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LAMINITIS “THE FARRIER’S PERSPECTIVE”

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Introduction
The term laminitis covers a broad spectrum of conditions relating to the laminae. Lameness can vary from imperceptible to unable to stand. Treatment varies according to the severity and the phase of lameness (Figure 1). Successful farriery treatment is aimed at stabilising the condition, reducing pain and promoting new horn growth that is as healthy and normal as possible.

The Onset of Laminitis
Immediately that there is a diagnosis of laminitis the horse must have exercise totally restricted to stable. The bedding should be 40cm of clean dry whitewood shavings. Frog support is essential; this can be achieved by using dental impression material (DIM) e.g., PM Hoofpacking Soft or other similar materials. An alternative is the use of Styro-foam pads that are taped to the foot and crush down to conform to the hoof. The horse should not be allowed exercise for 30 days. This is an opportunity to prevent acute laminitis and preserve foot shape.

Figure 1. Taken from Corrective Farriery – a textbook of remedial horseshoeing.

Figure 2. From left to right; a) normal position of the distal phalanx with in a healthy hoof capsule, b) an Acute Founder showing rotation and potential solar prolapse, c) a Sinker where the distal phalanx has dropped vertically, d) a long term severe Chronic Founder showing gross changes to the distal phalanx and the hoof capsule.
Trimming Procedure for Typical Foundered Horse

In the authors experience trimming as a treatment, alone from shoeing, in the acute or recent post acute cases is ineffective. Trimming alone is only advised for typically foundered horses that have stabilised, i.e., not showing signs of continuing to sink or rotate. Most will show clear external visual signs of laminitic changes to the hoof capsule.

The Chronic Foundered Horse - 3 Months Plus

It is typical of ponies and small horses that they survive laminitis attacks and the consequent changes to dorsopalmar alignment better than other breeds. The characteristic changes seen are diverging growth rings at the heel caused by faster growth than the toe, a flared (concave) dorsal hoof wall, and a distended white line at the toe. These distortions are frequently exaggerated by negligence (by the owner or farrier). The hoof should be trimmed to return it to normal dimensions. The dorsal hoof wall is trimmed to align with the distal phalanx (PIII) (Figure 4). Radiographs help (especially where a farrier does not have the confidence) to bring back the break-over point. An accurate guideline to trimming the dorsal hoof wall is that in any chronic laminitic hoof the distal phalanx always remains in alignment with the proximal third of the hoof wall. The heels, which will be overgrown and may run forward, require trimming back. The palmar/plantar angle of PIII should then be approx. 3-5°. The foot should be trimmed to create a normal (straight) hoof pastern axis (HPA). The toe is rounded to improve break-over. In the thoroughbred and many larger breeds the above signs are seen but because of the larger and flatter foot shape of these types they seem less able to cope with a chronic founder situation without shoes. None-the-less in very mild cases the author uses the same trimming technique described above.

Shoeing the Acute and Recently Chronic Foundered Horse

With the acute and/or chronic foundered horse the heart bar in conjunction with a dorsal wall resection has proven successful in many cases. This is the procedure advocated by the late B Chapman. Lateral x-rays and markers along the dorsal wall and a drawing pin 10mm back from the apex of the frog allows the farrier to gauge the fitting of the frog plate. The dorsal wall marker shows both rotation and if aligned with the coronary band indicates if sinking has occurred. The frog plate is placed according to the strict guideline that frog must be visible all around it and the tip of the frog plate 10mm back from the apex of the frog. The dorsal wall is resected to the coronary band from approximately where the first two toe nails would be.
Reshoeing is strictly at one month intervals. When appropriate (usually 4-6 months) the dorsal wall is trimmed into a flowing rounded toe. If the horse is sound and the resection has almost grown out, shoeing is changed to a conventional shoe with a rocker toe. Where treatment is considered successful, i.e., the horse returns to its normal work, small pockets of seedy toe often remain. These are usually at the toe within the damaged white line and may persist for several years.

**Alternative Methods**

1. The author has limited experience of the procedure of coronary band grooving as an alternative to a full dorsal wall resection. The rationale is that the lateral integrity of the dorsal wall is not destroyed by this method.
2. The Equine Digital Support System (EDSS) procedure espoused by G Ovnicek has proven a successful alternative to the heart bar/resection method. The shoeing consists of a Natural Balance shoe set back radically. A frog support pad is fitted with dental impression material filling the sole and lateral sulci from the frog apex caudal. Additional frog support and heel elevation wedges are fitted in response to assessments of the horses comfort.
3. The glued Rail Shoe espoused by S O'Grady is similar to the EDSS method but is attached with acrylic and enables PIII to be set closer to its correct palmar angle to the ground. The caudal hoof is supported with DIM (Figure 4).

**Shoeing the Chronic Founder Horse - 3 Months Plus**

There is a wide range of variations of this condition. From the post acute laminitis that has recovered from prolapsed distal phalanx requiring heart bar and dorsal wall resection to the horse that has never had a noticeable attack of laminitis but has clear signs, i.e., changes to hoof shape. It is always the authors aim to not have heart bars used after one year.

Long term low grade chronic laminitis, i.e., flattened sole, some additional heel growth, divides into those that cannot go unshod and those that are relatively sound unshod. If unshod and only required to be pasture sound, the foot is dressed in the manner described earlier to gain HPA alignment and pull back the heels. Where requiring shoeing, a rocker/rolled toe with upright heels extending past the heel buttress is fit. The section used is 20x8mm (3/4”x5/16”) fullered concave steel. If the sole is convex (dropped) an aluminium three quarter fullered shoe out of 20x8mm (3/4”x5/16”) flat section is a useful shoe. It is easy to seat out the foot surface as required (Figures 5-7).

![Fig 5: A radiograph of a Type 1 chronic founder shows some remodelling to the dorso-distal margin of PIII, excessive toe length (arrowed) and a shallow depth of sole.](image-url)
Fig 6: The foot shown in Figure 12 is typical of many Thoroughbred mares. Changes to the PIII are compounded by allowing the toe to grow forward. Note the distance between the break-over point and the coronary band (arrowed).

Fig 7: After trimming, according to guidelines shown earlier in this section, the break-over is now closer to the coronary band (arrowed). Note that the dorsal wall is not rasped back to the shoe and the heels are supported caudally.

Definitions
Chronic – long standing in nature.
Distal phalanx – pedal bone, coffin bone.
Founder – occurs when the distal phalanx has become displaced from its normal position within the foot due to the prolonged or severe effects of laminitis, excessive weight bearing or trauma.

Sequestrum - infected bone detached from the main body.

Type I founder – no significant change to the distal phalanx.

Type II founder – significant demineralisation and changes to the distal phalanx.

Further Reading: