

Equine dentistry

Part 2: Origins of dental pathology, preventative techniques and equipment, equine veterinary dental education

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In part one of this series (*Vetscript*, May 2009), Elizabeth Thompson considered the veterinarian's role and responsibilities when equine dental procedures are carried out by lay people. She highlighted the clinical signs of dental disease and examined the development of teeth in the horse. In this, the second part of the series, she looks further into the origins of dental pathology in horses, recommends good preventative techniques and equipment and outlines educational opportunities for those wanting to know more about this branch of equine health. In part three, she will be discussing dental pathology.

Origins of dental pathology

So how does all this pathology occur? Horses have long crowned teeth (hypsodont) with exposed enamel ridges to help grind the rough feeds they eat. They exhibit prolonged eruption, which means that their teeth erupt for 20–30 years (unless they, or their supporting structures become diseased). The teeth undergo attrition until the tooth is expired or worn down to the root. The mandible must move sideways for the molars to come into contact with each other. The incisors and the cheek teeth are not meant to be in contact at the same time.

Horses are “anisognathic” (“unequal jaws”) with the maxillary cheek teeth set wider than those of the mandible, creating a situation where, in grinding their food with a horizontal power stroke, the palatal edges of the upper teeth and the lingual edges of the lower teeth are eroded the most. This leaves the buccal edges of the upper teeth and the lingual edges of the lower ones to become “sharp points”. The lingual sharp points can cut into the tongue (and the opposing gingiva, if extremely long), while the sharp points on the upper teeth cut into the cheeks, especially under halters and bridles. The space between the maxillary cheek teeth and the cheeks is very narrow at rest. When the mouth is opened, the cheeks are pressed tightly onto the sharp points of the teeth, frequently creating painful buccal ulceration. The resulting pain may cause abnormal chewing patterns, leading to overgrowths and resultant malocclusion and dental disease. A horse only chomps up and down as we do when the teeth are *unable* to move horizontally as they should. Regular “odontoplasty”, or floating, may prevent development of many malocclusions and helps to repair damage previously created by neglect.

What about those wild horses?

Many clients ask why their horses need dental care when wild horses don't. I usually respond that our horses don't live under wild conditions and that we have bred for things like speed and jumping ability, rather than for “good teeth”. In the wild, natural selection keeps

horses with suboptimal teeth out of the gene pool, as undernourished horses become easy prey for predators and are less likely to survive to reproduce. A “natural” diet devoid of large quantities of grains and refined sugars makes a difference as well. Wild horses graze relatively soft grasses. Most grasses cause significantly less wear on teeth than grains, even though horses on pasture graze for 12–16 hours per day. Refined sugars or honey in a modern domesticated horse's diet may also cause problems as they can cause increased tartar deposition, leading to periodontal disease and potential premature tooth loss.

Preventative techniques and equipment

Periodontal disease

One of the most significant dental disorders which may be prevented by regular floating is periodontal disease, a situation where prevention is much easier than cure! Periodontal disease is often overlooked, as it requires a thorough dental examination. It usually begins when sharp points cause horses to chew improperly, resulting in food impaction between teeth and between teeth and gums. The microorganisms in this decaying food cause gingivitis and erode the gingival margin, allowing food and bacteria entry into deeper tissues. This ever-enlarging food pocket creates a defect between the tooth and the surrounding periodontal ligament. (Anatomy review: the periodontal ligament in the horse runs the entire length of the reserve crown, that part of the crown between the exposed crown and the apex and locks the tooth in the alveolus.)

If the situation goes unchecked, the infection continues until it reaches the apex of the tooth root and kills it, requiring its removal. If periodontal pockets are discovered during examination, they may be treated by removal of all food particles, debridement of necrotic tissue and packing with an antibiotic-impregnated gel to attempt to allow the pockets close up. This

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usually requires sedation, nerve blocks and radiographs. Periodontal disease can be treated, but regular and *thorough* dental examination and floating seem preferable. Extraction in the horse should not be undertaken lightly, as many problems result from even uncomplicated extractions. Once a tooth is lost, the unopposed and continually erupting tooth opposite the extracted tooth has nothing to create attrition. In addition, removal of a tooth allows “drift” of the remaining teeth of the arcade, as they move into the created space, causing further malocclusion. Both of these situations require life-long floating every six months to keep the mouth functional.

Veterinarian most appropriate person

There are real differences between just floating teeth and having a *thorough dental examination and floating (or odontoplasty)*. A thorough dental examination requires a good history, examination of the whole horse (particularly of the head and oral cavity) for disease and malocclusions, good record keeping and charting of progress. A veterinarian is the most appropriate person to perform this examination, as their knowledge of entire body systems and disease conditions are vital in dental examinations. Providing an owner's copy promotes interest in good equine dental health.

Minimum equipment required is:

- a *safe* full mouth speculum
- a large dose syringe or hose to flush the mouth
- a good light source
- an intraoral mirror
- dental picks.

Sedation recommended

I once thought I did a pretty good job of dentistry, until I started learning more about it and began looking much



The author (right) using the Flexi-Float on a client's horse.



Portable crush developed by the author.

deeper. Sedation allows a thorough examination to be performed every time, not just when the horse prefers. It is also recommended for the safety of the owner/handler as well as for that of the horse. Visualisation of many small intraoral structures is next to impossible in the unsedated horse. Normal practice in veterinary equine dentistry internationally dictates that these structures are evaluated. The use of radiography and some of the newer techniques for taking these films in the field by your veterinary dental practitioner simplifies diagnosis, treatment and monitoring of more challenging conditions.

Power instruments not for the untrained

Power dental instruments are replacing many hand tools for the educated equine dental practitioner. Used judiciously in well-trained hands, they are a time- and effort-saving tool. This allows the operator to leave the mouth of every horse the best they can possibly make it, within the constraints of the teeth themselves, while minimising wear and tear on our own bodies. Proper use of instruments and water minimises the potential of thermal damage. Power dental instruments should never be used by untrained floaters and/or practitioners untrained in their use, as damage can occur rapidly. Whether using power or hand instruments, your equine dental practitioner should know that the pulp chamber may reside as little as 2–4 millimetres beneath the surface of an overgrown tooth. Removing more than this, whether by grinding or cutting, may expose pulp. If any pulp is exposed (indicated by a pink or red (bleeding!) spot on the surface of the tooth), it requires a pulp-capping procedure within 24–36 hours to prevent potential death of that tooth within the next one to five years. This is a “painful procedure” and, as such, should only be performed by a veterinarian. Molar cutters do not allow one to evaluate distance to live pulp and, as such, are becoming rapidly outdated.

Frequency

How frequently are dental examination and treatment recommended? Keeping in mind all of the above, it

depends on the horse's age and use: once to twice yearly for younger horses from birth to eight or nine years of age and annually after that. For optimal performance, some horses may require six-monthly dental attention.

Don't neglect broodmares

Broodmares, although not ridden, still develop sharp points and all the dental problems listed above. Cheek and tongue lacerations, malocclusions, periodontal disease and loose molars can make her life miserable. As she ages, the conditions deteriorate. The bacteria entering the bloodstream from her infected mouth won't help the expensive foal she carries. Studies on women indicate that periodontal disease may increase the likelihood of low birth weights, pre-term labour and late miscarriage and that periodontal therapy may significantly reduce the rate of premature low birth weights.^{1,2,3} The dentistry provided to broodmares has historically been perfunctory or nonexistent. Thorough dental examination has often been bypassed as it was deemed unimportant, but it is something we should consider more seriously.

Equine veterinary dental education opportunities

Although education in dentistry for veterinarians in New Zealand has in the past been limited, this is changing and many veterinarians in New Zealand have pursued additional training and certification in this field. Combining this dental continuing education with our veterinary education in anatomy, physiology, pathology and therapy allows us to be well qualified to perform dentistry with excellence. Glenn Beeman (Mountainview Equine, Ashburton) and I have both passed the Membership Examination of the Australian College of Veterinary Scientists in Equine Dentistry and are happy to field your calls.

Excellent veterinary dentistry courses are available in Australia, the United States and United Kingdom. In

Australia, they are being organised by two companies: PacificVet Pty Ltd (Australia) and Equine Veterinary Dental Services (EVDS). The courses both involve lectures and wet labs. The PacificVet courses have been taught by Travis Henry, DVM and Scott Marx, DVM. The EVDS courses have been taught by Gary Wilson, BVSc, MVSc, MACVs (Vet Dent), Leon Scrutchfield, DVM, BA Rucker, DVM, Dennis Rach, DVM and Oliver Liyou, BVSc, MACVSc (Eq Dent), among others.

A PacificVet course is being planned for New Zealand in 2009 for those veterinarians keen to upskill in equine dentistry on the home front. Scott Marx, Glenn Beeman and I will be instructing. Hope to see you all there!

References

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Further reading

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Wilson GJ. *Equine Dentistry: A manual for equine veterinarians and equine dentists*. Sydney, The Post Graduate Foundation in Veterinary Science of the University of Sydney, 2000.

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