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COVER PHOTO BY MARK J. BARRETT



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Hampton's hidden hoof problem

After a gelding loses one-third of his foot in a freak accident, his recovery is complicated by a bone infection—or is it?

By Christine Barakat

Steven Hirsch woke with a start early one Saturday morning in April 2007 to furious pounding on his front door. “Steven, Hampton is injured. You need to come now,” said the voice on the other side of the door.

Hampton was Hirsch's 17.1-hand Thoroughbred gelding. In the eight years that Hirsch had owned Hampton, the pair had competed successfully at the lower levels of eventing, foxhunted and enjoyed the trails near Middleburg, Virginia. At age 14, the gelding was still going strong. “Everyone thinks their horses are the greatest and most talented ever, but Hampton really is,” says Hirsch. “I'm certain he has saved my life—literally—more than once.”

Hirsch quickly dressed and drove to the farm next door, where Hampton was boarded. He found the gelding standing out in his field, holding his bloody left foot in the air. A closer look revealed the entire outside third of the hoof was missing. As Hirsch struggled to process what this meant, the barn owner approached and handed him the missing chunk of hoof. Attached to it was a section of coronary band tissue and nestled inside was a portion of the coffin bone.

The gelding's right hind shoe had blood on the tip. It looked as if Hampton had an overreach injury, meaning he had stepped on his forefoot with a hind hoof. Most overreaches simply scrape the fleshy part of the heel bulbs or, at most, pull a flap of heel tissue loose. Hampton, however, had somehow sliced completely through his hoof, exposing laminar tissue and even bone. “Hampton



UP AND OVER: Hampton and his owner Steven Hirsch negotiated cross-country courses together before the gelding's severe hoof injury.

ton is powerful and long-legged and a goof in the field,” says Hirsch. “There are always 100-foot skid marks in the mud. He was most likely playing and stepped on himself.”

How the injury happened was the least of Hirsch's worries as he looked at the wound. He asked the barn owner to call the veterinarian, Cleanth Toledano, DVM, as he took a clean bath towel from his trailer and wrapped it around the foot tightly with duct tape to staunch the bleeding.

First aid

Toledano arrived within 10 minutes. “I remember they told me it was an overreach, so I thought I might just be removing a sprung shoe and maybe cleaning up a laceration. When they handed me the remnant of the hoof capsule they had found on the ground, and I saw there was a portion of bone inside it, I knew we had a much bigger problem.”

With so many tissues exposed, infection was a primary concern. Toledano

administered a mild sedative and painkillers, then set to work cleaning and assessing the wound. She scrubbed the tissues gently with antiseptic and used saline solution to wash away debris. Then she gave Hampton a systemic antibiotic and injected an antibiotic into the coffin joint, the space between the coffin bone and short pastern bone. “When I put the needle into the joint capsule, a small amount of joint fluid came out,” she says. “That was a good sign because it meant that even if the capsule had been breached, there was still enough integrity to the joint to hold the joint fluid and antibiotic.”

As much as she was able to do on the farm, Toledano knew that Hampton's wound required surgical exploration and cleaning. She rewrapped his hoof in fresh bandages and referred him to Blue Ridge Equine Clinic, a little more than two hours away. Hampton loaded willingly and Hirsch drove south.

When he pulled into the clinic late that afternoon, Hirsch was met by Paul

TIME LAPSE: The day after his injury, Hampton's hoof was a mess of exposed laminae, vessels and bone (right). Over the course of the next 18 months, however, the various tissues of the foot slowly grew back. Today, with the help of supportive shoeing, Hampton's hoof is functional enough for light trail riding and romps in the pasture. To see more photographs of Hampton's injury, go to EquusMagazine.com.

APRIL 2007



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Stephens, DVM, ACVS. "Our biggest concern in this type of injury is the extent of the soft tissue damage," says Stephens. "Having just the hoof wall ripped off is not a major concern: It's like having your fingernail ripped off, in that you can expect it to eventually grow back. The real problems arise when you lose the germinal tissues, which are the tissues in the coronary band area that are responsible for the hoof growth. If you lose too much of that tissue, you won't get regrowth."

Stephens unwrapped Hampton's hoof and did an initial assessment of the wound, flushing it with saline as he worked. "I found one or two arteries still actively bleeding, so I tied those off," he says. "I also tried to get a general sense of what tissues were involved." It was obvious that the damage was extensive enough to require exploratory surgery under general anesthesia.

Stephens rewrapped the hoof in a heavy bandage, gave Hampton another dose of systemic antibiotics and phenylbutazone for comfort, and scheduled the procedure for the morning.

The extent of the damage

The next day, Hampton was placed under general anesthesia and Stephens began to methodically examine what remained of his left hoof. "A full third of the hoof was simply gone," he says. "It was remarkable how smoothly the tissues had been cleaved. It was as if someone took an axe to his hoof. That's actually a good thing, theoretically, because the sharper the separation between tissues, the healthier the remaining tissues are likely to be. And there was, in fact, very little dead tissue I had to remove."

Hampton's coffin bone was exposed, and the outside wing was missing. Stephens took x-rays to confirm that the remaining bone was intact. He then "pressurized" the joint, inserting a

needle into the joint space and injecting sterile saline, then watching carefully for any leak at the wound site. "We found a tiny hole, probably about a millimeter in diameter," he says, "but certainly big enough for infection to enter." In a more typical injury, tissues around the hole could be fashioned into a bandage to seal it over, but Hampton had no excess tissues left around it. "We had to squeeze the tissues around the hole together and suture it indirectly."

Stephens gave the wound a final lavage (flushing) with saline, injected the joint space with antibiotics, wrapped the foot in a heavy bandage and went to call Hirsch as Hampton recovered from anesthesia. "I told Steven that if we didn't have a problem with infection in the critical structures, I thought the wound was capable of healing." Stephens was also encouraged by the fact that Hampton seemed so comfortable, bearing weight on his injured hoof and walking well. "You would think a horse with this sort of injury would be hopping on three legs, but he was walking." That meant that Hampton was less likely to develop overload laminitis in his opposite foot.

Three days later, Hampton—still at the clinic—suddenly became less willing to walk on his injured foot. The gelding was again anesthetized to undergo a regional limb perfusion, a procedure in which a tourniquet is applied just above the fetlock and antibiotics are injected into the small veins of the foot. "This saturates the area with a high concentration of antibiotics," says Stephens.

Hampton's hoof was rewrapped and a hard fiberglass cast molded over it. When the cast hardened, Stephens split it down the middle to make it easier to remove and reapply. "The cast transferred weight away from the injury site and eliminated motion, which really helped his pain," he

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says. "But at the same time, it could be easily removed for bandage changes and replaced afterward." Hampton returned home two days later to the care of Hirsch and Toledano.

Hampton was kept in a stall and received phenylbutazone and anti-ulcer medication. Toledano came every day to remove the bandages, gently scrub and flush the wound, and remove dead tissue. By the end of the first week, fresh, pink granulation tissue was forming on the edges of the wound, an encouraging sign. Hampton was also walking more comfortably each day.

By May, Hampton's bandages needed to be changed only once every four days, and later in the spring, the cast was removed for good. By early summer, the gelding could be turned out in a small pen four hours a day. In the earliest days of July, however, the big gelding became acutely lame again.

"I sedated him and blocked the leg, numbing it," says Toledano. "I was then able to do a bit of probing and exploring." She noted the portion of the coffin bone that was still exposed was very sore, even with the leg blocked. "My concern was there was an infection in the bone, preventing soft tissue from growing over it." Toledano used a curette^o to scrape the end of the exposed coffin bone until only hard, healthy bone remained. She also took radiographs that revealed no bone fragments or infection of the remaining bone. Hampton was immediately more comfortable, and with time soft tissue began to cover the exposed surface of the coffin bone. At the end of July, a shoe with a removable "hospital" plate was put on the injured hoof, and a few weeks later that was replaced with a conventional egg-bar shoe.

Then, on August 15, Hampton had another setback: He was lame once again and his wound was draining more than would be expected at this stage of healing. "Now I was really worried he might have an infected coffin bone," says Toledano, who took radiographs of the injured hoof. "He had just gotten a shoe on that Steven didn't want

to remove, so it was difficult to get a clear view of the area. I thought I could see lighter flecks on the radiographs that might have been pieces of dead bone (known as a sequestrum)." Toledano again referred Hampton to Blue Ridge Equine Clinic.

A red herring

Hampton arrived late in the evening, and surgery to explore the healing wound was planned for the following day. To everyone's surprise, the gelding was nearly sound in the morning and his wound had stopped draining. Instead of surgery, the veterinarian on duty, Steve Trostle, DVM, decided to treat Hampton standing with a sedative and a local anesthetic, leaving the new shoe in place. Radiographs revealed the flecks Toledano had seen, and Trostle was able to locate and remove a single small piece of bone, although he found no evidence of infection. Hampton returned home to Toledano's care.

Two weeks later, however, Hampton's lameness returned. Still concerned about a bone infection, Toledano blocked the lateral palmar nerve to Hampton's foot, which would numb only the side of the hoof with the wound: "If the problem had been in the coffin joint, the block wouldn't have helped." Hampton was sound after the block, which meant that the wound itself was the source of his pain, yet another set of x-rays showed that flecks—possibly troublesome bone fragments—were present. There was also one area of the wound that continued to drain. For the second time in as many weeks, Hampton was put on a trailer and sent to Blue Ridge Equine Clinic.

"The third time Hampton was here, we felt like there had to be something we hadn't yet identified going on," says Stephens. "We pulled Hampton's shoe off to get better radiographs and saw the same flecks on the images that Dr. Toledano had. We then put him under general anesthesia so we could do a complete surgical exploration."

Stephens carefully inspected the wound, looking for the "bone frag-

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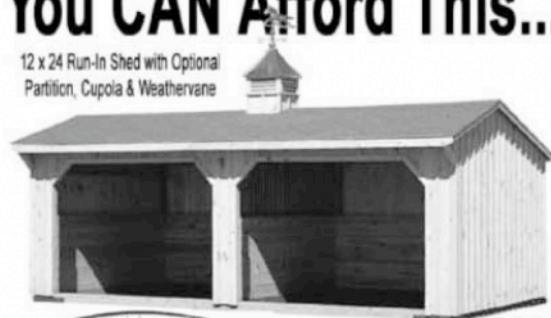
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ments" seen on the radiographs and found none. "It was then we realized what we were seeing on the x-rays was the collateral cartilage mineralizing, which is a normal process. What we'd been suspicious was infected pieces of bone causing his lameness was really a red herring."

What was more likely causing the problem, Stephens discovered as he probed the wound further, were the deep tracts and fissures being formed as various tissues tried to regrow over the wound. "In that area of the foot, you have so many different types of tissue—the hard, keratinized tissue of the frog and sole, the softer tissues of the laminae, and the hoof wall itself. They are all growing into and over each other, trying to organize themselves and not always being successful at it." Within this mass of tissues, an abscess had formed between Hampton's heel bulb and frog, trapping debris and exudate. Stephens drained the abscess and removed dead tissue.

Hampton came out of the surgery sore but able to bear weight on his hoof again, and within a few days he was nearly sound.

Since his surgery last September, Hampton developed other small abscesses, which were located and drained. After 18 months the wound had healed over completely, but the gelding's hoof will always require special care. "He is still missing the biomechanical support of a third of his hoof," says Toledano. "We've been working with different types of shoes, frog pressure pads and wedges to act as prostheses. His hoof is going to need this kind of attention for the rest of his life."

Hirsch, however, is happy to provide it. "Out in the field, he's his old self again. He gallops around like a madman and plays with the other horses, and that's so good to see. I've even been able to ride him again, although I'm too paranoid to do much more than walk on the trails. It doesn't matter, though. I'd be happy to just have him as a large lawn ornament." ●

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makes me even more suspicious that she has a gaited horse, because these breeds tend to have a pronounced head nod at certain gaits.

*Kirsten Marek, DVM
Blackstone, Illinois*

My older Quarter Horse mare also makes a “thunk-thunk” sound sometimes when I ride her. In her case, it’s a very good sign. The sound is made by her lips and occurs when she is relaxed, yet walking very forward, rhythmically and happily. I hope it’s the same with this woman’s mare and, as Dr. Latham suggested, “perhaps she is just a happy, functionally noisy mare”!

*Ginny Gable
Las Vegas, New Mexico*

● The right priorities

After reading “Hampton’s Hidden Hoof Problem” (Case Report, EQUUS 381), my heart goes out to Steven Hirsch and Hampton. My first reaction to the photos was shock—I can’t imagine how Steven felt when he first saw the injury! The love and dedication Steven showed makes me wish I knew him personally.

Where many would have put Hampton down, Steven’s expression, “I’d be happy to just have him [Hampton] as a large lawn ornament,” to me, said it completely. I hope Hampton and Steven are doing well.

*Marlene Wilson
Trenton, Tennessee 🐾*

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