

The Dreaded Toe Crack (Cracks that aren't so funny)

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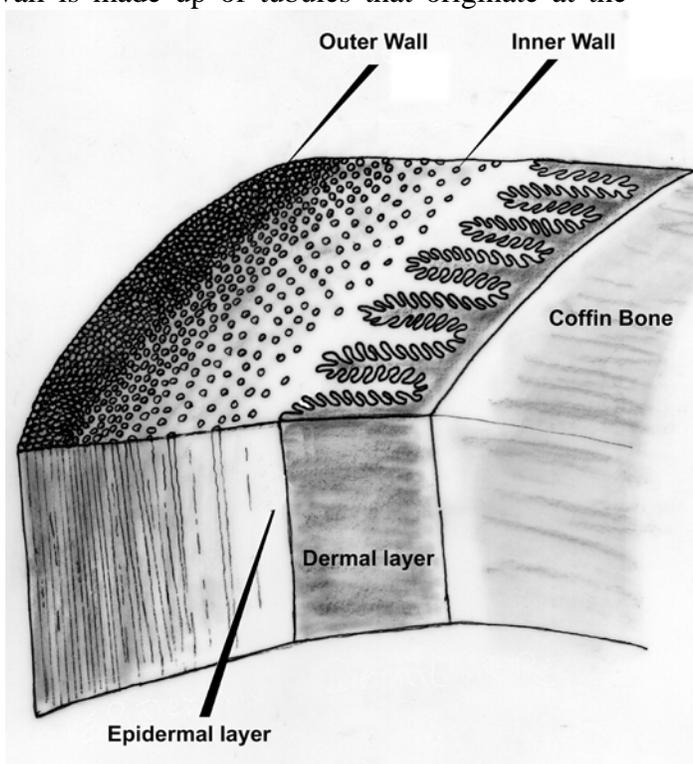
If you have ever owned a horse that was prone to hoof cracks, you know how frustrating it can be. You are not alone. Nagging, persistent toe cracks can be very frustrating for even the most experienced of farriers.

Toe cracks can remain for months or even years, often managed but not cured. To the farrier, toe cracks are a nuisance; but until they cause lameness or interfere with the application of the shoe, are in many cases treated as cosmetic defects. There are a number of traditional treatments for hoof cracks. The most common being notching, burning or relieving pressure at its base. Notching is very common and involves filing or rasping horizontally across the top of the crack in an effort to prevent the crack from traveling further up the hoof capsule. Burning involves the use of a small crescent shaped branding iron applied to the top of the crack. It is believed that branding will seal the crack, preventing it from becoming worse. Relieving a crack at its base is probably the most commonly used technique for treating hoof wall cracks. The farrier will cut the hoof wall away from under the area of the crack before applying a shoe. It is hoped that relieving the stresses at its base will prevent the crack from getting worse, while giving the foot time to heal. With an understanding of correct hoof wall function, it becomes clear that these practices are more often detrimental than successful, and unless you provide an environment that is conducive to healing, the crack will remain.

Know Your Hoof Wall

The hoof wall has multiple zones responsible for various functions. The outermost hoof wall provides protection against moisture loss and toxin ingress. It is also responsible for the storing of energy created by the stride, to be released during breakover. The outer wall must be strong and hard to resist the leverage forces that occur throughout the stride. The outer hoof wall is made up of tubules that originate at the coronary band. The tubules are bonded tightly together by a specialized intertubular horn that acts much like super glue. When this bond is stressed, a crack can form. The tubules of the outer wall are continuous, running from the coronary band to the ground. Notching and burning breaks this growth and reduces the wall's ability to function properly.

The inner hoof wall, often described as the water line, is far more pliable than the outer wall, and is well suited to distortion without breakdown. The inner wall is easily identified by its lack of pigment. Research has presented evidence that the



intertubular horn of the inner wall originates at the laminae layer of the foot, and grows from the inside out, blending with the tubules of the outer wall as it grows to the ground. The inner wall thus has fewer tubules and is far more pliable than the outer wall. It acts as a buffer zone between the sensitive structures of the foot and the hard unyielding outer wall. When the foot is asked to distort, it is the inner wall's responsibility to absorb much of the pressure created by the lever forces created by the stride. It appears that a lack of healthy inner wall can be one cause for reoccurring hoof wall cracks.

Cause and Effect

Recently I lectured at the International Hoof Care Summit held in Cincinnati, Ohio, where noted researcher, Dr. Sue Kempson of Scotland, spoke on white line disease. Dr. Kempson presented evidence that imbalances in nutrition can cause deficiencies within the cells of the inner wall leading to bacterial infection, which can disrupt keratin production. Infections lead to poor intertubular horn growth. A lack of inner wall puts excessive stresses on the outer wall, which can lead to hoof wall cracking.

Excessive vitamin A and Selenium were listed to imbalances that can lead to cell damage and bacterial infection within the inner wall. Dr. Kempson suggested that greasy dressings and fat solvents be avoided.

Calcium deficiency



Three months after treatment began



Evidence that trauma can lead to infection of the inner wall was also presented. Dr. Kempson sited nail holes, metal ions leaching from horse shoe nails and environmental (warm, wet) insults as causes of trauma that can lead to inner wall infections. Evidence of infection that you can identify is the blackness seen at the base of the wall when the shoe is removed.

Balance can play a huge role in hoof wall health. A loss of inner wall, coupled with imbalance in the shoeing process, excessive stresses are placed on the outer wall leading to cracks. Seek a competent farrier to apply a balanced trim, or better yet, learn how to balance it yourself. Once the cracks have gone, then call a farrier to apply a shoe if you really feel you need to have your horse shod.

Treatments

Now that we have a better idea as to the cause of hoof cracks, what can we do to cure or better yet prevent hoof cracks? With the understanding that environmental stimulus is responsible for the health of the equine foot, we can develop a treatment plan to cure an existing crack, or a preventative strategy to prevent future cracks.

First and foremost, use a hoof disinfectant to rid the foot of harmful bacteria. I highly recommend a product called Clean Trax. Clean Trax is a deep penetrating hoof cleanser that is often effective in one treatment. Follow up with a daily treatment of a non-necrotizing topical anti-bacterial solution. I recommend staying away from products that contain formaldehyde, bleach or other necrotizing ingredients.

You may have come to the conclusion that I promote going shoeless for the health of the equine foot, and for a foot with a toe crack, this is no exception. I have successfully treated toe cracks shoeless for many years now. I, like many farriers, have tried patching, wiring, branding and relieving. Don't get me wrong, there will be times when the foot has lost so much structure that the only course of action is to stabilize with some form of shoe or patch. I do believe that it should always be the last course of action.

A balanced foot that is exposed to the proper environmental stimulus for the return of healthy intertubular horn and inner wall will be a foot that will not crack. What is the proper environmental stimulus you ask? Exercise! Hand walks over firm smooth surfaces will do wonders for the horse with weak inner wall growth. Balance in the foot will allow for correct distortion to occur, thus providing the necessary pressure for correct growth. Often twenty minutes a day of hand walking for eight weeks will produce visibly healthy growth in the hoof wall.

Diet as a Factor

Evaluate your diet program. A well balanced diet will go a long way to prevent cracks, and is a must if you wish to cure an existing crack. You should be confident that calcium and phosphorus intake is balanced. A ratio of about 1:6 to 1 is suggested. Avoid excess vitamin A and Selenium. Though no hard fast rules have been established for vitamin A, it is suggested that no more than 40,000 IU (International Units) be feed per day, though total intake may be much higher. I have seen good results in feeding as much as 100,000 UI per day in some areas of the United States. You can avoid excess selenium intake by limiting selenium to 1 PPM (parts per million). Feeding copper may help protect your horse from excessive selenium, but be careful not to feed excessive copper. It can cause a selenium deficiency. The symptoms of selenium toxicity and deficiency are very similar, poor quality horn, dull coat and loss of mane and tail hair. The key is to feed a balanced diet. I know that nutrition can be a little confusing, but with a little homework, you should be able to establish the correct diet for your horse. Ask your vet for some guidance in this area.

Toe Cracks and White Line Disease



Twelve weeks after treatment began



Conclusion

Your role in hoof care as an informed owner is to provide a dry, clean environment that is conducive to the health of the foot. Begin with a well balanced foot, treat for infection, and provide a balanced diet and plenty exercise. This should all be done while your horse is shoeless. I hope this article will help you to proclaim for your self, that you are "Shoeless not Clueless!"