Digestive System

The function of the digestive system: Secretion, digestion, absorption and movement. Diagnosis of abnormalities of digestive system by:

1. Abdominal palpation.

2. Oral examination.

3. Rectal palpation.

4. Percussion and auscultation.

5. Radiography and endoscopy.

6. In addition to that sampling and analysis of saliva, stomach content, feces, abdominal fluid may yield information of importance in differential diagnosis also hematological examination for complete blood count and chemical component is used in differential diagnosis.

   Oral cavity

Affection of oral cavity:

1. Abscesses of the oral cavity associated with actinobacillosis or actinomycosis infection, appropriate medical therapy can be undertaken after bacteriological examination to confirm diagnosis.

2. Traumatic lesion: The mouth may be wounded by the penetration of sharp or pointed bodies entering through the cheeks or sharp teeth lacerating the cheeks and lips or by fragment of bone in fracture of the jaw also may be foreign bodies taken in food such as nails, needles, pins. These wounds are only serious when an important vessel or nerve was involved. Ordinary wounds of the mouth heal rapidly. It is only necessary to clean them after feeding. A foreign body must be removed, debridement, antiseptic. When fracture of mandible, reduction and immobilization of the fracture was achieved by the use of transverse pins, bone plate or combination of both with wiring and external fixation. In cattle: Foreign bodies lodged in the oral cavity or pharynx is common problems. Treatment: removal of foreign body by manually or surgical operation depends on the type of foreign body encountered.
3. **Neoplasm**: Usually pedunculated may result in intermittent blockage of the oral or nasal pharynx. Epulis was located primary tumor with a malignant tendency generally on the gum adjacent to the upper or lower incisors which displaces the lip with its increasing size and tend to be recognized at an early stage. A tumor of the floor of the mouth may involve the under surface of the tongue, the lower jaw bone, and other tissues of the area. A small lesion detected early can be controlled in most cases by excision of the growth and radiation therapy.

**Lips**

1. **Hare lip**: This is a cleft in the upper lip which often runs into the nostril, may be unilateral or bilateral and is often associated with cleft palate. Cleft of the lower lip is rare and usually occurs on the midline. The defect may also involve the palate alone, affecting the hard or soft components of the palate, or both. Hare lip may be due to incidental or genetic origin. It occurs in all species and appears to be most common in calves. **Treatment**: The edges of the cleft are excised and the incision sutured.

2. **Trauma**: Wounding of the lips is fairly frequent after car accident, contact with sharp protruding objects, attack by dogs. Because of the excellent blood supply, healing is usually rapid. In severe laceration or loss of substance, plastic surgery is called for to preserve the function of the lips. Repair requires careful surgical apposition of the lip margins. Mucosa and skin layers are sutured separately.

3. **Avulsion** of the lower lip from the gingival margin: in severe laceration, reconstructive surgery is indicated. This can be problematical because of the high muscular content and movement in the lips and tongue. Careful attention should be paid to normal principle of wound cleaning and debridement. Tension should be tied on the skin surface rather than over the mucous membrane.

4. **Retraction of the lips**: Sometimes as the results of injury and consequent development of much fibrous tissue between the lip and the gum, cicatricle contraction retracts the lip and prevents its meeting with the other one. This may be remedied by making an incision between the gum and the lip.
5. **Tumor**: papilloma or warts are common on the lips of the horse and are less frequently seen on those of cattle. The tumors form in clusters and are various dimensions. They cause salivation and usually an offensive smell from the mouth. Treatment: Excision.

### Cheeks

1. **Tumor**: occasionally occur and may present special management problems because of oral fistulization associated with the lesion itself as a result of therapy. Treatment: cryosurgery.

2. **Wound**: penetrating wound of cheeks or loss of substance from the edge of the lips. Treatment: repair under general anesthesia, the wound edge is excised and a horizontal incision was made above and below the hole, somewhat larger than the diameter of the wound. The hole is closed with deep interrupted silk sutures. The horizontal incisions are sutured.

### Hard palate

The osseous base of the hard palate is formed by the pre-maxilla, maxilla and palatine bones, and its borders are the alveolar arches.

**Cleft hard palate:**

Cleft in roof of the mouth may be congenital, but the hereditary basis of the anomaly is less well defined.

**Clinical signs:**

1. Dysphasia with reflex of milk or food material through the nostril.
2. Direct visual or by endoscope.
3. Aspiration pneumonia.

**Treatment**: The hard palate can be approached through:

1. Mandibular symphysiotomy.
2. Oral approach.
3. Pharyngotomy (limited exposure).

Small caudal defects of hard palate can be repaired using a mucoperiosteal sliding flap technique. Large cleft of the hard palate may be best repaired by the mucoperiosteal reflected flap technique.
**Soft palate**

Musculomembranous fold that separate the cavity of the mouth from that of the pharynx. Mandibular – symphysiotomy approach was used. However surgical exposure of the caudal soft palate is still poor with this approach and the supplemental use of a midline pharyngotomy. The repair of a cleft soft palate involves excision of the mucosal edge surrounding the cleft following by a two or three layer closure. Possible complication of mandibular symphysiotomy includes infection and drainage as well as osteomyelitis and loosening of the symphysiotomy site.

**Tongue**

**Injuries**: various injuries to the mucosa or muscular of the tongue caused by abnormal tooth shape or position, bites, foreign bodies, spiny vegetation and fine thorns. The depth and extend of the injury determines whether an inflammation reaction (Glossitis) develops.

**Treatment**:
- a. Fresh wound of the muscular should be cleaned and sutured.
- b. Old wound cleaning and application of local antiseptics and antibiotics.
- c. Large wounds of the tongue tip often heal badly due to the poor blood supply and constant movement and some become necrotic.

**Tumor**: Uncommon, but the one usually seen is sequamous cell carcinoma. Treatment is excision if possible or amputation where practicable.

**Fracture of hyoid bone**: The hyoid bone is occasionally fractured following severe traction on the tongue or in blunt trauma which also produce a mandibular fracture. Treatment: Trachostomy in severe dyspnea, fracture immobilization if possible by expose the fractured bone and wire the ends together. Forced feeding by stomach tube, long – term feeding an indwelling oesophagostomy tube may be considered.

**Laceration**: Occur after street accidents or by sharp tooth fragments. If laceration is deep suture it under general anesthesia. Suturing should involve obliteration of dead space within the tongue substance. Tension suture on the dorsum of the tongue is more effective than suture placed on the ventral muscular portion.
Salivary glands

**Trauma**: Fresh wound involving the salivary glands can be sutured. When suturing is not practical, healing by granulation occur. However, a permanent fistula may develop following trauma to a salivary duct. The fistulous tract has usually formed a fibrous tube; it should be excised by a circular incision around the fibrous wall cut this off close to the salivary duct. Introduce a polyethylene catheter into the duct; secure the end in the mouth with a few sutures and in the cheek and cut off the excess. Closure the wound in several layers with catgut. The skin wound is closed with interrupted silk sutures. The tube facilitates normal drainage of saliva.

**Sialotiths**: These usually occur in stensens duct (parotid duct) and can achieve considerable size. The calculi consist mainly of calcium carbonate and are considered to require a nidus (small foreign body or inflammatory process) for the position of the calcium salts. Enlargement due to the calculus is the usual clinical future. Radiographs can be used to confirm the presence of sialolith. Surgical operation can be done under general anesthesia, make an incision over the swelling along the course of the duct taking care to avoid accompanying veins and arteries. Expose the calculus then remove it and suture the duct wall with continuous catgut suture.

**Salivary cyst (Ranula, mucocele)**: Rupture of a duct and leakage of saliva into the surrounding tissue to form fluctuant swelling diagnosis by aspiration of saliva on needle puncture. The D.D from thyroglossal cyst and cervical abscess.

**Tr**: Fistula creation from cyst to the mouth by placing a Penrose drain, or radical excision of cyst and associated damaged Sal. gl.

**Neoplasm's**: The parotid gl. may be the seat of benign or malignant tumors. The commonest tumors in this region are melanomata, which often contain sarcomata's elements and are found chiefly in grey horses. adenocacinomas of the parotid and mandibular gl. are most common and occur in dogs horse and cattle.

**Teeth**: Examination of the teeth not only is important for determining age but also help to identify abnormalities that might be present such as fractured teeth, sharp enamel and other lesion. The tooth was consist of the followings:

- **Crown**: part of the tooth which appear over the gum.
- **Neck**: area between crown and root.
Root: embedded in alveolar tissue which contain bl.v and nerve.

Common clinical signs of dental disease

1 – Difficulty in mastication.
2 – Quidding (drop of food out of the mouth in process of mastication).
3 – Weigh loss.
4 - Unilateral or bilateral nasal discharge
5 – Malodorous breath
6 – Swelling over the dental area
7 – Drainage from a fistula or sinus
8 – Sinusitis
9 – Reluctance to drink water
10 – chewing of food on one side with tilting of the head
11 – passage of un masticated food in feces

Diagnosis of dental disease
   1- Oral examination
   2- Radiography
   3- Endoscope if there sinusitis
4- Clinical signs

**Supernumerary Teeth (polydentia)**
Congenital condition leading to dental crowding usually in incisors.
Treatment: Extraction of these teeth.

**Oligodontia**
It is a congenital absence of tooth germ or retention and inclusion of a tooth with in the jaw.

**Sharp teeth**
This condition occur due to irregular wear of teeth leading to painful lesion of buccal mucosa or tongue and cause disorder of mastication. The outer border of the upper and inner border of the lower of molar become sharp.
cause:
1- Upper jaw more wide than lower jaw.
2- Weakness of maseter muscles.
3- Painful lesion so grinding at specific area.

Tr: rasping

**Dental caries**
Decalcification of the hard tooth substance involving either crown, neck or root, may be superficially carries or deeply or penetrating to opening of pulp cavity leading to cavilation of tooth. Cariogenic bacteria that produce acid from carbohydrate fermentation and in addition proteolyses enzymes of different kinds of bacteria both destroyed and attack organic substance of tooth. Also defiance of fluorine play important role of this disease.

Clinical signs:
1- Brown to greyish brown or black discoloring.
2- Pain.
Tr: Removal of brown substance then used, amalgam

**Dental tartar**
Deposition of material on tooth surface which acts as nucleus for tartar formation due to calcified of material by mineral salts of saliva especially cal. phosphate,
calcium and magnesium carbonates and organic substance. Tartar does not cause any clinical signs unless it involves the gingival border in which case primary marginal gingivitis may cause separation between gum and tooth, leaving a hollow to collect fecal particles lead to periodontal disease.

Treatment: 1- removal of tartar by tooth scaler.
   2- removal by H2O2 1:5 mouth wash
   HCL 1:100 mouth washes

**Alveolar periostitis**

The alveolar periosteum is a vascular layer of c.t that attaches the embedded part of the cheek tooth to the alveolus. Inflammation changes in the area with secondary of bone enlargement, fistulation and sinusitis.

**Causes:**
1- The most common routes of infection include entrance of food material and resultant of infection through a patent infundibulum between the gum and tooth.
2- Association with fractured of tooth.

**Tr:**
1- antibiotic.
2- Extraction.

**Indication of teeth extraction**

1- Dental fistula originating from the root of an infected cheek tooth.
2- Sinusitis associated with diseased maxillary cheek tooth.
3- Fractured tooth with septic alveolar periostitis and osteomyelitis.
4- Neoplasia, abscesses or fractures of the mandible or maxilla.

**Repulsion**

Trephination and tooth repulsion, this is indicated whenever a tooth cannot be extracted.

**Tooth extraction**

Under general anesthesia a dental extractor is placed on the tooth and lateral to medial motion applied. When the tooth loosens in the alveolus, there is a sucking noise and rotary motion may then be used to help elevate the tooth. Following removal any debris should be removed from the socket, but the clot is left
undisturbed. The cavity is flushed and a gauze pack inserted. This may be replaced with dental wax.

**Pharynx**

The pharynx is functionally part of both the digestive and respiratory system. The pharynx divided into oral and nasal pharynx, The nasal pharynx is located dorsal to the soft palate.

**Foreign body**

Animal eat or chew almost anything specially cattle such as stick, potato, orange, these may be lodged in pharynx.

**Clinical signs**:
- a- Salivation
- b- Not able to eat

**Diagnosis**:
1- Clinical signs
2- Oral examination
3- Endoscope

**Tr**: manual removal of foreign body

**Pharyngeal Cyst**

The most frequent location of these structures, which ranging (1-5cm) in diameter is beneath the epiglottis. An occasional cyst may be located in the mucosa of the dorsal nasopharynx. There are capable of causing clinical signs related to air-way obstruction or dysphagia. The etiology of pharyngeal cyst may be either development or acquired.

**Diagnosis**:
1- clinical signs
2- Endoscope examination

**Treatment**:
Resection of pharyngeal cystic structure is accomplished through a ventral laryngotomy approach with the patient in dorsal recumbency.
Pharyngeal abscess

More frequently there are the results of trauma to the pharyngeal mucosa from sharp objects or sometimes abscesses develop in calves as a result of septicemia.

Clinical signs:
1. Drooling saliva.
2. Anorexia.
5. Nasal discharge.
6. Enlargement of pharyngeal area caudal to jaw.

Treatment:
External drainage is probably the method of choice.

Space occupying lesion of the nasopharynx
The most frequent causes of nasopharyngeal lesion include neoplastic disease & fungal granulomas. Parasitic lesion caused by Habronema sp. The majority of neoplastic processes are malignant with sq. cell carcinoma and fibroma or fibrosarcoma. Fungal granulomas are most often caused by Enthomopthera sp.

Clinical signs:
1. Airway obstruction.
2. Nasal discharge.
4. Dysphagia.

Diagnosis:
1. Endoscopy.
2. Histological examination of biopsy.

Treatment:
Depends on the cause, location and extent of the lesion. Localized neoplastic lesions may be managed by direct excision in conjunction with cryosurgery. Fungal and parasitic granulomas may be excised if localized and treated with tropical amphotericin B and organophosphate respectively.
Surgical approaches to the pharynx

Four approaches can be made to the pharynx to perform surgical correction of various conditions. The selection of approach is determined by the disease present, the type of method of correction planned for the disease and the surgical exposure required. Each procedure has its advantages and disadvantages, the ventral laryngotomy was used most often for surgery of the pharynx and larynx.

1. Ventral laryngotomy.
2. Oral approach.
3. Pharyngotomy.
4. Mandibular symphysiotomy.

Ventral laryngotomy:
1. Midline incision is centered at the intersection of a line continued ventrally from the vertical ramus of the mandible.
2. Scissors are used to divide the sternohyoideus and omohyoideus muscles.
3. Self retaining retractors are used to facilitate the deep dissection.
4. The laryngeal lumen is entered through the cricothyroid ligament with a stab incision extended with scissors.
5. Retraction allows visualization of the laryngeal lumen. The surgical site is cleaned daily during the post-operative period.

Esophagus

Choke (Obstruction)

Obstruction of the esophagus occurs in all animals, but is common in bovines, which very prone to pick up foreign bodies & bolt them, especially during pregnancy. In cattle (potatoes, beets & other vegetables roots), in dogs & cats bone fragments like fish bone. There are certain predilection sites for the feed to cause blockage, these are at the pharyngeal entrance to the esophagus, as the opening is bigger than the lumen more distally. As the thoracic entrance occasionally at the aortic arch, as the 1st rib & the aorta limit esophageal distention, & the cardia, where sphincter tone diminishes the lumen.

Clinical signs:

1. Tendency to stretch the neck.
2. Salivation.

3. Ruminal tympany.

4. Water can not be swallowed.

5. Swelling may be seen in the left jugular furrow.

6. In horse may show sever distress by excitement, anxiety, sweating, shaking the head & walking about the stall.

Diagnosis:

1. Clinical signs.

2. The presence of an obstruction is confirmed by stomach tube.


Treatment:


2. Manipulative treatment by:
   a. Foreign body at the pharyngeal entrance, manual removal under heavy tranquilization.
   b. If the foreign body is not too far from the pharynx, a wire loop can be inserted & manipulated over the body & gently with drawn.
   c. If the object can be palpated in cervical area it may be possible to restrain the animal & retrieve the object manually from the oesophagus. If failed may pass stomach tube & try to push the object into the stomach.

3. Operative treatment: the musculature of the oesophagus is weak & holds sutures poorly, but the mucosa is relatively strong.

Complications of Oesophagotomy:

1. Dehiscence of incision.
2. Infection (extension into surrounding tissue).
3. Fistula.
4. Structure.
5. Leakage.
6. Diverticulum.
7. Dilation.
8. Laryngeal hemiplegia.

Oesophageal Diverticulum

There are two types of oesophageal diverticula:

1. Traction diverticula: result when contraction of perioesophageal fibrous scars tissue causes outward traction & tenting of all layers of the oesophageal wall. They commonly develop at the site of a healed oesophagostomy or following spontaneous healing of an oesophageal wound or fistula.

2. Apulsion Diverticulum: is a local protrusion of mucosa through the oesophageal musculature. Although two mechanisms described for the development of apulsion Diverticulum is fluctuations in oesophageal intra–laminal pressure & overstretch damage to oesophageal muscle fibers may impacted feed stuffs.

Clinical signs:

Diverticulum of the cervical oesophagus will typically present with an enlargement in the neck that results in dysphagia or choke. The swelling may increase in size in association with swallowing.

Diagnosis:

1. Contrast media.
2. Endoscopy.
Treatment:

Repair of apulsion Diverticulum is diverticulectomy. The oesophagus is exposed & the Diverticulum identified the edges of the ruptured tunica muscularis are dissected from the mucosa, being careful to avoid penetration of mucosa, the mucosal sac is inverted & the debrided edges of the tunica muscularis sutured together with simple interrupted suture.

Oesophageal stricture: The oesophageal wall layer involved in the duration & fibrosis mural lesion involves adventitia & muscularis. Ring lesion involves mucosa and submucosa, anullar lesion involves all layers of oesophageal wall.

Etiology:

1. External or Internal trauma.
2. Local pressure necrosis of the mucosa.
3. Oesophagotomy or perforation.
4. Sever oesophagitis due to caustic anthelminities or any other inflammatory process involving the oesophageal wall.

Clinical signs: manifested typical signs of oesophageal obstruction.

Diagnosis:

1. Clinical signs.
2. Endoscopy.

Complications:

1. Aspiration pneumonia.
2. Dehydration.
3. Diverticulum.
4. **Oesophagotracheal fistula**.

**Treatment**:

1. Use of bougienage to dilate annular lesion.
2. Surgically method includes oesophagotomy or partial resection.

**Narrowing of the Oesophagus**

Caused by other than f.t. formation in the wall of the oesophagus itself including:

1. Neoplasia.
2. Abscessation of the wall of oesophagus.
3. Exstraoesophageal lesion such as abscesses neoplasia, goiter, scar tissue & sequel to a wound.

**Diagnosis**: Indicated by a tendency for ingesta to delay or to accumulate in the oesophagus. If the narrowing is in the cervical region, it can frequently be seen by the bulge of a bolus cranial to it or detected by palpation. Differentiated from stricture within the oesophagus by clinical, radiology and endoscopic exam.

**Treatment**: According to the cause.

**Perforation or rupture of oesophagus**

Break down into oesophageal wall can occur secondary in long-standing obstruction, foreign body perforation & external trauma to the cranial area or extension of infection. If there is no drainage to the outside, the leakage of saliva & ingesta into the tissues of the neck cause sever cellulitis & phlegman development.

**Treatment**:

1. When there is drainage in the oesophageal wall & or significant infection of the surrounding tissue, it is better to leave the defect to heal spontaneously, while
providing adequate drainage & placing an oesophagostomy tube aboral to the defect. The animal is fed through the tube.

2. Resection & Anastomosis.

Megaoesophagus: Dilation of the oesophagus resulting from hypomotility unassociated with an anatomical lesion or obstruction. The authors suspected that the problem was achalasia (generalized) neuromuscular dysfunction & enlargement of the oesophagus with narrowing of distal portion.


Treatment: Oesophagomyotomy.