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Equine caries (tooth decay) – is it really a problem?

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This month's information sheet continues with the theme of dentistry and is brought to you by Nicole Du Toit. Nicole is an equine veterinary surgeon with specialist qualifications in equine dentistry. After graduating Nicole worked in mixed private practice in the UK for 2 years. From 2002 – 2005 she did an equine practice residency at Edinburgh University, where she gained her certification in Equine Practice (CertEP) and did a research MSc (Masters) on equine cyathostomins (small red worms). This was followed by a PhD in equine dentistry with a focus on donkeys. She then worked at The Donkey Sanctuary, Devon, where she managed the clinical pathology laboratory and helped with research. In 2012 Nicole moved back to South Africa where she started a referral equine dentistry service. From 2011 she was involved in the Speciality Organising Committee in establishing a veterinary dentistry equine subspecialty in the EVDC (and AVDC), and in 2013 she was awarded her European and American diploma in veterinary dentistry (equine subspeciality). Nicole is consulted on and involved in our dentistry cases, regularly coming into the hospital and travelling out to clients yards as well.

What are Caries?

Caries are caused by the bacterial fermentation of carbohydrates, resulting in the production of acid, which lowers the pH in the mouth leading to tooth decay. The production of saliva helps to neutralise the pH and therefore slows down and prevents the development of tooth decay. As horses spend 16 – 18 hours a day chewing forage such as hay, caries are not as common as in other species that don't spend so much chewing food in a day e.g. humans, cats and dogs. There are however **two types** of caries that we do see in horses, which can be significant and cause severe dental disease.

The more common, **equine infundibular caries** has been seen in up to 80% of horses examined in some veterinary studies. Infundibulae are enamel infoldings present in the upper cheek teeth and all incisors (see last month's info sheet). There is a developmental problem seen in some horses resulting in incomplete filling of these infundibulae by dental tissue. This results in a defect in the tooth (infundibular cemental hypoplasia) and may predispose to infundibular caries, by allowing the impaction of food material, and subsequent bacterial fermentation in the defect. This is more commonly seen in the mid to back upper cheek teeth. Once the caries process has started, it will continue to perpetuate as the food impacts. The bacteria can then spread to the live dental tissue (dentine) and progress to cause a tooth root abscess. Advanced caries of both infundibula in maxillary cheek teeth can merge midline and so weaken the tooth and predispose to tooth fractures. Once the teeth are fractured, bacterial disease will rapidly spread to the roots, and may cause a tooth root infection or even worse, a bacterial sinus infection.

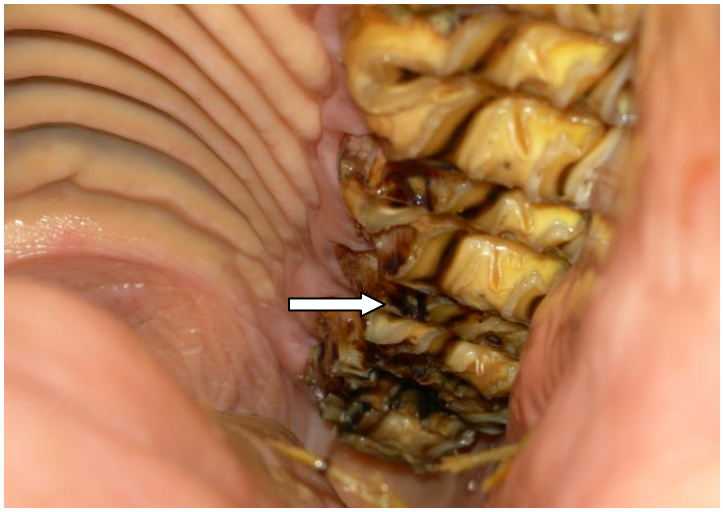
Advanced infundibular caries

Treatment of these caries, if identified in the earlier stages, consists of cleaning out and filling these cavities with dental filling material. These prevent the impaction of food in the defects and the spread of bacterial disease. However, if these caries are advanced to the point where they have weakened the tooth or there are changes in the roots of the affected teeth on radiographs, then extraction is required. Complications associated with tooth fractures are:

- Oral pain
- Gum disease
- Gum and palate ulceration
- Tooth root infection
- Bone infection (if lower cheek teeth)
- Sinus infection (if upper cheek teeth)

A tooth fractured as a result of severe infundibular caries

The second type of tooth decay we see is **generalised (peripheral) cemental caries** and they are often recognised in individual horses. There are also documented outbreaks involving groups of horses. Loss of peripheral cementum may result in gum disease (periodontal disease), increased rate of tooth wear or fracture of exposed brittle enamel and loss of function. Severe generalised dental caries, identified in studies on groups of horses in Mexico, Sweden, Scotland and Hong Kong, appeared to be related to management practices, in particular to high levels of simple carbohydrates in diets and in one case the feeding of excessively acidic silage. This has also been observed in groups of horses fed high levels of molasses or daily treats of molasses. In advanced cases, the teeth become mechanically weak, with fracture of the unsupported enamel and in some cases the horses develop other wear abnormalities due to restricted chewing action caused by pain.



Peripheral caries on the inside of the upper cheek teeth

What causes these caries and how can I prevent them?

The cause of equine generalised caries appears to be multifactorial, with a likely influence of high simple-carbohydrate diet, short duration of eating time, pH of diet, individual animal variation and the presence of specific oral bacteria.

Increasing access to forage/ hay, making sure that your horse does not go for long periods of time without roughage and decreasing the proportion of dietary simple carbohydrate (grains such as barley and oats) may slow down progression of the disease. Individual cases that are severely affected may also be treated with repeated chlorohexidine mouthwashes.

Summary

Horses should have regular dental examinations so that any caries may be detected early and treated if necessary, or at least monitored for any progression of the disease so that treatment can be implemented before the disease gets advanced.