Prevention and management of contralateral laminitis

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Contralateral limb laminitis is a major complication of skeletal injury repair in horses and often results prolonged debilitation and the ultimate demise of the patient. Understanding this disorder is important in prevention and management and is especially important in client management.

On the surface contralateral limb laminitis appears to be purely a mechanical overload of supporting lamella. However, one perplexing facet of the clinical disease is why some horses are able to tolerate weeks to months of total loading on a limb with seemingly no adverse effects whereas others may suffer irreparable damage in as little as 2 to 3 days. Presently there appears to be no clear cut measurable point at which laminae fail in a clinical patient and our means of determining which horses are going to give way is lacking. Speculatively, several possibilities exists to explain the variation in individuals. Some horses may simply have relatively weaker laminar attachments and be prone to failure under load. Others may be influenced by pain mediated stress resulting in excessive levels of cortisols or other inflammatory agents predisposing to basement membrane damage. Damaging of some lamella may initiate a local inflammatory response resulting in the release of local matrix metalloproteinases ultimately causing further damage to the desmosomal attachment at the basement membrane layer.

Recognizing these possibilities it is important for the clinician to be cognizant of the fact that laminitis may plague the patient at any time during the recovery period. In the typical clinical case of mechanical overload, signs of laminitis are seen after one to two weeks but may occur at any time from two days to months. Characteristic gait changes are not recognized in the early stages because of the presence of lameness in the primary limb. A common observation is an improvement in the degree of lameness of the primary limb. Prior to this there are often changes in other clinical parameters such as intensity of the digital pulse, hoof wall temperature fluctuations, and changes in the contour of the coronary band over time. It is therefore important to make assessment of these parameters routine in the monitoring of the patient. Likewise routine periodic radiographs (lateral to medial and dorsal palmar projections) looking for subtle changes in laminar edema, coffin bone position, or evidence of sinking should be performed.

Detecting these changes early will aid the clinician in implementing treatment plans and recognize of a given course of action is ineffective. As with most diseases prevention is the key to the most successful outcome. The most basic means of prevention is to establish even and uniform load bearing between the members or minimizing load on both. Horses with a cast on a limb should have the opposing limb elevated to the same level with a cuffed shoe with pads or a hoof cast or series of pads nailed to the foot to achieve this elevation. The ideal bedding varies by clinician but the goal should be to achieve a uniform compliant surface to allow comfortable loadbearing along the solar surface especially if barefoot to allow for maximal load distribution. Application of a foot cast with impression material or use of commercially available boots may help accomplish this also.

In the extreme situation, facilitated load sharing in a sling is possible but labor intensive. Also, some individuals do not tolerate the partial support and lay there weight into the sling; however, the device is still useful for bandage changes or other standing procedures. A commercially available portable walker with a sling (Faulkner Walker, Paris, KY) is beneficial during the rehabilitation period when the patient is allowed partial controlled mobility with limited load bearing.

Invasive are usually performed after the onset of laminitis and the patient has undergone displacement of the coffin bone. The most common of these procedures is tenotomy of the deep digital flexor tendon in cases of active or chronic rotation. Techniques are described in the literature. Casting alone or application of specialty shoes such as a rail shoe or heart bar are useful in specific cases. Transfixion casting or application of a skeletal transfixator is an effective means of temporarily transferring load to circumvent the digit, however, in the time required to re-grow a hoof capsule complications are often encountered. The most common complications include fracture through pin holes, loosening, breaking, or migration of pins, or infection around the pins.

Pharmacologically the most logical goal is to keep the patient comfortable with in reason without jeopardizing the primary repair. Judicious use of NSAIDS, along with a fentanyl patch, in conjunction with alternative therapies such as acupuncture will often provide enough pain relief to maintain an acceptable comfort level. For hind limb injuries, long term epidural catheterization for administration of morphine will maintain weight bearing although caution is issued here against too much analgesia. Although we routinely use drugs to enhance the vascular supply to the laminae such as acepromazine, pentoxyfyline, or isoxsuprine.
there is no clinical evidence to support their use for prevention or treatment of laminitis. In summary, prevention is the best treatment. At the earliest signs of development of laminitis one should consider aggressive measures such as unloading the feet in hopes of arresting the progress of the disease.

SUGGESTED READING
Parks AH. How to: Prevent and/or manage distal phalanx displacement in the acute stages of laminitis In proceedings, 46th BEVA Congress 206-207, 2007.