

Update on Navicular Disease

Explore the latest options for diagnosing and managing this confounding lameness.

By Toni McAllister

6-9-2005

Veterinarians and researchers often debate the semantics and definitions of navicular disease, navicular syndrome and navicular-type pain. Susan Dyson, MA, VetMB, Ph.D., FRCVS, head of Clinical Orthopaedics at the Centre for Equine Studies at the Animal Health Trust in Newmarket, England, is considered a leading authority on lameness in the horse. When asked to clarify the murkiness surrounding this unfortunate equine condition, Dr. Dyson's response is quite clear. "I think navicular syndrome is a rather meaningless term, coined largely because historically we often were dealing with a horse's palmar foot [heel] pain for which we did not have a definitive diagnosis."

Dr. Dyson prefers the term navicular disease, but clarifies that it "should only be used for those horses with definitive abnormalities of the navicular bone." There are many other conditions that can cause pain in the heel area, but she cautions that they should not be put in the same pot as navicular disease.

Navicular disease is a chronic, or at least recurrent, lameness condition. Because of the navicular bone degeneration that occurs, some veterinarians put navicular disease in the same category as "degenerative joint disease," or arthritis, for which there is no cure.

You probably know a horse that's been diagnosed with navicular disease—perhaps it's your horse. But was the diagnosis accurate?

Navicular disease is far less common than most people think. Soft tissue injury/disease in the structures surrounding the navicular bone are far more likely than navicular disease. Interestingly, many sound horses show navicular bone changes on radiographs (X-rays), while many horses suffering "navicular-type" pain have clean X-rays. For these reasons, it's probably unwise to label a horse as having navicular disease without thorough diagnostics to back it up.

The Horse's Achilles Heel

The navicular bone is a very complex component of the horse's foot function: It's a pivot point at the back of the coffin joint, crisscrossed by ligaments and cradled by the deep digital flexor tendon, which extends the length of the leg and attaches at the bottom of the coffin bone. The navicular bone stabilizes the deep digital flexor tendon to the coffin bone; a tiny sac called the navicular bursa acts as a cushion between the tendon and navicular bone. While a diseased navicular bone can cause pain in the horse's heel region, so can any one—or several—of these structures if there's a problem.

Diagnosing Heel Pain

Besides navicular disease, there are many things that can cause pain in the horse's heel region. Here's a look at where things can go wrong:

- * Strained distal sesamoidean impar ligament
- * Changes of the collateral ligaments (visible with MRI) of the navicular bone
- * Mismatched feet (usually one foot has a long toe/low heel, while the other foot is more upright)
- * Deep digital flexor tendon lesions
- * Adhesions between the deep digital flexor tendon and the distal sesamoid bone
- * Fibrocartilage on the bottom of the navicular bone
- * Navicular bursa inflammation
- * Hypertension of blood vessels within the marrow of the navicular bone

* Coffin joint arthritis When a horse is painful in the heel area, there is always a possibility of fresh trauma. Heel pain related to an injury is sudden—a bad landing from a jump, too much pounding on pavement. Primary soft tissue injuries of the deep digital flexor tendon, collateral sesamoidean ligament, distal sesamoidean impar ligament or collateral ligaments of the distal interphalangeal joint, for example, all present as heel pain.

Of course pain in the heel area can also have a slow onset, indicative of degeneration of the navicular bone, or navicular disease. Dr. Dyson says she also sees horses with both navicular disease and soft tissue injury or disease.

Diagnosis

Before the advent of more sophisticated diagnostic tools, the cause of pain in the palmar area of the foot was difficult to pinpoint. Now, using traditional diagnostics such as X-ray and local analgesic techniques (nerve blocks), along with the advancement of ultrasound, scintigraphy and magnetic resonance imaging (MRI) for use on equines, finding the cause of heel pain in horses has become a much more precise science. Looking into the foot with MRI, it is possible to view bone and soft tissues in great detail, on images that resemble sequential slices, just as we would see inside a loaf of bread, slice by slice.

"I strongly believe that MRI has revolutionized our ability to diagnose causes of palmar foot pain and is helping our understanding of the disease processes," Dr. Dyson says. "We can now tailor therapy to the specific injuries/diseases."

In the case of navicular disease, Dr. Dyson believes MRI really complements traditional X-ray. "I think that we are now in a better position to interpret radiological abnormalities of the navicular bone, based on our experience with MRI. Since the advent of MRI, we have become aware that there are probably several different types of navicular bone disease that may not be due to the same causes."

Considered a breakthrough on the diagnostic front, "standing" MRI is being used at a few equine hospitals across the country to evaluate soft tissue and bone (done while the horse is standing and only mildly sedated). Traditional MRI requires that the horse be laid down under general anesthesia.

Diagnosing any lameness can get expensive. Nerve blocks and X-rays are just the beginning. If you opt for additional diagnostics, your horse may need to be transported a long distance to receive scintigraphy, ultrasound or MRI. Fees can quickly escalate to \$1,000 or more, depending on tests, but since the future performance of the horse is at risk, this may be a good investment. "Do it now or do it later" applies here. Evidence of injury early on may save time and money on expensive shoes or medications.

In addition to diagnostics, help your veterinarian by researching your horse's past if possible. If you know your horse's bloodlines, what evidence of navicular disease is present in your horse's dam and sire? Are other offspring of either parent compromised by similar lameness? While this information may offer clues, family history is subjective. Research is ongoing as to whether genetics play any role in navicular disease.

Managing Navicular Disease

The prognosis for horses with navicular disease is uncertain. Even with the best possible care, some horses continue to be lame. Given this information some owners retire their mounts, while others attempt to manage the disease and keep their horses in work. Neither decision is right or wrong, but ensuring the horse's quality of life is always the first priority. Some horses simply need a career change or to work only on soft footing. Here's a look at commonly used therapies:

Hoofcare: Keeping the hooves balanced and trimmed on a regular basis is foremost in managing all horses. Conditions like long toes/low heels, sheared heels, sheared frogs, wall flares and contracted heels are signs of feet in trouble. Whether they are the cause or effect of a lameness problem is not as relevant as devising a plan to restore hoof balance through proper trimming and management.

Manipulating foot support to relieve pressure on the heel area is a key concept in therapeutic farriery. The most essential elements of managing horses with heel pain are to ensure, 1) that the hooves are balanced and level; 2) that the farrier eliminates a long toe condition; and 3) that the horse is shod to the widest part of the frog to provide ample support of the rear of the foot.

Before applying any corrective shoes, care should be taken to allow the foot to recover from imbalance and contraction, and to benefit from healthy circulation. Many farriers and vets prefer resting the horse for weeks or months without shoes, in hopes of encouraging better support and circulation within the foot. But some of these horses are too painful when

shoes are removed for extended periods of time, so this may not be possible.

Wedge pads and bar shoes were state-of-the-art therapeutic treatments 10 years ago, and are still successful for short-term therapy on some horses, but farriers are careful about applying devices that may actually lead to more problems for the horse. Wedge pads can actually cause more heel compression, and there is a downside with bar shoes, even when properly applied: They are heavy for the foot to lift and can cause increased tension on the deep digital flexor tendon and navicular apparatus.

When it comes to shoeing a horse with navicular disease, experienced farriers often begin by extending the base of support under the foot and by increasing the width of the shoe. Narrower shoes may sink deeper into the ground and force the horse to work harder; a wider shoe is more likely to "float" the horse over the surface and increase ground contact. Sole-support materials such as dental impression material or urethane fillers are another way to dissipate the load over a larger surface.

But what works for one horse may not work for another, and what works for one farrier often won't work in the hands of another.

A more recent advance in farriery is the use of foam pads or blocks duct-taped to the horse's hoof to manage pain. More and more farriers are carrying and using these blocks for all sorts of hoof pain conditions, particularly laminitis. Marketed by companies such as Equine Digit Support System/Natural Balance, these foam pads are used to break the cycle of pain by encouraging the horse to load the back of the hoof. The same protective "cushion" can be achieved using boots such as Old Macs, Boa Boots or Easyboots.

Drug Therapy: Nonsteroidal anti-inflammatory drugs (NSAIDs), such as bute, Banamine and naproxen, are among the medications most commonly used to manage inflammation and pain associated with navicular disease. They are not a cure but can be very effective management options.

Isoxsuprine hydrochloride has long been prescribed for horses suffering navicular disease to improve blood flow to the feet. Many veterinarians continue to prescribe it, but in horses its effectiveness has not been proven.

Injections: Injecting the coffin joint and/or navicular bursa has become a common therapy for managing inflammation of structures within the hoof. Coffin joint injections of corticosteroids and/or hyaluronic acid are fairly easy for most veterinarians to do and many feel they are a valuable treatment option. The relief a horse might get from a coffin joint injection is temporary, needing to be repeated once or twice a year. Injecting the navicular bursa is not as easy and relief is usually temporary.

Another available therapy is intramuscular injections of polysulfated glycosaminoglycan (Adequan) to help control inflammation.

Surgery: There are different surgical procedures that have been performed to relieve pain associated with navicular disease, but a neurectomy, or "denervating," is the long-preferred surgical option in this country. A neurectomy involves cutting the palmar digital nerves that run to the horse's heels. While a horse will retain some feeling in the foot, a neurectomy can help diminish or even eliminate pain in the heel area, but is not a cure. Many veterinarians hesitate to perform the operation because the nerves will grow back, and there is always risk associated with it including infection and the formation of painful neuromas. A neurectomy is not considered a difficult procedure, and in many cases can be performed while the horse is standing.

Extracorporeal Shock Wave Therapy (ESWT): This noninvasive procedure uses pressure waves to stimulate bone remodeling and blood flow to promote healing. In the case of horses suffering from navicular disease, ESWT has given some researchers reason to be optimistic. A recent study (Extracorporeal Shock Wave Therapy for Treatment of Navicular Syndrome, Scott McClure, DVM, Ph.D., et al, 2004) showed that ESWT does decrease lameness in horses suffering from what the researchers term navicular syndrome. However, the therapy is controversial among veterinarians in that there are analgesic effects with ESWT that may last for several days, but long-term relief is not as certain. Also, researchers have yet to demonstrate why or how ESWT works, and multiple ESWT sessions may be required to see any benefits. Since the procedure is noninvasive, there is a very short recovery period, generally one week of stall rest followed by a few weeks of hand walking and groundwork.

Exercise: Oftentimes veterinarians will prescribe exercise to help manage a horse with navicular disease, and a light workload can benefit many. However, keep in mind that footing can play a major role, and some horses actually develop heel pain when they change training surfaces. Generally speaking, most horses with navicular disease seem to travel

better on soft ground that is not too deep. Evaluate stall bedding, too. Cushioning stall mats may be worth a try during lay-ups or for long-term management.

If the horse's condition permits turnout, extended time outside the stall is typically recommended for horses with navicular disease to increase circulation and blood flow to the feet.

Rest: While some rest may be beneficial for horses suffering from navicular disease, light work is more often prescribed.

If your horse has been accurately diagnosed with navicular disease, work with your veterinarian and farrier to determine the best course of action to manage the condition. A true cure for navicular disease is still elusive, but management options are available.

Further Reading
Research Needed to Better Understand Navicular Disease

This article originally appeared in the July 2005 issue of Horse Illustrated. [Click here to subscribe.](#)