



A Case of Onychomycosis in a Friesian Gelding

by Monique Craig APF

Onychomycosis is fungal infection that attacks nails. 'Onycho' means finger nail or toe nail, 'mycosis' means disease caused by fungus. In the case of the equine hoof, onychomycosis^[1,2] is normally referred to as white line disease (WLD). Despite its name, WLD involves the non-pigmented inner hoof wall and not the white line of the hoof. The white line (or zona alba, stratum internum) is the junction between the wall and sole^[3].

A 17 hand 14-year Friesian gelding presented to us after clinical evaluation ruled out metabolic issues. All four hooves were affected with WLD with the front hooves showing most of the damage. The initial shoeing method consisted of hoof wall resection, elevating the heels via wedge pads and application of banana (rocker) shoes along with gluing and casting material. The fungal infection was no longer active at the time of my initial shoeing at the end of July 2017. The exact cause for the WLD onset was not determined. It was reported to me that this 17 hand Friesian gelding had been left barefoot for the winter season as usual. The gelding was normally shod for the rest of the year. The winter of 2016/2017 was unusually wet and this may or may not have contributed to the white line issue.

The gelding was very reluctant to move upon arrival at my facility. After shoe removal, the four hooves showed signs of unresolved damages due to WLD -- the right front being the most affected and is shown in this article. All four hooves had abnormally high heels even for a Friesian. For such cases, my approach is to first lower the heels to the level of the exfoliated frog. I then remove toe length while assessing how and when to remove damaged walls. I tend to work in increments. My goal is to find a balance between removing impaired tissues and leaving some in order to provide strength and support to the hoof while healing. Full debridement is not always necessary.

Trimming and shoe placement are done by using an orthographic (perpendicular) projection after palpating the coronary gaps. The capsule - being a three-dimensional asymmetric object - is not always easy to assess. The hooves are then thoroughly disinfected and cleaned prior to packing the caudal aspect of the hoof with dental impression material (DIM). I rarely pack hooves forward of the apex of the frog. In this case, shoe support was provided by using EponaShoes. At the time of the first application and after careful hoof testing, the area around the apex of the frog showed signs of pain on all four hooves. The shoes were ground on the sole side adequately to avoid any chance of sole pressure. I tend to support such hooves progressively, at first with a more cushioning approach, and later, as the pain disappears, with somewhat firmer support. It is always advisable to use caution while providing sole support and packing hooves since no two hooves are the same. The ground side of the shoes were also prepared to provide adequate rolling at the shoe periphery. Rolling is done at the heels and toes, and the pitch is adjusted as called for by the situation. A light roll was also applied to medial and lateral sides of the shoes which helps to ease the mechanics of limb ad/abduction. A small ribbon of glue was applied onto the shoes. I limited the amount of glue on some areas of the hooves to allow better air circulation to certain regions. Finally, four nails were applied to further secure the shoes. My goal is to make the horse as comfortable as possible so that it starts to move as much as possible. Natural range of motion is an important key to healing. By December 2017 there was only a very small indication of wall damage and by March 2018 there was no longer any signs of damage. The gelding was videoed after each shoeing, and we noted that its gaits and comfort kept improving after each shoeing.

A FEW DETAILS

It is interesting to keep in mind that the hoof capsule can be considered as a specialized form of skin^[4,5]. Skin healing is not significantly different in horses than in other mammals such as humans. Skin has a high amount of plasticity and responds to physical stimuli which in turn are converted into biochemical responses. These responses can be healing or, if the stimuli is too severe, can be harmful.

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calendar of events

JULY

7/27 Never Say Never Summer Camp Clinic, Webster, NY
Clinician: Esco Buff PhD APF-I CF (2 CE)
Contact: Esco Buff PhD APF-I CF, 585-298-6619

7/30 - 8/3 Dr. Redden's Equine Podiatry Clinic, Versailles, KY
Clinician: Ric Redden DVM (35 CE)
Contact: Ric Redden DVM, 859-983-6690

AUGUST

8/2 - 8/4 2018 Australian Farriers' Conference, Wisemans Ferry, NSW
Clinicians: Dave Farley CF APF-I, Mike Hayward APF-I, Catherine Carney, Dr. Caroline Foote, Brian Hampson, Sarah Kuyken, Ngareta Linehan, Kelvin Lymer, Rob Pinkney, Dr. Rachel Saiz (16 CE)
Contact: Courtney or Erin Stevens APF, +64 (0) 481 067 066

8/7 Orrville Veterinary Clinic, Orrville, OH
Clinician: Esco Buff PhD APF-I CF (8 CE)
Contact: Gabe Middleton DVM, 330-682-2971

8/9 - 8/11 Esco Buff's Annual Summer Summit, Webster, NY
Clinicians: Esco Buff PhD APF-I CF, Ken Best APF, and Kris Kibbey (20 CE)
Contact: Esco Buff PhD APF-I CF, 585-298-6619

8/23- 8/25 E.L.P.O. Barefoot Hoofcare
Skills Course, Penrose, CO (21 CE)
Contact: Cody Ovnicek, 717-372-7463

SEPTEMBER

9/1 - 9/3 World Championship Blacksmiths Competition, Big Horn, WY
Clinician/Judge: Austin Edens CJF (24 CE)
Contact: Craig Trnka CJF APF, 505-235-5952

9/3 - 9/7 Dr. Redden's Advanced Equine Podiatry Clinic, Versailles, KY
Clinician: Ric Redden DVM (35 CE)
Contact: Ric Redden DVM, 859-983-6690

9/4 Oakhurst Equine Farrier Forum, Newberg, OR
Clinicians: Sylvia Ouellette DVM & Jack Root DVM (3 CE)
Contact: Sylvia Ouellette DVM, 503-554-0227

9/11 - 9/23 2018 FEI World Equestrian Games, Tryon, NC
AAPF/IAPF Farriers will be serving as Official Farriers
Contact: Dave Farley CF APF-I, 561-310-1549 or James Gilchrist APF-I, 561-308-0346

9/15 2018 Spanish Lake Blacksmith Shop Annual Clinic, Foristell, MO
Clinician: Bobby Menker CJF APF (6 CE)
Contact: Bob Schantz CJF APF, 636-463-7211

9/20 - 9/22 2018 Ontario Farriers Association Annual Convention, Orangeville, ON
Clinician/Judge: Jonathon Nunn FWCF
Contact: Paul Miller CF APF, 613-453-2074

9/26 - 9/29 2018 Annual NEAEP Symposium, Saratoga Springs, NY
Clinicians: Raul Bras DVM CJF APF, Joao Neto CF APF, Ric Redden DVM, Gregory Staller DVM, Stefan Wehrli (25 CE)
Contact: Dave Dawson APF, 585-205-5122

9/27 - 9/29 E.L.P.O. Forging & Farrier Skills Course, Penrose, CO (21 CE)
Contact: Cody Ovnicek, 717-372-7463

There is also a subtle distinction between repair and regeneration. Repair is an incomplete tissue repair whereas regeneration is a complete replacement of damaged tissues to their initial qualities. Excessive hoof debridement which includes invading soft tissues can create scars which may impair the long term full function of the hoof.

In this example, the hoof seems to have regenerated but it may not be the case for all hooves depending on the general health, hoof care history and genetics of a particular horse. Unfortunately, hoof quality seems to not be a priority in breeding programs. Riding horses at too young an age may also not be conducive to quality hooves.

It is important to keep in mind the innate function and evolution of the hoof [6]. For instance, the equine digital cushion is not just a vestigial leftover from the early four toed horses - it still functions as a pad to some extent, hence the hoof capsule should be maintained under the bony column to allow some loading from the limb onto it.

Both the hoof capsule and bones are somewhat asymmetric. Add to this, the fact that the capsule deforms due to applied loads. It is therefore not always obvious how to map a hoof adequately. Using an orthographic projection of the articular area between the second and third phalanges gives a means to do a 3D analysis of the hoof and may prevent trimming to distortions [7].

The last layer of the epidermal capsule (stratum corneum) has a very complex architecture with specific mechanical properties. This layer is made up of dead keratin cells. I therefore want to use a material that is closer to keratin's mechanical properties in order to help with healing. Finally, it is important to



Figure 1: Frontal photos: July 2017, Dec 2017, March 2018



Figure 2: Lateral radiographs: July 2017, Dec 2017, March 2018

have radiographs not only to rule out pathologies, but also to assess bone morphology. A flat pedal bone will not have the same needs as an upright one. Understanding the amount of concavity of the palmar aspect of the pedal bone [7,8] is very important when applying therapeutic shoes. The shape of P3 and its angle will define my shoe placement and amount of rolling (or not) at the shoe.

CONCLUSION

This case demonstrates favorable outcome even in a severe case of WLD by allowing the hoof to regenerate. Hooves regenerate like skin which has adaptive capacity to heal or not. Aggressive debridement is not always indicated.

No single approach can guarantee a spectacular outcome every time, but in most cases the ideas and approach outlined here will be effective. I have been applying this approach (and documenting it) for over 22 years while using metal shoes, composite shoes and/or leaving horses barefoot.

REFERENCES

1. Aprich, V., Spergser, J. et al, "Scanning electron microscopy and fungal culture of hoof horn from horses suffering from onychomycosis.", in *Veterinary Dermatology*, Volume 21, Issue 4 August 2010.
2. Kuwano, A., Yoshihira, T., Takatri, K., and Kosuge, J. "Onychomycosis in white line disease in horses: pathology, mycology and clinical features.", in *Equine Veterinary Journal*, volume 30, Issue S26, June 2010.
3. Bragulla, H., Budras, K., and Reilly, J. "Fetal development of the white line (Zona alba) of the equine hoof." In *Equine Veterinary Journal*, Suppl. 26 (1998) 22-26.
4. Bowker, R., Lancaster, L., and Isbell, D, "Morphological evaluation of Merkel cells and small lamellated sensory receptors in the equine foot.", in *American Journal of Veterinary Research*, June 2017, Vol 78, NO. 6, Pages 659-667.
5. Craig, M., "The Hoof Capsule: Wood or Skin?" in *Trail Blazer Magazine*, 2006. Available at www.EponaMind.com
6. Craig, M., "The Evolution of the Horse." In *Trail Blazer Magazine* 2007. Available at www.EponaMind.com
7. Craig, M., "A Modern Look At ... The Hoof, Morphology - Measurement - Trimming - Shoeing", *Outskirts Press*, 2016.
8. Burd, M., Craig, J., and Craig, M. "The palmar metric: A novel radiographic assessment of the equine distal phalanx." In *The Open Veterinary Journal*. 4(2) (2014): 78-81.



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EMMY'S STORY

by Chip Cook APF-I

My name is Chip Cook APF-I. I live in southeastern Virginia. I have been a farrier since 2002. In 2016, I joined the American Association of Professional Farriers and have maintained my Accredited Professional Farrier status by attending clinics, watching webinars and listening to podcasts. In the beginning of 2018 I studied and earned by AAPF Foundation Credential (APF-I).



Above: Emmy, six weeks old.

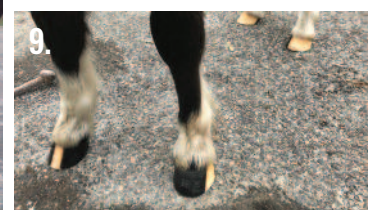
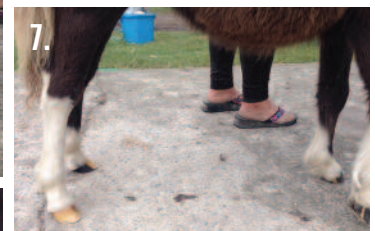
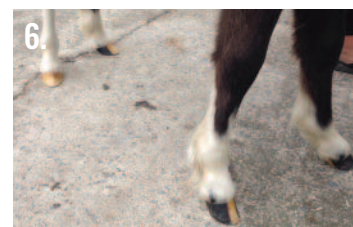
Let me tell you about a very interesting client. In mid-June 2015 I received a call from a client's neighbor. This person lives in northeastern North Carolina, not far from my home. She stated she had just gotten a 6-week-old mini filly which was badly in need of a hoof trim. My response was "You mean 6-months old?" She said "No, 6 weeks old". Boy did the gears in my mind start turning. I immediately started to wonder if I was getting good information about this potential client, and if I am, why is a 6-week-old in such bad need of a trim (injuries, metabolic issues, abuse, etc.).

I was able to schedule a barn visit within two days. I was then able to "fill-in-the-gaps" when I spoke to the owner. The filly, Emmy, was born April 28, 2015 and was soon after orphaned/abandoned by its mother. My new client adopted Emmy early in mid-June. She called me within a few days after getting the filly home. On June 16, I examined this little filly's feet. The feet appeared to have very long toes and underrun heels. One of my initial concerns was that the filly might have weak flexor tendons. The feet were very unusual for a 6-week old animal (Photos 1, 2, 3).

I recommended a call to the veterinarian ASAP to do a complete health check and determine if there were any underlining causes for the unusual hoof growth. I also recommended talking to nutrition experts for feeding and nutritional needs. I took several photos and a few videos of the filly. After leaving I called the client's veterinarian of choice and shared with him what I saw and all the data I had collected. On this initial visit I did not do anything in the way of trimming, as I wanted the vet to see exactly what I was seeing so we could formulate a plan.

On the vets first visit I was unable to be at the barn. I soon learned from the local vet that there were no underlying health issues causing the odd growth for this filly. He agreed that due to weak flexor tendons the filly was really long in the toes and underrun in the heels. The vet, the owner, and I coordinated a visit to work on the filly within days of the veterinarian's visit.

At the first joint visit, the veterinarian, the owner, and I all talked and came up with a plan to bring this filly around. We were able to immediately get to work on the plan. A correct nutritional plan was put in place, along with other recommendations from the veterinarian. For the farrier work, a tight 3-4 week cycle for trimming, with the veterinarian and I both at the visits, was agreed upon. The veterinarian was to be present so that he could make sure the corrections to the hooves were providing the progress needed. He was also monitoring the filly's overall health to make sure she did not have any other contributing factors that would impede our progress.



Continued on page 6

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This little filly had lots of spunk and at times the veterinarian would actually pick her up off the ground so that I could trim her feet! We didn't want to chemically restrain her. After the first couple of trims, her behavior improved to the point he didn't have to lift her 40-60 lbs. off the ground. In the initial visits I concentrated on shortening/pulling the toes back while getting the heels back to the widest part of the frog. I did this in small increments to allow the structures in the legs to adjust and tighten up along the way. The appointments were every three weeks for the first 3-4 months. As the visits progressed you could see the improvement at each days end (Photos 4,5). This tight schedule, proper nutrition and a client that followed vet and farrier directions led to hooves that looked like this by September 23, 2015 (Photos 6,7). Within four months she had more traditional looking and more importantly, functional hooves. At that time we were able to extend out the appointments to a more normal 6 week schedule and the veterinarian no longer came to the farrier appointments.

I am very happy to report that as I write this in May 2018, the now mare is still one of my clients and is doing well. She is now a pasture mate for another horse the clients have since rescued. When now trimming her feet, they look like "normal" hooves and no one would ever know what she looked like when I first saw her in June of 2015 (Photos 8,9).

I cannot stress enough if not for the team approach to hoof care (which I learned very early on in my career from my mentor, teacher, and best bud Darren Owen CF APF of Indian Fields Farrier Service) this horse's story would not have had a happy ending. The quick action on the client of "calling a team together"; the ability and willingness of the farrier, nutritionist, and veterinarian to all work together; and a very compliant horse owner willing to do whatever was necessary for the good of the horse, all lead to the success.

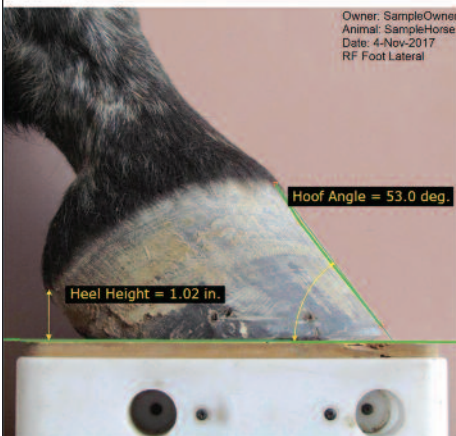
I would like to thank Emmy's owner for allowing me to share their story and for all her hard work in with this special filly.



Above: Chip and Emmy



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BITS AND TIPS

"The horse has only one conformation, no matter what the sport. Trim for the conformation. Shoe for the sport."

- Grant Moon CJF AWCF

"Make a mark at 5 inches from the heel on your anvil. It makes shoe fitting far easier."

- Steve Prescott CJF APF-I

"Auto type saves a ton of time. Speech to text also saves time but be careful of what words appear on the screen before hitting send."

- Mike Hayward APF-I

"Take baseline photographs of the horse's feet in front of you before you work on them. You can never go back and get those initial images."

- Daisy Bicking APF-I

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