Diseases of Tonsil, Salivary Glands & Tongue

- Tonsils: inflammation & neoplasia
- Salivary glands
  - Mucocele or sialocele (Extravasated pseudocyst)
  - True salivary cyst
  - Ranula (on the floor of the mouth along side the tongue)
  - Sialolithiasis
  - Sialoadenitis
  - Tumors
- Tongue
True salivary cysts, dogs

Ranula, mandibular salivary duct, dog

Salivary gland carcinoma, cat
Necrotizing tonsillitis, dog: enlarged, ulcerated organ easily confused with ulcerated tumor (SCC, right)

Lymphoma, tonsil dog
Epitheliogenesis imperfecta, bovine

Wooden tongue, cow

Gross & histo of thrush, oral candidiasis) tongue, foal

SCC, tongue, dog
Diseases of esophagus

- Manifested by regurgitation, dysphagia, odynophagia, multiple swallowing attempts & excessive salivation
- May lead to respiratory disease (aspiration pneumonia)
Diseases of esophagus

- Infections extending from mouth (viral, etc)
- Esophageal dilation (megaesophagus)
- Esophageal rupture
- Esophageal obstruction (choke)
- Reflux esophagitis
- Parasitic lesions
- Neoplasms
Ulcerative esophagitis, **BVD**, cows

Ulcerative esophagitis, **MCF**, cow
Megaesophagus

- Dilation due to insufficient/uncoordinated peristalsis
- Often no microscopic lesions
- Congenital form
  - Vascular ring
  - Idiopathic
- Acquired form
  - Idiopathic
  - Muscle disease
    - Myasthenia gravis
    - Chagas’ disease
    - Hypothyroidism
    - Others

Persistent right 4th aortic arch, dog
Megaesophagus, dog: In the congenital form (top) the dilated portion is cranial to the heart and is due to persistent 4th aortic arch. In the acquired form (bottom) dilation starts just cranial to the diaphragm.
Examples of foreign bodies causing ulceration, choke or perforation, dogs (top), horses (bottom). If the animal survives, healing is by fibrosis, which may lead to stenosis (bottom right).
Barrett esophagus is a complication of long-standing gastroesophageal reflux in humans.

Acid reflux esophagitis, horse

Barret esophagus (intestinal metaplasia, human) © Elsevier 2005
Parasites

Sarcocystosis (Sarcocystis sp), duck

Cysticercosis (Cysticercus cellulosae), pig
Spirocercosis due to *Spirocerca lupi*, dog. Large submucosal nodules containing the parasite (left) are formed in distal esophagus. They can transform to become malignant tumors e.g fibrosarcoma (arrow heads, right). A section of the parasite is shown by the arrows.
Spirocercosis. Aortic aneurism

Spirocercosis. Associated large nodules can be fibrosarcomas or osteosarcomas.
Diseases of Forestomach

Most are related to Management

- Ruminal tympany (bloat)
- Foreign bodies
- Inflammation
Bloat

Over-distension with gases of fermentation

- **Primary**
  - Pasture bloat
  - Feedlot bloat
- **Secondary**
Pathogenesis of primary bloat

Formation of stable foam (mixed with rumen content & so can’t escape)

- Pasture bloat
  Feeding on legumes containing leaf proteins → rapid digestion & release of chloroplast particles → rumen microbes colonize particles → gas bubbles trapped in particles → stable foam

- Feedlot bloat
  High CHO diet with fine particles & microbes which produce slime → stable foam
Pathogenesis of primary bloat

- Rapid fermentation & acid production $\rightarrow$ low pH & formation of stable foam
- Eructation & salivation are depressed, bacterial polysaccharides may be increased
- Rapid accumulation of gases in rumen $\rightarrow$ increased pressure in rumen and abdomen $\rightarrow$ death from respiratory & circulatory failure
Lesions in bloat

- Gross abdominal distension
- Animal found dead & rolled on back
- Large volume of frothy rumen content
- Marked congestion of head, neck & hind limbs
- “Bloat line” on esophagus at thoracic inlet
- Low rumen pH (<6)
**Bloat line**, esophagus and trachea at the thoracic inlet. This is diagnostic for bloat.
Foreign bodies

- Trichobezoar (hair balls)
- Phytobezoars (plant material)
- Lead substances → intoxication
- Sharp metals → hardware disease (traumatic reticuloperitonitis, pericarditis and myocarditis)
Inflammation of forestomach

Two main groups

- Extension from mouth & esophagus
- Grain overload (ruminal lactic acidosis, engorgement toxemia, rumen overload)
Pathogenesis of grain overload

- Sudden change to high carbohydrate diet →
  overgrowth of Gram + bacteria → xs lactic & volatile fatty acids → pH < 5
  → Eliminates normal Gram – flora & fauna
  → Damages mucosa → microvesicles
  → Osmotic effect → atony & fluids into rumen

- Sudden death from dehydration, acidosis & endotoxemia

- Survivors often have grave sequelae
Sequelae of Grain overload

- **Bacterial rumenitis**
  - *Arcanobacterium pyogenes*
  - *Fusobacterium necrophorum*
  - Ulcers that heal by scarification

- **Liver abscesses**
  - Often subclinical
  - May rupture into vena cava → fatal septic embolism

- **Mycotic rumenitis**
  - Well demarcated, circular hemorrhagic infarcts
  - Can become systemic → placentitis & abortion
Grain overload, bovine: Marked hyperemia of reticular mucosa (top left), moderate cellular infiltration and severe vesiculation of the mucosa (histo, top). Those that survive acute disease may develop necrobacillary rumenitis and ulceration (partially healed ulcer (bottom left). Ruminal scars or stellate ulcers (bottom right).
**Mycotic rumenitis** secondary to Grain overload (left). Histo: Fungal hyphae and abundant inflammatory cells have infiltrated a vesicle in the mucosa of forestomach (Silver stain and PAS).

**Mycotic hepatitis** due to grain overload.
Diseases of Stomach & Abomasum

- Physical influences
- Gastric Ulcers
- Gastritis
- Parasitic Diseases
- Neoplasia
Physical Influences

- Acute gastric dilation & volvulus (GDV)
- Displaced abomasum
- Chronic gastric dilation
- Abomasal dilation & emptying defect
GDV - Pathogenesis

- Failure of normal eructation & pyloric outflow
- Mostly large dog breeds, rarely horses & pigs
- Follows large meal (dry or highly fermentable)
- Xs gas production $\rightarrow$ functional obstruction of cardia & pylorus $\rightarrow$ dilation $\rightarrow$ torsion $\rightarrow$ volvulus
- Compression of lung & posterior vena cava
- Circulatory collapse (shock)
- Death from respiratory & circulatory failure
GDV - Gross lesions

- Severe abdominal distension
- Clock-wise rotation of stomach
- Hemorrhagic infarction
- Rupture of stomach (equine)
- V-shaped bending of enlarged spleen
- Congestion of intestines
Schematic and actual illustration of **Gastric dilation and volvulus**, dog. The stomach is filled with fluid and gas and the serosa is congested. The spleen is engorged, displaced to the right, and V-shaped. Death is usually from hypovolemic shock following compression of lungs and posterior vena cava.
GDV, V-shaped bending of enlarged spleen

GDV, Clock-wise rotation of stomach

GDV, compression of the caudal vena cava