Equine Dentistry
Anatomy and Physiology

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Equine Field Service
KSU-VHC
Outline

- What diseases/abnormalities can be prevented with good dentistry?
- What abnormalities can arise from a bit?
- Know the aspects of hypsodontal teeth (eruption/yr ect.)
- What is hardest most dense tissue of body?
- Know the nerves of the teeth/mouth
- Know TMJ movement
Outline

- Know the Triadan teeth numbering system
- Know the aging aspect of horse incisors
- Know cheek teeth eruption order (mainly first and last)
- Know effect of modern day feeding management
- Know angle of cheek teeth!!!
- Know physiology of mastication
References
Importance of Dentistry

- AAEP
  - Equine Dentistry Campaign
- The Horse
- Equus
- Western Horseman
- Purina Mills
Importance of Dentistry

- Medical/preventative care
  - Geriatric population
- Processed feeds: problem
- Confinement and feeding practices
- Athlete vs. model
- Feed cost
Importance of Dentistry

- Client education
  - Help the horse
- Practice builder
  - Offering service
  - Other services provided
  - Preventative medicine
Importance of Dentistry

- Prevention
  - Impaction Colic
  - Esophageal obstruction
  - Weight loss
  - Oral ulcers
  - Oral abscesses/inflammation
  - Bit problems
Importance of Dentistry

- Bridle/bit problems
  - Proper use
    - Communication
      (Rider/Driver to horse)
    - Western vs. English
    - Drive (carrage/cart and horse/horses)

www.laboe.com/

www.postquarterhorses.com
Importance of Dentistry

- Bridle/bit problems
  - Cut tongue
  - Mandibular periostitis (bars)
  - Trauma-pinched/cut tissue
Importance of Dentistry

- Sore
  - Gap mouth
  - Pin ears
  - Toss head
  - Push into pain
  - Mistaken for lameness
    (fails to travel straight)
Anatomy

- Hypsodont teeth
  - Erupt 2-4 mm/year
  - Reserve Crown = 100 mm
  - 25 to 30 years old
Anatomy

- **Enamel**
  - Hardest, most dense substance of the body
    - brittle
    - exposed occlusal surface
  - Covered by cementum

- **Dentin**
  - Softer calcified tissue vs. Enamel
    - crack stopper
    - irregular occlusal surface
Anatomy

- **Pulp**
  - Connective tissue
  - Blood vessels
  - Nerves
  - Predentin
    - odontoblast---dental tubules

- **Cementum**
  - Similar to bone
  - Anchor for periodontal ligament
  - Protect the underlying dentin
  - Bulk of clinical crown
  - Protect coronal enamel
Anatomy

- Nerves of the teeth
  - Trigeminal nerve (5th cranial nerve)
    - Mental nerve (mandibular)
      - Mandibular foramen
      - Mental foramen
    - Infra-orbital nerve (maxillary)
      - Infraorbital foramen
Anatomy

- TMJ and muscles of mastication
  - TMJ wide range of lateral movements
    - Side to side
    - Rostro-caudle
      - Elevate head---mandible moves caudle
        - Sternocephalicus muscles tension on mandible when elevated
      - Lower head---mandible moves rostral
  - Horses-transverse power stroke (medial)
    - Masseter m.
    - medial pterygoidius m.
Anatomy

- **Deciduous Teeth**
  - \((Di \ 3/3, \ Dc \ 0/0, \ Dm \ 3/3)^2 = 24 \text{ teeth}\)

- **Permanent Teeth**
  - \((I \ 3/3, \ C \ 1/1 \ or \ 0/0, \ PM \ 3/3 \ or \ 4/4, \ M \ 3/3)^2 = 36 \text{ to } 44\)
Anatomy

Triadan System

Shown as you are looking at horse, face on.
Anatomy

Deciduous Triadan System

Shown as you are looking at horse, face on.

5 RIGHT 6

8 7

Wikipedia
Anatomy

- Aging
  - Shedding (Incisors)
    - _01: 2.5-3 years
    - _02: 3.5-4 years
    - _03: 4.5-5 years
  - Shedding caps (premolars and molars)
    - Done at 4.5-5 years
Anatomy

- Aging
  - Canines (_04)
    - Mostly males
    - Erupt 4.5-5 years
  - Wolf Teeth (_05)
    - Simple brachydont teeth
    - 40-80% of horses (upper: 105, 205)
    - Erupt 6-18 months
Anatomy

- Aging (incisors)
  - Occlusal surface
    - Dental star
    - Cups
  - Shape
    - Occlusal surface
    - Direction
    - Length
## Anatomy

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Youngest Cheek teeth

Oldest Cheek teeth

Baker and Easley, 2005
Physiology

- Mastication
  - Chewing
  - Preparing ingesta for digestion
Physiology

- Modern day equids
  - 14-18 hours/day feeding
  - Food type influences chewing patterns
    - Lush feed---more lateral excursion
    - Drier feed---less lateral excursion

Baker and Easley, 2005
Physiology

- Mandibular condyles
  - 15° angle in 2 planes
  - Correlates 15° angle of teeth
  - Correlates with palatine ridges
Physiology

- Lophs basins
- Intradental oral cavity
- Auger movement
  - Palatine ridges
  - Tongue
Physiology

- Chewing cycle
  - Opening stroke (1-4)
  - Closing stroke (5-6)
  - Power stroke (7-10)
Summary

- Importance of Dentistry
  - Education/Public knowledge
  - Bits/bridles

- Anatomy
  - Hypsodontal teeth
  - Aging
  - Nerve location/enervation
Summary

- Physiology
  - Mastication
    - Feed stuffs
    - Head position
  - Chewing Cycle
Next

- Apply Anatomy and Physiology
- Dental Exam
- Treatments
- Records/client education
Scenario

- 20 year old, QH, Grey, Gelding
  - Dropping food
  - BCS = 2/9
  - Owner: Current on vaccines (5 way in spring)
  - Owner: Dewormed 1 yr ago with Strongid Paste

- What do you want to do?