Tendon injuries: Treatment and prognosis

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Tendon injuries can be subdivided into two major categories:

1. Overstrain and,
2. direct penetration (e.g. wounds).

The treatment protocols discussed here focus on overstrain injuries to the superficial digital flexor tendon (DDFT) and the deep digital flexor tendon (DDFT).

The healing can be grouped into three phases with different treatments targeted at each:

Inflammatory Phase:
The first 7 days after the initial injury, the aim is to limit further inflammatory phase at 2 to 30 days post-injury. The treatment aim is to limit inflammation. This can be achieved in three ways:
1. Cold hosing of limb.
2. Support wrap to reduce swelling from accumulating in the lower limb.
3. Anti-inflammatories (e.g. Bute paste), when prescribed by your veterinarian, will reduce inflammation, swelling and pain associated with tendon injuries.

Repair Phase:
The repair phase overlaps with the inflammatory phase at 2 to 30 days post-injury. The treatment aim is to limit further damage and influence early tendon healing. This can be achieved in three ways:
1. Confinement in a stall will reduce further damage in the first 7-14 days after the initial injury. After 7-14 days, the aim is to influence tendon healing by providing low intensity exercise such as hand walking.
2. Regenerative medicine products. This is a branch of human and veterinary medicine whereby natural products are harvested from the patient or ‘donor’ of the same or different species to treat medical and orthopaedic conditions. Below are two products that are commonly used to treat tendon injuries in the horse:
   - Platelet Rich Plasma (PRP)
   - Stem Cells

Remodelling phase:
The remodelling phase starts later than 30 days after the initial injury, and is the phase where exercise intensity and the size of the yard or paddock can be gradually increased. Your veterinarian will schedule an ultrasound examination every 1-3 months depending on the initial injury to monitor the progression through the rehabilitation period.

For PRP (Platelet-rich Plasma) therapy, your veterinarian will take blood from the vein of the patient using aseptic technique, spin it down in the lab and prepare a small fraction of concentrated plasma. This is injected back into the hole in the tendon, using the ultrasound machine to determine the correct location.

For Stem Cells, tissue harvest is done using ultrasound guidance. The platelet rich plasma concentrate contains growth factors and anti-inflammatory proteins that aid in the healing process.

Stem Cells can be harvested from bone marrow, adipose tissue, or a donor of the same or different species to treat tendon injuries in the horse.

Platelet Rich Plasma (PRP):
Platelet Rich Plasma (PRP) is a PRP concentrate that is injected into the lesion under ultrasound guidance. For PrP (Platelet-rich Plasma) therapy, your veterinarian will take blood from the patient’s jugular vein and prepare a small fraction of concentrated plasma. This is injected back into the hole in the tendon, using the ultrasound machine to determine the correct location.

Stem Cells:
Stem cells can be harvested from bone marrow, adipose tissue, or a donor of the same or different species to treat tendon injuries in the horse.

Stem cells are harvested from the bone marrow of the injured horse. In this case, bone marrow is being aspirated from the sternum. The sample is then sent to a specialist laboratory, and a few weeks later, the stem cells are sent back ready to be injected into the lesion site.

Platelet Rich Plasma (PRP) is often used in conjunction with Stem Cells to treat induced superficial digital flexor tendon (SDFT) lesions as a model of connective tissue injury.
Tendon injuries do generally not cure themselves by spelling the horse in.

If you suspect a tendon injury in your horse, contact your vet so he or she can establish a diagnosis and develop a treatment and rehabilitation program.

Tendon injuries can be challenging to diagnose and treat. A mechanical walker or time available to exercise the horse are required to implement a graded exercise program.

Therapeutic Farriery
The importance of appropriate farrier care cannot be over emphasised when discussing tendon injuries.

A shoeing interval of 4-6 weeks is important to ensure the toe doesn’t become long and to ensure the mechanics (including the breakover) of the foot are optimised. For injuries of the SDFT, a rolled toe, wide webbed aluminium shoe is a good choice. By raising the heel of a horse standing on a hard surface, the strain on the DDFT is reduced, while the strain is increased in the SDFT. Therefore, it is important to shoe a horse with a DDFT injury with a raised heel shoe and house on a firm surface to enable the mechanics of the shoe to work effectively.

Prognosis
The factors that influence the likelihood your horse will return to work at the same level of performance include:
- Time from initial injury to diagnosis
- The longer the horse is left without diagnosis of a tendon injury, further damage can be occurring
- Degree of lameness on presentation
- Horses that present with a severe lameness are more likely to have a serious tendon injury that will be more difficult to treat and require a longer rehabilitation program.

Conclusion
Tendon injuries in the horse can be a serious cause of lameness, however early detection, a good relationship between your farrier and veterinarian, and commitment to a rehabilitation program can result in a sound horse. The use of regenerative medicine products (stem cells and PRP) have shown promising outcomes as an adjunct to a rehabilitation program.

- Tendon injuries come in many variations – a thorough veterinary examination is essential for proper assessment.
- Tendon injuries can be challenging to diagnose and treat.
- If you suspect a tendon injury in your horse, contact your vet so he or she can establish a diagnosis and develop a rehabilitation protocol.
- Tendon injuries do generally not cure themselves by spelling the horse in the paddock.
- Make sure you stick to the appropriate exercise protocol and follow up the status of the tendon injury before you start training your horse like you used to do.

- Size of the tendon lesion
- The larger the lesion (in diameter and length), the longer the rehabilitation period that will be required and the poorer the prognosis.
- Age of the horse; as the horse ages, the tendons become less elastic and prolonged periods of time are required for the healing process to be completed.
- History of a previous tendon injury
- Scarring from previous injuries are less elastic and tendons tend to re-injure either side of these areas of scarring
- Finance and facilities
- Treatment, such as stem cells and PRP can be expensive
- Stalls and yards of various sizes are required to house horses with tendon injuries
- A mechanical walker or time available to exercise the horse are required to implement a graded exercise program.

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