



2025 Winter CE Conference

February 1 and 2

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**Making Sense of a Horse's Mouth -
Anatomy and Oral Exam Review**

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Making sense of the horse's mouth: an anatomy and oral exam review

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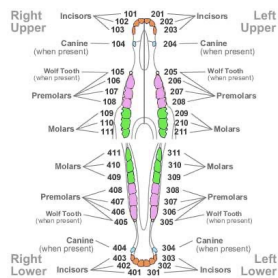
Summary

- Anatomy review
- Equipment needed for oral exam
- Five point oral exam



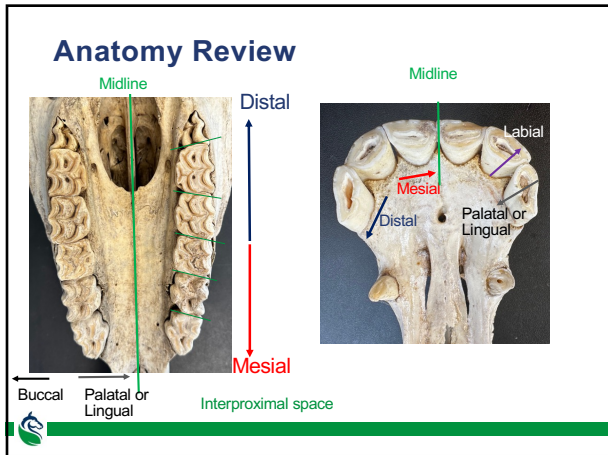
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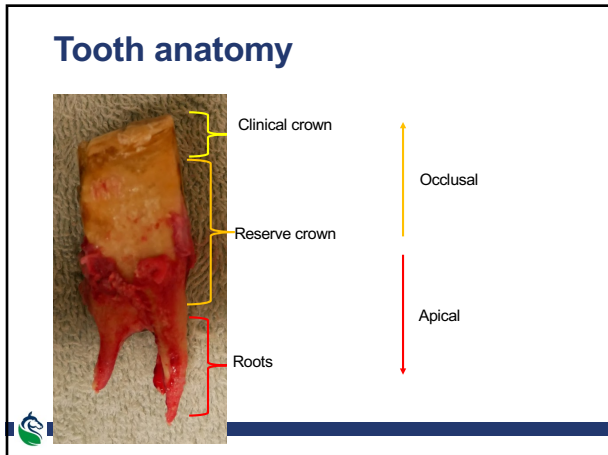


Courtesy Dr. Bruce Whittle

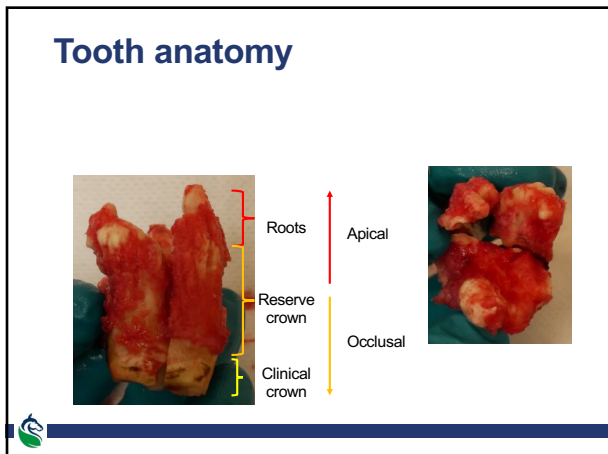
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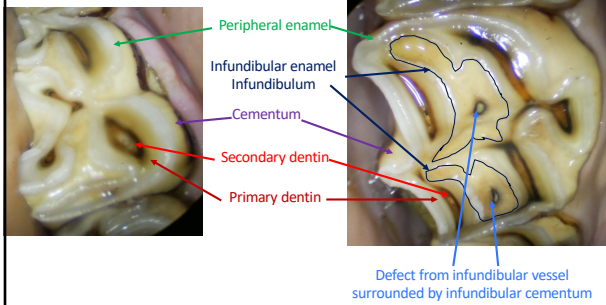


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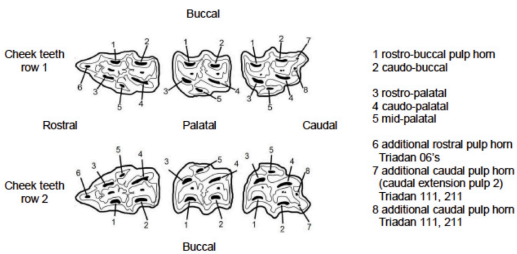
6

Tooth anatomy



7

Maxillary Pulp Horns



8

Mandibular Pulp Horns

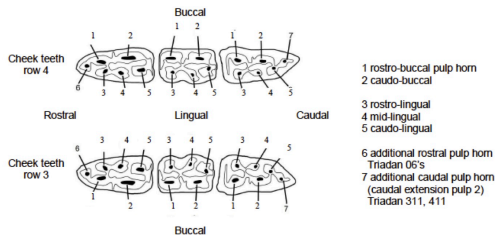
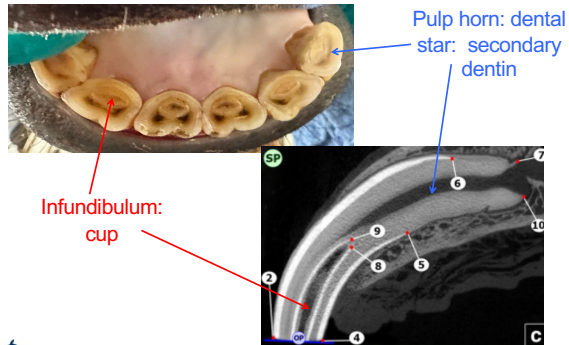


Figure 3. Pulp nomenclature system described by du Toit et al. (29)
(illustration modified from Dacre et al. (23), with permission)

9

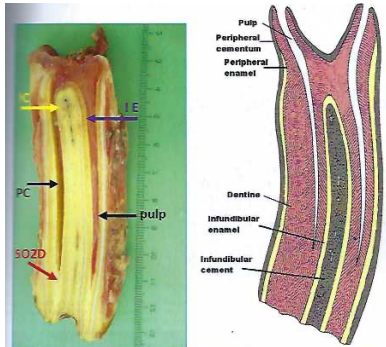
Incisor Anatomy



Roit P, Lipke M, Schier H, Staszuk C. Three-dimensional anatomy of equine incisors: tooth length, enamel cover and age related changes. BMC veterinary research. 2013/12/09. 249: 9

10

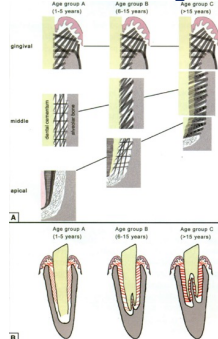
Tooth anatomy



Easton J, Dixon P, de Wit N (eds). (2022). Equine dentistry and maxillofacial surgery. Cambridge Scholars Publishing.

11

Periodontal anatomy

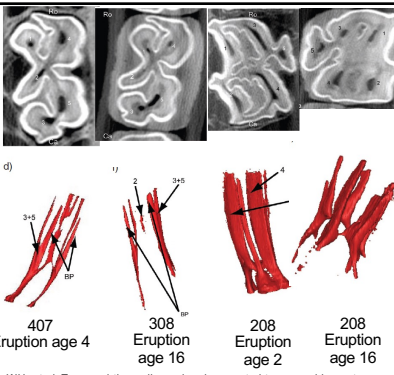


Staszuk C et al. Collagen Fiber Architecture of the periodontal ligament in equine cheek teeth. JVD. 23:3. Sept 2006

12

Pulp horns

- Soft tissue in pulp canal
 - Connective tissue
 - Blood supply
 - Lymphatics
 - Nerves
- Fibroblasts and odontoblasts

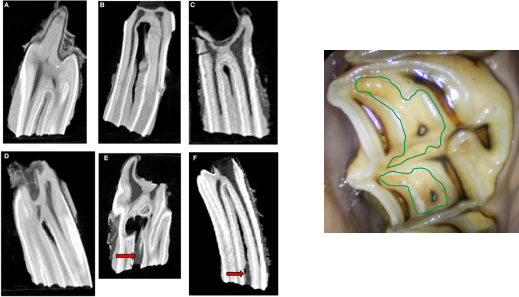


407 Eruption age 4 308 Eruption age 16 208 Eruption age 2 208 Eruption age 16

Windley Z, Weller R, Tremaine WH, et al. Two- and three-dimensional computed tomographic anatomy of the enamel, infundibulae and pulp of 126 equine cheek teeth. Part 1: Findings in teeth without macroscopic occlusal or computed tomographic lesions. *Equine vet. J.* (2009) 41 (5) 433-440

13

Infundibululae

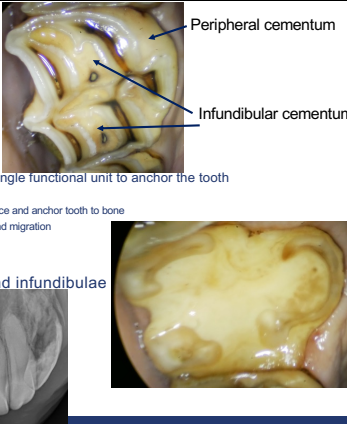


Horbal A, Smith S, Dixon PM. A computed tomographic (CT) and pathological study of equine cheek teeth infundibululae extracted from asymptomatic horses. Part 1: prevalence, type and location of infundibular lesions on CT imaging. *Frontiers Vet Science.* 6:124. April 2019

14

Cementum

- White or cream colored
- Histologically similar to bone
- Some flexibility
- Two functions:
 - Subgingival cementum and PDL single functional unit to anchor the tooth
 - Extensive collagen fibers
 - Sharpey's fibres: cross periodontal space and anchor tooth to bone
 - Dynamic process of cell proliferation and migration
 - Protects the dentine
 - Can be quickly deposited
- On the periphery of the tooth and infundibululae

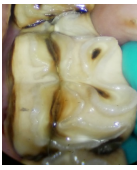
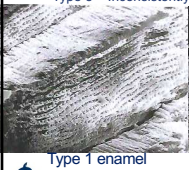

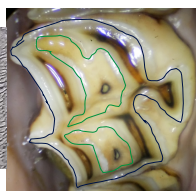


Leasley J, Dixon P, du Toit N (eds). (2022). *Equine dentistry and maxillofacial surgery*. Cambridge: Scholiers Publishing.

15

Enamel

- Enamel is the hardest structure in the body but very brittle
 - Can not repair itself
 - Wears the slowest
- Shiny/ clear
- There are 3 types of enamel
 - Type 1 - Inner folds- amelodentinal junction
 - Type 2 - Peripheral enamel folding- amelocemental junction
 - More resistant to cracking due to enamel decussation
 - Type 3 - Inconsistently present as a thin layer

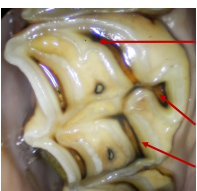
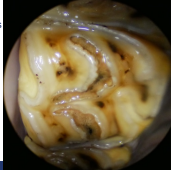
Type 1 enamel Type 2 enamel

Easley J, Dixon P, du Toit N (eds). (2022). *Equine dentistry and maxillofacial surgery*. Cambridge Scholars Publishing.

16

Dentine

- Most of the tooth is dentine
- Cream or brown colored
- 3 types of dentine
 - Primary dentine
 - Present when the tooth first erupts
 - Secondary dentine
 - Regular secondary dentine- periphery of the pulp canal
 - Irregular secondary dentine- in the center of the pulp canal, irregular structure
 - Tertiary dentine
 - Reactionary tertiary dentine- pre-existing odontoblasts
 - Reparative tertiary dentine- previously undifferentiated pulp connective cells that become odontoblasts
- Dentine can respond to trauma, infection or abnormal wear by sclerosis





Easley J, Dixon P, du Toit N (eds). (2022). *Equine dentistry and maxillofacial surgery*. Cambridge Scholars Publishing.

17

Reasons to Perform an Oral Exam

- Only a veterinarian is trained and licensed to perform this exam
- Precursor to any treatment
 - This includes floating teeth
- Evaluating any disease where a dental differential exists
- Recognize normal and abnormal
- Prevent a misdiagnosis
- Pre-purchase exam



18

Equipment needed

- **Well sedated patient**
 - 20-40 mcg detomidine/kg (9 – 18 mg detomidine for a 450 kg horse)
 - I use 8 – 10 mg detomidine for most horses
 - Butorphanol as needed
- **Bright light**
- **Full mouth speculum**
- **Oral examination instruments**
 - Dental mirror
 - Periodontal depth probe
 - Pulp horn explorer
 - Bucket with chlorhexidine and dose syringe
- **Dental chart** or other system for recording findings



19

Five Point Oral Exam

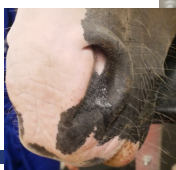
- External exam
 - Occlusion
 - Oral soft tissues
 - Periodontal status
 - Endodontic status
- And don't forget to get a history and do a PE before oral exam!



20

External Exam

- Symmetry of the head
 - Muscle atrophy
 - Anatomical or developmental changes
- Swelling
 - Soft tissue or bony
- Draining tracts or wounds on the head
- Nasal discharge
- Odor
- Body condition score



21

Occlusion

Class 1 Malocclusions (focal)

- Overlong teeth
 - Ramps, waves, steps, etc.
- Tipped towards
 - Cheek (buccoversion)
 - Tongue (lingoversion)
 - Palate (palatoversion)
 - Mesio- or disto-version

Class 2 Malocclusions

- Brachygnathism (parrot mouth)

Class 3 Malocclusions

- Prognathism

Class 4 Malocclusions

- Slanted incisors usually due to wry nose conformation

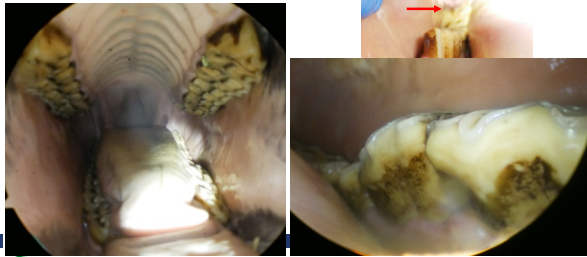


22

Occlusion

• Overlong vs. overgrown

- Overlong is more correct, since horses have prolonged eruption, and are not continuing to "grow" their teeth



23

Oral Soft Tissues

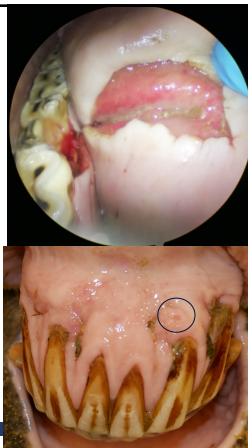
• Lacerations in the mouth

- Tongue
- Cheek
- Lips
- Hard palate/soft palate

• Oral masses or swelling

- Abscesses
- Tumors
- Polyps

• Draining tracts or fistulas



24

Oral Soft Tissues

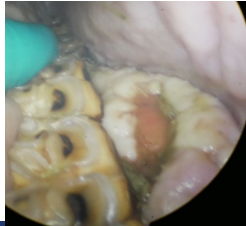
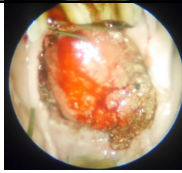


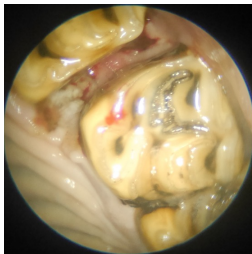
Photo courtesy of Dr. Molly Rice



25

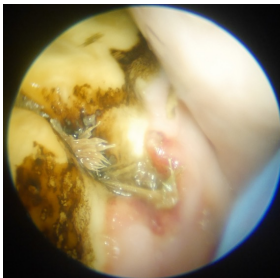
Periodontal Status

- Inflammation of the support structures of the tooth, including those below the gum line
- Periodontal pockets
 - Note depth and location
 - Normal is 1-2 mm
- Diastemata
 - Feed stasis in interproximal spaces
- Gingival recession, hyperplasia, or parulis lesions
- Halitosis
- Mobility
- Radiographs are necessary to properly stage periodontal disease



26

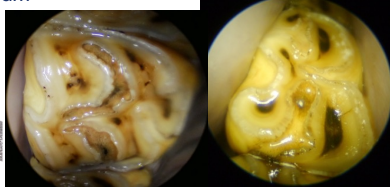
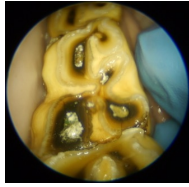
Valve Diastema



27

Endodontic Status

- **Pulp horn defects**
 - Pulp exposure
 - Abnormal shape/size
- **Infundibular abnormalities**
 - Caries of the infundibulum
 - Patent infundibulum



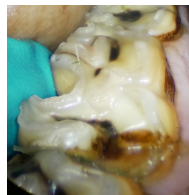
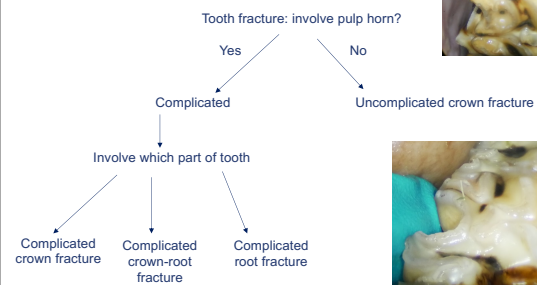
28

Endodontic Status: tooth failure



29

Endodontic Status



30

Practical approach to oral exam

- Gather history and draw up sedation
- Brief PE including cardiac auscultation, assessment of BCS
- Rinse mouth with dilute chlorhexidine
- External oral exam, evaluate incisors, and note any malocclusions
- Place speculum
- Observe for focal malocclusions and examine oral soft tissues
- Mirror or oral endoscopy exam, start with 100 quad first
 - Count teeth
 - Assess endodontic status then periodontal status
 - Come back to any areas that need further evaluation with periodontal probe or pulp horn explorer
- Chart findings
- Discuss findings and plan with owner



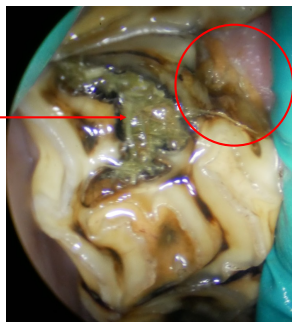
31

Troubleshooting

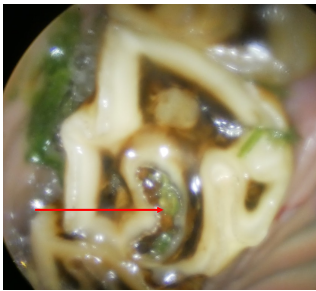
- Sedation
 - Use lots!
- Head stand or head sling- use it!
 - Keep the head level without hyperextending
 - Work at a comfortable height for you- standing or sitting
- Have the mouth open as much as comfortably possible for the patient
 - For my X spec and Alumaspec- the entire length of the strap is open
- Use a bright light
- Fogging
 - More chlorhexidine solution in your water or use saliva from the underside of the tongue
- Look every carefully at each tooth and compare to contralateral side or adjacent teeth
 - Easy to miss fractures, pulp horn defects, perio disease, etc



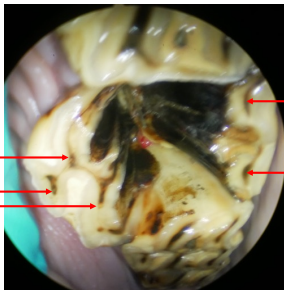
32



33



34



35



36

Questions?



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