

## Laminitis What is Laminitis?

Laminitis is inflammation of the laminae, which is the tissue that secures the coffin bone or distal phalanx to the inside of the hoof tissue. Laminitis is often interchangeable with the laymen's term, "FOUNDER". The coffin bone is normally secured in a position where the front of the bone is in alignment with the front of the hoof capsule. The laminar tissue is just like any other tissue, being dependent on daily blood circulation to provide nutrients in order to maintain cellular health. In episodes of laminitis, the tissue begins to break-down or exhibit cellular death. When the tissue is damaged, the coffin bone becomes unstable in its position and gradually rotates downwards towards the ground due to a backward pull via the deep flexor tendon.



(Picture "A" on the left shows the coffin bone at a 14.34 degree rotation) The condition is very painful for the horse and can be fatal if not treated promptly. In severe conditions, the coffin bone can rotate and penetrate the sole of the hoof, resulting most likely in euthanasia. Prognosis is dependent not only on the degree of rotation and laminar damage, but also is dependent on the pain tolerance of the horse. In some cases of minimal rotation, the horses are in such extreme pain that they must be euthanized due to lack of ability to relieve their suffering.

## What Causes Laminitis

There are many causes of laminitis, but the most common causes are carbohydrate (grain or pasture) overload, road founder due to constant concussive forces on the feet, infection or toxemia, insulin resistance and cushing's disease. Recent research is indicating a common link between these conditions, that being chronic inflammation, which may be contributing to the ongoing nature of the condition. The blood supply to the laminae is altered during laminitis, leading to a decrease supply of various nutrients and oxygen to the tissue. This then leads to cellular death and eventual release of the coffin bone and eventual rotation. In many cases, treatment can lead to improved bone stability and controlled pain, but unfortunately the condition is likely to recur in the future.

## Therapeutic Options to Treat Laminitis:

Laminitis shares many similarities with equine arthritis, that being inflammatory mediators such as PGE-2 and MMP-9. MMP-9 is actually thought to be implicated in the breakdown of the laminar tissue, which leads to coffin bone rotation. Traditional therapeutic options include the use of NSAIDs (phenylbutazone), narcotic pain medications, vasodilators (acepromazine) as well as other blood circulation modifiers such as isoxsuprine and pentoxifylline. Corrective hoof trimming and application of a styrofoam pad or therapeutic shoe are also employed in most cases to help reduce toe length, improve breakover ease as well as support the coffin bone. The use of supplements has been controversial over the years and questions have been raised as to what purpose they might serve. The use of hoof growth support products have been favored to help encourage overall hoof health and recent human research indicates that herbs such as curcumin and boswellia might actually help to reduce the inflammation associated with laminitis as well as possibly alter the course by reducing inflammatory proteins such as PGE-2 and MMP-9. The use of antioxidants are also of potential value to help reduce associated oxidative stress and thereby also altering the course of the disease.