Dentistry and Soundness

by Monica Meer

When I started trimming back in 2001, I was just like everyone else involved in natural barefoot trimming. Thinking this was the "secret." This was the missing piece of the puzzle, the puzzle of soundness. I was diligent in my efforts, only to find along the way that the hooves, as important as they are to the soundness of horses, in many cases were not the actual cause of lameness. I have found over the years that, in most cases, the hooves are merely a symptom of a greater cause.

Hoof care practices have come a long way since I began studying the horse's hoof. We now know that diet, environment, boarding, nutrition, metabolism, hormones, etc., all play integral roles in soundness.

Well, I am here to add one more thing to this whole mix of tools in my "soundness" bag of fixes: equine dentistry. Or should I say "Whole Horse Dentistry." Also known as **Natural Balance Dentistry™**. This method should **NOT** be confused with traditional methods of "floating" or the recent onslaught of the (big bucks) power floating method. My intention here is not to insult anyone who is performing these methods, but rather educate people on the differences in the methods, and the profound effects they can have on our horses, in regard to lameness and hoof issues.

Being a natural trimmer for 9 plus years has taught me a lot. I know there are others out there who have found the same thing as I, that the hoof changes, sometimes during the course of a year, maybe less, maybe more. Regardless, we can all admit the hoof changes. It was my search for help for my own horses which actually led me to the answers. It led me to the direction of Natural Balance Dentistry™. Why did their hooves change over time? What was the reason?

I do not think this is a normal occurrence. When I start to see changes in the hoof, it is a big red flag waving smack in the middle of my face. The horse is compensating for something. Now begins the search, but now my search also includes balance of the mouth.

As I am sure all horse owners know (although, some may not), horse's teeth are hypsodent, which means that the teeth have a generous surplus of reserve crown below the gum line which grow until the age of 5, and then erupt over the life span of the horse. So they are continually erupting, and the rate of eruption should equal the rate of wear. This eruption rate decreases as the horse ages.

Well, just as with the hooves, domestication, along with unnatural boarding and feeding practices, has caused the maintenance of teeth to become our responsibility. Just as the hooves need to be trimmed regularly to mimic natural wear, the teeth need to be addressed (reduced) in order to mimic natural wear for them, as well.

Let's start at the beginning. As the horse ages, it sheds the deciduous teeth and replaces them with permanent teeth. By the age of 5 (approximately) all of the "baby" teeth are replaced, the permanents are all in, and in wear. We consider this to be a good reference point to direct us in the natural length and angle of incisors for the horse. Each horse being an individual, the length and angles may vary, but generally fall into a range of 8 to 10 degrees. Nature has provided them with stability and "guidance" through these formative years, as our young horses grow and mature. They do this by maintaining at least three molars in occlusion at all times during this phase of their life. Even in utero, this same stability and guidance has been set and in use for the proper development and stabilization of the TMJ (temporomandibular joint) to take place.

The biggest disservice we can inflict on our young horses is power floating them while they are in these impressionable years. Immediately, the guidance could be compromised, as well as the stability of the TMJ. **It is best to not alter what nature has put in place as protection and guidance for development.**

Horses age 5 and younger should be monitored for proper shedding of caps and if need be, reduction of pathology, only that which would inhibit proper mechanics of the jaw. Sometimes caps may have a problem shedding on their own, these instances may cause the permanent teeth to erupt incorrectly. The sharp edges and the angles should be maintained. These are brand new teeth, ready to take the wear of forage. They are also very soft and can be easily compromised. Feeding them hard, dense, and course pellets and grains may wear the cementum prematurely, which causes the stronger enamel folds of the tooth to be raised. This type of pathology is easily correctable with the use of precision hand instruments.

Horses at the age of 2 and under should not have a speculum inserted, due to the fact that the plates in the skull have not yet fused. It is highly recommended that horses age 2 and under have no form of dentistry performed at all, and horses age 3 to 5 have very little done other than that which is mentioned above.

So, now you are scratching your head wondering "OK, so **how does this affect the hooves**?" Well, it can start at any age, but with many, it can start with that first float of the teeth.

As I stated earlier, nature has supplied the horse with its own method of guidance and stabilization of the TMJ, which directly relates to the angle of the teeth, which directly relates to the biomechanics of the jaw. We compromise this in several ways. Through premature and/or aggressive dental procedures, lack of dental procedures, through unnatural feeding practices such as hay feeders or head up posture while eating, as well as through unnatural movement and unbalanced riding. Why is the stabilization (balance and comfort) of the TMJ so important? It is due to the fact that 70% of the nerves run through this joint, nerves and propreoceptors directly related to balance and motion, nerves relating to the top line, nerves that affect the horse from the head all the way through the tip of the tail. So you can see how we set them up at an early age. Just as in humans, each tooth in the mouth is directly related to a meridian which runs through the body. Each tooth can be linked to specific organs, glands, and joints.

And again, how does this effect performance and relate to the hoof? Well, when the horse begins to become compromised through inhibited and lack of correct biomechanics of the jaw, pathology begins to form. As the pathology forms, the nerves respond. When the movement is compromised, there is a neuromuscular response which occurs. The horse begins to compensate. Some muscles begin to take up the slack of others which no longer function properly, due to the nerve response, or due to balance changes.

You may not even notice this for a time. It can creep up slowly, over the course of several months to several years. But eventually, something gives. Or, it becomes obvious through really aggressive behavior. Refusal of the bit, defiance under saddle, inability to perform lead changes, bucking, rearing, inability to go in one direction comfortably, inability to collect or extend in the gait, head up posture, etc. All of these inabilities reflect in the hooves. Actually they reflect in many areas, with the hoof showing up last—the last resort, and the last red flag. Symptoms such as arthritis and joint issues, hock issues, stifle issues, weak suspensories—these areas can all be prematurely broken down due to abnormal posturing, which could be due to lack of balance, guidance, and stability of the TMJ. In fact, many of these same lameness issues have been successfully resolved by addressing specific pathology in the mouth.

Let me try and explain the neuromuscular response a little bit deeper, using the human jaw as an example. We have something called

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proprioception at work in our body. Things that we perform everyday without even thinking about it, this is proprioception; our balance, our place in space and time. For instance, we do not think about our jaw when we chew, where it is placed, how far out it moves as we chew. We have built-in guidance which directs the way. Slide your jaw to one side or the other while your teeth are in contact. Oops, we get to the canines and there is a lift. Our brain tells us to stop. Propreoception takes over and this built-in protection does its job. In fact, when we come to that canine tooth and actually bite down using that tooth, there is something really uncomfortable that happens. We get a sensation which tells us this is unnatural, move the jaw back into its correct position.

It is the same in the horse. If there is pathology which inhibits the movement of the jaw, as in raised edges, rims, hooks, ramps, etc., it, in essence, sends communication to the brain to stop, don't proceed, this does not feel right. But the horse, in its effort to "right" itself, will try to find its guidance again. The horse will begin to posture. It will begin to carry itself in a way so that it will re-establish guidance and try to find the stability once again. This involves the use of muscles, muscles which will begin to fatigue over time. So, again, proprioception takes over and the body adapts, no thought process involved, it does what it needs to do to right itself. They may develop what we call a convenience bite, a place where the horse can deal with the imbalance.

There is a lot of pressure produced when the molar tables come together. Just as when we are at rest or moving, when the horse is at rest or moving (working), it is not holding, clenching, (or what we call occluding) its teeth together. Our jaw is not engaged (applying pressure) unless we are eating. When pathology inhibits the proper biomechanics of the jaw, and in turn influences the comfort of the TMJ by not allowing balance during this "at rest" or "working" place, the horse will posture itself accordingly. The body will always try and find a place of comfort. Pathology is caused by neuro messages.

So we now know how we are setting up our young horses for muscle and joint issues, as well as the hoof issues that will plague this horse as a result of these issues. We also know that it can be worse for the older horse.

I already spoke of the horse's teeth being hypsodent. That being said, the incisors as well as the molars are affected. How do we generally age a horse? Through the incisors. We have photos in vet books and educational materials showing the long, angled teeth of the older horses, getting even worse as the horse reaches 20 or so plus years. This should not be the case.

It is through lack of understanding that this has become what we consider "normal" when we look into the mouth of an older horse.

Again, whether the practitioner who is working on your horse is using the traditional method of hand floats, or power floats, the majority of their work always seems to be focused on the outer edge of the upper arcades (buccal), or the inside edges of the lower arcades (lingual). What begins to happen over time is that the rest of the picture is being neglected. Angles of the molars are being diminished year after year, while other unaddressed pathology is left to go rampant.

The life span of the molars can be decreased, or worse, the molars can become prematurely expired through over floating. The occlusal surfaces can be diminished by over rounding the edges or sides of the molars. All this as the horse's incisors are left to get longer and longer. In an effort to maintain occlusion (contact) of the molars, as well as find comfort to the TMJ, the pressure they produce to correct the back of the mouth now forces the incisors to move forward into an unnatural length and angle. It is the incisor eruption without wear which actually causes the malocclusions in the molars, but yet they fail to address them.

All photos courtesy Monica Meer

BEFORE **AFTER**

Cody—Before and after dental work. Both eyes have come forward. The temporalis muscles are reduced and soft. The ears have come closer together. His head posture has come down. Stiffness of movement has decreased. Hips have changed, chest has changed, and shoulders have changed. Overall, increased happiness and movement.

As the horse ages, it becomes more and more sensitive to subtle changes that reflect on the TMJ. The meniscus, the disc which lies between the two bones making up the temporomandibular joint is becoming thinner and less flexible. Now the horse's sensitivity has increased, and it can feel even the most subtle of changes, which in turn can affect their performance even more. As the horse ages, it can become harder for them to manage these subtle changes to molar arcades, let alone major changes, which we continue to inflict on them year after year through recommended (unbalanced) floating. This is why we associate hard keepers, weak top lines, saggy sway backs, bony hips, as an "age related" problem, when in fact it may be due to compensation causing muscle atrophy.

The angles of the molar arcades are generally around 14 degrees (less on the front 12-15, steeper in the back three). Less angulation usually occurs in horses with wide faces, and possibly steeper angles in horses with very narrow faces. On average, though, it is 14 degrees. The horse's teeth should not be rounded on either side, buccal or lingual; the entire surface of each tooth should be in contact with the entire surface of the opposing tooth, all the way around. By rounding the edges of the teeth, the less surface they have to do the job they need to masticate the food properly.

As they continue to be floated each year, addressing mainly the edges that I spoke of earlier, the more and more diminished the angles become. The more rounded the molars become. The greater the lack of occlusion. The more glazed and un-textured they become. It is the texture and the enamel which help to move the food bolus through the arcades of teeth for mastication. Horses can also become performance compromised, and the hooves can start to change even more.

In fact, the edges of the teeth should be sharp. The action of mastication is more about "cutting" of the forage than it is about grinding. The edges should be like a sharp serrated knife. The edges should not hang down (as points), but rather they should be in plane with the surface or the whole arcade of teeth, angle intact. "40 million years of evolution can't be wrong, but 100 years of bad opinions could be."

Some people become obsessed with these "points", thinking and visualizing the horse is

biting its cheeks with every chew. Truth is (as you all know), the maxilla (upper jaw) is stationary; only the lower jaw has motion. The mandible (lower jaw) generally will not move past the pathology. Why would it bite down on the points? How would it successfully masticate food by biting down on points? Can it laterally move across the points? Wouldn't doing that break the points off on its own?

In my opinion, the horse cannot "bite" the soft tissue. The mandible is inset from the maxilla, it is narrower. The process of mastication is the mandible laterally moving outwards to use the lingual cutting edge of the lower arcades against the buccal cutting edge of the upper arcades. In fact what is most likely happening with points is the method of vertical motion. It is my theory that the "ulcers" that appear on soft tissue is more due to lack of correct motion and function of the jaw, than it is to the "points" coming in contact with soft tissue. That has yet to be proven, but gives us all something to consider. What if the ulcers are due to food that gets packed, allowing bacteria to form as result of vertical chewing? Or maybe it is the process of the forage stabbing into the soft tissue due to lack of lateral motion or rubbing of the forage into soft tissue with vertical motion? Don't be mistaken, it is important to reduce the points to the plane of the molar arcades, but it is more for the fact of proper biomechanics than what most people are visualizing the problem to be.

Working in a horse's mouth is precision work. The horse's performance depends on it. The teeth of a horse really have more to do with movement and performance (and hooves), than eating. A horse's natural instinct is to survive. They most likely will eat regardless of how we compromise them, but the compensation does not lie.

A weak top line, sunk in behind the withers. Hips that are apparent, due to lack of muscle, weak hind quarters, ewe necks, underdeveloped necks, or over-developed necks, are all a response to compensation. It may or may not be related to the mouth, but most are. As horses age, and the angulation of the teeth change, and they are forced to posture and redefine their guidance, they diminish important muscle mass. Older horses do not have to have sunk, underdeveloped, top lines, they do not have to be hard keepers. It is not for the fact that they have "points," it is for the fact that they may be "balance compromised." Get them comfortable, they will compensate less, and they can rebuild their muscle and use calories more efficiently.

Back to the hooves. How many times do we see two different angles of hooves? I am seeing it now more than ever. Actually, I have been seeing it more now that the advancement of power floats has taken over the industry. We see cracks develop, flares develop, different forms of mysterious lameness issues. What we neglect to ask ourselves in this whole process is when were the teeth done, and by whom?

Sometimes the after-effects of poor dentistry can be seen immediately. Horses may not eat, they might drool, and they may look to be in obvious discomfort. Then a few weeks will go by and they find their way through the changes. They appear to be OK. Then at any time, weeks to months, or longer, you may notice other changes occurring, like weight loss, changes in muscling, change in balance or gait, and HOOVES. Saddles may not fit the same. They may refuse the bit, they may no longer want to collect, or maybe they do not want to go in one direction or the other. They may experience signs of lameness.

What I want to do through this article is bring awareness of lameness and hoof issues as a result of a bigger picture, which simply may not be addressed through trimming, or shoving supplements down their throats.

I have seen it time and time again, gimmicks, trimming tricks, trying to correct these issues. You can't do it this way. If you do not get a balanced hoof as a result of **correct** trimming, then look up higher. Don't back up the toe into the white line, don't leave more heel, take more heel, leave a medial or lateral wall higher to compensate. Not only will it not work, but you may cause even further lameness. We are not working with a block of wood. It is a living and MOVING thing. Every change has an effect. If you are not getting the results you desire, then after addressing the diet and lifestyle of the horse, contact a Natural Balance Equine Dentist. Have them assess the horse and rule out the possibility of improper biomechanics of the mouth.

I have several case studies in the works. One of them is Cody, one of my own horses, as featured in the photos. You can more read about him on my web site: www.thenaturalhoof.com. You can learn about Natural Balance Dentistry™ through my site, and also through the Advanced Whole Horse Dentistry Learning Center: www.advancedwholehorse.com. There you can read articles written by our program director Spencer LaFlure, as well as published articles that I have uploaded on my web site for public viewing.

About the author: Monica Meer owns five horses, collected due to a variety of lameness issues. She is a CP/Instructor with the AANHCP, and is certified in Natural Balance Dentistry™ through Advanced Whole Horse Academy. She is also certified in Reiki, Equine Sports Massage, and is a practicing herbalist.