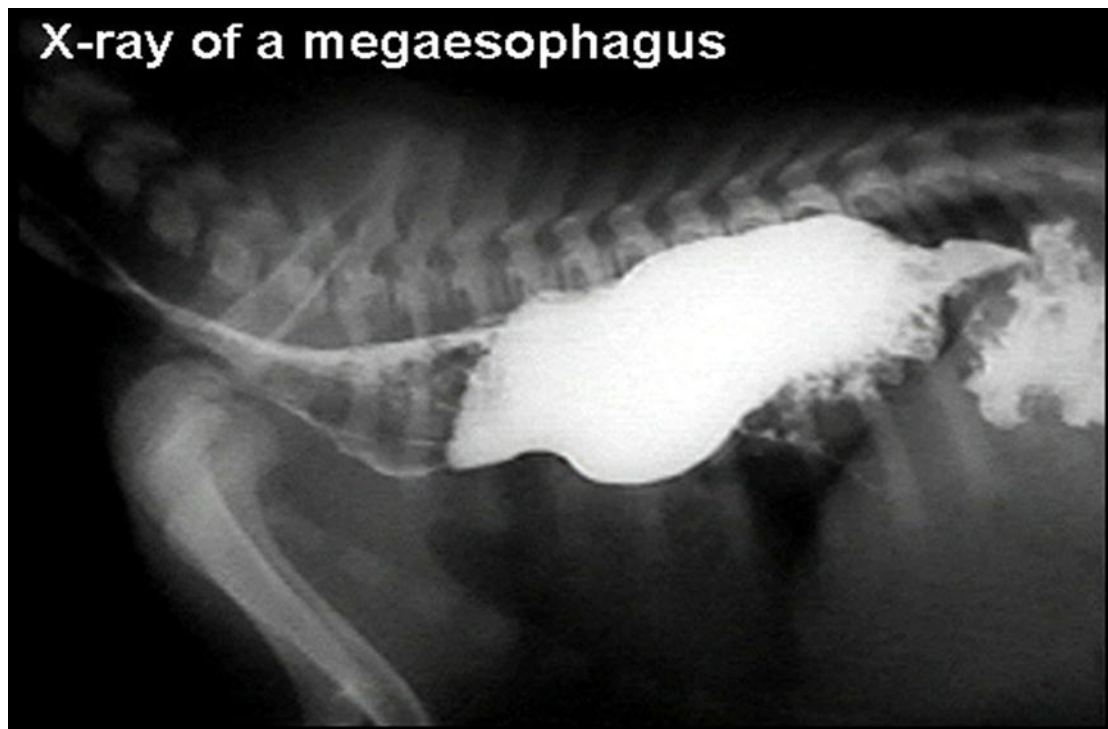
- 1-gentle handling of tissue.
- 2-minimization of contamination.
- 3-appropriate selection & application of suture material.
- 4-appropriate use of electrocautery.
- 5-accurate apposition of tissues.

Affections of the esophagus

1-Dilation of the esophagus (Mega-esophagus):-

This can involve large segments or the whole of the esophagus which is then flaccid and aperistaltic. This is a congenital defect and seen most often in foals and it is a lethal abnormality. It is manifested by milk or ingesta reflux from the nostrils, and after ingestion of solid feed a doughy enlargement of the esophagus extending from the area of the larynx to the thoracic inlet. Passing a stomach tube is difficult. Death occurs as a result of inhalation pneumonia or asphyxia.

Other causes of esophageal paralysis may be caused by intoxication and intracerebral infection.

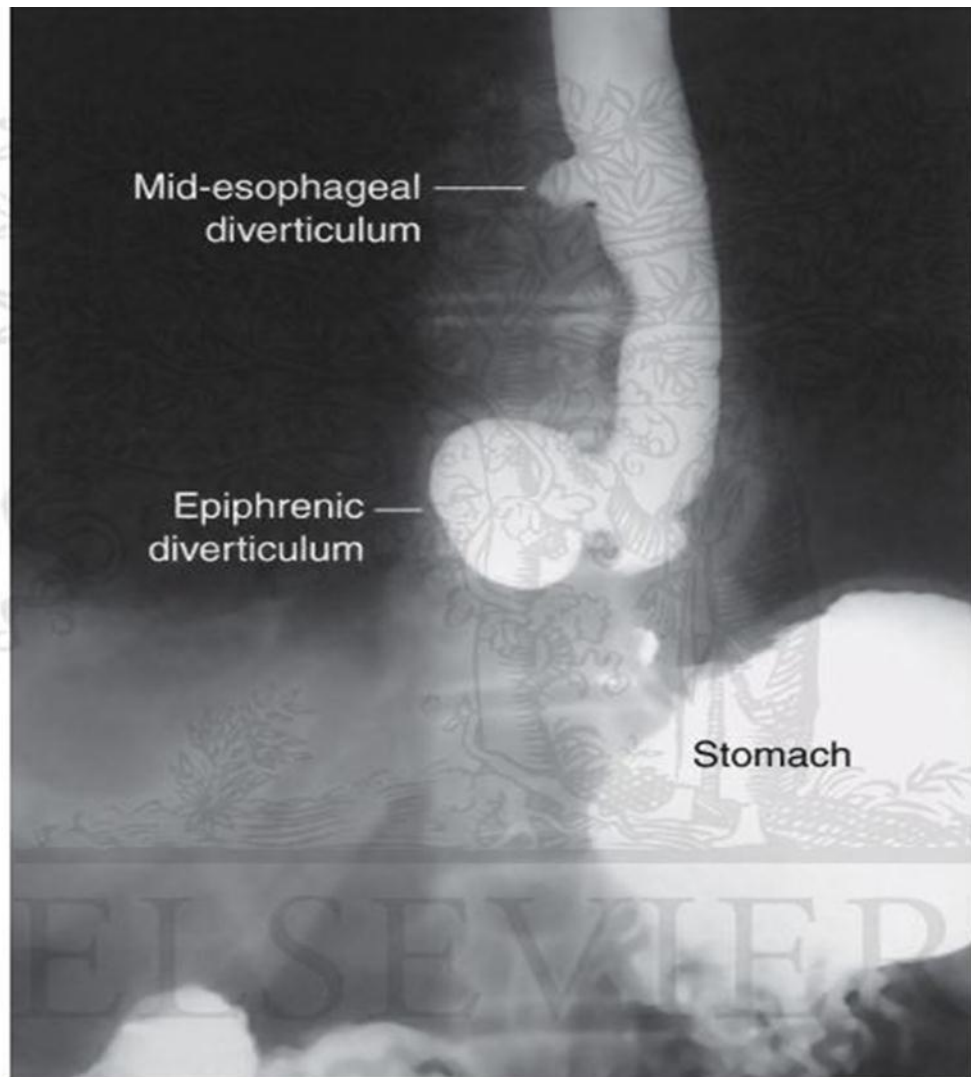


2- Fusiform or cylindrical dilation:-

It occurs following obstruction, this dilation extends from distal point of obstruction for a variable distance. This continues until the normal diameter has been regained.

3-Esophageal Diverticula:-

Is circumscribed sacculations in the wall of esophagus that interfere with the normal esophageal motility patterns. The esophageal diverticula may be congenital or acquired.



Congenital diverticula:- have been attributed to abnormalities in embryological development that permit herniation of the mucosa through a defect in the muscularis.

Acquired diverticula:- are subdivided into:-

A- A pulsion diverticulum(pseudodiverticula):-

Is an out-pouching of mucosa that herniates through a defect in the tunica muscularis . it caused by increased luminal pressure as a result of mechanical (foreign body, stricture) or functional esophageal obstruction . in human, pulsion diverticula are most frequently located in the pharyngoesophageal region (Zenker`s diverticula) or cranial to the diaphragm (epiphrenic diverticula).

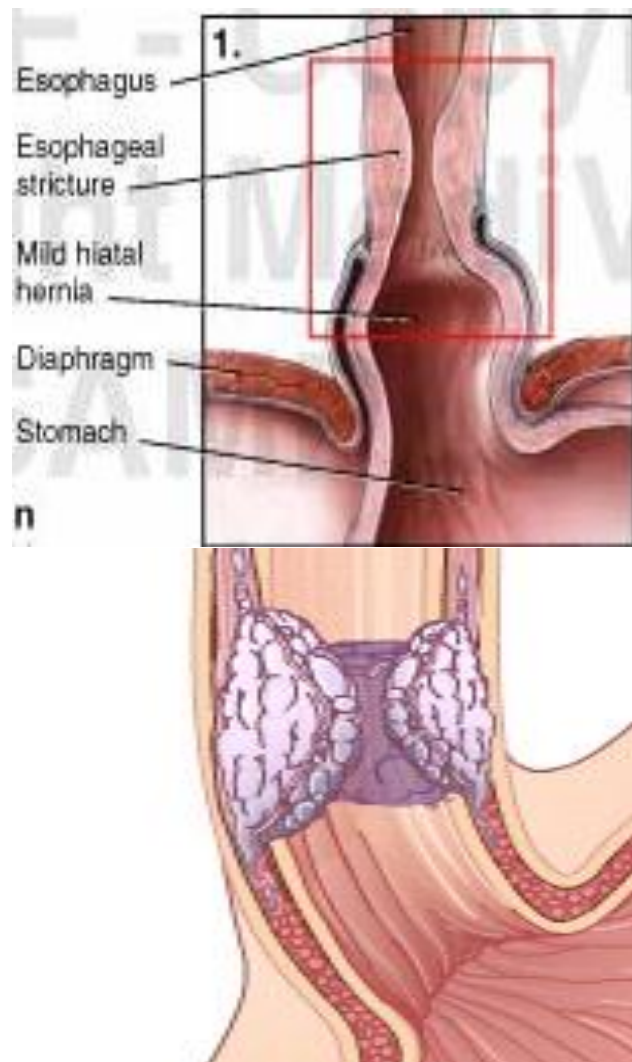
B- A traction diverticulum(true diverticula):-

Is a full-thickness deviation of the esophageal wall, developed in the cranial & mid-esophageal body & result from peri-esophageal inflammation & fibrosis.

4-Narrowing of the esophagus:-

The causes of esophageal narrowing are:-

- 1-There is a stricture from formation of scar tissue as a result to a wound caused by sharp objects after local pressure, necrosis or after esophagotomy. It can also occur after severe esophagitis particularly from caustics.
- 2-Neoplasia of the esophagus particularly squamous cell carcinoma and papilloma decreases the diameter of the lumen.
- 3-Abscess of the esophageal wall
- 4-Pressure from outside the esophagus causes obstruction to the passage of feed, and in ruminants may cause chronic bloat e.g. enlargement of the mediastinal lymph nodes in cattle (often tuberculosis).
- 5-Goiter if large, causes pressure on the esophagus.
- 6-In dogs narrowing due to injury following general anesthesia caused by reflux of acidic gastric contents.
- 7-In dogs also infestation of *Spirocerca lupi* causing granulomatus growth in the esophagus and narrowing.



5-Esophageal Fistulas:-

Is an abnormal communication between the esophagus & the trachea, bronchus, lung parenchyma. Esophageal fistulas may be congenital or acquired.

Congenital esophageal fistulas result from an incomplete separation of the tracheobronchial tree from the digestive tract whereas the acquired esophageal fistulas are secondary to esophageal foreign bodies.

Note:-

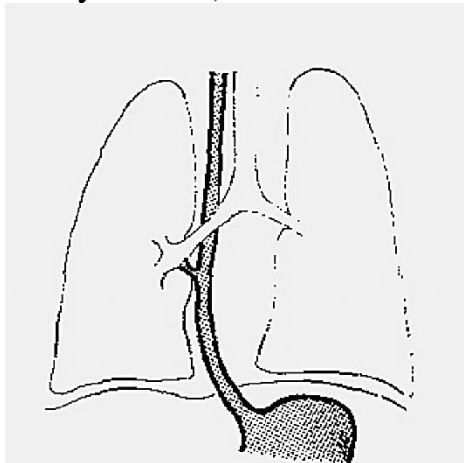
Median age of affected animals is (3years) range (6months to 7 years).

Types of esophageal fistulas:-

1-cervical esophageal fistula.

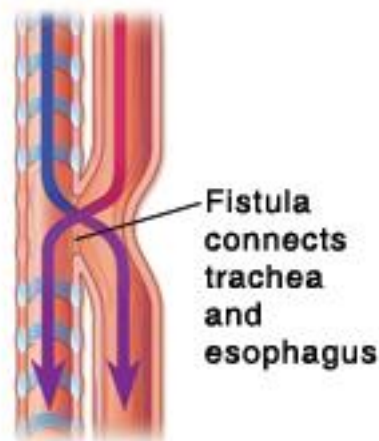
2-Bronchoesophageal fistula:-

Is an abnormal opening between the esophagus & bronchus . it may be congenital (rare) or acquired(foreign body & pulmonary disease).



3-Tracheoesophageal Fistula (TEF):-

is an abnormal opening between the trachea and the esophagus. In embryo the trachea and esophagus start out as one tube. Then, they are supposed to separate into two tubes. But if the wall of tissue between the trachea and esophagus doesn't form fully, an opening between the two tubes remains. This is a fistula. during eats, food can pass from the esophagus through the fistula into the trachea. This can cause breathing problems. Symptoms of TEF include drooling and coughing up mucus.



Clinical signs:-

- 1-coughing, which may be associated with drinking liquids.
- 2-regurgitation.
- 3-lethargy.
- 4-anorexia.
- 5-pyrexia.
- 6-dyspnea.
- 7-weight loss.

Diagnosis:-

- 1-clinical signs.
- 2-contrast radiography.

Treatment:-

The treatment of esophageal fistula depended to the site of fistula :

-Cervical esophageal fistula:-

In acute cases may need treatment with open drainage.

-Bronchoesophageal fistula:-

A lateral thoracotomy is performed, the fistulous tract is excised rather than ligated, the esophageal defect can usually be closed primarily. if the extensive lesion in the communicating lung lobe, the lung lobectomy is necessary .

-Tracheoesophageal fistula:-

The tracheal defect is closed primarily or reconstructed.

Esophageal problems in cattle

The most important surgical problem involving the esophagus is choke or obstruction caused by foreign objects. In adult ruminant this problem may require immediate attention, as blockage of the esophagus will limit or prevent the eructation of gases produced by fermentation in the rumen. A delay in treatment may lead to death from the respiratory disturbance due to tympany.

Common objects cause choke in cattle:-

- 1-Potatoes, fruits and other vegetable roots.
- 2-Compression the lumen of the esophagus by space occupying lesions, as lymphosarcoma of thymus, or mediastinal lymphadenopathy.
- 3-Trauma may be caused by stomach tube passage, chemical irritation from medicated boluses in the esophagus.
- 4-Damage caused by the lesions of migrating Hypoderma larvae.

Clinical signs:-

- 1-History of eating a particular food stuff
- 2-Bloat
- 3-Tenesmus
- 4-Urine dribbling
- 5-Retching and salivation.

Treatment:-

- 1-If the object can be palpated in the cervical area it may be possible to restrain the animal and retrieve the object manually from the esophagus.
- 2-If it cannot be reached, one may pass stomach tube and try to push the object into the rumen.
- 3-If the object lodges at the cardia, a rumenotomy may have to be performed to allow the surgeon to reach through the cardia and retrieve the obstructing object.

Esophageal problems in horses

Obstruction causes includes, foreign bodies, wounds, stricture or narrowing, diverticulum, dilation and esophageal spasm.

Clinical signs:-

- 1-Ptyalism
- 2-Dysphagia
- 3-Regurgitation of food, water and saliva from the mouth and nostrils
- 4-Coughing
- 5-Some horses will show distress and sweating
- 6-Extension of head and neck.

Diagnosis:-

- 1-Clinical examination
- 2-Radiology
- 3-Endoscopy.

Treatment:-

Esophagotomy.

Esophageal Anastomosis (Esophagectomy):-

Necrotic tissue or extensive perforations with necrosis are indications for esophageal resection and Anastomosis.

Surgical procedure:-

- 1-After exposure of the esophagus, the operative field should be packed off with moistened pads to prevent contamination with esophageal contents
- 2-The esophagus is stabilized by an assistant with the index and middle fingers of each hand (clamp) to minimize contamination
- 3-The diseased portion of the esophagus is resected
- 4-All necrotic tissue should be excised, and shreds of tissue and muscle should be carefully debrided to expose healthy tissue
- 5-Three stay sutures are placed at equal distances around the esophagus in healthy tissue. These sutures facilitate gentle handling of the esophagus and help to maintain apposition of the cut ends.
- 6-The mucosa is now closed with simple interrupted sutures of (4/0) polypropylene. The sutures should be about 2mm apart and include a 2mm bite of mucosa. All knots of the mucosal sutures should lie in the lumen.
- 7-The muscular layer is closed with simple interrupted or horizontal mattress sutures of (3/0) polygalactin.

