To Bit or Not To Bit

By Janene Clemence (Dip. Psy. CNZL1)

I've seen many articles recently that talk about bitting the horse, mostly on how to make the horse work better, how to fit the bit, the importance of quiet hands etc.

What I haven't seen in any of these articles is the truth about what a bit actually does…how it really works in the mouth, and what other effects that bitting may have on your horse…your horse…the one you call your friend and claim to love.

It is not enough to just stand up and say, "I think bits hurt horses and we shouldn't use them!" If we take a simple look at the anatomy and physiology of the horse, we can better realize the psychological and physiological impact on the horse and then come to an informed decision on whether or not bits really belong in a horse's mouth.

Without visiting the anatomy and physiological aspects of the horse, we will fail to understand the impact the bit really has on the horse. Science shows the tremendous discomfort/outright pain created by the bit in a horse's mouth, and the physiological effects on the horse. Just taking a little time to visit any gathering of riders in any discipline will anecdotally confirm what science proves.

Whichever way a person tries to argue, science can lay the truth on the table. In the end, it is only a choice…a choice to not cause pain to the horse, or, to choose to knowingly inflict pain. As our understanding of science and general knowledge expands, our perceptions change, and so too, the way we act. Sometimes these changes are difficult. One reason is because new information must be absorbed, and this can take time, but the difficulty is also that it is sometimes difficult to digest what we have done when we realize what the truth is.

When those changes force us to take stock of who we are, then those changes are met with even more resistance. Because our actual mindset and behaviour has to change towards our horses when removing the bit, there is a high degree of opposition. The status quo is always easier. Some of the following information over this article and the next may be confronting to many people, but it is every persons own choice and responsibility what they do with the information, we all have our own journey.

The beginning…

The bit has actually been in use for thousands of years. Evidence from a site in Botai, Northern Kazakhstan shows bit wear on the P2 molars of horse skulls .The site is dated 3600 – 3000BCE. This means horses were ridden with bits much earlier than first thought. Botai did not have wheeled vehicles so the horses were more likely to have been ridden than driven.

As time progressed, means of control became more 'sophisticated', unfortunately, 'more sophisticated' meant 'more painful' for the horse. Sadly, the progress in the design of modern day bits does not in fact move forward and away from brutality. None of the designs of any bit on the market today is new. All designs can be found from hundreds to even thousands of years ago. The simple snaffle of course, is one of the earliest designs, and has not really changed since its conception.

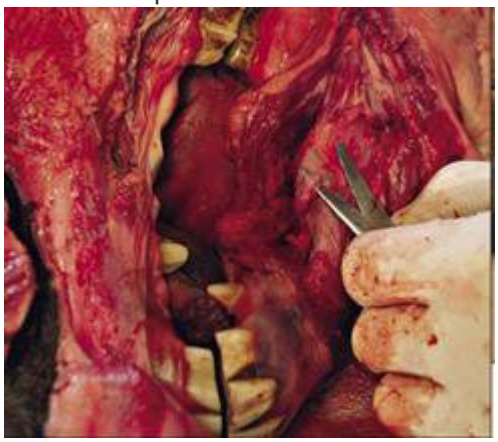
Bits were designed to cause pain, and obviously it was thought that more pain was better than a little pain! Today, we know that animals can feel pain, that they are emotional, and intelligent…we know this to be truth, and yet we still somehow believe or agree that pain is the best method of control!" Is this Ethical?!

Anatomy and physiology

As there is limited space we will be looking at the facts quite briefly.

Bars of the mouth: The Trigemenal Nerve sits directly below the bit. The trigeminal nerve is directly enervated to the brain. Anyone who has had a toothache knows what nerve pain is! Trigemenal Nerve pain (Tic Douloureux) is one of the most severe pains known to mankind. Humans suffering from it begged to be killed as it is so unbearable

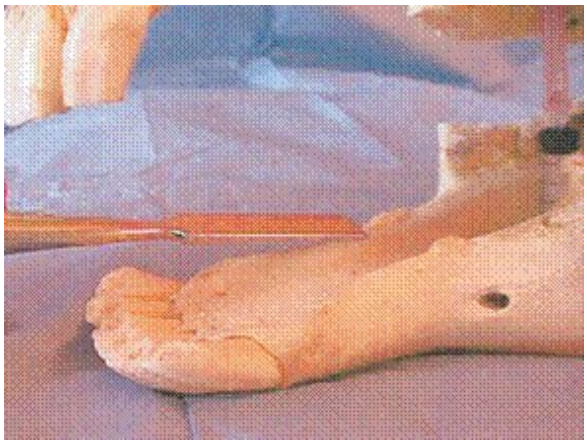
(http://en.wikipedia.org/wiki/Trigeminal_neuralgia). Headshaking in horses is one manifestation of Trigemenal Nerve pain.



Trigemenal nerve, seen on the left scissor blade

There are over 100 behavioural issues that are directly linked to the use of the bit…some of these might surprise you. (W. Robert Cook FRCVS, PhD, "PATHOPHYSIOLOGY OF BIT CONTROL IN THE HORSE"). This paper was published in the Journal of Equine Veterinary Science, it is a peer reviewed work.

In skulls of horses that have been bitted it is clear to see the damage done to the diastema (bars of the mouth). The periostium of the bone is damaged and in chronic cases will develop bone spurs. Even if no spurs develop, the roughening of the periosteum is easily seen.



bone spur...seen at end of instrument

One of the common defences pro-bitting, is "but a harsh bit in good hands can be mild, and mild bit is only as harsh as the hands controlling it". Really? How much pressure is there on the tongue? The jaw? The palate? The now fairly well known 'St Petersburg Study' (Alexander Nevzorov) showed tremendous forces upon the mouth of the horse. - for drawing, from 50 to 100 kg; - for an average force jerk, from 180 to 220 kg; - for a strong jerk: over 300 kg. (per 1 sq. cm. of mouth surface!!)

'Drawing' may be understood as 'standard' contact to the mouth via the reins ie taking up contact to put the horse on the bit. An 'average force jerk' may be understood as the type of rein action seen when used to slow a stronger horse showjumping, or one 'evading' contact in the warm up area in dressage. A 'strong jerk' may understood as the rein action seen when controlling a very strong horse across country/or getting a headstrong horse 'under control'…and also seen when a rider has 'lost their cool'.

It isn't true that 'an ounce in the hand is an ounce in the mouth'. Part of the reason is because of the very small contact point made by the mouthpiece to the jaw…small contact points increase pressure. Once upon a time women were not allowed to wear stilettos onto a plane for this same reason, the small pressure point increased the weight on a given area.

The bars can be particularly damaged in the horse that gets the tongue over the bit to avoid the pressure on the tongue. The horse to the right suffered these injuries doing just that. By consistently getting his tongue over the bit the bit literally just crushed and sawed into the bone.

Palatum Durum (palate/roof of mouth). The palatine nerve (n. palatines major) lies between flesh and bone. The bit will hit and bear pressure here at rates of 180-200 kg per square centimeter. To the left you can see bruising done to the Palatum Durum caused by a snaffle.

Tongue: The tongue is subjected to the same pressures as the bars of the mouth. Lacerations and pinching (from catching the tongue between bit and teeth, or in the joint itself) often just go unnoticed. The tongue heals quickly and you may be completely unaware that your horse has ever even suffered the incident. The laceration to the right is a more severe incident, but was caused by the bit.

Teeth: The bit damages the teeth. It takes up to 150 hours to cause wear grooves on the P2 molars using bits made from organic materials (wood, hemp rope etc) (Brown, D. R., and D. W. Anthony, 1998). Steel will likely cause wear a lot faster!

In order to try and minimize damage, certain 'routine' procedures are carried out. The two most common procedures are:
1) Bit seats. 2) The removal of teeth to accommodate the bit.
There is debate about the bit seat…research by natural balance specialist Spencer la Flure says removing a certain amount of the wear surface of a tooth such as found in the 'bit seat' destabilizes the mouth, which in turn leads to Temporomandibular Joint problems.
TMJ issues are of major concern…the TMJ functions as one of the horse's main balancing components and thus, a TMJ issue will affect the whole of the horse. Others maintain that a small amount can be safely removed and makes the mouth of the bitted horse more comfortable. From experience I can say this true, that horse seems more comfortable… however the point is, we are deliberately 'deforming' a part of the horse in order to be able to use an instrument that causes at least discomfort, and is capable of producing extreme pain and permanent disfigurement. 'More comfortable' is relative.

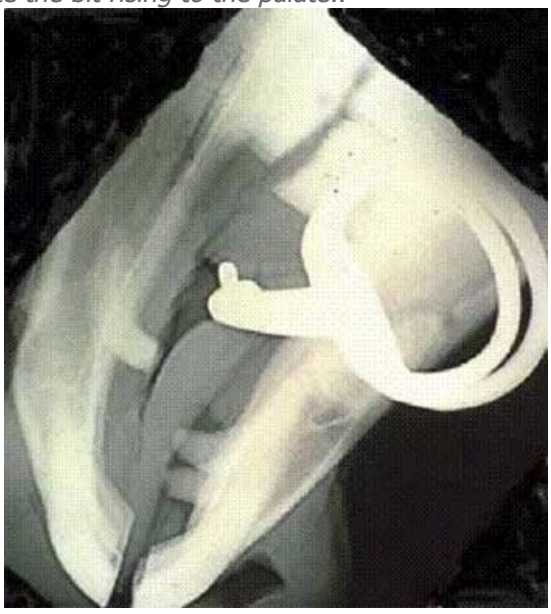
The teeth that are primarily removed are the wolf teeth. It is true that if left in the mouth these may be a source of extreme pain to the bitted horse. However, if the wolf teeth are in good order they do not need removing if you are not using a bit. It is the impact of the bit upon these teeth that is the major concern, they break easily as they are very small teeth.

Horses consistently take the bit up to the teeth in order to relieve the tongue of pressure. In doing this, while holding the bit the horse is unable to align his jaws correctly as he should for his movement. The lower jaw moves forward as the horse comes to the position known as 'on the bit' (I won't call that collection as 'on the bit' is generally false collection); in turning the horse follows his lower jaw (Grant D. MacKinnon C.Eq.D. Teeth or Training)

He cannot do this if he is holding a bit between his teeth. He cannot do this if a rider has 'contact' on the mouth.

Below we see how a snaffle sits in the mouth...the first x-ray shows a loose ring snaffle…there is light contact on the reins to show the lifting of the joint towards the hard palate...the roof of the mouth (Palatum Durum). The second myth-busts the idea that a french link is more mild; note the depression of the tongue. The third shows how far back the bit will slide on a moderate contact, note how the tongue is being 'rolled' to the back of the mouth, and how pressure there is on the tongue. In this position of course, there will be impact with the teeth.

note the bit rising to the palate..



The French Link...not mild after all...note the depression of the tongue..

What about shank bits? A simple mathematical equation tells us how much leverage we get from the shanked bits (and also curbs, but the effect of the chain increases pressure on the lower jaw) …if you measure a bit from the outside of the mouthpiece (cannon) to where the cheekpeices attach (called the purchase length) and measure the shank from mouthpeice to rein attachment it

will show the ratio of leverage. For example, if you have a two-inch 'purchase length' and a shank of 6 inches your leverage factor is 3:1. This means if you have 1kg of pressure in your hand, the horse will have 3kg on its mouth.

contact with the palate...this time show with the Tenessee Walker bit (shanked)

Rein pressure on a bit with loose cheeks and a broken (jointed) mouthpiece can force the mouthpiece against the palate. A bit with a high port or spoon can contact the palate and a lateral pull of the reins (Eg a one rein stop) can force the bit against the cheek teeth. Any port or 'tongue groove', as they are sometimes miscalled, that is 2 inches or longer will reach the palate of the average horse if a curb chain or strap is not fitted to disallow that.

The eyes remain the same…

Unfortunately, photographs such as those shown above can be captured by anybody with a camera on any given day at any competition of any level, or out on any ride in any trail riders club. The eyes of all these horses reflect the same thing.

Note the colour of the tongue (blue) on the racehorse…a not uncommon happening in many bitted horses, as the pressure eventually is cutting circulation to the tongue.

The eyes remain the same...the racehorse. Note the blue tongue...more common than you think..

Other issues:

Parotid Gland: The parotid gland is under a lot of pressure in the frame that can be forced upon a horse via the bit. The parotid gland is the largest salivary gland. Studies have shown the parotid gland in 100% of the dressage and sport horses autopsied had haematomas…the actual centre of the gland was necrosed. Damage to the parotid gland is now being linked to colic in sport horses…especially repeat colics.

Ulceration is increased both in size and incidence in the mouth of the bitted horse, nosebands make this more likely, especially if the horse is also needing dental attention. (The prevalence of oral ulceration in Swedish horses when ridden with bit and bridle and when unridden; Tell, Egenvall et al).

Soft Palate displacement was thought to be congenital, but this has also been linked to the bit. The damage occurs as the horse is unable to swallow correctly with the bit in his mouth and because the bit may cause the movement of the tongue…as we seen with the x-ray of the snaffle drawing the tongue back in the mouth…. the soft palate lies in contact with the root of the tongue, any movement of the tongue also causes movement (i.e. elevation) of the soft palate, which in turn obstructs the nasopharynx.

Another issue with the bit is the automatically induced salivation. We are taught a wet mouth is a

good mouth…unfortunately the horse cannot swallow correctly with the bit, and definitely cannot swallow the excess saliva so a quantity of this will be inspirited (breathed in). This causes pulmonary Haemorrhage (bleeding in the lungs). Usually you will not see this other than when it presents in its more severe form ie bleeding at the nose (except in the racing horses where it is very common and often controlled by drugs), but you will see it by endoscope post-exercise. The horse is made to eat… or run/play…not to do both at the same time.

Conclusion…

It is truly only a matter of choosing NOT to cause pain to the horse; bits are not necessary for control whether on the ground, up in the saddle, or when being driven…and a bit is not necessary at the 'advanced' level of dressage (or other sports) for 'micro control'. The issues I have introduced here are only the start and have only been touched upon…in the next issue we will look at some remaining issues that relate to the horse as a whole and why the horse cannot be said to be in collection when he is ridden with contact. There are ways to develop the horse correctly bitless for any discipline, and there are people to turn to that can help those who decide that the bit truly does not have a place in the mouth of a horse.

For any questions or statements on this article (or further sources and resources to turn to) please feel free to contact me at equinearts@bigpond.com

Links and references:

Clayton.H , radiographic plates. http://cvm.msu.edu/research/research-centers/mcphail-equine-performance-center/publications/usdf-connection/USDF_May06_Clayton.pdf

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Spencer La Flure, natural Balance Dentistry www.advancedwholehorsedentistry.com

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The Secondary Products Revolution, Horse-Riding, and Mounted Warfare by David W. Anthony and Dorcas R. Brown (http://users.hartwick.edu/anthonyd/harnessing%20horsepower.html)

W. Robert Cook FRCVS, PhD, " BIT-INDUCED FEAR: A welfare problem & safety hazard for horse and rider

W. Robert Cook, FRCVS., Ph.D., "PATHOPHYSIOLOGY OF BIT CONTROL IN THE HORSE"

www.horsesforlife.com, The Infraorbital Nerve.