

Daniel P. Keenan, DVM

Lynsey D. Makkreel, DVM

Talia M.A. Lin, DVM



## **SUSPENSORY LIGAMENT DAMAGE**

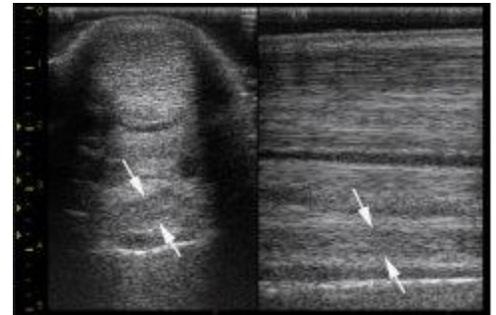
The suspensory ligament supports the fetlock and protects it from hyperextension (dropping too low) at exercise. The ligament begins at the back of the upper cannon bone in both the fore and hind limbs. It runs downwards close to the back of the cannon bone before dividing into two branches each of which attaches to one of the sesamoid bones at the back of the fetlock. Some fibers continue and attach to the upper pastern area on the front of the leg.

### ***How does the suspensory ligament become damaged?***

The ligament and its branches are strong but only slightly elastic. Excessive stress can occur to the ligament when a horse lands after a jump, when it travels at fast speeds or applies excessive force to the area. Essentially, an over-stretching injury can occur resulting in damage to the ligament. The damage may be only slight tearing of fibers at any level, however the origin (the upper cannon bone) or the branches are more commonly affected. The damage is usually accumulative over a period of time and may be considered a type of “repetitive strain injury”. Alternatively a ‘core lesion’, or hole, can be seen with ultrasound in the body or branch of the ligament where a number of fibers have ruptured. These injuries usually have a more sudden onset. Complete rupture may occur, in extreme cases, but this is fortunately uncommon.

### ***How can I recognize that my horse has damaged his suspensory ligament?***

Clinical signs vary with the site of the injury and the severity of the damage. When the origin of the suspensory ligament is damaged there is usually no heat or swelling but there may be some pain when the area just below the back of the knee or hock is pressed firmly with the leg in a flexed position. In these horses the lameness may be subtle and (especially in the hind limb) often develops gradually and goes undiagnosed for some time. In the fore limbs the lameness may be inconsistent and somewhat variable. When the hind limbs are affected, the lameness is usually more consistent. The horse may warm out of the lameness and the lameness is usually more obvious when the horse is exercised on a soft surface and in a circle. Typically a horse will be more lame when the affected leg is on the outside of a circle. In many cases the horse may show signs of poor performance but no overt lameness.



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Daniel P. Keenan, DVM      Lynsey D. Makkreel, DVM      Talia M.A. Lin, DVM

183B Bordentown Crosswicks Rd, Crosswicks, NJ 08515

Ph: 609-291-0535 Fax: 609-291-8899

[www.foundationequinenj.com](http://www.foundationequinenj.com)      info@foundationequinenj.com

With injury to the branches, there is usually thickening of the affected region. Warmth and tenderness may or may not be present. A varying degree of lameness will be present. If the ligament is ruptured, the fetlock will sink towards the ground, fully or partly, depending on the completeness of the rupture. Suspensory ligament rupture is most commonly seen in older brood mares and occurs due to degeneration of the ligament rather than related to an athletic injury.

### ***How are suspensory ligament injuries diagnosed?***

An initial diagnosis is based on the results of history, clinical signs, (heat, swelling and lameness), nerve blocks and radiography, the latter to rule out bony abnormalities. Ultrasound examinations are essential to definitively diagnose and quantify the degree of damage to the ligament.

### ***What treatment options are available and can my horse make a full recovery?***

Again this depends on the site and severity of the damage and how quickly the condition is diagnosed.

**Proximal Suspensory Desmitis** - In the fore limbs the prognosis is good. The most conservative therapy is simply a period of convalescence and rehabilitation. Given enough time most ligaments will heal, however an owner may not always have the luxury of time. Additionally, the suspensory ligament will heal by forming scar tissue instead of generating new ligament. Scar tissue has even less elasticity than ligament and therefore is more likely to tear again. There are some additional therapies that have been developed in the last couple of years that aid to speed healing and promote the formation of ligament rather than scar tissue. Shock wave therapy is commonly used in the treatment of suspensory desmitis. This instrument emits high energy sound waves which help stimulate healing. The typical protocol is a series of 3 shock wave treatments two to three weeks apart. In addition to this, there are several new products on the market that are made to be injected directly into the affected ligament. A-cell, Stem Cell Therapy (VetStem) and Platelet Rich Plasma have all been found to have a positive effect on the quality and speed of healing. Currently there is no conclusion as to which product works the best and it seems to be a matter of individual veterinary preference as to which gets used. Occasionally a steroid will be injection into the region of the origin of the ligament. This procedure is used only when there is swelling but no significant tearing of the fibers. The steroids will help reduce the inflammation present but will also slow down healing if fiber tearing is present. In the hind limbs the prognosis for conservative treatment is not as good as the anatomy of the hind limb is slightly different than that in the fore limb which complicates the healing process. Shockwave therapy and medication of the site of injury may be successful depending on the degree and duration of lameness. If this fails a surgical procedure called a 'Plantar Metatarsal Neurectomy and Fasciotomy' can be performed. This is a very common procedure and has a much higher success rate.



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**Suspensory ligament body and branch injuries** - Minor damage to suspensory body and branches will usually repair given sufficient time. This usually means box rest initially with physiotherapy, such as cold hosing, to reduce inflammation. In acute injuries where a core lesion is present, the same substances as described above (A-cell, VetStem, Platelet rich plasma) can be injected directly into the damaged area of the ligament under ultrasound guidance. These as mentioned before are aimed at improving the structure of the healing tissue and vary in efficacy and popularity. Your veterinarian will advise you if this form of treatment may be appropriate for your horse. In more chronic cases, shockwave therapy is commonly used, followed by a period of controlled exercise, the duration of which depends upon the initial amount of damage. Lameness associated with more severe branch injuries may persist due the amount of 'fibrosis', or 'scar tissue', which forms around the branch itself. In these cases a surgical procedure call 'suspensory branch splitting' may be required. In cases where a fragment of sesamoid bone has broken away with the damaged ligament (avulsion fracture), the prognosis is poorer.

The prognosis is grave for cases of complete ligament rupture even with several months rest and euthanasia may be required on humane grounds.

### ***What can be done to follow the repair process?***

With body or branch injuries, sequential ultrasound scan examinations are the most useful way to monitor the healing process. In the case of proximal suspensory desmitis, ultrasound changes often lag behind the improving clinical picture and the degree of lameness is often used to assess how well the horse is responding. Depending on the degree of damage, follow-up scans should be performed at one and three months and certainly before any significant increase in exercise level. Any increase in exercise should be made gradually to avoid over stretching the incompletely healed tissues.

### ***Is the injury likely to recur?***

Ligaments are made up of fibers that run along their length in a regular, well-organized manner. When the fibers are damaged some heal in an irregular, criss-cross pattern rather than lengthways. Also, the repaired tissue is different in structure and mechanical properties than the original, healthy ligament tissue. Therefore the ligament will always be compromised in structure and function rendering it susceptible to re-injury. However, if the horse is given sufficient time for repair and a careful and sensible approach is made to re-introduction to exercise, re-injury is less likely to occur.

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