

# From Cracks to Thrush...

## Addressing Problems in Hoof Quality

by Sabine Kells

The hoof you see at the end of your horse's legs is a product of two basic factors: growth and destruction. Growth includes the rate and quality of horn produced; destruction includes abrasion, chipping/breaking, and microbial decomposition. Both of these are factors which you can influence for good or ill.

A truly healthy hoof, at least in my definition as a Strasser Hoofcare Professional, is one in which growth and destruction are in perfect balance. A healthy hoof never gets too long or too short, too hard or too soft, and remains perfectly balanced at the end of the horse's leg.

If every hoof was like that—truly healthy—there would be no place in this world for farriers or barefoot trimmers or companies which produce rasps and hoof knives.

Personally, I'd like a world like that. Realistically...well, let's say I'm not passing up that sale on rasps at the local tack shop just yet. Because in reality, many horse owners and trimmers are still faced with unhealthy hooves. And whether it's hairline (or not so hairline!) cracks in the wall, white line "disease," excessive hoof wear, or thrush, the key to a permanent solution—and a healthy hoof!—is understanding what's causing the problem. Then you can remove the cause, and allow healthy hooves to grow. The horse's body knows how to do this, trust me. The horse owners' responsibility, as the horses' caretakers, is to make sure their bodies have the building blocks and conditions necessary to let them to do that job properly.

The number of truly healthy hooves out there is a pretty good indicator on how well horse owners, on the whole, are doing at fulfilling that responsibility.

Of course, it doesn't help that, conventionally, many of the causes of hoof problems have been misunderstood or remained completely unknown. Faced with an inability to remove the cause, all that was left to the conventionally-trained vet or farrier was addressing the symptom, with treatments ranging from chemicals to shoeing, drugs, and surgery. The success rate of these methods has gotten us to where we are today: with the majority of the world's horses lame to various degrees, textbooks full of "incurable" diseases of the hoof, and entire industries built up around keeping those sick horses somewhat comfortable and usable... until nothing more can be done except to put them out of their misery. (Then we get a new horse, and start all over again.)

**Fig. 1:** Four-year-old horse with extremely poor hoof quality and long-term health problems, including laminitis, white line "disease," and dropped coffin bone, conventionally treated with surgery, resection, and "orthopedic" shoes. After transitioning to barefoot at Dr. Strasser's hoof clinic, the horse became sound and rideable, with permanently healthy hooves.



**Fig. 1**

**Fig. 2a:** extremely poor quality hind hoof of a 13-year-old Thoroughbred facing euthanasia in the near future because the shoes were no longer staying on. Other problems included recurring lameness for the past 3-4 years, bucked knees, windpuffs, and coffin bone rotation with separation on both fronts. Within 2 months of de-shoeing and beginning correct trimming, the horse was moving well and more lively than ever before, and the windpuffs and bucked knees were gone. **Fig. 2b:** same hoof 7 months after de-shoeing: the new healthy wall has reached the ground in most regions and solar quality is good once more.



**Fig. 2a**

**Fig. 2b**

Usually, the lack of conventional success isn't due to the "incurability" of the problem, but the inappropriateness of the treatment—because the treatment doesn't understand, and thus fails to remove, the cause. And with the cause remaining present, even if one problem is temporarily "dealt with" by the current treatment, it will

eventually recur, and/or other problems will develop, which again are not understood at their causal level. And so the cycle continues.

The "quick fix" via symptomatic treatment, whether via chemicals or surgery or shoeing, is like spray-painting a discolored ceiling under a roof leak: unless you also fix the leak, the "quick fix" not only didn't provide a permanent solution, it will allow more damage to continue to occur.

As readers of *The Horse's Hoof*, you probably already know this. And you are miles ahead of conventional thinkers, because you're aware that lifestyle and hoof form have a lot to do with hoof health. Many of you have taken your horses from lame or sick to healthy and sound, either with the help of "un"-conventional barefoot trimmers, or learning to do it on your own if no other option than the conventional one was available. You already know how important barefoot and herd life are to a horse's health. But even for the barefoot crowd (and we are, by now, a crowd—how wonderful is that?), sometimes some of the basics can slip under the table, to rest temporarily forgotten, while we get caught up in "treating" stuff. We are so trained to think "symptomatic treatment," it often takes an outside reminder, and a deliberate shift in focus, to remember that little, important adage: **first, remove the cause.**

This article is here to remind you of some of the causes for problems in hoof quality and quantity, so that you can be more effective in restoring good, healthy hooves quickly and permanently.

Remember those two factors I mentioned at the beginning of this article? Growth and destruction. I mainly want to address the growth part, and what affects it. Because I'm assuming most of you have the "destruction" part at the rate that it should be: meaning you have your horses on appropriate terrain for their breed, get their hooves rehydrated as necessary, and don't expose them to unhealthy conditions such as stall keeping, confinement, harmful chemicals and the like. The lifestyle has to closely match what this animal evolved for, which is near-constant movement on suitable terrain. Even a horse kept on 20 acres, if mostly standing around in its own excrement in front of that always-full hay feeder, is going to have poor quality hooves simply because of the unhealthy "footing"... never mind not moving enough to produce healthy hooves.

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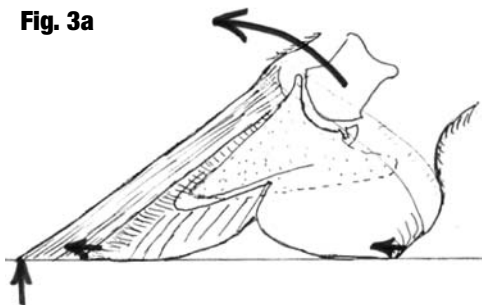
So much for the “destruction” factor. Let’s briefly review what affects the growth of healthy hoof horn, and what’s the most common thing gone wrong when you start seeing problems in that department.

In most cases of poor quality or insufficient quantity, something’s not right with the hoof form, resulting in either lever forces or insufficient blood supply, or a combination thereof.

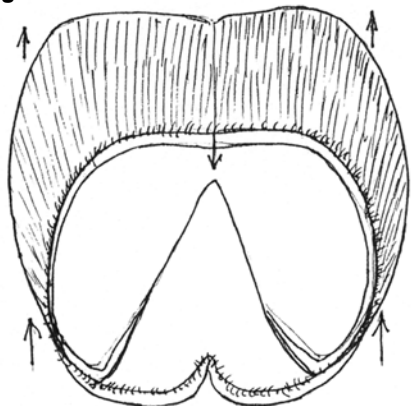
Cracks are usually the result of lever forces, and these are pretty obvious to most people involved in hoof care. Leaving the toe or heels too long can result in a toe crack (either from the bottom up or the top down, respectively) or quarter cracks; leaving the walls too long or the heels underrun can likewise cause quarter cracks or toe cracks, depending on the situation.

**Fig. 3a & 3b:** Schematics showing the forces causing a toe crack from the ground up due to long toes (3a) and from the top down (3b) due to high heels or high lateral walls or underrun heels. Quarter cracks can also form from the same levers, depending on horn quality and other aspects.

**Fig. 3a**



**Fig. 3b**



More often than not, though, the problem is some degree of circulatory disruption, and these can be a little harder to spot, especially when you’re not thinking in that direction.

Pretty much anything off in hoof form, terrain suitability or lifestyle can result in a decrease in normal blood flow to and in the hoof. And as soon as you decrease the blood circulation

through the hoof, you decrease the quality and quantity of horn produced.

As far as terrain and lifestyle go, inappropriate terrain (that is, too soft to effect hoof mechanism in that horse with those feet), or insufficient movement (see above mention of horse on 20 acres not budging from full hay feeder) are the main culprits when it comes to causing reduced hoof mechanism, and thus circulation.

When it comes to hoof form, there’s a much greater variety of problems to choose from. If the hoof is too steep (the coronet is less than 30 degrees) for whatever reason, toe too short or heels too high; or a hoof has excessively long bars, whether vertical or laid down over the sole; or it has underrun heels; or too much sole horn; or even an excessively thick frog, hoof mechanism is impaired to some degree. This means blood flow to the living, horn-producing tissue in the hoof (the corium) is also reduced. That reduction could affect all of the corium equally, or various areas of it to various degrees, depending on the type (location) of the corium and the particular mis-shape of the hoof.

Without normal circulation, less quantity and/or reduced quality horn is excreted by the corium. The result: inferior wall, sole, white line, or frog horn.

Depending on the actual cause and situation, the whole or only part of a type of corium, and as such horn, can be affected. For example, with overall very poor circulation, such as in a horse with severe contraction, or on too-soft terrain, the entire hoof will produce inferior quality and quantity horn, but it’s most commonly noticed in the softer and more quickly destroyed white line horn, and so the horse is diagnosed with “white line disease.” With a too-steep coffin bone (high heels, short toe, underrun heels) the wall is often of poorer quality and/or compressed in the toe region only, as the coronary corium producing the wall is chronically overloaded; or a tiny “hole” becomes visible in the sole at the toe just inside the white line, indicating a lack of circulation and thus reduced/no sole horn production under the tip of the coffin bone, where the sole-corium supplying circumflex artery is being squeezed shut.

Other times, especially but not only with excess bar height or displaced bars (such as with underrun heels), frog growth is reduced, since the arteries feeding the frog lie pretty much right above the top of the bars. All or only the rear part of the frog can be affected, depending on the actual cause; and if, in addition, the environment is especially supportive of microbial growth (wet climate, or poor hygiene such as stall keeping or other confinement, whether forced or out of “boredom”), “thrush” is often diagnosed.

**Fig. 4:** Hole in the sole due to the circumflex artery at the tip of the coffin bone being pinched shut between the bone and the sole horn, due to a previously excessively steep coffin bone.

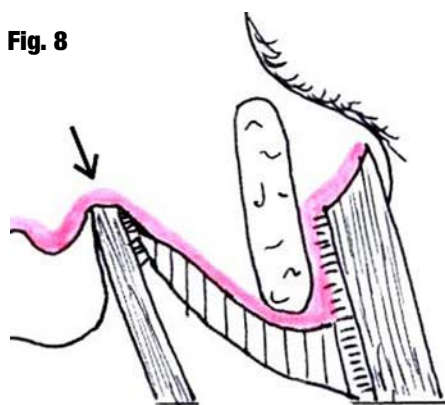


**Fig. 5, 6, 7:** Poor frog quality, due to improper hoof form, all of them involving long or upwardly-levered bars. **Fig. 8:** Excerpt from schematic showing where the frog arteries run above the bars (arrow).





Fig. 7



**Fig. 8**

This microbial overgrowth situation, much lamented in conventional circles, is not so much due to the presence of too many bacteria, fungi, or other microbes, as it is to the unnaturally slow rate of horn production caused by impaired circulation to the living tissues producing frog horn. Bacteria and microbes are always present, but in a healthy situation, the rate of horn growth is equal to or greater than the rate of decomposition and wear. Additionally, sweat glands in the central and collateral grooves help maintain an acidic environment, protecting from bacteria (bacteria flourish in an alkaline pH, which is why the outsides of our bodies are acidic, even though the inside is alkaline).

There is one other lifestyle aspect I should mention, one which is not related to how much circulation is in the foot, but rather to what is being circulated. Nutrition is one of those areas where there's lots of experts, but not all of them agree on what is best for the horse. All I'm going to remind you of, when it comes to that, is the original lifestyle and natural diet of the horse. The production of good quality horn requires the proper building blocks, i.e. nutrients, the same way that a top athlete needs a healthy diet in order to build muscle and bone (though horn, unlike muscle and bone, is not living tissue but rather an excreted product, like our fingernails—but to the horse, it's a very important product). Improper nutrition can mean that the horse literally does not have the

basic supplies from which to form good hoof horn. Or, it could be that even with currently good nutrition, the internal organs (especially liver and intestine) may have been previously damaged by the use of, for example, chemicals such as wormers or medications. Such organ damage presents an additional problem in the formation of healthy horn, not to mention body tissues.

So to sum up this discussion on horn quality and quantity: anything affecting the systems and factors involved in the availability, digestion, absorption and metabolism of nutrients, and anything affecting the rate of delivery of those nutrients to the hoof corium, will affect the quality and quantity of the horn being produced.

If your horse's hooves show a problem with either, evaluate the situation, remove any causes, and support the animal holistically. That not only means optimal lifestyle, and proper trimming and all that, but also may include such varied things as chiropractic treatments and physiotherapy (if, for example, one of the reasons that a horse is weighting a hoof improperly is joint or muscle issues); herbs and homeopathics (for example, with liver damage); soaking the hoof in water with apple cider vinegar (for abscessing during the healing process, or for "thrushy" hooves to keep the rate of decomposition of the unhealthy frog horn to an "abnormal" minimum while new, better quality horn grows out).

And speaking of the latter, vinegar is a non-toxic, age-old way to keep food from spoiling through microbes, and does a very good job on all sorts of problems in that area. Chemical products for thrush and other treatments are often toxic (just read the "caution" labels), so my suggestion is generally this: if it's a product that you'd soak/apply to your (possibly chapped and bleeding) skin, use it on your horse; if not, don't. Because remember that, if the frogs are very damaged (as can be the case with bad thrush), or you have broken skin or open wounds of any kind, whatever you're soaking in or applying can enter the bloodstream.

A final thought on conventional versus holistic treatment: I think that, for any unhealthy state, whether it's in a horse or a human or a hedgehog, removing the underlying cause and supporting the body holistically and non-toxically in its healing processes is the only truly permanent solution. Symptomatic treatment, so common in conventional medicine of all disciplines, tends to address only the perceived symptoms—the cough, the fever, the allergy, the rotting frog, the lameness—without doing anything about the underlying cause, because often the cause is simply not known or understood. So we do what we can to make the undesired symptom go away and make the horse/person/whatever more comfortable and functional.

So it sounds like I'm saying conventional medicine is a bad thing. I'm not. If I've been in a car crash, I'm not going to go looking for a non-

invasive, non-chemical, holistic way of stopping major bleeding or pushing a broken bone back into place. Just about every type of medicine is appropriate in certain situations. The trick is to know enough about the given situation, and about the abilities and limitations of the type of medicine, to be able to make the best choice for that particular situation.

One thing that makes the conventional/symptomatic/chemical solution so appealing is that it can often be the fastest "fix". That is, after all, what is has been developed for, to get rid of the apparent problem asap. This is one of the things my conventionally-trained vet used to lament about horses and lameness: that an owner, if calling the vet for a lameness problem, wanted the horse back to being rideable by the time the vet left (and never mind the decade of damage and deformation in the feet). But just as often, owners just can't stand to see their animals in pain and want the pain gone at any price...or do not understand the price the horse's health pays for that "instant fix", because in many cases of symptomatic treatment of hoof problems, the cure does more damage than the "disease". The willingness of the owner to agree to it, or even demand it, is indicative of a lack of information, which is one of the things we are all trying to remedy.

Sometimes a conventional approach will be the last straw which breaks the horse's back and sends its already borderline organs into failure; sometimes conventional medicine is necessary to keep it from dying right then and there.

With problems of hoof quality and quantity, however, it's rarely such a desperate "do-or-die" situation, where the wrong choice will leave you out of choices permanently. And in today's world, there's a ton of information and opinions and advice at our fingertips, much of it contradictory, much of it—like the types of medicine—more helpful in certain situations than others.

So how to make the best use of this cornucopia? The SHP in me would say, become familiar with the basics of anatomy, histology, biology, physics and the nature of the horse, and see what rings true from there. The part of me that's been doing too much reading on quantum physics-y stuff would add: but don't forget about the "observer effect." Because, as they're discovering on the cutting edge of science these days, expectation/conviction can affect...well, pretty much anything and everything, including the laws of physics. So become knowledgeable...and then do what you're sure is best for your horse! 🐾

**All photos and art** from *The Hoofcare Specialist's Handbook*; Strasser, H, & Kells, S; 2001.

**About the author:** Sabine Kells lives with her two horses on beautiful Vancouver Island in British Columbia. She is a Strasser Seminar and Certification Course Instructor, and head of the Education Committee of the Equine Soundness Association ([www.strasserhoofcare.org](http://www.strasserhoofcare.org)).