

Dentistry

BY CHRISTY WEST, JACK EASLEY, DVM, MS, DIPLO. ABVP

Tooth Characteristics and Feed Digestibility

Think floating a horse's teeth improves his feed digestion? Think again. James Carmalt, MA, VetMB, MVetSc, Dipl. ABVP, ACVS, associate professor of large animal surgery at the Western College of Veterinary Medicine in Saskatoon, Canada, presented a study at the convention showing that floating doesn't improve feed digestion. However, an exam should be done to look for areas of dental pain.

The study of 17 Quarter Horse and Draft horses found no apparent correlation between oral pathology score (a measure of mouth abnormalities) and any measure of feed digestibility, including nutrient analysis and feed particle size in the stomach and feces. However, that doesn't mean that floating is a waste of time and money, said Carmalt; it is valuable for fixing painful dental problems.

"Digestibility is a software (soft tissue) problem, not a hardware (tooth) problem," he commented. "We're getting away from routinely floating teeth and looking at soft tissue problems such as cheek ulceration, endodontic (inner tooth/root) problems, etc."

This shift to an increased focus on soft tissues is supported by others in the dentistry field. Jack Easley, DVM, MS, Dipl. ABVP, a dental practitioner in Shelbyville, Ky., made the following comments during the question/answer session: "Years ago we would look at hooks, waves, ramps, and step mouth (various tooth wear patterns) and call it pathology. Now we think they're the result of pathology somewhere else, such as ulcers/oral pain causing changed mastication (chewing motion) and abnormal tooth wear. For example, weight loss in older horses isn't so much from tooth wear characteristics as from pain, which makes them take all day to eat (slow, reduced feed intake is the problem, rather than ineffective chewing). That's what we need to deal with—the cause of the pain, rather than the resulting abnormal tooth wear."



ANNE M. EBERHARDT

One study showed that floating doesn't improve feed digestion. However, an exam should be performed to look for areas of dental pain.

Thus, the take-home message of this presentation was that annual/biannual dental exams are still very much needed to identify and address problems in teeth and soft tissues, but floating the teeth should be done to reduce pain, not to improve digestion (because in most cases it won't).

Endoscopic Equine Dental Exams

In many cases, a horse's dental exam consists of a veterinarian taking a quick peek inside the mouth and feeling the teeth, followed by floating (filing) any sharp points. However, using an endoscopic camera (mounted on the end of a long probe) can help practitioners find and treat more dental abnormalities, said Easley. He presented a discussion of this procedure and a video tour of several horses' mouths.

Easley noted endoscopic examinations offer more benefits than just a more thorough examination. The exams can be recorded, providing valuable video for horses' medical records that can be reviewed as needed and even sent to other practitioners for consultation. Also, the

practitioner can review video footage with the owner to illustrate the exam's findings. However, endoscopic exams don't stand alone; visual examination and digital palpation (feeling the tooth surfaces with the fingers) are also important parts of the dental evaluation.

Easley recommends using the following equipment for a endoscopic dental exam:

- Sedation for the horse;
- Full-mouth speculum;
- Head stand;
- Rigid, heavy-duty 45° mirrors;
- Dental picks;
- Digital video camera and 150-watt light source;
- Flexible light cable;
- Digital video camcorder;
- Still-image capture device;
- Flat-panel LCD viewing screen;
- Laptop computer to record and store video clips of the oral examination;
- Rigid laparoscope with a 30-60° wide-angle lens. (Don't use a flexible one in the mouth unless you want it mutilated, he advised. Instead, find a used rigid

laparoscope that still has good optics.) **Exam Findings** Easley reported that cheek ulceration from rubbing against sharp points on the teeth is quite common in horses that haven't had dental care in a year or more.

He also recommended using dental picks to further investigate pockets (between teeth and gums) that collect feed material. "Often what you think is a little pocket could be up to several inches deep," Easley said.

Like many techniques, it takes practice to correctly perform and interpret an endoscopic dental exam. "It's a challenge when you start doing endoscopic exam of horses' mouths, because sometimes you'll overdiagnose or misdiagnose problems," he noted. "An understanding of the normal changing anatomy of equine dentition with age is critical to the diagnosis and management of equine dental disease."

Diagnosing Pulpitis in Equine Teeth

Pulpitis, a painful inflammation of the pulp within a tooth, can be tough to diagnose in horses. Once it advances to the point of causing significant pain, external jaw swelling, and even drainage, it's a bit easier to pinpoint, but wouldn't it be better to catch it before then?

Toward that end, Miriam Casey, MVB, MRCVS, of Langford Veterinary Services in North Somerset, United Kingdom, presented a study in which she and colleagues investigated associations between occlusal (chewing surface) tooth lesions and pulpitis. This study was funded by The Horse Trust, an equine welfare charity in the U.K.

Radiography (X rays) can be used to help diagnose pulpitis, but Casey noted that it is not an ideal diagnostic aid by itself as its value for this has varied widely with different studies. Also, dental radiography is not always used unless problems are suspected. But occlusal lesions discovered during a routine dental visual/pick exam could suggest that pulpitis is present. Then the practitioner could catch it before the inflammation (also called tooth root abscess, apical abscess, apical infection, dental sepsis, etc.) develops into a major problem requiring specialized treatment or tooth removal.

Casey and her colleagues evaluated 44 cheek teeth with pulpitis that were extracted from clinically affected horses and compared them with 90 cheek teeth



COURTESY DR. JACK EASLEY/AEPP PROCEEDINGS

This endoscopic image shows the dark-stained buccal mucosal ulcerations adjacent to sharp enamel points.

from control cadavers with no history of dental disease. They found secondary dentinal defects (pitting of the secondary dentin, which is often stained dark brown from feed) were significantly more common in diseased teeth; 56.5% of diseased mandibular (lower jaw) teeth and 52.4% of diseased maxillary (upper jaw) teeth had these defects, compared to 0% and 2.5% of control teeth, respectively. Caries (dissolution of mineralized dental tissues) of the infundibula (cement-filled enamel cups) of maxillary teeth wasn't any more common in diseased teeth than healthy ones, but caries that had eroded through the infundibular enamel was more common in diseased teeth (28.6% vs. 2.5% of controls). Casey noted that severe carious lesions tended to occur in the first molars.

She summarized as follows: "Examination of occlusal secondary dentine is a vital component in investigation of suspected apical pulpitis in equine cheek teeth. Infundibular caries involving enamel is also significant." You have to use a dental mirror and pick and probe these areas; if you're still just doing oral exams by pulling the tongue to the side and using a flashlight, you're missing a lot, she noted.

Advanced Dentistry Table Topic

Equine dentistry is a rapidly expanding field that encompasses a number of procedures. These include occlusal equilibration (how the teeth contact the opposite teeth surfaces), endodontics (the treatment of the diseases of the tooth pulp), exodontics (the extraction of teeth), oral surgery, orthodontics (the supervision and guidance of the growing dentition and the correction of the mature dentofacial structure), periodontics (the treatment of the diseases of the supporting and investing structures

of the teeth), and restorative/operative dentistry. The Advanced Dentistry Table Topic was facilitated by Edward Earley, DVM, Fellow AVD Eq, of Laurel Highland Farm and Equine Services in Williamsport, Pa., Stephen Galloway, DVM, of Oakland, Tenn., and Charles McCauley, DVM, Dipl. ACVS, Dipl. ABVP, of Louisiana State University.

McCauley spoke briefly about the importance of diagnostic imaging when dealing with dental disease. Proper radiographic imaging utilizing extraoral and intraoral techniques is critical when trying to make a diagnosis using radiographs. The indications and benefits of computed tomography (CT) were discussed and demonstrated through the use of a case example.

Galloway spoke concisely about equine incisor periodontal syndrome. This is a painful disorder of canine and incisor teeth that variably causes periodontitis (inflammation of the supporting structures of the teeth) with resorptive or proliferative changes of the calcified dental tissues in the aged horse. Currently the cause of this disorder is unknown. A recent publication by Carsten Staszak, DrMedVet, et al. (*The Veterinary Journal*, December 2008, 178 (3), 372–379) evaluated this condition histologically in a small group of horses and have labeled this syndrome as "equine odontoclastic tooth resorption and hypercementosis."

Easley spoke briefly about infundibular cavities (horse incisors and maxillary cheek teeth have enamel infoldings called infundibula that penetrate the occlusal surface) and the profession's dilemma when attempting to treat these problems. Goals of restorative dentistry include: 1) preserving tooth integrity; 2) restoring function; 3) protecting the pulp; and 4) preventing extension of the lesion. Equine veterinarians need to critically evaluate their current standards of treatment to make sure these goals are met.

Additional topics the group discussed include:

- 1) the senseless destruction of healthy teeth through procedures such as canine reduction, incisor reduction, and bit seats (when the first upper and lower cheek teeth are slightly rounded);
- 2) the difference between indirect and direct pulp exposure; and
- 3) treatment options for periodontal disease. ♣

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