LOW HEELS IN THE HIND FEET - AN OFTEN OVERLOOKED PROBLEM

WORDS: **STEPHEN E. O'GRADY DVM & J.G. MERRIAM DVMDR.**

About the authors:
Stephen E. O'Grady DVM and J.G. Merriam DVM. Dr. Steve O'Grady is a veterinarian and a farrier. He operates Northern Virginia Equine; a podiatry practice located in Marshall, Va. Dr. Jay Merriam is a partner in the Massachusetts Equine Clinic, a full service sport horse practice located in Uxbridge, Massachusetts.

A look at two treatments with successful clinical results…

Low, under-run or collapsed heels affecting the health of the foot (or as a cause of lameness) has been well documented in the front limbs. However, very little information has been written concerning the effects of low or damaged heels in the hind limbs.

Horses with structural damage to the heels of the hind feet will suffer the same consequences associated with the hoof capsule, as noted in the front feet but the hind feet don't appear to be affected with disease of the internal structures as noted in the forefeet.

This difference may be due to the anatomy of the hind limbs and the propulsionary function of the hind feet. Damage to the structures of the hind feet may be well advanced before lameness is noted. Under-run or collapsed heels in the hind feet may lead to a subtle bilateral lameness, which is often attributed to hock, stifle or back pain.

Lameness issues in the hind limbs are often localized to the proximal suspensory ligament, the hocks or the stifle. Part of the therapy for lameness involving these structures is to raise the heels of the hind feet regardless of the conformation of the hind foot. Long egg bar shoes or egg bar shoes with wedge pads are generally used for this purpose.

Yet there is absolutely no documentation that confirms that heel elevation exerts significant influence on any part of the hind limb anatomy above the distal interphalangeal (DIP) joint.

Furthermore, heel elevation applied to the hind feet that have existing low heels or an under-run heel, appears to damage the heels further leading to an additional lameness problem in and of itself. The lameness caused by damage to the heels is often diagnosed secondary to the affected ligament or joint for which the heels were originally elevated.

CLINICAL EXAMINATION OF THE FOOT

Abnormal heel conformation of the hind feet is easy to recognize. When looking at the limb from the side, the digit will show a broken back hoof pastern axis. The slope of the coronary band from the toe to the heel will have an acute angle. The bulbs of the heels will have a bending appearance and can be seen lying against the shoe palmar to the end of the heel. The dorsal hoof wall begins to take on a "bull nosed" appearance (*Figure 1A*).

The frog is generally large from the constant stimulation with the ground. The clinical appearance of a hind foot with the heels damaged by an egg bar shoe and a wedge pad are much the same (*Figures 2A and 2B*). The broken back hoof pastern axis will not be as marked and the angle of the coronet will not be as acute but the damage to the heels and soft tissue structures of the heel will be greater, due to the continuous pressure exerted by the length of the shoe and the wedge pad.

Upon removing the shoe, the end of the heel of the hoof wall is located well forward from the base of the frog. The horn tubules will be parallel with the ground. The hoof wall at the heel will be thin, there will be no angle to the sole and the bars will be absent. The whole frog will be pushed down below the hoof wall (*Figure 3*).

When the foot is placed on the ground, total weight bearing will be placed on the frog and many horses are reluctant to stand on it when the opposing limb is lifted off the ground.

Viewing the ground surface of the foot, there will be a "trough" noted between the apex of the frog and the inner branch of the shoe at the toe. Hoof testers placed on either side of the heel at the angle of the sole will elicit a painful response (*Figure 4*).

RADIOGRAPHS

A lateral radiograph of the hind foot will show a broken back hoof pastern with the second phalanx (P2) being pushed palmarly and distally relative to the distal phalanx (P3) during weight bearing (*Figure 5*). This places excessive stresses on the palmar section of the joint capsule.

The palmar margin (palmar angle) of the distal phalanx is lower when compared with the dorsal margin of the distal phalanx. Damage to the heels of the hoof capsule can be noted below the palmar process of the distal phalanx as lucent areas in the hoof capsule.

The sole depth below the dorsal margin of P3 is markedly increased relative to the heel and the perimeter of the distal phalanx can be seen migrating toward the dorsal hoof wall. This is what causes the "bull nose" appearance of the dorsal hoof wall. The soft tissue structures in the palmar section are noted to be lying against the shoe.

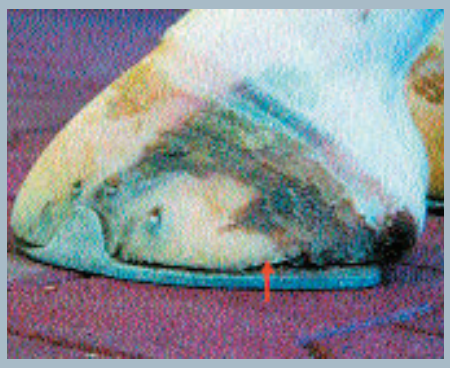

Fig 1A. Note the arrow denoting the end of the heel. Looking at the foot from behind, the frog is situated well below the hoof wall and the frog can be seen to prolapse down between the two branches of the shoe (Figure 1B).

Fig 1B. Note the position of the frog below the hoof wall at the heels.

Fig 2A. Again note the arrow at the end of the heel.

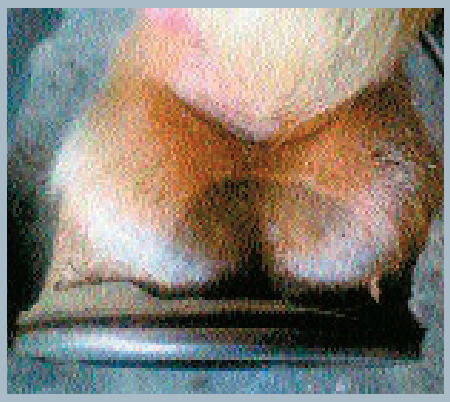

Fig 2B. Note how pressure is placed on the soft tissue structures of the heel by the wedge pad and the egg bar shoe.

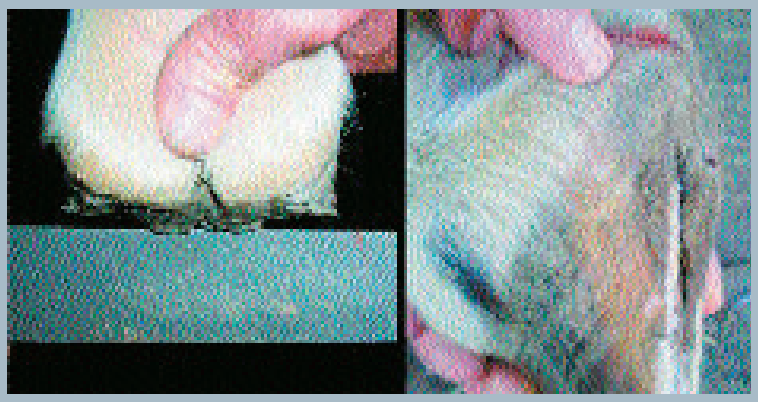

Fig 3. The left photo shows damage to the heel with an open shoe. The photo on the right shows where the base of the frog was weight bearing on the egg bar shoe.

Fig 4. Pressure from hoof testers will also show movement due to separation in the damaged heels.

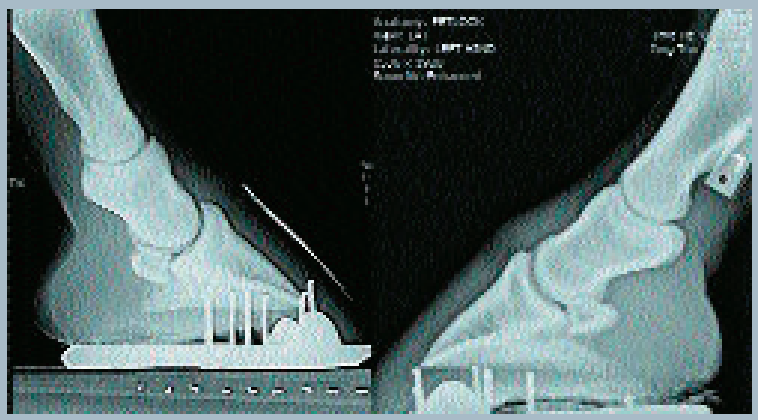

Fig 5. Note the position of P2 relative to P3 in both radiographs. This places the load on the palmar section of the foot.

"The lameness caused by damage to the heels is often diagnosed secondary to the affected ligament or joint for which the heels were originally elevated."

Fig 6A. A foot that was shod with an egg bar shoe. Note the damage to the heels.

Fig 6B. The same foot in Figure 6A after rasping the heels down to solid tissue and leaving the horse barefoot for 6 weeks.

Fig 7. Excess hoof wall is removed from toe quarter to toe quarter.

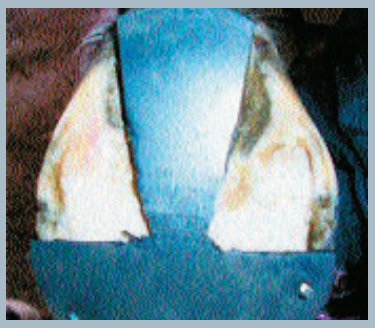

Fig 8. A 2-degree wedge pad cut out so weight bearing is concentrated over the frog.

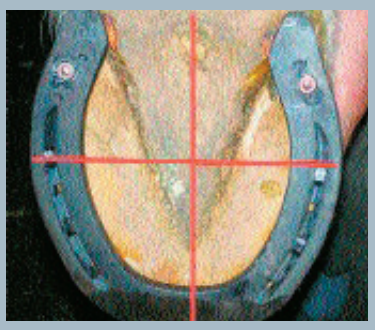

Fig 9. Shoe fitted to hind foot after frog is displaced so it is on the same plane as the heels. Note a line drawn across the widest part of the foot lies in the middle of the shoe. Note break over has been created in the shoe with a grinder.

"The back section of a degree pad is cut out to fit over the frog as a mirror image. "

TREATMENT

Damage to the heels of the hind feet is often easier to improve than damage to the forefeet, possibly due to the difference of the load encountered on the hind limbs versus the fore limbs. Two methods can be employed to treat this condition.

First, allowing a horse to go without hind shoes - if possible - for 4 to 8 weeks can be very effective.

This approach can also be used with horses that are resting due to proximal suspensory ligament disease. The shoes are removed and the hoof wall at the heels is moved palmarly until solid structures of the hoof wall are encountered. The hoof wall at the toe is lowered appropriately and the edges are rounded.

Over the next few weeks, the pressure on the frog will compress and displace the frog until it assumes the same plane as the heels on either side (*Figures 6A and 6B*).

If the horse needs to continue in work and wear shoes, the approach will be different. The shoes are removed and the heels are moved palmarly until solid horn is established. Excess dorsal hoof wall is removed from toe quarter to toe quarter (*Figure 7*).

The prolapsed frog needs to be compressed in order to have a flat, even plane that includes both the heels and the frog. The back section of a degree pad is cut out to fit over the frog as a mirror image. A thin strip extending across the toe is left attached to the frog wedge and two 4.5 race nails are placed through this strip into the hoof wall at the toe quarters to hold the frog wedge directly over the frog (*Figure 8*).

An Animalintex self-contained poultice is saturated with water and applied so it envelops the whole foot. It is secured to the foot with brown gauze and elastic tape. The horse is now placed in a stall with a firm surface for 24 to 48 hours. During this time, the feet are submerged in a bucket of water a few times to keep the poultice saturated.

At the onset of applying the frog wedge, the horse is given 2 grams of phenylbutazone (Bute), as some horses will show mild discomfort and develop a digital pulse. Therefore, when medication is suggested and used, both authors contend that Veterinary assistance should be solicited when performing this procedure.

When the poultice is removed, the frog will be compressed between the heels forming a flat even surface that includes the frog and both heels. The horse can be shod immediately, or can be placed in a stall bedded with sawdust for an additional day to let the feet dry out.

The frog will be soft and can be shaped further. Any additional horn at the heels can be removed so the heels of the hoof wall are solid and approach the base of the frog - being careful to keep the frog and both heels in the same plane. A shoe can now be fitted and applied.

We fit shoes on the hind feet the same as the front where a line is drawn across the widest part of the foot and the shoe is fitted so the line is placed in the middle of the shoe.

In the hind feet, the branches of the shoe may extend marginally beyond the end of the heels (*Figure 9*).

If additional heel elevation is necessary, a wedge pad or a bar wedge can be placed under the heels as long as the shoe is fitted in the manner just described. This will concentrate the load under the frog and heels rather than behind the heels, which is the case with a long shoe.

CONCLUSIONS

The authors have used the frog pressure and soaking technique on 15 horses with low heels and prolapsed frogs. The results have been excellent in all cases.

Damage to the heels of the hind feet are much easier to resolve or improve than the fore feet. This could be due to the anatomy of the hind limb along with the shape and function of the hind feet. Once the frog has been repositioned and the heel structures have grown, attention to the foot prep is necessary to keep the frog and heels in the same plane. The size and placement of the shoe are equally important in maintaining the health of the heels of the hind feet.

For further excellent advice and information on Equine Podiatry go to: **www.equipodiatry.com**