

## Founder: Truths & Myths

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In the past it was common practice to turn foundered horses out to pasture for a year, because it was well known that they would heal in that time – by growing out the damaged hoof capsule. Somehow we have become “blinded by science” and now believe if science can’t fix something it can’t be fixed.

That is far from the truth. Accepted “scientific truth” is not necessarily fact. Common sense is often more accurate. My favorite example is that up until the mid 1980’s (*the end of the 20<sup>th</sup> century*) surgery, including open heart surgery, was performed on infants without benefit of anesthesia. Infants were paralyzed with a derivative of curare so they couldn’t scream or move.<sup>1</sup> Why? Because science had decided infants didn’t feel pain.

So science is not always right. In fact every new invention or ground breaking thought has been ridiculed by the scientific community before being accepted. The only science that appears to embrace new ideas, thinking out of the box, and creativity is computer science. And look how far they have come with that attitude. We should take note.

Science has yet to fully understand what is going on with regard to founder and laminitis. However, founder is natural and common, and because thinking and knowledge are not the sole province of veterinarians, it is possible for the layman to comprehend what is going on.

Laminitis technically means inflammation of the laminae. And that type of laminitis does exist. It can be caused by a horse getting into the grain bin and eating way too much, and it can be caused by other things, such as vaccinations, medical treatments, and even foaling. In this type of laminitis symptoms come on very quickly as a result of a systemic problem.

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<sup>1</sup> Hospitalized newborns, from preemies to babies up to 18 months of age, have been routinely operated upon without benefit of pain-killing anesthesia. This has been the practice for decades but was unknown to the general public until 1985 when some parents discovered that their seriously ill premature babies had suffered major surgery without benefit of anesthesia.. Up to this time, babies were typically given a form of curare to paralyze their muscles for surgery, making it impossible for them to lift a finger or make a sound of protest! From *Babies Don’t Feel Pain: A Century of Denial in Medicine*, by **David B. Chamberlain**, Ph.D, presented at The Second International Symposium on Circumcision, San Francisco, California, May 2, 1991

Dietary laminitis is due to a combination of factors, not only sugar in the grass. Mostly it's due to the horse being overweight. There are no skinny horses with ribs showing getting dietary laminitis! Calories count. Just as with a Type II diabetic, some horses have issues with sugar if they are overweight and don't exercise. The cure for these horses is more work and fewer calories, just as it is for humans.

The laminitis caused by being overweight and getting too much food comes on fairly slowly and is almost instantly reversible if caught as soon as the horse looks tender footed. The solution? Immediately reduce the horse's food intake! If the horse is on pasture, limit the area available, use a grazing muzzle, put the horse in a stall or other enclosure until he/she is no longer tender and is moving normally. It's that easy. Ignoring the symptoms will just allow more damage to be done, until you have a horse in full "founder stance".

It's sad to say, but all too common is another form of laminitis and founder. Mechanical founder. This type of founder is completely preventable with correct hoof care, and is caused by letting the toe grow forward to the point where the connection to the laminae can no longer be maintained. This type of founder is also very curable.

Founder – the term used to refer to “rotation of the coffin bone” – is more serious than laminitis. Not because the coffin bone has rotated and can never be brought back to normal position, but because the hoof capsule has failed, and the horse must grow a new one. Conventional treatment is virtually the kiss of death. Before you get offended, consider this: if conventional treatment worked, there would be very few failures, and virtually all foundered horses would be returned to 100% soundness. There would not be millions of dollars being spent on research, and there would not be regular notices of the deaths (by laminitis) of famous, and valuable, Thoroughbred stallions in *The Blood Horse*.

The example I most often give is, if conventional treatment worked, Barbaro would be alive today. Most cases treated conventionally do not end well, that is fact. Yet the same methods are used over and over and over. Einstein is credited with saying that the definition of insanity is doing the same thing over and over and expecting different results. Regardless of who said it, it's valid. By that definition, conventional treatment is insanity, and does *not* return horses to pain free, sound, normal lives.

At the point where a diagnosis of laminitis or founder is made, the horse will often find itself in real trouble. While treating laminitis/founder correctly, as soon as possible, will lead to a complete cure and return to happy soundness, conventional treatment will only exacerbate the issue. Especially if shoes are prescribed. Shoes will set the horse on the path to constant lameness and/or eventual euthanasia. This is not condemnation of vets, only the truth. The vast majority of vets do not understand how to cure founder. If you doubt this, ask your vet how many foundered horses he has returned to *complete* soundness – with “de-rotation”. And by complete soundness I mean just that – back to jumping, cutting, reining, racing, barrel racing, etc.

For some reason, once the word founder is spoken, and to a lesser extent, laminitis, everyone goes into panic mode and common sense - along with science – goes out the window.

Crazy theories abound in the veterinary community and the farrier/trimmer community as well. Foremost among them is that the deep digital flexor tendon is pulling the coffin bone out of place. Another common theory is that the heels must be lowered to get the coffin bone to return to the correct angle. Both of these ignore the actual facts of anatomy. Which is shocking to me, as at the very least, veterinarians who have studied anatomy should know better.

Let’s look at the deep digital flexor tendon. It causes a *voluntary* movement, which is to curl the hoof backwards. When a horse jumps a fence and curls his front legs, the deep digital flexor tendon is what pulls the hoof back and up. Just like when we curl our fingers. It is a voluntary action. The brain has to send a signal to the leg to do it. The exception of course being a horse which is born with contracted tendons – tendons which are too short, and therefore *do* exert pressure on the hoof to curl backwards. But in a normal horse that is never the case. Look at a horse lying flat out on the ground – the feet are not curled up and back. Neither are the feet of a foundered horse.

And let’s look at the idea that trimming the heels will lower the back of the coffin bone to a normal position. Take a look at Figures 1 and 2. Both show the coffin bone to be located where? *In the front half of the hoof capsule*. This is critical to realize.



Figure 1



Figure 2

It's clear, looking at the images above, that the coffin bone is in the front of the hoof. The majority of it is well forward, and its weight, distribution of mass, angle of attachment to the short pastern, and the digital cushion behind it, keep it pointed downward, *normally*, with the wings in the back pointed up.

In addition, even if a trimmer cut the heels so low as to cut into the digital cushion (not likely to ever happen – just an illustration) the back part of the coffin bone would still not move down. Because of the size and weight of the front portion of the coffin bone, and the weight of the horse pushing down on it, the coffin bone will always point down. Think of it as a seesaw or teeter totter. Once one end is down with someone sitting on it the other end must be up. Only weight from *above* will push the other side of the teeter totter down. Removing heel will not *pull* the rear portion of the coffin bone down.

In addition, the very same deep digital flexor tendon often blamed for pulling the coffin bone down, actually prevents the back of the coffin bone from moving down! (See Figure 3)

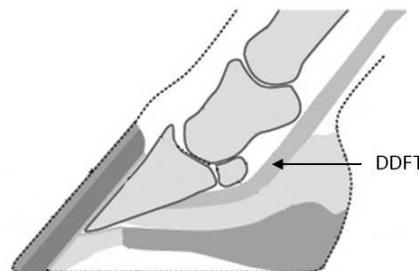


Figure 3

Still, one of the most common things I hear is the refrain “the heels must come down so that the coffin bone can regain its normal position”. This is a huge fallacy. If people actually gave serious thought to what is happening, there are countless horses who would still be alive today.

Let me state the scientific truth. There is no action a trimmer can apply to the hoof capsule which will lower the rear portion of the coffin bone. Let me repeat. *There is no action a trimmer can apply to the hoof capsule which will lower the rear portion of the coffin bone.* For some reason this simple scientific fact is never mentioned, or seemingly even considered.

The idea that the back of the coffin bone is out of place is just a myth. Look at the images in Figure 4. Which foot is foundered?



Figure 4

As you can see, there is no difference in the position of the rear portion of the coffin bone between these two freeze-dried specimens. So why would we want to trim the heels? What would it accomplish, except to make the horse sore, and to force it to put more weight on the toe? Just where we don't want it!

The following images (Figure 5) are the complete versions of the above freeze-dried hooves.



Figure 5

It's now very apparent that the hoof on the left is foundered with "rotation", and very close to sole penetration, while the hoof on the right is normal. And yes, the coffin bone normally points down.

A closer examination of the images reveals something else. The actual angle of the "rotated" coffin bone is not significantly different from the angle of the normal coffin bone. The illusion of angle difference is caused by the change in angle of the hoof wall. Justifiably so – as founder is *not* rotation of the coffin bone, but displacement of the hoof capsule, caused by loss of integrity. To put it simply – the hoof capsule is falling apart and rotating *away from the foot*.

The hoof wall, the sole, and the frog, which form the hoof capsule, are created by the foot of the horse. (What I refer to as the foot of the horse consists of the internal structures.) The various coria produce the sole, the frog, and the hoof wall. And they produce them continually. I tell my clients and students to think of the hoof capsule as a form of "bionic shoe". A living shoe built continuously by the foot.

When viewed in that light, founder is really failure of footwear. Much of the fear surrounding founder is due to what is called coffin bone rotation. In fact, the coffin bone stays just where it always was, attached to the short pastern, also known as P2. What actually rotates is the hoof capsule. Imagine you are wearing a hiking boot that is old. Suddenly the sole starts coming off. The next thing you know your foot has come through the bottom of the boot and the boot itself is up around your ankle. Just

because your foot came out of the bottom of the boot doesn't mean your foot rotated. And that is the same situation a horse is in when the hoof capsule attachment to the foot fails.



**Figure 6**

Figure 6 shows what happens when the heels are raised (by the farrier or vet applying “therapeutic” shoes). Any woman who has worn high heels knows what happens when you raise heels – MORE pressure is applied to the toe. Is that what we want? NO. The weight of the horse will push downward damaging the sole and eventually resulting in the hoof capsule having a hole in the bottom which will allow it to start riding up the leg – which is what really happens during “sole penetration”.



**Figure 7**

Figure 7 shows what happens if a shoe is put on. The shoe prevents the sole from touching the ground, leaving it no support from underneath, allowing the weight of the horse to push downward, damaging the sole and forcing the hoof capsule up, tearing what little connection it had left to the hoof wall. Again not what we want!

[NOTE: The freeze-dried specimens in the above photos are cross sections. So while it may look as though there is no connection between the coffin bone and the hoof

wall, there is most likely connection on the sides – and definitely at the back of the foot. In addition, the coffin bone is not spear shaped, it is hoof shaped, the outer, rounded side, has been cut off.]

To those who will say the farrier will put pads underneath, I say to you those pads do not offer sufficient support, or correct support. A horse is heavy. What seems strong to us, is not to them. Look at car tires as an example. When full of air, we cannot put enough pressure on them to flatten them. But when your car is sitting on them, they give easily. Ditto pads under a horse's foot. In addition, pads with fill,

which *are* hard enough to support the horse, put too *much* pressure on the foot. Imagine your own feet. You're wearing shoes that are really comfortable. You love how those shoes fit! Then someone puts a metal plate on the bottom, and while your foot is in the shoe, they fill the bottom with concrete. How would you feel now? Not good – and that is how the horse is made to feel. Not good. And worse, not healthy.

What is the best support for the foot? The ground. Natural ground, which gives where the horse needs it to give and supports him where he needs support. In a foundered hoof, the wall must be taken all the way down to sole level, so that the pressure of the horse's weight, coming down on the foot, has the support of the *ground*. If the wall is not removed, it acts like a shoe and allows the sole room to drop, while pushing the hoof capsule up.



Figure 8

The images in Figure 8 show how trimming the heels does not lower the back of the coffin bone. The radiograph on the left shows a normal hoof, the one on the right a severely foundered hoof, which has clearly been that way for a very long time. The heels look the same in both photos, but the coffin bone still points down in front – and has been literally destroyed by that pressure. The line to the left of the hoof on the right shows where the hoof wall is – way too far away from the bone, because the focus in this case had been on the heels and the toe was not addressed. Notice that the entire short pastern is inside the hoof capsule, as well as part of the long pastern. The hoof capsule is riding up the leg.

If neither trimming nor raising the heels is the answer, what IS the answer? The problem starts at the toe and must be fixed at the toe. It is that simple. We must take the pressure *off* the toe. If we don't, the connection of hoof wall to laminae will continue to be broken as the hoof grows out.

Below (Figure 9) is an extreme founder case. The mare, a Peruvian Paso, had been foundered for several years before I was called in. She was in shoes the entire time. As is clear in the far left photo, taken at my first visit on 7/25/06, the hoof is in terrible shape and the hairline is lower at the front than at the heels. The center photo was taken 4 weeks later and there is already improvement. The hairline is returning to a more normal position, as are the heels. *[PLEASE NOTE: I never trimmed the heels, all I did was back the toe. Even though this is counterintuitive, backing the toe allowed the heels to move to a better angle.]*



Figure 9

The photo on the far right was taken on 10/10/06, and it's clear that the hairline has returned to normal and new growth at the coronary band is in the right direction, yet there was no additional progress even after several months. It was at that point that x-rays were taken which revealed that almost half the coffin bone had eroded away.

The ruler in the last photo shows the hoof height to be less than 2 inches. Due to the coffin bone loss, the decision was made to euthanize the horse. But despite the tragedy of this case, it demonstrates that the hoof is always *immediately* responsive to a correct trim.

Over time I have come to understand that the foot is not a static victim. The foot has the ability to make significant and dramatic changes *by itself*, in very short order. The following photo (Figure 10) was

taken November 7, 2012 by a client, as part of an email consult. The horse is clearly foundered, with rotation.



**Figure 10**

Conventional wisdom is to trim the heels in order to return the coffin bone to a more natural position, or even just to relieve the pressure on the toe. And it does APPEAR as if that would work.

But remember, there is nothing trimming can do to lower the back of the coffin bone. In addition, experience has taught me that the heels must be left alone, unless they are more than 1/4 inch above the sole.

Yes, I realize that concept is completely counterintuitive, and goes against “human logic”, however, it is the truth.

Here is a portion of the initial email from the owner.

*“The last trim, after reading your article, I refused to let my trimmer touch her sole or heel and have been rasping her toe back every few days, but her heel looks very high and she doesn't want to put weight on it and has a toe first landing.”*

This woman’s statement reveals the truth. Even horses with severe founder will walk on their toes if their heels hurt. It doesn’t matter what we *humans* think, or what *we* feel is logical. The truth is the truth. If a horse’s heels have any pain they will land on their toe. High heels are often blamed for causing the horse pain, and are trimmed to “relieve” that pain. That too is fallacy. Once the heels are left alone the horse starts to use them *more*.

Proof that the hoof does not respond to human logic, but functions according to “hoof logic” is evident in Figure 11, a photo of the same horse above. The photo, taken December 10, 2012, shows that leaving the heels alone and backing the toe allows the *foot* to heal and fix *itself*. All changes visible in the photo are results of what the hoof itself did. The only trimming was backing the toe.



**Figure 11**

This is the message I am trying to get people to understand. The *foot* does the work. The trim only has to do what the foot *wants* and *needs* (according to the *foot* - not Man). The change in angle is significant. It's night and day. Not because the heels were trimmed to bring them down, but because they were LEFT ALONE.

Once the pressure from the toe was reduced and the heels left alone, the horse stopped weighting its toe and started putting weight on the heels. Only that action – by the horse – can change things. Consider yourself. If you don't want to put full weight on your heels, you don't have to; you can shift the weight to your toes. So can and does the horse.

There are many barefoot trimmers who are curing founder. However, it is taking them many months, and often years. Simply because they too continue to trim the heels when the foot says no. Since I have started listening to the hoof, and using what I've termed the Hoof Guided Method, I have been able to return horses to soundness in a matter of a few months, often relieving the majority of their pain at the first trim or over the next 3-4 weeks). They still have to grow a new hoof capsule in order to be "cured", but they are out of pain, moving freely, and happy while they wait. And I do mean moving freely - bucking, running, able to be ridden.

So how do we trim a foundered hoof? It's actually fairly simple, yet each point is critical. I can't stress that strongly enough. The key points are listed below. However, unless the diet is appropriate, success will be limited or non-existent. My only failures, aside from where the coffin bone was severely damaged, were when owners refused to change the diet, when it was necessary.

- When trimming a foundered horse, keep the wall (*other than the heels*) at sole level.
- *Leave the heels alone* unless they indicate they want to be trimmed. If the heels are 1/4 inch or less above the sole in the seat of corn area, do *not* trim them. If they are more than 1/4 inch above the sole in the seat of corn they are asking to be trimmed, but *only* down to 1/4 inch above

the sole. It is tempting to trim them – resist! This is CRITICAL. The back of the foot must be comfortable for the horse to stand on, or it will put more weight on the toe – where we DO NOT want it. Remember, the heels are not the problem! Hoof logic must be respected.

- DO NOT trim the sole unless it is exfoliating on its own. The horse needs all the structure and support it can get. The sole will exfoliate when the foot is ready.
- Back the toe whenever possible. It is critical that as much pressure be relieved in the toe area as possible. Consider your own fingernail. If it's long and someone pulls it upward until it starts to rip off, not only is it painful, but if they keep up the pressure it will rip it right off your finger. Same thing with the hoof. Pressure on the foundered toe is literally ripping the hoof wall away from the coffin bone. The foot will tell you when and how far you can back the toe.
  - ✓ If there is a sole ridge, you can bevel the toe to just in front of it – yes even going through the white line if the ridge indicates. This is the foot telling you exactly what to do – don't ignore it, honor it.
  - ✓ If there is no visible sole ridge, bevel to the white line. If you have left the heels alone, a ridge will form by the next trim

(For details on how to know when and how much to back the hoof visit the following link:  
<http://www.youtube.com/watch?v=hLXB1c8Y1pA>)

- DO NOT trim the foot to make it *look* good – do only what it asks for. Looks do not count. The hoof has to heal internally, at its own rate. It can't be rushed by trimming. Respecting the foot leads to healing, trying to impose our ideas on it delays healing – often for the life of the horse.

Remember - it is nature that does the real work - that is why the old time remedy of putting the horse out to pasture for a year worked. Our only job is to control the toe, to keep the wall at sole level, and allow the foot to heal. The hoof will do the rest. Egos and human logic need to be put aside and hoof logic respected. It is a matter of life and death.