



Horse Care

Dealing With Suspensory Injuries

by **HEATHER SMITH THOMAS**

Suspensory injuries are common in horses. The suspensory ligament lies between the flexor tendons and the cannon bone, and is a broad, elastic band that keeps the fetlock joint from going clear down to the ground when weight is placed on the leg. The extensor branches of this ligament (going from the fetlock joint to the front of the pastern) keep the pastern joint from buckling forward. Injuries to this shock-absorbing support system are often very debilitating and slow to heal. Suspensory damage is sometimes a career-ending situation.

Diagnosis

Kent Allen, a veterinarian in Middleburg, Virginia, has a practice that deals with equine lameness, diagnostic imaging and prepurchase exams. When diagnosing suspensory ligament injury, Allen says the basics include a thorough clinical evaluation and palpation of the leg. "We pay particular attention to the size, shape and consistency of the suspensory ligament, because pain alone can fool you many times." He says a lot of horses that are completely normal will react to squeezing their suspensories, so a person must evaluate the ligament itself.

"Once you get past the clinical examination, there are several ways to diagnosis this, depending on where the damage is." If it's in the origin of the ligament (where it attaches to the bone, often called a high suspensory injury), he feels that bone scan (nuclear scintigraphy) is the best method for confirming the diagnosis. Because the ligament is attached to the bone at its origin, any inflammation in this area shows up very well in a bone scan.

"This is a difficult area to palpate. Sometimes these horses are sore and sometimes not, but if they've pulled the ligament at the bone—right where it originates—there is irritation on the

bone and it will show up on a bone scan," he says.

"In the proximal suspensory area—which is just the upper end of the ligament but not the origin, then ultrasound is a good tool for diagnosis. Some people use thermography, and that can be quite useful (looking at the heat pattern in the upper to mid area of the suspensory). Ultrasound and thermography are both helpful there, but ultrasound is the 'gold standard' we've used for many years. Lower down, in the suspensory ligament branches—the lower one-third of the ligament, at the fetlock joint—ultrasound and thermography are both used for diagnosis, but ultrasound allows you to look at those branches in great detail," he says.

"Where the suspensory branches attach to the bone, we look at that with ultrasound and x-rays—we want to know what's going on with the sesamoid bones where these branches attach," says Allen. The forward branches (to the front of the pastern) are usually not clinically important, he says, because they are rarely injured. "You can diagnose those with ultrasound and/or x-ray in that area." Diagnostic nerve blocks can help determine the area of injury and pain, and then the bone scan, ultrasound, thermography or x-rays are used to pinpoint exactly what is injured.

Treatment

After the injury is diagnosed, the first step is to reduce swelling by using anti-inflammatory drugs, cold hosing, cold boots, physiotherapy, wrapping, etc. says Allen. The quicker you can get the inflammation reduced, the better. Then a veterinarian must decide upon a course of treatment. Allen likes to use high energy shock wave on suspensory injuries and has had tremendous luck with this type of treatment, he says. "We've used shock wave therapy on almost every area of the suspensory, and find it very useful. We've had better luck with the high energy focused shock

wave than the low energy treatment."

Allen says shock wave works much better in early cases than in long-standing injuries. "If you can treat the horse in the first 30 days, you get a much better effect. I usually try to get the heat and swelling out of the injury—which takes about a week—and then use shock wave therapy. The mechanical energy of the shock wave itself seems to help push some of the fluid and edema out of the suspensory ligament, which speeds healing. One of the main purposes of treatment is to get fluid and swelling out of there so the ligament fibers can get closer together and heal quicker."

In older, chronic cases, he has used a variety of treatments over the years—from therapeutic ultrasound to injections of iodine and peanut oil. "The most important thing with chronic cases, however, is how you rehabilitate them. I use graduated, controlled exercise and I ultrasound them many times. I often check with thermography also, because sometimes there's not much change on the ultrasound. The fiber pattern won't heal any further. Sometimes it stays that way for the rest of the horse's life," says Allen.

"The question then becomes—is there inflammation? If you wait for it to heal, looking at it with ultrasound, you may wait for several years. But if you wait for it to look reasonable on ultrasound, and enough time has elapsed (about six months), you want to then check for inflammation as you start increasing the horse's exercise level again. That's the more important question."

"In that regard, thermography becomes more useful, sometimes, than ultrasound—in the later stages—for checking the progress of healing. It's a bit of a balancing act. You have to be at least six months along, usually, for this to be a useful tool."

New Surgical Technique

Nathaniel White II, DVM, MS, Dipl. ACVS is Chief of Surgery at the Marion DuPont Scott Equine Center

(Leesburg, VA). He has been doing experimental surgery on suspensory ligament injuries, with a technique that is similar to tendon splitting.

"In front limb injuries there are some cases in which this splitting technique appears to be helpful. One is when the injury occurs where the suspensory attaches to the sesamoid bones. This also works well in the rear limb. We've been able to take horses with chronic problems (that would not heal) and do the splitting technique and have it heal," he says.

"We use ultrasound to guide the blade directly into the damaged ligament, and we scrape or puncture along the bone where it attaches. This stimulates the blood supply by opening up that area where the blood can't get in." If you look at these lesions under a microscope, one will see a very dense, bloodless scar, explains White.

There are no blood vessels in that area. "We are not sure what happens with the splitting, but since the horses do well afterward, we assume we've been able to get new blood supply and new healing. There also appears to be some new attachment back to the bone during the healing process." The torn ligament reattaches back to the bone more readily.

"We've done this a lot in the rear leg, also, in a high injury where the ligament attaches to the cannon bone just beneath the hock. We don't have all the results in yet, but we started doing this two years ago and have had horses return to complete soundness."

"The ligament is surrounded by connective tissue, where it attaches to the cannon bone. It's like a dense, tough compartment that's full of pressure after the injury damages it. It does not allow blood to flow in—because of the swelling and the increase in tissue pressure. By doing this fasciotomy, and by splitting deep (going down to the bone where there is a pulling loose of the attachment) and scraping or puncturing the bone, we increase the blood supply. It enables the blood flow to return. We've had very good success with having these heal back in, and it looks like the attachment has been improved," he adds.

He has usually done this with older injuries—the cases that have not healed with rest. "We have done some that were a couple months old and have had other horses that were injured, rested, brought back into work and reinjured. We did some of these a year after their initial injury, and have had good success," says White.

He feels that in some ways this technique is similar to bone marrow injections because the area has to have the same kind of penetration to get the bone marrow in. "The question, then, is whether the bone marrow is really necessary or is it the physical disruption? It doesn't matter—as long as it heals."

With the surgical technique, there have been no reinjuries yet on the ones he has done, so this is quite encouraging. "The horses are put under general anesthesia for the procedure, because it must be quite exact—the horse must not move. It doesn't take long, however, and we use ultrasound for exact positioning of the blade through a very small incision. We use a sharp scalpal blade or tendon knife (which is basically just a permanent scalpal with a sharp point) which goes deep enough to scrape the bone."

He explains that this is very similar to tendon splitting, but "we pay attention to the bone attachment as well as opening up the outside of the ligament. You can't help but open up the ligament when you do the split, and this may be what gives the most benefit. Either way, it's working, and that's the important thing."

He stresses the point that this does not speed up the healing. "When people hear about new techniques, they often think it will make the injury heal faster. This technique does not speed it. In other words, it still takes just as long to have these horses heal and get back into work (usually six months or longer), but we feel the end result is better." The recovered horse is more apt to stay sound after healing, with less risk for reinjury. This is true with almost any technique, he says. "You really need to wait for it to fully heal before you stress the horse again."