Wolf Teeth: How to Safely and Effectively Extract and Is It Necessary

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The small, vestigial first premolars are known as "wolf teeth" (Fig. 1). These simple brachydont teeth do not have a deciduous precursor and erupt when the horse is 6-18 months old. Horses can have none to 4 wolf teeth, but most horses have 1 or both maxillary wolf teeth. Mandibular wolf teeth are fairly rare, but are occasionally encountered, most commonly in Standardbreds (Fig. 2). The size, shape, and location of wolf teeth vary widely, and the size and shape of the crown does not always indicate the size and shape of the root. Double wolf teeth and other oddities may occur. Wolf teeth may not erupt normally, but remain submucosally, resulting in so called "blind" or "occult" wolf teeth. Blind wolf teeth are usually 1-2 cm rostal to the PM2s (06s) and occur at a rostral/ventral angle under the mucosa. This position makes them more susceptible to contact from the bit which often causes performance problems. Radiographic (low exposure is needed) examination of the maxillae rostral to the PM2s may be indicated to determine the size and shape of the roots.

It has been theorized that because permanent PM2s (06s) are larger than their deciduous counterparts, an erupted permanent PM2 may put pressure on a wolf tooth's root causing the root to absorb.[1] This could explain the apparent absence of well-developed roots of wolf teeth extracted from some mature horses.

The necessity for removing wolf teeth is controversial. I have the same opinion as that of an author of a book published in 1860, who stated that "No wolf tooth does any good and may do harm, so extract them all." If I find a wolf tooth/teeth in a horse that is performing successfully, however, I show the wolf tooth/teeth to the owner/trainer, record their presence on the horse's dental chart and tell the owner/trainer that if the wolf tooth/teeth cause a problem, they should be extracted. If the practitioner insists on extracting wolf teeth from a winning horse, and the horse is ridden poorly in its next competition, the practitioner, not the rider, will likely get credit for the horse's poor performance.

It may be impossible to create proper "bit seats: with wolf teeth present". It has also been reported that some wolf teeth become loose or diseased and cause head shaking or bitting problems.[1] Wolf teeth should not be floated or ground to the gum as this may loosen them or expose the pulp chamber. Either of these conditions could result in the damaged wolf tooth requiring extraction.[1]

Horses should be given a sedative/analgesic, and the wolf tooth desensitized with local anesthetic solution. Usually 1½ mL mepivacaine HCl injected at the junction of the hard palate and gum medially to the middle half of the PM2 (06) provides good anesthesia for

Figure 1. A small wolf tooth is present.

Figure 2. A mandibular wolf tooth is present.

the extraction (Fig. 3). I block the wolf teeth before starting corrective procedures of the cheek teeth, so that the time taken for the corrective cheek teeth procedures gives adequate time for the wolf teeth anesthesia to become effective.

A variety of elevators and forceps are needed for wolf tooth extractions because wolf teeth vary greatly in size, shape, and location, and a mallet may also prove handy (Fig. 4). The key to extraction without breaking off the root is to elevate the periodontal ligaments off the roots, and then to elevate more! A wolf tooth that lies against the PM2 (06) should be elevated around its circumference, except where it contacts the PM2 (06), before elevating between the PM2 (06) and the wolf tooth. This provides room for the root to move without breaking. If there is 2 mm or more space between the wolf tooth and the PM2 (06), I use a Burgess-type instrument to cut the gum completely around the

Figure 3. A needle is in position to inject local anesthetic to block the wolf tooth for extraction.

Figure 4. Instruments that can be used for wolf teeth extractions.

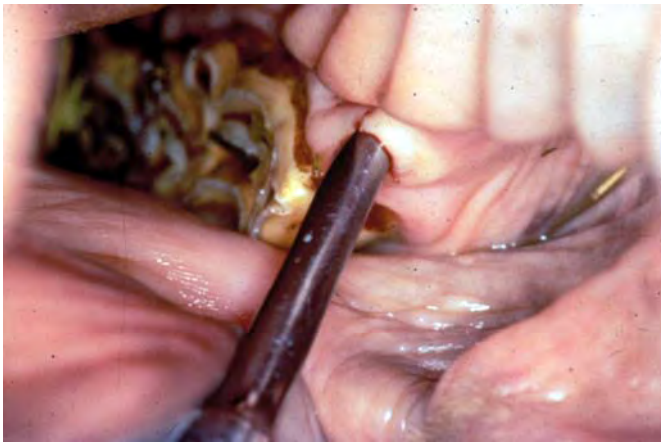

Figure 5. A Burgess-type instrument cutting the gum around a wolf tooth.

circumference of the tooth (Fig. 5). This makes it easier to use a small, very sharp canine elevator to separate the periodontal ligament from the wolf tooth. A larger, sturdier elevator is then used. It is helpful to fatigue the periodontal ligament by prying in one direction and applying pressure on the tooth for 15 seconds or more before prying in another direction. This technique is more effective than rapidly moving the elevator back and forth. The PM2 (06) can be used as a fulcrum to gently pry the wolf tooth.

If the wolf tooth is difficult to elevate, a strong, sturdy elevator is placed between the wolf tooth and the PM2 (06) and tapped firmly with a mallet. This usually loosens the wolf tooth sufficiently so that the tooth can be elevated easily. Using a mallet on difficult wolf teeth reduces the incidence of broken roots and the time required for extractions. Some practitioners move a small elevator around the wolf tooth, tapping it with a mallet, and believe that this technique provides more controlled damage to the periodontal ligaments.

Breaking the root usually causes no problems, unless the root protrudes above the alveolus or if retained root fragment has been loosened, in which cases it may cause pain, necessitating removal. In most cases, a broken root can be left without causing a problem though the root may eventually work to the surface where it can then be extracted. Still great care should be practiced during extractions and every effort made to not break the root. Extraction sites of mandibular wolf teeth should be lavaged once or twice daily for a few days to prevent feed from accumulating in the empty alveolus and subsequent infection.

Prior to extraction, local anesthetic solution is infiltrated around the blind (or occult) wolf tooth. I use a Burgess-type wolf tooth instrument to incise the gingiva around the crown, and then I extract the tooth with an elevator. Some practitioners use a hooked scalpel blade, a bone chisel and mallet (Figs. 6 and 7). Blind wolf teeth are frequently found in mature horses, and in mature horses, the root may be firmly embedded in bone, in which case a mallet is frequently required for the extraction. Though broken roots of normal wolf teeth seldom cause problems this may not be true of blind wolf teeth. If a portion of the tooth is left, it may act as a sequestrum and cause pain and behavioral problem.[a] Since

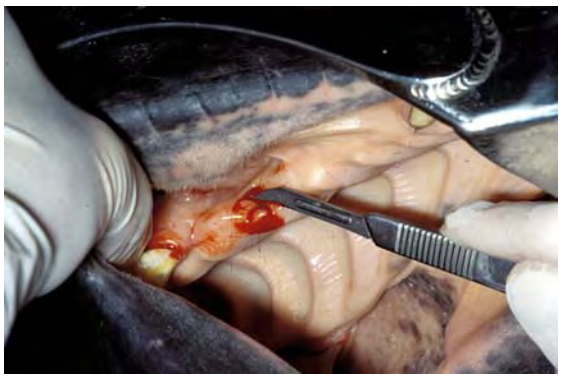

Figure 6. Cutting the mucosa around the crown of a blind wolf tooth.

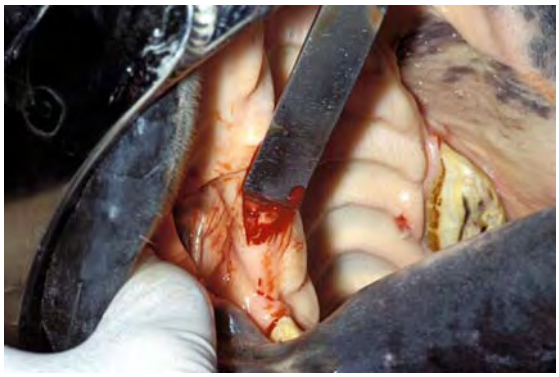

Figure 7. A bone chisel is being used to extract a blind wolf tooth.

this is a possible sequel, the extracted tooth should be carefully examined to be sure the entire tooth was extracted and the tip of the root not left behind. Blind wolf tooth extractions may result in large mucosal defects and such defects should not be sutured. Mucosa may react to suture material causing nodules to develop, which may be irritated by a bit. The owner should be instructed to lavage the open wound daily for a few days. Forceps and a scalpel should be used to trim any excessive tissue from all wolf tooth extraction sites as excessive tissue may form a raised scar that can also cause discomfort from a bit[a]

If the horse is more than 3 years old, I tell the owner that "The bad news is that enough cementum may have developed within the alveolus that the root will likely break before it can be extracted, but the good news is that the cementum will hold the broken fragment in place where it will not cause a problem."

The palatine artery and vein may be penetrated during extraction of wolf teeth because of their proximity to the wolf tooth, and the amount of blood loss caused by laceration of one or both of these vessels may be alarming to the owner (Fig. 8). Because the horse is already sedated, a towel can be inserted into the mouth to apply pressure to the extraction site. This and elevating the horse's head (but not the nose to help prevent aspiration problems) normally stops the hemorrhage.

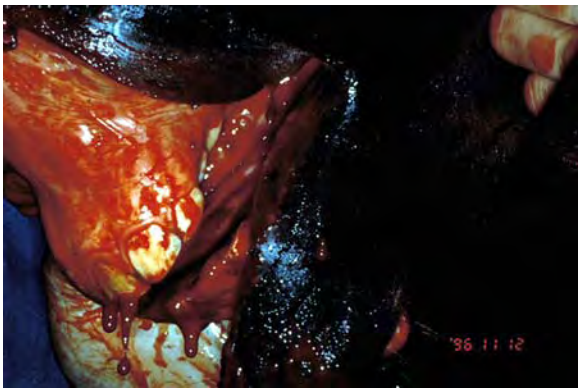

Figure 8. Hemorrhage that has occurred from palatine artery/vein penetration.

Because wolf teeth may cause bitting problems, all dental patients should be carefully examined for the presence of wolf teeth. Use common sense when determining how you should treat a horse that has wolf teeth.

Reference and Footnote

1. Easley, Jack. Corrective dental procedures. In: Baker, GJ and Easley, Jack, ed Equine Dentistry 2nd ed. Elsevier Saunders. 2005:221-248.

a. Johnson, TJ, Personal Communication. 2006.