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Common Hoof Problems in Equines and Their Management

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INTRODUCTION

The hoof is an extremely important structure of horse that require utmost care for optimal performance of the animal. Although the structure of the hoof differs from species to species, the basic anatomy is very similar between species. It is important for the owner to understand the basic structure and anatomy of the hoof so that he can take proper measures for the management of hoof injuries.

A horse's hoof is composed of the wall, sole and frog. The wall is simply that part of the hoof that is visible when the horse is standing. It covers the front and sides of the third phalanx, or coffin bone. The wall is made up of the toe (front), quarters (sides) and heel. The wall of the hoof is composed of a horny material that is produced continuously and must be worn off or trimmed off. The hoof wall does not contain blood vessels or nerves. In the front feet, the wall is thickest at the toe; in the hind feet the hoof wall is of a more uniform thickness. The wall, bars and frog are the weight-bearing structures of the foot. Normally the sole does not contact the ground. Inside the hoof houses third phalanx. Between the second and third phalanges on the posterior side is a small bone called the navicular bone. The wall of the hoof is composed of a horny material that is produced continuously and must be worn off or trimmed off. The hoof wall does not contain blood vessels or nerves. The wall, bars and frog are the weight-bearing structures of the foot. Normally the sole does not contact the ground. Normally, the hoof wall grows at the rate of about three-eighths inch per month. New layers of hoof wall are produced continuously from just below an area called the coronet at the junction of the skin and the hoof wall. The hoof wall is covered with material that prevents evaporation of moisture. When this material is deficient, the hoof wall becomes dry and

excessive flaking and cracking may occur. A good hoof paint aids in preventing excessive drying.

CARE AND TRIMMING

Maintenance of hoof in equines require proper planning and forethought. The hoof wall needs to be kept in a smooth weight-bearing surface.

Several factors affect the rate at which the hoof regrows; and depending on these factors, the hoof may need trimmed at regular intervals. Factors include:

1. Age of the horse- hooves of younger horses grow faster than older horses.
2. Climatic conditions- hoof growth slows during colder winter months.
3. Nutrition- horses with nutritional deficiencies will grow weaker, less flexible hoof than those with an adequate nutrient supply.
4. Terrain and/or housing conditions- more natural wear on the foot will occur in horses housed in rocky or hard-terrain pastures compared to softly bedded stalls or paddocks with a sandier soil.
5. Exercise- exercise also promotes healthy hoof growth.

Trimming the hoof requires some skill that most people can learn and three basic tools- a rasp, nippers and hoof knife. The hoof knife is used to remove some of the sole and trim the frog. The nippers are used to cut away the hoof wall. More of the wall is removed at the toe than the heel. The rasp is then used to smooth the cuts and level the surface. Nailing on shoes requires considerably more skill and practice under the watchful eyes of a trained farrier.

COMMON HOOF AILMENTS

1. Broken Hoof Wall

As the hoof wall grows down and out, the piece of surface may break off. It usually grows out normally but sometime the laminar tissue might harbor bacteria.

If the missing hoof wall involves underlying dermis (the layer beneath the outer hoof horn) or subcutaneous (beneath the skin) or even deeper tissues, apply a bandage and allow the wound to heal with granulation (scar) tissue and epithelialization (skin or hoof horn replacing granulation)

2. Coronary Band Injury

The coffin joint's location beneath the coronary band makes it vulnerable to penetration by sharp objects and resulting infection. Substantial coronary band tears can lead to permanent hoof cracks that must be managed over the course of the horse's life. Deep injuries to the coronary band may result in loss of the coronary germinal epidermis. Interruption of the germinal cell layer is likely to lead to permanently altered structure and strength of the hoof wall below the injury. Aggressive the veterinary care is required in case of serious injuries for the better the chances of a favorable outcome.

3. Penetrating Injury

Horses occasionally step on nails and sharp objects, with the potential to penetrate the sole. If the horse can stand flat-footed, leave it alone until the veterinarian arrives. Do your best to keep the horse from moving, or at least protect the punctured area with cotton or combine roll and a bandage. The horse should be evaluated for penetration depth and chances for any contamination. If the penetration is deep, the veterinarian will have radiographs with a nail in place," to shows the depth of the nail and damage it may have caused to other structures. A nail in the frog, particularly the cleft of the frog (the triangle-shaped area in the center), can put a horse in considerable danger. it may contaminate the navicular bursa, deep digital flexor tendon, and/or coffin joint can cause fatal injury. Depending on the injury's severity, your veterinarian is the best person to decide the course of treatment.

4. Sole or Wall Abscess

An abscess is formed when infection occurs between the inner surface of the hoof capsule and the bone. The infection is caused by the introduction of bacteria through the hoof capsule or sole. Trauma can occur if the horse steps on a nail or piece of glass, where softening of the hoof wall is most often caused during wet weather conditions or when standing in wet dirty stalls for prolonged periods. This type of foot ailment is the most common cause of a sudden onset of lameness. The pain experienced by the horse is due to the pressure created by the abscess under the hoof wall. Treatment focuses on drawing the infection to the sole surface (often by soaking the foot) so that it can drain. A veterinarian may also pare a small hole to relieve the pressure and allow drainage if they are able to locate the site of infection. Antibiotic treatment can curtail the infection.

5. Thrush

Thrush is the most common infection of the hoof and occurs in frog cleft (central sulcus) and collateral grooves or sulcus, which run along each side of the frog. Thrush has a characteristic odor and presence of black or gray discharge/decaying tissue. The frog will be softer, sometimes tender to touch and prone to tear. The infection can be caused by similar wet and/dirty conditions that cause abscesses; however, the in this case, the infection does not penetrate the hoof wall.

Simple but persistent treatment is necessary and involves the delivery of any disinfectant deep into the sulcus. This treatment should be done for seven days, then wait seven days and retreat until healed. Another option utilizes topical antibiotic gel. Again, it should be treated for several days until the infection has completely healed and the depth of frog cleft has returned to normal.

6. Greasy Heel

Scratches, sometimes referred to as greasy heel. It is the inflammation of the skin in which the rear surface of the pastern and fetlock enlarge and ooze discharge. It often is associated with poor stable hygiene, but no specific cause is known. Heavy horses (such as draft horses) are particularly susceptible, and the hindlimbs more commonly are affected. Standardbreds often are affected in the spring when tracks are wet. The common use of limestone on racetracks has been associated with scratches. The skin is itchy, sensitive, and swollen during the early stages; later, it thickens and loses all but its shorter hairs, which stand in an upright position. The surface of the skin is soft, and the grayish discharge has a rotten odor. If the condition continues long term, small masses of tissue (called granulomas) may appear. Lameness may or may not be present, but it can be severe if inflamed tissues beneath the skin of the limb become infected.

Persistent and aggressive treatment is usually successful. This consists of removing the hair, regular washing and cleansing with warm water and soap to remove all soft discharge, drying, and applying an astringent dressing. If granulomas appear, a veterinarian may remove them. Deep infection requires whole-body antibiotics and vaccination against tetanus.

7. Laminitis (Founder)

It occurs when the laminae beneath the hoof wall weaken and in severe cases, separate from the coffin bone (final bone in horse's leg), causing loss of the foot's mechanical integrity and significant pain and lameness. In the case of laminitis, the focus should remain on prevention rather than treatment. Since one proposed mechanism involves digestive and metabolic disturbances by the over consumption of carbohydrates from grain or lush pasture grasses, proper feeding management practices should always be followed. Care should be taken to excessive grain intake, which could overload the horse's digestive system with rapidly fermentable carbohydrates. The acidic conditions caused by excessive microbial fermentation is responsible for systemic inflammation and resulting laminitis. The same care should be taken when introducing horses to a new diet or pasture to avoid digestive disturbances.

Once laminitis is diagnosed by your veterinarian, treatment involves careful and coordinated therapies between your vet and farrier to prevent further damage the laminae.

SUMMARY

The common equine hoof conditions that can be prevented or treated with proper management. It is always best to get a diagnosis when a foot problem arises to ensure its being treated most effectively. The horse owner should have a basic understanding of hoof anatomy, nutritional needs of the hoof, routine trimming needs, and hoof care programs so that the owners can best maintain the health and functionality of the horses' feet.

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