Pathology of the Alimentary System

Lecture 3
 Teeth, tonsils, salivary glands & tongue

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II. Diseases of teeth & dental tissues

- Structure & function
- Dental anomalies
- Attrition & abnormal wear
- Periodontal disease
- Dental neoplasia
In humans, carnivores, swine, and ruminant incisors (do not continue to grow after they are fully erupted)
Complex (hypsodont) tooth

In horses, cheek teeth of ruminants and tusks of boars (continue to grow throughout life)

Comparison: Brachydont (left) and Hypsodont (right) teeth

Gray: Cementum
Black: Enamel
Yellow: Dentine
Red: Pulp

http://hglanham.tripod.com/Horses/horses20.html
1. Anomalies of tooth

1.1 Abnormal positioning → malocclusion

- Malocclusions due to abnormal positioning of the mandible
  - Prognathia (protrusion of mandible)
  - Brachygnathia (short mandible)

- Abnormal tooth eruption patterns

Malocclusion and overgrowth of incisors, mouse.

Prognathia, horse

Brachygnathia, horse
1.2 Anomalies of tooth development

1.2.1 Primary dysplasia
- Tooth agenesis (anodontia)
- Supernumerary teeth (polyodontia)
- Dentigerous cysts

1.2.2 Secondary dysplasia
- Segmental enamel hypoplasia
  - Canine distemper in puppies
  - BVD intra-uterine infection
  - Cachexia
1.2 Abnormal teeth coloration

- Tetracyclines
- Porphyrins (heme)
- Fluoride (fluorosis)

Orange-red discoloration of teeth due to porphyrins, cat

Yellow discoloration due to tetracyclines, dog

Fluorosis leads to discoloration & abnormal wear, cow
2. Lesions caused by attrition & abnormal wear

- Rapid / irregular wear
- Loss of normal dental structure
- Dental infection
- Dental fracture
3. **Infundibular impaction (necrosis or caries*)**

- Incomplete cementum formation prior to tooth eruption.
- Bacterial action on impacted food leads to caries.
- Serious disease of ruminants and horses
- Incidence increases with age

*Caries*: acid demineralization of tooth and enzymatic digestion of dental organic matrix followed by inflammation

**Infundibular necrosis.** Notice the presence of feed material (f) within a cheek tooth and the associated abscess (*), horse
4. Periodontal disease

- Damage of gingiva & periodontal ligament
- Dental plaque (bacteria + food particles + organic matrix) on tooth surface
- Dental calculus or tartar (mineralized plaque)
- **Pathogenesis**
  - Inflammation starts from gingival crevice
  - Gingival recession & destruction of periodontal ligament
  - Tooth loosening

- **Sequelae:**
  - Pulpitis
  - Tooth abscess
  - Alveolar osteomyelitis
  - Loss of tooth
  - Bacteremia

Early gingivitis at the crevice dog (top), and periodontal disease with gum recession dog (bottom)
5. Dental neoplasia

5.1 Epulis (gingival growth)

- Tumor of periodontal ligament

- Types:
  - **Fibromatous** epulis: benign
  - **Ossifying** epulis: benign
  - **Acanthomatous** epulis: infiltrates surrounding bone, frequent recurrence (may transforms into SCC); Syn: Acanthomatous ameloblastoma

- **Other tumors**: Odontomas & ameloblastomas
III. Diseases of Tonsils

- Tonsillitis
- Neoplasia
  - Lymphoma (lymphosarcoma)
  - Squamous cell carcinoma (SCC)

![Normal tonsils, pig](image1)

Necrotizing tonsillitis, pseudorabies, pig.

Tonsillar lymphoma (top) and SCC (bottom), dogs

*Pathologic Basis of Veterinary Disease, 4th ed., Mosby-Elsevier*
III. Diseases of Salivary Glands

2.1 **True salivary cyst** (cystic distension of a salivary gland duct)

2.2 **Mucocele** or **sialocele** (Extravasated pseudocyst)

2.3 **Ranula** (a true salivary cyst on the floor of the mouth alongside the tongue)
III. Diseases of Salivary Glands

2.4 Sialolithiasis

2.5 Sialoadenitis
- Sialodacrooadenitis in rats
- Mumps in humans
- Rabies
- Canine distemper
- Salmonellosis in pigs

2.6 Tumors

Sialolith, horse. The adjacent gland has disappeared due to pressure necrosis

Pathologic Basis of Veterinary Disease, 4th ed., Mosby-Elsevier

Salivary gland adenocarcinoma, cat. Noah’s arkive
III. Diseases of Tongue

- Epitheliogenesis imperfecta
- Actinobacillosis (wooden tongue)
- **Candidiasis** (Thrush)
  - *Candida albicans*
- Squamous cell carcinoma

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

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