

Dental Conditions in Horses of Different Age Groups

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INTRODUCTION

Typically there's a wide age range of horses presented for dental care in most practices. To manage these cases effectively it is important for the veterinarian to have a good working knowledge of skull-dental anatomy, dental eruption sequence, and age-related patterns of tooth attrition. The purpose of this section is to highlight some of the more important considerations of dental care in various age groups of horses.

Tooth Triadan number	Deciduous tooth eruption age	Permanent tooth eruption age
01	6 days	2 ½ years
02	6 weeks	3 ½ years
03	6 months	4 ½ years
04	-	4-5 years
05	-	6 months
06	At birth	2 ½ years
07	At birth	3 years
08	At birth	4 years
09	-	10-12 months
10	-	2 years
11	-	3 ½ years

CONDITIONS OF FOALS AND WEANLINGS

In the initial postpartum period the foal's skull is evaluated for symmetry, the lips and gingiva of the incisive area are examined for abnormalities, and occlusion of the upper and lower jaw is evaluated simultaneously.² Brief intra-oral inspection of the palate, tongue, and oral soft tissues is performed by gently retracting the cheek and shining a bright light into the oral cavity. Abnormal congenital conditions of the newborn include:

- Cleft palate (palatoschisis)³
- Class 2 Malocclusion (Overbite)⁴
- Class 3 Malocclusion (Underbite)⁴
- Wry Nose (campylorhinus lateralis)⁵
- Missing teeth or supernumerary teeth
- Developmental disorders such as dental dysplasia and epitheliogenesis imperfecta^{6 7}

Occasionally, very young foals can be affected with periapical abscess of a cheek tooth. In the author's experience these have been typically associated with idiopathic fracture of a deciduous premolar and are primarily seen as a jaw swelling. Conversely, tumors and cysts resulting in enlargement of the mandible or maxilla can also be seen in very young horses. Differential diagnoses for these type of jaw swellings include:

- Equine juvenile ossifying fibroma⁸
- Heterotopic polydontia (ear tooth, ectopic tooth cyst)⁹
- Paranasal sinus cysts¹⁰
- Mandibular aneurysmal bone cysts¹¹
- Epidermal inclusion cyst (atheroma)¹²

CONDITIONS OF JUVENILE HORSE (1yr.-5yr.)

In horses between the ages of 1 year and 5 years, 24 permanent cheek teeth and 12 incisors erupt sequentially, causing the deciduous cheek teeth and deciduous incisors to exfoliate. Juvenile age horses presented for dental care have been shown to have a high incidence of cheek abrasions from sharp

enamel points.¹³ Objectives of an oral examination during this period include evaluation for appropriate dental eruption, assessment of occlusion, identification of sources of pain, and evaluation of the oral soft tissues (cheeks, tongue, lips, and palate) for problems such as bleeding, abrasions, or tumors. The periodontal tissues and endodontic elements of the teeth should also be evaluated. Dental treatment of the juvenile age horse most commonly includes evaluation and management of:

- Sharp enamel points and oral soft tissue abrasions
- Wolf Teeth
- Deciduous incisor teeth
- Deciduous cheek teeth
- Injuries
 - Incisive bone fracture
 - Dental avulsion
- Facial swellings
 - Eruption bump
 - Periapical tooth infection
 - Tumor of dental origin
 - Craniofacial fracture

CONDITIONS OF MATURE HORSE (5-15 yrs. approximately)

Occlusal Abnormalities

In an effort to improve comfort during performance and mastication, discussions on dental care of mature horses tend to focus heavily on the cheek teeth, specifically odontoplasty of sharp enamel points and crown reduction of overlong areas of the dentition. Sharp enamel points occur normally along the vestibular edge of the occlusal surface of maxillary teeth and along the lingual edge of mandibular teeth. Odontoplasty of these sharp areas is indicated to decrease trauma and abrasion to adjacent buccal and lingual tissue. In addition to sharp enamel points, all or part of a clinical crown can become overlong or sharp due to the cycle of malocclusion, continual eruption, and abnormal attrition. Depending on severity, the overlong tooth may interfere with mastication, and/or traumatize adjacent soft tissues, and/or cause abnormal shifting of teeth resulting in periodontal disease. Proper crown reduction of overlong portions of the dentition can be very useful to reduce unwanted effects of malocclusion.

Incisor malocclusions can occur if there is discrepancy of jaw length, if malformation of craniofacial structures is present, or if one or more incisor teeth are missing. For example, mandibular brachygnathism results in overbite, and mandibular prognathism appears as an underbite. Other abnormalities of incisor bite have been characterized as having dorsal curvature, or ventral curvature, of slanted bite. In the author's experience most incisor malocclusions cause few problems and rarely require crown reduction unless they are advanced enough to prohibit cheek teeth from occluding.

Endodontic Abnormalities

Endodontic pathology is commonly identified in the clinical crowns of incisor teeth and cheek teeth of mature horses undergoing complete oral examination. Keep in mind that an endodontic problem may or may not be associated with active apical disease, but without performing dental radiography it is more challenging to assess the situation. Examples of endodontic lesions identified during oral exam of mature horses include:

- Infundibular caries affecting the cheek teeth
- Necrotic pulp exposure
- Complicated crown fracture
- Complicated crown-root fracture
- Uncomplicated Crown Fracture
- Peripheral cemental caries

Periodontal Problems

Periodontal disease comprises a syndrome of gingivitis, periodontitis, alveolar bone loss, and calculus formation.¹⁴ Periodontal lesions are common in mature horses, and deep periodontal problems may be painful and interfere with mastication. Radiography can be very useful to assess changes in alveolar bone, periodontal ligament space, and periapical tissues.

Valve diastemata of the cheek teeth occur when the occlusal portion of the interproximal space is narrow and acts as a one way valve, allowing forage to enter the diastema and become trapped. In severe

cases a marked amount of forage becomes packed below the gum leading to the development of painful periodontal problems, osteitis, and apical infection. In moderate or severely affected horses, management of valve diastemata includes mechanical widening of the affected interproximal space.¹⁵ Depending on severity, additional strategies for treating periodontal problems in mature horses includes:

- Odontoplasty, crown reduction
- Dietary modification (eliminating long fiber roughage)
- Periodontal treatments
- Extraction of teeth

Oral Soft Tissue Injuries from Bit Contact

Trauma to the soft tissues of the lower bars mesial to teeth 306 and 406 can occur with excessive bit contact, and some of these lesions can be easily missed unless the tongue is gently retracted to allow visualization. Lesions of excessive bit contact may be very painful and reflect need for tack adjustment, bit adjustment, rider adjustment, or further evaluation of the horse for underlying training issues or musculoskeletal problems.¹⁶

CONDITIONS OF SENIOR AGE HORSES (horses older than 15-20 yrs. of age)

With advancing age horses will gradually experience decreased ability to chew course roughage. In the authors experience this occurs in large part due to age-related dental problems that include advanced attrition of the premolar/molar teeth, malocclusion, periodontal disease, and senile atrophy of the muscles of mastication. More severely affected horses undergo weight loss and exhibit chronically thin body condition (keep in mind there's a long list of non-dental factors to consider in older horses being evaluated for poor body condition). It's important for clients to know that horses of advanced age are capable of maintaining good overall health with proper attention to dental care, by providing alternate sources of digestible roughage, and by instituting diet modifications to increase energy intake.¹⁷ As a result, dentistry and nutritional counseling have become very important considerations in the veterinary treatment of senior age horses.^{18 17}

Malocclusion

Cupping of the maxillary cheek teeth occurs as crown attrition progresses into the former location of the common pulp chamber. Cupped teeth tend to develop very sharp enamel edges causing abrasions to adjacent tissue. At the same time, severe wave and overlong mandibular teeth 309,311,409,411 are common findings in older horses. With further ageing mandibular teeth and maxillary teeth wear through the level root furcation and become very smooth with the gingival margin.

The goal of treatment in senior horses is to perform conservative odontoplasty of sharp and overlong areas in order to improve comfort during mastication and performance. It is not appropriate to attempt to restore a normal occlusal table of the cheek teeth in an old horse with severe malocclusion – to do so exacerbates masticatory problems by eliminating former areas of occlusion.

Endodontic Disease

Senior horses can suffer from the same endodontic disease diagnosed in the other age groups. Infundibular caries leading to complicated crown fractures (sagittal fractures) are often seen. This is due to the carious process being present for a considerable amount of time leading to destruction of the dental hard tissues. Careful examination of the endodontic structures will commonly reveal changes affecting the pulp horns and infundibula. When changes are noted radiography is often indicated.

E.O.T.R.H. (Equine Odontoclastic Tooth Resorption and Hypercementosis)

Most commonly EOTRH is a condition of older horses involving tooth resorption lesions of the incisor teeth and canine teeth.¹⁹ It is gradual in onset and often undiagnosed until extensive lesions are present. The syndrome is diagnosed radiographically and in severe cases can be recognized grossly by loss of hard dental substance with or without production of excessive cementum on the exterior of the tooth. Pathological changes of the teeth and surrounding structures may result in gingivitis, bleeding, odor, pathologic tooth fracture, and discomfort. Extraction of affected teeth generally results in resolution of clinical signs.

Periodontal Disease

In senior horses the author will commonly elect to extract cheek teeth affected with advanced periodontal disease: these include teeth that are depressible within the alveolus, teeth that have mobility greater than 3mm, and severely malpositioned teeth involved with valve diastemata. Less severe forms of gingivitis and halitosis benefit from odontoplasty and daily mouth rinses using a solution of dilute chlorhexidine

gluconate and water. Feeding soft diets that do not contain large stems such as fine grass hay, lush pasture and complete feed pellets prevent feed impaction in the affected interproximal spaces.

Oral neoplasia

If an oral mass is encountered on oral examination, differential diagnoses include neoplastic conditions such as squamous cell carcinoma, fibrosarcoma, sarcoid, melanoma, and tumors of dental origin. Non-neoplastic conditions also occur in the oral cavity and include papilloma, exuberant granulation tissue, and gingival hyperplasia.

Neoplasia of the oral cavity may manifest as an unnoticed solitary oral lesion, however in many older horses the mass becomes quite large before it is discovered and the destructive process extends to underlying tissues resulting in displacement of teeth, difficulty eating, and facial swelling. In these horses appropriate work-up of the oral mass includes biopsy of the lesion and histopathology, and radiography or CT study to evaluate underlying structures.

SUMMARY

Although many similarities exist, the challenges and problems associated with dental care in horses can be somewhat unique among different age groups. Veterinarians should continue to equip themselves with proper dental knowledge and instrumentation in order to successfully manage problems in the particular age group under examination.

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