



Six Reasons For Poor Hoof Quality

Equine vet Scott Morrison examines causes of compromised horn

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The mare's feet didn't look good.

They had a dull appearance, were running forward and dishy. The hoof wall had chips and cracks, including one that traveled from the second nail to the coronary band

(Figure 1a)

When poor hoof wall quality is evident in a horse, one of the first considerations is whether its diet is well balanced. Convinced that more supplements were necessary, the mare's owner was no exception. While nutrition certainly can be a culprit, there are other potential causes to consider.

"We're all frequently asked about hoof wall quality," says Scott Morrison, a farrier and equine veterinarian at Rood & Riddle Equine Hospital in Lexington, Ky. "Not every horse needs more supplements. A lot of hoof wall quality problems are multifactorial."

In the mare's case, an unbalanced diet wasn't the source of the problem. Rather, it was a mechanical issue.

"We pulled her toes back and used a roller motion shoe for a couple of cycles before letting her go barefoot," Morrison says. "Look at the hoof wall

(Figure 1b)

. It's like a different horse."

Besides nutrition and mechanical issues, there are also four other possible explanations for poor quality horn — genetics, hydration, coronary band pathology and chemical damage.

Genetics And Mechanical/Shoeing

There are a number of factors under the umbrella of mechanical/shoeing that can influence hoof quality, including too much time between trimmings and substandard farriery.

Farrier Takeaways

Hoof wall quality problems are multifactorial and can be the result of genetics, mechanical/shoeing problems, hydration, nutrition, coronary band pathology and chemical damage.

Horses with thin soles usually have poor quality hoof wall.

Compromised coronary bands will generate poorly developed hoof walls.



Figure 2a



Figure 2b

“Poor, shallow nailing that splits the hoof wall can create some mechanical damage
(Figures 2a and 2b)

,” Morrison says. “Horses that aren’t pulled back enough get long — especially weak, thin-walled Thoroughbreds. When the toes get long, the soles get real thin.”

Blunting the toe shape, trimming heels back and rounding the walls with a proper bevel are all ways to build a solid foot with your trim, he says.

“On the other hand,” Morrison says, “excessively trimming or cupping the sole and leaving sharp edges are ways to destroy a foot.”

Horses that have thin soles usually also have poor quality hoof wall.



Figure 3a



Figure 3b

“They get a really dull, unhealthy looking wall

(Figure 3a)

,” says the International Equine Veterinarian Hall Of Fame member. “But if you come up with mechanics on how to build a healthier foot and thicker sole, a lot of times you improve the sole depth and their wall quality will come around quite a bit

(Figure 3b)

.”

Utilizing shoeing mechanics to build sole depth starts with the trim.

“Trim the heels back to establish a proper base of support,” Morrison says. “Toe shape is important. A more blunt shape creates a strong structure; however, over squaring or over dressing the toe will weaken the hoof. It’s more of a 45-degree trim of the toe when pulling it back and blunting the toe shape. I rarely trim higher than ½-inch up the wall when pulling the toe back. That leaves the bulk of the hoof wall toe bridge intact.”

Utilizing a roller motion shoe and sole support increases sole depth significantly, Morrison says.

“The roller motion shoe is rockered slightly in the heel and toe,” he says. “More specifically, the last 1 inch of heel is rockered slightly. This corresponds to where the palmar process of the pedal bone ends. The toe is rockered slightly from the point directly beneath the front, or anterior, of the coronary band.”

For this mare, glue on shoes were used a few times and then left barefoot.

“You can see how her hoof wall quality improved after probably 8 months of shoeing,” he says.



Figure 4a



Figure 4b



Figure 4c

Hydration Changes

Unhealthy hoof wall that is susceptible to hydration changes will exhibit vertical cracks that start at the ground surface and work their way toward the coronary band

(Figure 4a)

. These are referred to as weather or sand cracks.

“Typically, these horses respond to a hoof dressing,” Morrison says. “We just use a pine tar-based hoof dressing to help protect the hoof from the weather changes and give it a layer

(Figure 4b)

.”

Although Morrison uses hoof dressing, he cautions against sealants in these cases.

“I think it just traps things in,” he says. “You want things that let the horse’s foot regulate its own moisture content. Pine tar-based dressings have a lot of natural antifungal and antibacterial properties in them. They’re natural and feet usually do fairly well in them.”

After a year of painting with the pine tar-based dressing, the hoof wall has dramatically improved.

“There are no cracks; beautiful feet

(Figure 4c)

,” Morrison says. “It has the same diet, same farm, same farrier. We just started painting this horse’s feet with the dressing.”

Equally important was how they were trimmed.

“We rolled up the edges real well and didn’t let the feet get splayed out,” he says. “We kept everything tidy and rounded up. Those walls responded really well.”



Figure 5



Figure 6

Too Much Of A Good Thing

Make no mistake, a well-balanced diet is critical for healthy hoof walls. Yet, there can be too much of a good thing. Selenium is one such mineral.

“Horses need a little bit of selenium, but it’s bad when you give them a lot,” Morrison says. “It interferes with the disulfide bonds that help hold the protein structures of the hoof wall together. When you feed too much selenium, it replaces the sulfur and horizontal cracks develop

(Figure 5)

. Horses with selenium toxicity can get really sore and can get severe founder.”

Coronary Band Pathology

Examining the health of the coronary band is critical for hoof wall development.

“If the coronary band is irritated, you’re going to have a hoof wall that suffers,” he says. “That’s where the hoof wall is generated.”

Among the signs of a compromised coronary band is coronitis, which is swelling of the coronary band and causes the hairline to stick up

(Figure 6)

“I’m sure we’ve seen old retired hunters or jumpers that have some coronary bands that look questionable,” Morrison says. “Hoof wall that’s produced from a coronary band with coronitis has a scaly texture. It looks like a slate roof. It’s cracked, not very smooth and healthy looking **(Figure 7)**

Coronitis often can be seen in the heel bulbs **(Figure 8)**

“A lot of times it starts there,” he says, “and then creeps around to the front.”

It’s not entirely understood how or why coronitis occurs, but it can be brought on by such maladies as pemphigus, an autoimmune disease; sunlight hypersensitivity and liver disease, among others.

“I’ve biopsied lots of these and I never really get a specific diagnosis,” Morrison says. “It usually comes back as an idiopathic coronitis, which basically means we don’t know.”

After years of working with horses, he has a theory about one potential cause.



Figure 7



Figure 8



Figure 9a



Figure 9b

“I think a lot of these occur in horses that hit the ground real hard

(Figures 9a and 9b)

,” Morrison says. “Maybe some of these cases start off as a mechanical cause and then their immune system overreacts to it and the horse gets coronitis.”

Despite the uncertainty surrounding the cause, the treatment is clear.

“Usually we’ll treat these cases with a steroid cream — betamethasone

(Figure 10)

,” he says. “In some cases, it works beautifully

(Figures 11a and 11b)

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Chemical Damage

There are a number of environmental influences that can adversely affect hoof wall quality.

“You want to look at the environment that the horse is living in,” Morrison says, “to see if there’s anything it’s allergic to.”

For example, a horse that merely stands on black walnut sawdust is susceptible to laminitis and/or founder.

If a horse experiences an allergic reaction, Morrison suggests:

- Changing the bedding.
- Check the hoof dressings.
- Check weeds in the fields.
- Perhaps a change of pasture.



Figure 10

Although there's a possibility that a horse is experiencing poor hoof quality because of an unbalanced diet, it's important to examine all of the potential causes to avoid unintended consequences.



Figure 11a



Figure 11b

Important Vitamins, Minerals And Proteins

The equine hoof needs a variety of vitamins, minerals and protein to grow quality hoof wall. Here's a look at how some affect the hoof.

Vitamins

Vitamin A:

A deficiency causes fragile wall and tubules don't adhere together.

Biotin:

This B vitamin increases tensile strength, hardness and growth rate. It also decreases the incidence of wall defects.

Minerals

Zinc:

Low zinc levels have shown to cause weak, poor quality horn and increased incidence of white line disease.

Calcium:

A deficiency results in brittle feet with poor tubular structure.

Selenium:

Excess selenium creates separations and horizontal cracks.

Protein

Disulfide bonds:

These bonds in protein hold polypeptide chains together, giving hoof its high tensile strength.

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