Straight From the Horse's Mouth:
Equine Dentition

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Swiftsure
EQUINE VETERINARY SERVICES

About Me!

- Associate at Swiftsure Equine Veterinary Services, Victoria, BC and Fritz Equine, Cowichan Bay, BC since 2016
- University of Calgary Faculty of Veterinary Medicine class of 2015
- Rotating hospital and field internship at Tennessee Equine Hospital, 2015-2016
- Special interests in sports medicine and dentistry
- Amateur Show Jumper

The Plan

- Equine Dental Anatomy
- Biomechanics of Chewing
- Basic Dental Care
- When Things Go Wrong
  - Dental Diseases and Injuries

Equine Dental Anatomy

Skull

- Elongated
- Large sinuses
- Dental diastema
- Mandibular teeth set slightly narrower than maxillary

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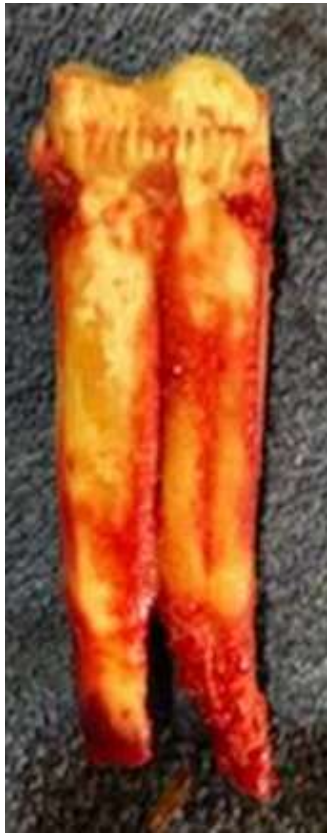
Teeth

- Hypsodont teeth – have high crowns, continue to slowly erupt through the animal's lifetime
  - Typical of grazing animals, coarse feedstuffs
  - Folded layers of enamel, dentin, cementum
  - Equine cheek teeth and incisors



Teeth

- Brachyodont teeth – have shorter crowns, erupt initially and stay a consistent size through the life of the tooth
  - Typical of carnivores and omnivores
  - Cementum surrounding root, dentin around pulp cavity, enamel on crown
  - Equine canines and wolf teeth

Teeth

- 36-44 teeth, variable between sexes and individuals
- 3 incisors, 1 canine, 4 premolars, 3 molars per arcade (4 arcades)
  - Canines often not present in mares
  - First premolars (wolf teeth) variably present

Sinuses

- Roots of the maxillary (upper) molars (09-11) in the maxillary sinuses
- Interconnected sinuses – drain into nostrils

Questions?

Biomechanics of Chewing

Biomechanics of Chewing

- Horses chew unilaterally - one side of the mouth at a time
- At rest the cheek teeth make only light contact, incisors are in full contact

Biomechanics of Chewing

- Different studies have come to different conclusions as to the specific order of movement of the mandible during each chewing cycle, but general pattern is:
  - Mandible moves ventral (downwards)
  - Mandible moves lateral and slightly rostral or caudal (forwards or backwards)
  - Mandible rotates around vertical axis
  - Mandible moves dorsally until cheek teeth of the "working side" make contact – creating maximal pressure aka "power stroke"
  - Incisors make contact during recovery stroke of cycle

Biomechanics of Chewing

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Biomechanics of Chewing

- Maximum force during power stroke has been recorded up to 1956 N
- Bite force of the incisor teeth during prehension is 2% of body weight
  - 10kg of force for average 500kg warmblood

Biomechanics of Chewing

- Influenced by:
  - dental pathologies
  - asymmetrical wear
  - TMJ discomfort
  - muscular tension in muscles of mastication

Basic Dental Care

Basic Dental Care

- Routine oral exams
- Regular dental floats

Basic Dental Care

- **Sharp enamel points**
- Excessive transverse ridges
- Occlusal abnormalities
  - Smile mouth
  - Frown mouth
  - Slant mouth
  - Dominant teeth/absent teeth
  - Excessive wear
- Hooks and Ramps
- Malocclusions

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- **Malocclusions**
  - **Mandibular prognathism (sow mouth)**

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- **Malocclusions**
  - **Maxillary prognathism (parrot mouth) - severe**

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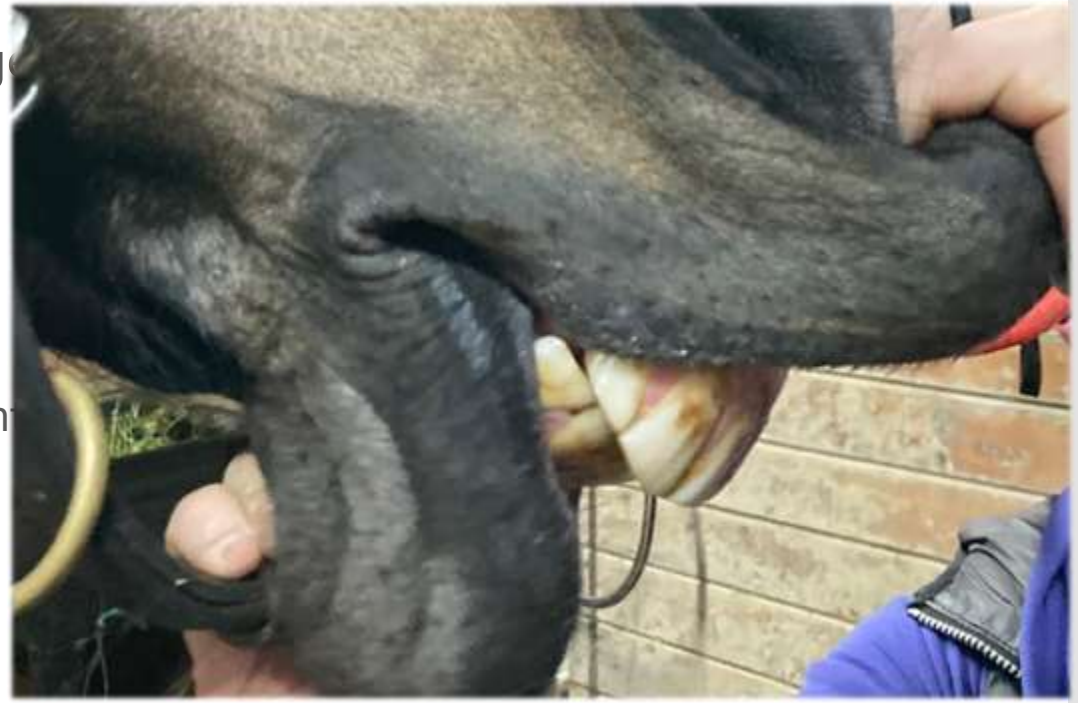
  - Frown mouth
  - Slant mouth
  - Dominant teeth/absen
  - Excessive wear
- Hooks and Ramps
- **Malocclusions**
  - **Maxillary prognathism (parrot mouth) - mild**



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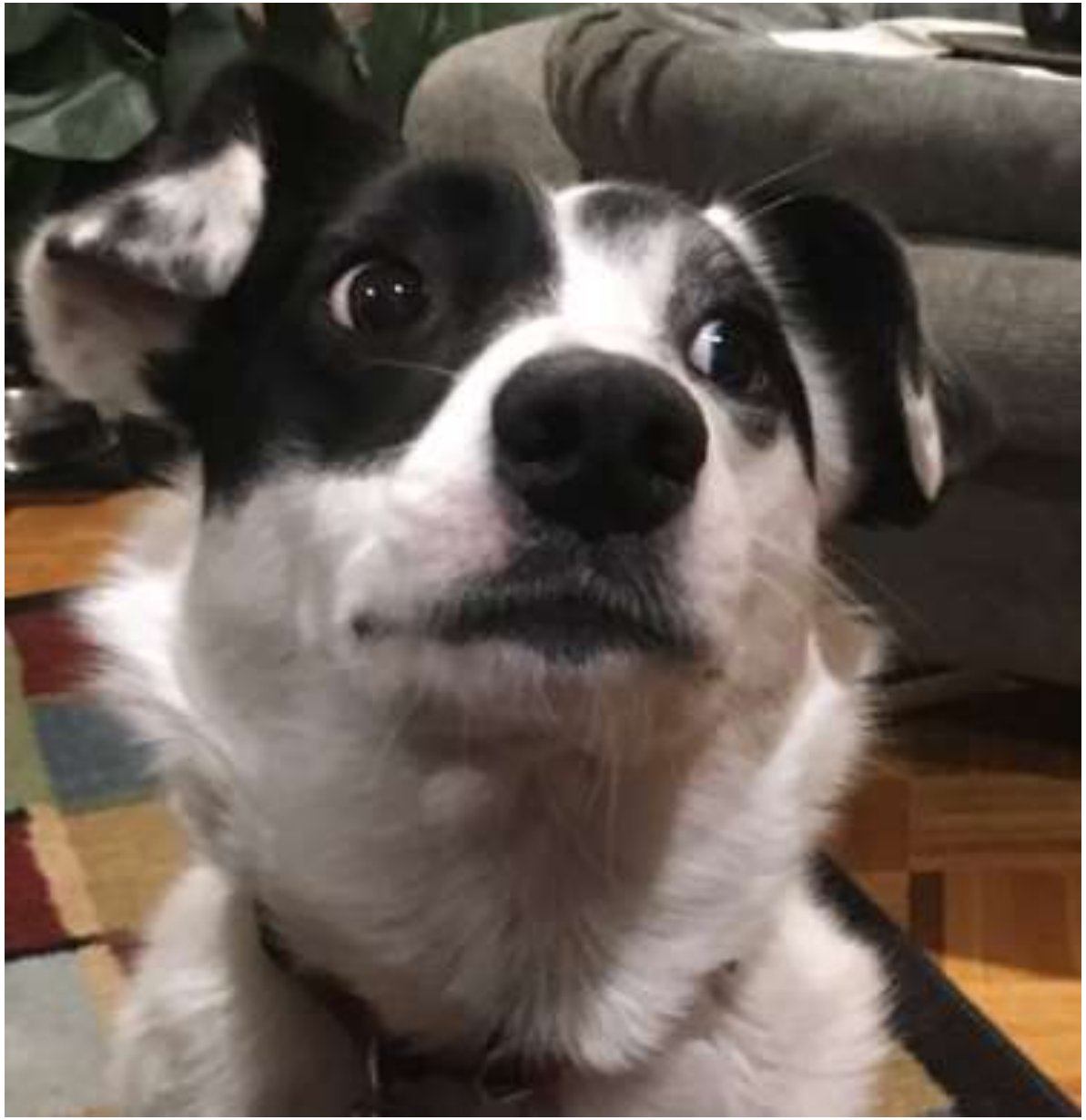


Dental Diseases and Injuries

Fractures

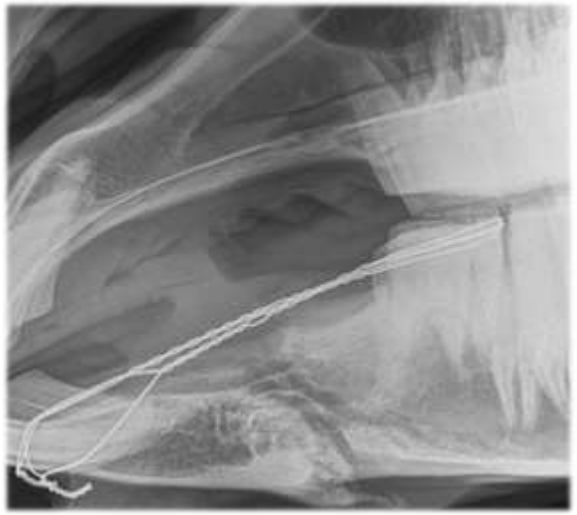
- Trauma to teeth or jaw from extraoral trauma (kicked, hit head)
- Trauma to teeth or jaw from intraoral trauma (bit a rock)

Fractures

- Caries, enamel chips, and chronic decay weaken the tooth and then normal bite forces can trigger a fracture

Fractures: Treatment

- Extract badly fractured/infected teeth
- Pulp capping if tooth is stable and pulp cavity is newly exposed
- Jaw fractures treated with wiring or surgery

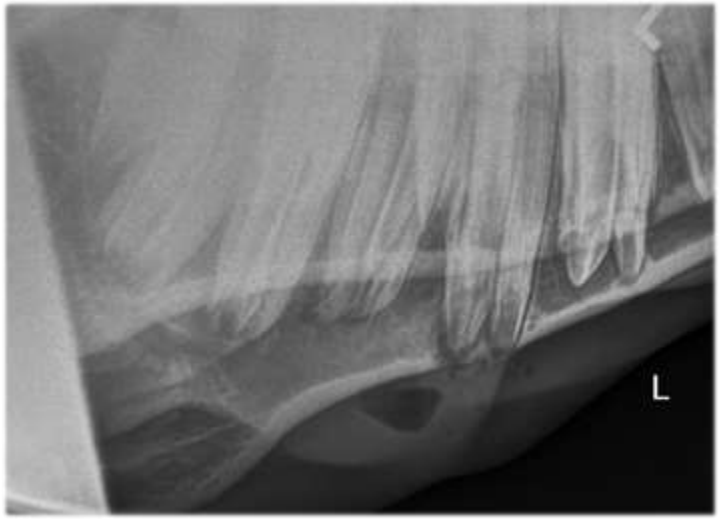


Foreign Bodies

- Sticks stuck between teeth
- Wire stuck in gums or tongue
- Blackberry thorns

Abscesses

- Ascending infections from exposed pulp cavity or up periodontal ligament secondary to periodontal disease
- Hematogenous (infection carried by blood)
- Secondary sinus infections



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Abscesses: Treatment

- Prolonged antibiotic course
- Extract infected tooth
- Sinus infections treated with lavage and antibiotics

Periodontal Disease

- Small gaps between teeth trap feed material which then decays
- Localized infection and inflammation leads to gingival recession
- More feed gets trapped, etc, etc
- Painful
- Can lead to tooth root abscesses, sinus infections, loose teeth

Periodontal Disease

Periodontal Disease

Periodontal Disease

Periodontal Disease: Treatment

- Clean all feed material from between/around teeth
- Widen the gap between the teeth in some cases
- Pack with dental impression material to prevent further feed accumulation (case dependant)

EOTRH

- Equine Odontoclastic Tooth Resorption and Hypercementosis

EOTRH

- Relatively recently described disease, cause is still not definitively known
- Progressive, painful degenerative condition of incisors and canines, and occasionally premolars
- More common in older horses and geldings
- Regional prevalence

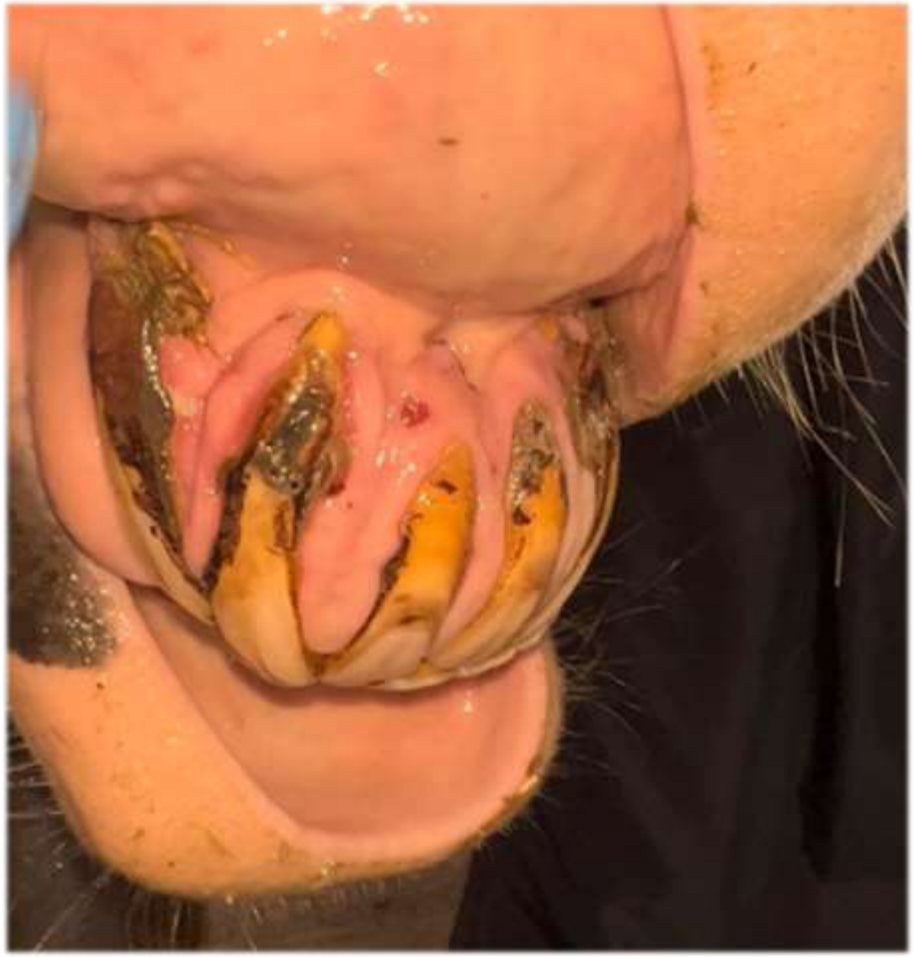
EOTRH

- Internal and external root resorption

EOTRH

- Hypercementosis

- Gingival recession, bone distortion, abscesses and draining tracts
- Painful



EOTRH
Carrot Test

EOTRH

- Proposed etiologies:
  - Likely multifactorial
  - Bacterial infection
  - Changing forces of periodontal ligament with age
  - Trauma
  - Periodontal disease

EOTRH: Treatment

- Extraction of affected teeth
- Early stages can sometimes be managed with topical chlorhexidine for some pain management and infections

EOTRH: Treatment

Thank You!

Questions?