

The Latest Views on Navicular Syndrome in Horses

Researchers continue to look for effective treatments for navicular syndrome, a common, yet complex degenerative condition in horses.



By: [Kimberly French](#) | August 11, 2019

When anyone that works with or owns horses hears the term navicular syndrome, it often strikes fear in their heart – and fear that the medical bills will begin to pile up.

Navicular syndrome, which is also referred to as navicular disease or caudal heel pain syndrome, is a degenerative condition that impacts the structures in a horse's heel and was first recognized as a condition in 1752. It is named after the navicular bone located at the back of the heel, the primary purpose of which is to provide a smooth surface for the deep digital flexor tendons to wrap around prior to connecting to the coffin bone. However, navicular syndrome occurs for a variety of reasons and presents itself in many ways, which do not always involve the bone itself.

“Navicular disease is a commonly-used term in the field of equine medicine and one that despite its name is not dependent on a pathology of the navicular bone itself,” wrote Sandra Eriksson in her 2018 Master's thesis for the Lithuanian University of Health Sciences Veterinary Academy. “The term has various definitions which are often the cause of confusion among publishers in the field of veterinary medicine. Navicular disease is a complex set of disease processes responsible for one-third of cases of chronic forelimb lameness in horses in North America and it is well known that it often, although not exclusively, involves the navicular bone. The pain and dysfunction resulting from the degenerative processes occurring in the navicular bone and its supportive structures makes it one of the most important diseases in the field of equine veterinary medicine.”

Signs, symptoms, and causes of navicular syndrome

The most symptom of navicular syndrome is lameness. Although the degrees of lameness vary, the most frequent situation is slight lameness that increases in severity over time. A horse with navicular syndrome experiences pain in the heels of the front feet (this condition is very rare in the hind feet) and it will move to relieve the discomfort stemming from pressure on the affected foot. When a horse with navicular syndrome is standing, the foot that is most painful is usually “pointed” or placed before the other front foot so it bears as little weight as possible.

Another sign a horse has navicular syndrome is a shortened stride, as a horse normally places his or her heel down first when moving, but will now revert to placing the toe first. Also, horses with navicular issues can no longer turn sharply, traverse rocky or hard ground, and cannot comfortably go down hills.

A horse can become quite difficult to manage while being shod, because as one leg is lifted for hoof care, the pressure increases on the other front leg, which can be extremely painful.

The exact cause, or causes, of navicular syndrome remain unknown. Like many other forms of lameness, it is probably a number of factors working in conjunction that are the culprit. Larger horses with small hooves and horses that perform over hard surfaces with repeated pressure on the front legs from activities such as jumping, roping, and reining compose the majority of the cases. It has also been noted that navicular disease could result from poor farrier care and techniques that inhibit interaction between the frog and the ground.

While any horse can develop navicular disease, research has demonstrated that Thoroughbreds, Warmbloods, Quarter Horses, Paints, and Appaloosas have a higher likelihood of suffering from this condition. It also appears that horses with unhealthy hooves and horses that are growing older (between the ages of 7-14) are more prone to develop navicular syndrome.

“It is well-known that hoof conformation and hoof angles have a tremendous impact on the forces acting on the navicular bone,” wrote Eriksson. “The relationship between this and the actual pathological findings, however, is poorly understood and remains open to speculation.”

Diagnosis and treatment of navicular syndrome

Determining the exact cause of any form of lameness can be challenging for veterinarians. In order for a horse to be diagnosed with navicular syndrome he often must undergo a number of tests such as nerve blocks, pressure tests, hoof and block pressure examinations, X-rays, venograms, ultrasound, thermography, scintigraphy and magnetic resonance imaging (MRI).

As there is no cure for navicular syndrome, treatment involves managing the condition. Proper trimming and therapeutic shoeing can provide some pain relief, and farriers often implement bar shoes or egg shoes to protect the frog when navicular syndrome is present and focus on shortening the length of a horse’s toe.

Navicular syndrome can be treated with anti-inflammatory medications injected in the hoof or given orally. Polysulfated glycosaminoglycans and hyaluronic acid also seem to help horses with pain management and slow disease progression. Also, nonsteroidal anti-inflammatory (NSAIDs)

medications are often given to affected horses to ease their discomfort. The combination of medical treatment combined with therapeutic shoeing is reported to be helpful in about 60% of affected horses.

In extreme cases in horses that cannot be made comfortable with medication or shoeing, palmar digital neurectomy ('nerving', where a segment of the nerves in the back of the pastern are surgically removed) may be a final alternative. While it provides long-term pain relief, it does not correct the underlying condition and the increased load on the structures may accelerate degeneration, causing rupture which requires euthanasia.

Dr. Kenneth Marcella, writing for DVM360, discusses how over the years many therapies have been used with different degrees of success, but a tried and true treatment has yet to present itself to veterinarians. "Frustration with the condition continues principally because horses continue to be affected by navicular problems," he reports. "No treatment to date has been found to be universally effective, and the veterinary community is still searching for a better solution. It has been estimated that one-third of all chronic lameness cases in horses are related to navicular issues."

Controversial drugs for navicular syndrome

In 2014, the U.S. Food and Drug Administration (FDA) approved the use of Tildren and Osphos for the treatment of navicular disease. At first, veterinarians were hopeful these medications, which are bisphosphonates, would be successful in managing navicular syndrome. Some issues, however, have arisen when the medications are used but the guidelines for its administration are not followed.

"Bisphosphonates are a class of drugs originally used to treat problems with bone loss in people," Marcella explained. "Bone is a constantly changing structure, and older bone is always being removed and remodeled into newer bone based on the stresses and pressures put upon it. This response of bones to strain, called Wolff's Law, was described by Wolff in 1892. For horses, this law can be restated to say that as increased loading or weight-bearing occurs in regularly worked horses, bone remodeling or 'turnover' also occurs in response to that stress.

"In other words, certain parts of bones become thicker and more dense to respond to an increased load and other parts may become thinner without load pressure. This remodeling of bone is accomplished by the action of osteoblasts and osteoclasts. Osteoblasts work more slowly and produce new bone. Faster-working osteoclasts resorb and remove bone."

Recently, the American Association of Equine Practitioners (AAEP) in conjunction with the Racing Medication & Testing Consortium (RMTC) issued a research proposal to determine how bisphosphonates truly perform. Both organizations would like to examine if administration of the medication is doing more harm than good in the racing industry.

According to the proposal, "A major concern among racing regulators, veterinarians and horse owners is the potential effects of bisphosphonates on the ability of bone to withstand the rigors of racing and training. This is of concern for not only the racing population, but also the effects of

administration on young horses prior to auction. There is significant speculation, but not much information, on how these substances affect long-term health and soundness.”

It remains to be seen what results this research will provide and if bisphosphonates will remain as a new treatment option for navicular syndrome.

What does the future hold for horses with navicular syndrome?

Thanks to MRI and other forms of imaging contrast-enhanced computed tomography (CECT), diagnosing and understanding navicular syndrome has certainly vastly improved.

“Over the past few decades, the development of magnetic resonance imaging (MRI) for the diagnosis of equine lameness has revolutionized our understanding of what used to be termed ‘navicular disease,’” wrote Mathew Stewart in a 2017 edition of *Veterinary and Comparative Orthopaedics*. “Prior to MRI, navicular disease was diagnosed primarily by a positive response to palmar digital nerve blocks (PDNB) and identification of characteristic radiological findings ... Given the limited diagnostic options that were then available, response to therapy was far from predictable.”

Unfortunately, there is much farther to go before this condition can fully be comprehended by the veterinary community.