

# Getting to Know NAVICULAR

By Jessica Lash

**YOU** CAN'T PIN-POINT IT, but something just doesn't seem quite right. Maybe your horse is a little short-strided when you warm up. Maybe it takes a few funny steps after a barrel race and you're not sure why. Or maybe it's clearly lame, but you can't find any heat, swelling, or an obvious reason to blame.

Few things strike more fear into the heart of a barrel racer than hearing the word "navicular," but advances in diagnostic accuracy, shoeing practices and medical management are giving horse owners every reason to approach the diagnosis with a newfound optimism. Dr. Scott Fleming, DVM, of Rood and Riddle Equine Hospital in Lexington, Kentucky, and Dr. Noah Grimes, DVM, of Athens Equine in Athens, Texas, shed light on the evolution of navicular syndrome and why this frightening diagnosis doesn't have to signal the end of a horse's performance career.

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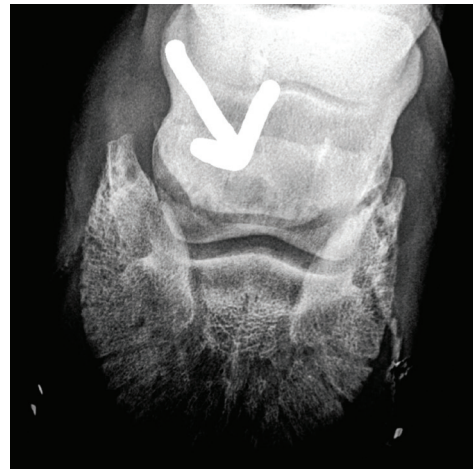
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### What is Navicular Syndrome?

Navicular syndrome is a term that encompasses any pain that originates from the navicular apparatus. This can include the navicular bone itself, the deep digital flexor tendon, the navicular bursa, the collateral ligaments on either side of the navicular bone, and the impar ligament. While a navicular diagnosis was once reserved only for horses who presented with pathology within the navicular bone itself, a better understanding of the apparatus as a whole has broadened the diagnostic criteria considerably.

“Generally speaking, navicular syndrome or caudal heel pain syndrome is injury, inflammation or pain associated with the back half of the foot,” Fleming explained. “There are so many different anatomical structures that have to work, bear weight and accommodate the range of motion back there that it is very easy for any one thing to cause an issue.”

Fleming says navicular syndrome and caudal heel pain syndrome are terms that are often used interchangeably, although caudal heel pain syndrome is a more generic term that simply denotes a horse with pain in the back half of the hoof. In horses diagnosed with caudal heel

pain, there may not be a clearly defined cause; in horses with navicular syndrome, there will be clinically significant findings within the navicular apparatus.

### Obtaining an Accurate Diagnosis

Because of the complexity of the navicular apparatus—and because treatment for navicular syndrome can vary considerably—Grimes emphasizes that the first step in successful management is an accurate diagnosis.

For both Fleming and Grimes, diagnosis begins with a clinical evaluation that involves blocking the palmar, or back half, of the hoof. This nerve block allows a diagnosing veterinarian to be certain that the horse’s lameness is originating from the back half of the hoof and not from further up the limb or from a different part of the hoof altogether.

If the horse is sound after the palmar block, radiographs of the hooves are the next step in the diagnostic process. While they play an important role in diagnosing navicular syndrome, Grimes says the information radiographs can provide is limited.

“Radiographs only show you bone,” Grimes said. “We are looking for any

*Left to right:* A cyst within the navicular bone on a 65-degree dorso-ventral view. These cysts can become painful, and injections are variable in their effect. Shoeing plays a vital role in managing these cases.

The same cyst as seen from a flat dorso-palmar view.

The most common method for injecting the navicular bursa involves using a spinal needle and radiographs to confirm placement.

changes in the navicular bone itself, such as a cyst, irregular bone margins, or changes in the distinction between the cortex and the medullary cavity, as well as any signs of arthritis in the coffin or pastern joints.”

In instances where the radiographs are inconclusive or more information is needed, an ultrasound or MRI may be recommended.

“In cases where I have an MRI, I have more information, and that lets me make a more informed decision,” Fleming said. “On an MRI, you can actually see the bursitis within the bursa. You can also see surface defects of the deep digital flexor tendon or the flexor surface of the navicular bone.”

## Health Feature

Grimes stresses that an accurate diagnosis is paramount in ensuring that a horse with navicular syndrome has the best possible treatment outcome.

“At the end of the day, completing all of the diagnostic steps will save you money, because you have a targeted treatment approach. That’s really where your prognosis comes from—having that correct diagnosis, and it’s huge,” Grimes said.

### Prescription Shoeing

Once a diagnosis is made, prescription shoeing is the first stop for Fleming and Grimes. Both veterinarians say proper shoeing is the single most important step in managing a horse with navicular syndrome. Shoeing needs vary widely depending on the specific dysfunction within the navicular apparatus. The horse’s job, its work and footing conditions, and how it responds to the shoeing also play a role.

In general, prescription shoeing will help ease breakover and reduce the impact on the back half of the hoof. Fleming says it usually takes about two weeks to gauge the impact shoeing changes will have.

“A lot of times these horses are going to



This aluminum shoe is a mildly wedged roller motion shoe with a heel plate that is designed to reduce leverages on breakover as well as tension on the deep digital flexor tendon, while protecting the navicular apparatus and digital cushion from concussion. This is a more therapeutic shoe but has traction deficits.



A good relationship with a knowledgeable farrier is critical to managing a horse with navicular syndrome.

try to protect concussion in the back half of the hoof, so we will put a rigid, welded plate over the whole back half of the foot, as opposed to the heart bar or straight bar shoe that will cover a much smaller surface area,” Fleming explained. “Then we will use either a soft impression mate-

rial or a soft pour-in in the back, because we still want to stimulate those internal hoof structures while reducing the physical force and concussion those sensitive areas are experiencing under load. Often times, those things are incorporated into a shoe that has a mild wedge and a rolled



A rigid plastic pad can do a good job of reducing concussion with a soft support material beneath it. The shoe selection can be tailored to fit the footing conditions, and the plastic pad also comes in a wedged option.



A Sigafos Series 1 with a thermoplastic heel plate can be custom fit for frog load and clearance. This shoe excels in concussion reduction with its very soft rim pad.

## Health Feature



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A properly balanced hoof reduces unnecessary strain on internal structures, including the navicular apparatus.

or rocker toe—just something to try to reduce breakover.”

Grimes takes a similar approach to shoeing a horse with navicular syndrome.

“I want to ease breakover, bring the toe back, and provide adequate heel support while also making sure we manage things like collapsed heels. Those can be really difficult to manage, and I don't want to make them worse by having the horse in a wedge shoe. I like wedge shoes, and I use them frequently, but an incorrectly applied wedge can cause more harm than

good by causing collapsed heels. A wedge that supplies adequate heel support is ideal to provide the mechanics needed for the foot while also correcting a negative palmar angle,” Grimes explained.

Grimes says that while significant changes in shoeing are often needed immediately following a diagnosis, the goal is always to reduce the need for aggressive shoeing over time so that the hoof mechanics can return to a more normal baseline as much as possible, while still keeping the horse comfortable.



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## MEET THE EXPERTS

**Dr. Scott Fleming, DVM, CF**, is a 2013 graduate of Texas A&M University. He is a shareholding member of Rood and Riddle Equine Hospital in Lexington, Kentucky, where he specializes in equine podiatry. A special interest for Fleming is participating in Equitarian Initiative trips to Central America to help working equids in the region.

**Dr. Noah Grimes, DVM**, earned his doctorate in veterinary medicine from Oklahoma State University. A lifelong horseman and avid barrel racer, he has spent his career focused on equine sports medicine both in practice and on the back of a horse. Grimes currently practices at Athens Equine in Athens, Texas.

## Managing With Medication

Non-steroidal anti-inflammatory drugs (NSAIDs), bisphosphonates and corticosteroid injections are the most commonly prescribed medications for horses with navicular syndrome.

While NSAIDs such as phenylbutazone and Equioxx can be beneficial in the early stages of treatment and during acute flares in pain, Fleming cautions against relying on them for long-term use.

“A lot of times I will give three to five days of Bute to help quiet things down, but long term, I try not to have horses on it,” Fleming cautioned. “Equioxx is a little less potent than Bute but has been found to be easier on the gastric system, so I will use it for more chronic, low-grade pain. You have to be cognizant that with anything like that, there are downsides—gastric ulcerations and inflammation of the intestinal tract are big ones.”

Similarly, Grimes says he tries to minimize the use of daily NSAIDs as much as possible, often preferring to start with shoeing changes and then moving directly to steroid injections.

Bisphosphonates can also be part of a comprehensive plan for managing horses with navicular syndrome—especially those with compromised navicular bone integrity. Known by their brand names Tildren and Osphos, bisphosphonates work by modulating bone growth.

“You have two cellular components that either break down or build bones,”



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Fleming said. “You have osteoclasts, which break down bone, and osteoblasts, which build bone. The idea behind bisphosphonates is that we are trying to establish a better equilibrium between these two processes. Essentially, for navicular horses, bisphosphonates reduce the bone resorption or osteoclastic component of that process. They offer some anti-inflammatory effects and pain modulation, as well.”

Grimes also finds the use of Tildren and Oosphos to be valuable, even if it is case-dependent.

“Horses that have a bruised navicular bone, or horses with cortex lesions or cystic lesions, are good candidates for bisphosphonates,” Grimes said. “Typically, I’m going to recommend that every 6-12 months. The caveat is that it should only be given to horses that are 4 years old and up.”

While NSAIDs and bisphosphonates both have a place in treating navicular syndrome, Fleming and Grimes agree that injecting either the coffin joint or the navicular bursa—or both—with steroids can be one of the most beneficial options for managing pain and inflammation.

“I will often inject the coffin joint to see if we can get relief and get the horse more sound with just that,” Grimes shared. “The coffin joint is really close to the navicular bone, so we’re putting the steroid in very close proximity to the navicular apparatus without having to go into the bursa.

“I will come back and inject the bursa if I have to,” he continued. “I try to give them the benefit of the steroid to quiet things down.”

Fleming takes a similar approach, noting that injecting the coffin joint is his first-line choice unless a horse presents with a flexor surface deformity or an MRI shows inflammation within the navicular bursa.

### **Pulling All the Stops: The Palmar Digital Neurectomy**

In the majority of cases, horses with navicular syndrome can be successfully managed for many years through a combination of prescription shoeing and medication. But despite a veterinarian’s best efforts, sometimes the desired outcome simply cannot be achieved.

In these cases, a palmar digital neurec-

tomy—often referred to as a heel neurectomy or ‘nerving’ a horse—may allow a horse to continue in a career that otherwise would not be salvageable.

“I will recommend it as a last resort,” Fleming said. “If your horse is at the top of its game and you have a lot invested, sometimes it is an opportunity to extend its career. It’s a very heavy decision to make. If that horse can’t feel its foot, a lot of times things can get really bad before you know it—for example, an abscess that progresses to a bone infection.”

Grimes also recommends the procedure only when all other options have been exhausted. He cautions that, because the neurectomy severs the nerve and removes the horse’s ability to feel pain, it can result in a catastrophic injury, such as a tendon rupture that forces euthanasia.

“Once you have a neurectomy, it’s not just done or over,” Grimes said. “You still have to keep on top of the shoeing. I’ll still inject coffin joints. It’s not a complete fix.”

### **Finding the Future**

While receiving a diagnosis of navicular syndrome feels overwhelming, there are many viable paths forward.

“It is not the death sentence that it once was to a horse’s career,” Grimes encouraged. “But again, accurate diagnosis is key so that we can manage it correctly.”

Fleming is cautiously optimistic about the future for horses with navicular syndrome.

“At the end of the day, it’s still a degenerative process, and the vast majority of them are going to get worse over time,” Fleming said. “But we’ve gotten so much better about finding it early and finding methods to reduce inflammation and concussion, and the medication has certainly found its place in treatment. I don’t think it’s necessarily changed the end run, but I think we have been able to slow it to the point where we’re seeing a lot better quality of life, and longer careers, for these horses.” **BHN**

Jessica Lash is an Indiana-based freelance writer, dedicated barrel racer, and regular contributor to *Barrel Horse News*.