

## Not All Laminitis Is Created Equal

*Bryan T. Fraley D.V.M.  
Affiliate of the Hagyard Equine Medical Institute*

Laminitis, as the name implies, is inflammation of the tissues (laminae) that bind the distal phalanx which is commonly known as the coffin bone to the inner hoof capsule. There are two types of laminae, sensitive and insensitive laminae. These two types of laminae interlock much like thousands of tiny ziplock closures. The sensitive laminae overlie the surface of the coffin bone while the insensitive laminae line the inner surface of the hoof capsule. Inflammation of these tissues is termed laminitis. However, you will soon understand that the term laminitis is used quite loosely and encompasses more than just inflammation. Not all laminitis is created equal. There are in fact three distinct phases of laminitis and appropriate treatment differs within each phase. Developmental laminitis is the phase which occurs prior to clinical signs. Destructive processes to the laminae have been triggered and are ongoing but the horse is not painful yet. In short laminitis is “developing” but neither the horse nor the owner knows it yet. A great deal of research has been focused on the developmental phase of laminitis. As a result of some of this research distal limb cryotherapy (Ice water bath cooling of the lower limbs and hooves) is being used clinically by some hospitals to halt the progression to the acute stage of laminitis. You might be asking and rightfully so. . . “If the horse doesn’t know it’s in the developmental stage and the owner can’t tell either, how does the Veterinarian know?” The short answer is we don’t. We try to pinpoint the population of horses which are most at risk of developing laminitis and start icing them. These tend to be very sick horses. Horses that have had colic surgery and the surgeons noticed dead or dying bowel, horses with severe colitis or diarrhea, severe pneumonia, retained placentas following foaling, horses that have over indulged in grain, and horses with very high fevers are all at great risk of developing laminitis and would be good candidates for icing.

The moment a horse shows clinical signs of laminitis (foot pain, lameness, bounding digital pulses, etc.) the horse is said to be in the acute phase of laminitis. This is the inflammatory stage of the disease. The laminae are swollen and withstanding some damage but are still managing to hold the coffin bone in a normal position within the hoof capsule. The acute phase ends and the chronic phase begins following 72 hours of clinical signs or when there is evidence of rotation or sinking within the hoof capsule on X-rays, whichever comes first. Chronic laminitis has been further subcategorized as chronic stable and chronic unstable laminitis. A chronic unstable horse’s coffin bone is actively rotating and/or sinking within the hoof capsule. A chronic stable horse is a horse that is no longer actively rotating or sinking within the hoof capsule. Chronic stable horses have rotated or sunk in the past but are now growing wall and sole around the new position of the coffin bone. Chronic stable horses can and often do have relapses and we call these occurrences acute on chronic episodes. I know this terminology can be confusing so I will summarize below with pictures to help illustrate the concepts.

**Developmental Laminitis**=disease process is starting; horse feels no foot pain, normal x-rays.



Grain overload

**Acute Laminitis**=laminae becomes inflamed, horse is painful, normal x-rays



Normal lateral X-ray



Picture of the sensitive laminae overlying the coffin bone #4(picture from unknown source)

**Chronic Laminitis**=laminae are torn apart, coffin bone has rotated or sunk, abnormal x-rays

Chronic Unstable=actively rotating or sinking, these horses are in a crisis situation



Unstable horse actively rotating coffin bone penetrating sole

Chronic Stable=no longer rotating or sinking, hoof capsule is remodeling around the new position of the coffin bone, growing sole, these horses can relapse and become unstable



Follow-up X-ray of the unstable horse above after many weeks of corrective shoeing and tenotomy. Notice improved wall and sole growth. This is now a chronic stable horse.



These are pictures of two different chronic stable horses. The hoof capsules have remodeled around the rotated position of the coffin bone. Both horses were surprisingly comfortable.

My hope is that you have a more complete understanding of the three distinct phases of laminitis. With this framework established I will go into much greater detail about each specific phase and the treatment options within each phase in future newsletters.

Wishing you a safe and healthy spring for you and your horses,

Bryan Fraley, DVM