

QUARTER RACEHORSE, QUARTER CRACK

By **STACY PIGOTT**
TRACK MAGAZINE CORRESPONDENT

For a short period of time this summer, the world watched with bated breath as Big Brown made a spectacular bid for the Triple Crown. Wins in the Kentucky Derby and the Preakness Stakes, as well as the Florida Derby before that, proved he was up to the challenge. He had the speed, he apparently had the heart. But did he have the hooves?

It was nearly impossible to see, hear or read a news report about Big Brown without hearing about his quarter cracks. Discussions previously confined to backstretch barn aisles became everyday conversation for Joe Public. Big Brown's quarter cracks, how they were treated and whether they would hurt his chances to win the Triple Crown, became the talk of the town.

While the public may have been getting their first dose of quarter crack education, it is a problem that has plagued the racing industry for years. The most famous quarter crack repair may have been on Ferdinand, when he defeated Alysheba in the 1987 Breeders Cup. Buckpasser wasn't so lucky; an infected quarter crack kept him out of the Triple Crown races in 1966, although he came back to win 15 consecutive races, setting track and earnings records as he went. Eventually, Buckpasser's quarter crack bothered him enough that his connections opted to retire the great runner.

Racehorses suffer from quarter cracks more than any other equestrian discipline, and they don't discriminate. The lowly \$2,500 claimer has just as much chance to develop quarter cracks as the next Triple Crown hopeful.

This doesn't mean, however, that we are at the mercy of quarter cracks. By understanding what quarter cracks are and why they develop, we can manage, treat, and even prevent this common hoof injury.

WHAT IS A QUARTER CRACK?

Despite the fact that quarter cracks are relatively common in racehorses, there is still a lot of misinformation circulating among horsemen.

"There is some misconception about the true definition of a quarter crack," said



An ill-managed quarter crack on a 3-year-old Quarter Horse racehorse.

Photo courtesy of The Podiatry Center at Reata

veterinarian and farrier Dr. Britt Conklin, of The Podiatry Center at Reata in Weatherford, Texas. "A true quarter crack is not at the bottom of the hoof. True quarter cracks originate from the coronet and actually run down the hoof wall, rather than a sand crack or something that begins at the ground surface and runs up the hoof wall."

Quarter cracks are painful (imagine your fingernail splitting into the cuticle) and hot, with an increased digital pulse on that side of the hoof. Unlike hoof abscesses that can work their way out at the coronet band, a quarter crack will not have any discharge such as pus or blood. Quarter cracks can, however, get infected and cause secondary hoof abscesses that prolong the problem.

Incidentally, quarter cracks get their name from their location on the hoof—the quarter. If your knowledge of hoof anatomy doesn't extend past "heel" and "toe," hoofcare.com's Fran Jurga explains it this way: the quarter is where the hoof wall has finished its arc around the toe and the heel area starts.

"The front of the foot is very, very rigid," explained Conklin. "The back of the foot is soft and pliable and moveable. That's why we have quarter cracks and not big toe cracks."

WHAT CAUSES QUARTER CRACKS?

All horses have four hooves, so why have racehorses cornered the market on quarter cracks? The answer is multifaceted, and plays an integral role in treating and preventing quarter cracks. Understanding why a quarter crack develops requires a basic knowledge of hoof anatomy and function. Specifically, we need to understand the function of the digital cushion and hoof tubules.

"When you're talking about Quarter-type running horses, you'll hear people say they're flat-footed or have thin soles," Conklin said. "But you don't hear a lot of people talking about the digital cushion in a horse because we can't see it. It's underneath the frog."

The digital cushion is one of the shock



Short shoes leave the heels unsupported. In such cases, a vertical line drawn from the origin of the quarter crack nearly always coincides with the end of the shoe.
 Photo courtesy of The Podiatry Center at Reata



The same horse after the hoof wall around the quarter crack has been pared away, showing the depth of the crack and the surrounding damage to the hoof.
 Photo courtesy of The Podiatry Center at Reata



On the road to recovery—Dr. Conklin has changed the hoof angle, applied special shoes to support the heels, and given the horse a synthetic digital cushion.
 Photo courtesy of The Podiatry Center at Reata

absorbing structures within the horse's hoof, dissipating energy from the concussion of the foot on the ground. Even though it can't be seen by the naked eye, there is a way to measure the depth of the digital cushion. After he has trimmed a hoof and pared out the frog, Conklin places a finger and thumb at the heel bulbs and frog and pinches his fingers together. A good digital cushion will leave two to three inches of space between your fingers and thumb.

“With some of these running horses, their digital cushion gets so thin it feels like your fingers can almost touch,” Conklin said of the anatomical problem that is common in race-bred horses. “The digital cushion probably takes the brunt of the initial load, and dissipates that energy through the dorsal wall as it begins to break over. So if that digital cushion is thin, the first place all that energy is going to go is straight up, and it usually goes into the quarters and the heels.”

The tubules are another way the hoof dissipates energy. The tubules are clearly visible when looking at a hoof from the front or side; they are the vertical lines that run straight up and down the hoof, from the coronet band to the ground. Ideally, the tubules should be as perpendicular to the ground as possible, and should be at the same angle at the heels as they are at the toe. If the tubules hit the ground perpendicular, they will compress to dissipate energy. The more parallel to the ground the tubules are, explained Conklin, the more they bend under stress rather than compacting to absorb the load.

“If a horse has a long, sloping foot that is underrun, those tubules are laying flatter, almost more parallel to the ground surface. In a lot of our Thoroughbreds and Quarter Horses, the tubules in the front actually have a decent angle, but the tubules in the back are completely underrun so the angles are opposite of what they should be,” Conklin continued. “Those laying down tubules are what drive a lot of that instability in the quarters and the heels of the foot itself up high on the coronary band.”

So when you take a racehorse, which has been bred to have long, sloping pasterns, add in a thin digital cushion, and throw in underrun feet with tubules that aren't perpendicular... viola! You have the perfect recipe for quarter cracks.

Conklin also believes large toe grabs play a role in quarter cracks, as do track surfaces. On hard surfaces, such as in barn areas or saddling paddocks, large toe

grabs create a negative palmar angle in the horse's hoof, meaning that the coffin bone is actually tilted backwards. When a negative palmar angle is created inside the hoof, the outside of the hoof follows suit as well. The tubules tilt backwards, mimicking an underrun hoof with laying down tubules.

"We know they have breakdown injuries associated with those high toe grabs, but I think they actually cause a lot of quarter cracks too," said Conklin. "We also know there are tracks around the United States that, historically, if you run a horse there, you're going to end up with quarter cracks. A hard track surface is much more demanding in that it doesn't take its own amount of shock, the foot is having to take a lot more, and those thin-soled, shallow digital cushion horses end up having a lot of problems."

HOW DO YOU TREAT THEM?

Unfortunately, there is no early warning when it comes to quarter cracks. Your horse will be fine one day, and have a quarter crack the next.

"It's going to just crop up on you and you're not going to see it coming. However, you can see some signs that you need to be careful, aware and paying attention to," said Conklin. "Predisposing factors include horses with really pliable, spongy heels, almost heels that you can move independently of themselves, or a thin digital cushion. Look from the side to



There are various synthetic materials that can be used to create a synthetic digital cushion to dissipate energy and help heal and prevent quarter cracks.
Photo courtesy of The Podiatry Center at Reata

THE PODIATRY CENTER AT REATA PRESENTS INAUGURAL SLM SNOWMAN MEMORIAL AWARD



Dr. Britt Conklin, Lindsey and Scott Pruitt.
TRACK Photo by Stacy Pigott

Before there was a Podiatry Center at Reata, there was Reata Equine Hospital, where Scott and Lindsey Pruitt's SLM Snowman spent several months battling laminitis before finally succumbing to the disease. SLM Snowman's plight, in part, helped pave the way for Dr. Britt Conklin's dream of a world-class podiatry center in North Texas to become a reality. The Podiatry Center at Reata opened in April 2008.

In honor of SLM Snowman and the Pruitt's unwavering dedication to his treatment and well-being, The Podiatry Center at Reata has developed the SLM Snowman Memorial Award, to be given annually to an owner who goes above and beyond in the care and welfare of their horses.

The SLM Snowman Memorial Award was presented to the Pruitts at the Texas Equine Podiatry Conference hosted by The Podiatry Center at Reata. "This is such an honor for Snowman," Lindsey Pruitt said. "People need to be on top of things and be aware of what is happening with their horses. Like Dr. Britt said at the very beginning, time is of the essence. You've got to catch things early."

The staff at The Podiatry Center at Reata created a video to commemorate SLM Snowman's life and the Pruitt's dedication. Part of the video and dedication ceremony can be seen at TRACK Magazine's website, www.trackmagazine.com.



Ready to race again—After a short lay-up and aggressive treatment, this horse is ready to return to the track with glue-on shoes and EquiPak heel support.

Photo courtesy of The Podiatry Center at Reata

determine how those tubules are laying. If they're way underrun, then you're setting yourself up for quarter cracks as well."

Once a quarter crack has developed, there are several different methods of treatment. Big Brown, for example, wore special glue-on shoes. The crack itself can be wired together, or even stabilized with a cast. No matter what course of treatment is followed, the primary goal is to keep the crack from getting worse, allow for new, healthy hoof wall growth, and provide a digital cushion for the horse.

"We try to stabilize the crack at the coronet so that it will grow down and form a rigid support underneath to keep it from cracking again," explained Conklin.

Dr. Stephen O'Grady presented a paper on quarter crack repair during the 2001 American Association of Equine Practitioners' annual convention. He wrote, "For a successful repair, it is necessary to determine the underlying cause of the quarter crack and to correct it where possible. It must be emphasized that the cause of the crack must be addressed in order to prevent reoccurrence."

Conklin agrees wholeheartedly. "We address it in the same fashion that we know it occurred. We know that, number one, concussion and no digital cushion is an issue. Number two, we know that

conformation of the foot could also be an issue as well. There are a lot of different fashions to actually handle the crack itself, but that's like putting a band-aid on. You've got to figure out why it occurred.

"If I have a horse that comes in, especially a running horse that has big toe grabs on and a negative palmar angle, I'm going to tell the owner, look, we've got to change up the mechanics of the foot. We're going to treat the quarter crack, yes, and we're going to get it healed, but we want to prevent it from occurring again. The way we do that is mechanics."

As Big Brown proved, it is possible to race a horse with quarter cracks. Conklin has treated Grade 1 Quarter Horse stakes winners with quarter cracks in all four feet. And while it is possible, it is not always optimal. For long-term healing of a quarter crack to occur, the horse must be laid up long enough for the crack to grow out at least halfway down the hoof wall. For most horses, that can mean four months or more away from the racetrack.

"Can you manage them through a race? Yes. But for long term treatment you have got to give that horse time to reorganize that crack and grow it out at least halfway down the wall for it to really be in a safe condition," said Conklin. "What I tell people is, we're going to manage this thing

until you have a time frame that we can leave it off for an extended period, and then we're going to get more aggressive in terms of how we deal with it. The beauty of podiatry is it's not all or the other. We have the capability of blending the two."

Education is key in dealing with quarter cracks. Horses that continually develop quarter cracks can be managed through long race careers as long as you understand why the quarter cracks are occurring, and take steps to prevent them from reoccurring in the future. Perhaps you choose not to race on tracks with harder surfaces. Or maybe you schedule your farrier visits at shorter intervals, so your horse doesn't develop overly long toes and crushed heels. You could forego high toe grabs, or use a shoe that offers more caudal sole support.

"The unfortunate thing is to some degree, owners and trainers are often not interested in preventing something. We just want the thing to run," commented Conklin. "So even though we know that changing the mechanics of the foot is beneficial, some people think they're slowing the horse down, whether it be the ability to grab ground or changing the flight pattern because we've stood him up a little more. Generally, we're behind the eight ball whenever we deal with one of them."

Big Brown's connections found themselves behind the eight ball in the Belmont Stakes. Now, Big Brown is being given the opportunity to redeem himself in the Haskell Invitational at Monmouth Park on August 3. Press releases leading up to the race talked about Big Brown's workout times and his attitude, but not his quarter cracks.

"We see quarter cracks for a lot of different reasons, and for running horses it's a big deal. But it's really nothing more than conformation in the foot, tubules, and proper anatomic digital cushion. These horses can be managed very well, and they tend to heal well," said Conklin. "That's the beauty of the foot. Is it's going to grow again and do fine as long as you're taking care of it."

