



Q&A FROM A HORSE DENTIST

Grant D. MacKinnon C.Eq.D.

Certified graduate of the Academy of Equine Dentistry &
proud member of the Association of Equine Dental Equilibration



Incisor Realignment and Reduction

Some of the most common questions I'm asked are associated with why and when are incisors adjusted. "Why are you working on his front teeth?" In most cases it is simply due to the lack of abrasion, mostly to the incisors and seldom to the molars.

Horses living in their natural environment, graze from 16 to 18 hours a day on abrasive solid stem grasses, high in silica which is their desired

choice of feed. Domesticated horses wear their teeth significantly less than their free range counterparts which has been attributed to the type of feed they are provided. Processed feed, cubes, pellets, alfalfa hay, oats and soft flat blade grass hay don't provide the horse with an abrasive substance to assist the incisors with wearing at the same rate as their molar tables. Even if a horse eats a non-abrasive feed for only a few hours a day, what seems to be a minimal amount of abrasion to us can make a significant difference to a horse when it comes to balance and comfort. That difference (between the incisors and molars) is what makes it necessary to adjust the excess length from the front teeth on domesticated horses. Equine dental practitioners that don't address this imbalance either don't understand the bio-mechanics of the mouth or are uneducated as to how important balance is to the health and performance of equidae.

An understanding comes from knowing that horses use their molars to chew every bite of food and with every "chew", small particles of tooth surface from the molars are ground away. However, tooth particles from the incisors are only ground away evenly when a horse nips grass as a daily food source. Therefore, when horse owners provide hay, pellets or grain, the



Smile Mouth (before)

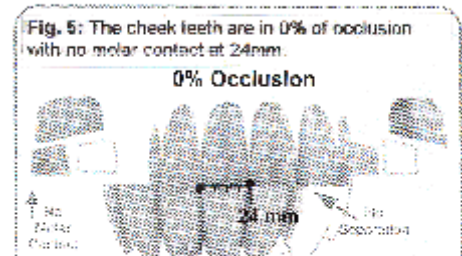
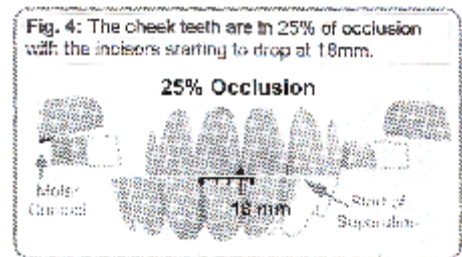
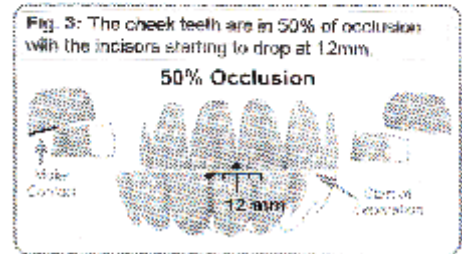
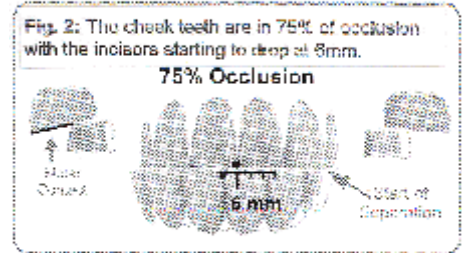
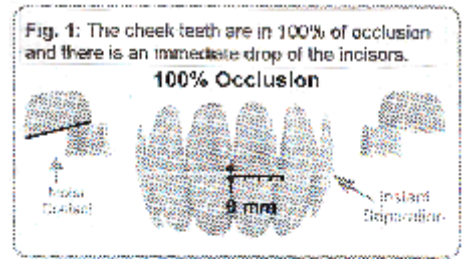


Smile Mouth (after)

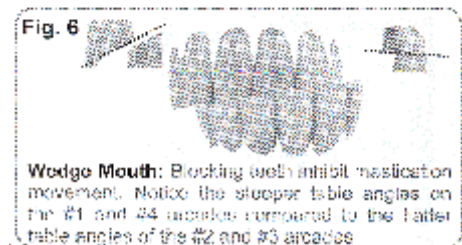
nipping is done for them. Eventually a horse's incisors are so long that they prevent the horse's molars from grinding together properly. Incisors that are too long cause soreness in and around the joint that swings their jaw. The farther the molars are held apart by overgrown incisors, the harder a horse has to work at chewing their food. This causes pain in a horse's joint (TMJ) as they are forced to chew wider and harder than normal. An easy comparison of understanding would be the soreness we would feel after chewing a large piece of bubble gum, "all day". When we are unable to fully close our back teeth together we experience similar discomfort.

Bio-mechanics explained: to become proficient at addressing incisors (1) equine dental professionals must first understand how a "normal" mandible functions before they can realize why and when incisor adjustment is necessary. For easy clarification, while a horse is chewing his feed, the mandible moves down (molars open apart), out (distend laterally), up (molars close together), back (molars grind across) chewing first on one side, then the other. (2) equine dental professionals must also understand that along with side-to-side movement there is also anterior/posterior movement of the TMJ. For example, when a horse is eating on the near side, the mandible shifts down and moves laterally, the left upper condyle of the mandible (upper portion of the jaw that extends through the skull, the insertion of the temporalis muscle) moves posteriorly while the right upper condyle moves anteriorly. In other words, the horse's skull is wider at the back, narrow at the front and has a slight upward curve from front to back and his teeth are wider at the front and narrower at the back. Quite literally is a complicated geometry lesson in and of itself. Although, regardless how difficult it may be to understand how the parts of a horse's skull works together in order to allow for proper chewing, the fact still remains, if there are any abnormalities or protuberant teeth proper chewing action will be restricted; health compromised and performance inhibited. Therefore is the duty of every equine dental professional to provide balance to the incisors/molars by freedom of movement to the TMJ.

"How many horses need their incisors realigned or reduced?" All horses deserve the balance that full equilibration provides. In my practice, I can safely say that I see a minimum of 15 horses each month that have received improper dental equilibration significant enough to shown signs of an uneven wear pattern on the incisors. Either the incisors were not addressed, incisors were aligned or reduced incorrectly or the back teeth were improperly manipulated causing irregular incisor and/or molar wear. Any one of these restrictions cause problems such as TMJ discomfort, lack of molar occlusion or inhibited performance. Pain can cause a horse to avoid eating and make him feel a little cranky when asked to perform. A lack of molar occlusion prevents a horse from chewing feed efficiently for his gut to process it properly, therefore leading to compromising nutrition. Improper molar occlusion has also been attributed to colic concerns (large feed particles leave voids in a horse's system). Seeking to achieve maximum movement in the



Over Long Incisors: Domesticated horses that eat processed feeds have little to no abrasion to the incisors and a substantial amount of abrasion throughout the molar arcade that causes an imbalance between incisors and molars





Wedge Mouth Aged Horse (before)



Wedge Mouth Aged Horse (After)

TMJ, in my opinion results in not only optimum feed mastication but optimum performance as well.

Lack of molar occlusion causing pain in the TMJ is easy to understand when one reviews figures 1-5. The longer the incisors, the more space is left between the molar tables. As you can see in figure 1, (100% occlusion), this horse's front and back teeth are in balance. His back teeth are able to grind together as soon as he starts to chew his food. Figure 2, (75% occlusion), this horse must slide his teeth to the side 6mm before his back teeth come together and able to grind and so on. In my career I have seen on average, 3 a month generally are over the age of 15. Some practitioners believe that horses can function adequately somewhere between 75% - 100% occlusion. Personally, I work to achieve 100% for every horse I work on – who am I to decide what horse deserves to be able to chew every bite of food, pain free. It is easy for horse owners to check the excess length of their own horses by measuring the distance from center to full occlusion. Start with the front teeth (closed) and centered. Slide your horse's jaw to one side and observe how far his jaw slides before you hear the molars make contact and grind together. Once the molars make contact, the incisors will separate. It is important to realize that the TMJ is not a fixed hinge and it moves depending on the different muscles being used therefore difficult to determine the exact amount of occlusal surface and these measurements should be used as a guideline.

I have discussed wedge mouths extensively in past articles but when discussing the incisor realignment and reduction it is obvious why they should be brought into the discussion. When incisor table angles are offset as in figure 6, mastication and performance is severely compromised. Other incisor irregularities that concern equine dental professionals is ventral curvatures (smile mouths), dorsal curvatures (frown mouths), missing incisors, displaced and irregular incisors, wavy incisors, parrot mouths, over-jets (sow mouths), under-jets and steep incisor table angles. Generally, 95% of horses I see for the first time have one of the incisor irregularity just outlined. In my current clients, 65% of the young horses under the age of 5 return with incisor irregularity since they are losing baby teeth – establishing their permanent dentition, and 15% of horses over the age of 5 will redevelop some kind of incisor anomaly (horses teeth erupt at a rate of an 1/8" a year therefore, unlike a human, they are always changing, preferential chewing to one side over the other, injury, and a host of other unknown cause/effect influences). Regardless the reason, it is important for every horse owner to realize how important annual incisor adjustment is for the care and well being of their horses. Please note: one alignment does not make your horse's teeth perfect, since their teeth continue to erupt throughout their life – just like feet, some will wear better than others, but still require regular maintenance.

Remember, all undesirable actions are compensatory to some point of pain and attributes to a horse's balance and ability to perform. If you are experiencing undesirable behaviors while riding your horse, have a certified equine dentist take a look, to get the answer *'straight from your horse's mouth'*.

If you have a question about your horse's teeth and how they might relate to his health or performance call 1-306-747-2724, 1-403-936-5394, 1-208-420-2701 or e-mail mackequine@sasktel.net.