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Extensor tendon lacerations

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Anatomy
The long digital extensor tendon and the lateral digital extensor tendon course over the dorsal and dorsolateral aspect of the tarsus, respectively, joining together on the dorsal aspect of the proximal third of the third metatarsus (MtIII), to insert onto the extensor process of the distal phalanx. Their main role is to supply passive resistance to flexion of the distal and proximal interphalangeal joints (Rooney 1987).

Clinical presentation
Despite often having extensive soft tissue damage, the degree of lameness is usually minimal. Complete transection of both tendons results in a characteristic dorsal ‘flick’ of the foot towards the end of the forward swing phase of the stride, just prior to hoof placement. Knuckling over onto the dorsal aspect of the fetlock is usually seen in wounds where all extensor structures have been severed; however, some proximal wounds may have enough peritendinous fascial attachments present to prevent this from occurring, at least initially (Bertone 1995).

Treatment
Wounds should be assessed on presentation for extent of soft tissue damage, degree of contamination and for evidence of compromised distal limb perfusion. Distal limb perfusion is assessed by a combination of digital pulse palpation, colour-flow Doppler and subjective assessment of distal limb warmth. The main blood supply to the distal limb is via the lateral plantar metatarsal artery. This artery is directly below the skin in the proximal third of the limb, and is particularly exposed to exposure. This may occur several days after the initial wounding.

Wounds where only one tendon is severed do not have functional compromise and can be treated as simply a skin wound. These wounds are generally in the proximal third of the cannon and may involve the distal aspect of the extensor tendon sheath. They may drain infected synovial fluid for several weeks, but this can be expected to resolve with time, and is of little consequence.

Wounds where there is total loss of extensor tendon function are best treated with a bandage cast for a period of 4–6 weeks. This allows the extensor tendon to form an adhesion to the metatarsus, with the lower limb in a normal weightbearing position.

Counter-intuitively, small wounds may do much less well than larger wounds, as the fibrosis of digital tendon to cannon, which is necessary to maintain toe extension, may be tenuous in small wounds. This may be overcome by lengthening the wound and suturing a length of tendon to the underlying periosteum.

Complications
Sequestration is common. This will cause an increase in lameness, and possibly swelling above the cast, generally 10–14 days after initial injury. Radiography through the cast is confirmatory. The cast need not necessarily come off, if the lameness can be managed with nonsteroidal anti-inflammatory drugs (NSAIDs), and there is no tourniquet effect at the top of the cast due to ‘muffin-top’ swelling. Smaller sequestra may only be apparent clinically as a nonhealing discharging sinus tract, later in the healing process.

Bandage cast sores are also common, but often of limited significance. However, any sudden increase in lameness should prompt immediate cast removal.

Prolonged cast application should be avoided in weanlings, and especially foals. Catastrophic flexor tendon laxity can ensue, which can cause subsequent tendon rupture, or severe sesamoiditis. The younger the foal, the more quickly this can happen. Three weeks is a rough maximum time in cast for a foal under 4 months of age.

Stringhalt is a potential sequel to any extensor tendon laceration, but is considerably more common in foals managed using a cast. Exposed proximal tendon ends should be trimmed back to the level of intact peritendinous tissue, minimising the chance of adherence of the severed tendon edge to bone. In most cases this complication can be successfully managed by tendon transection proximal to the adhesion, or removal of the entire proximal tendon portion in cases of lateral digital extensor tendon adhesion.

When the animal has been walking on the dorsum of the fetlock, necrosis of dorsal fetlock tissue may lead to joint exposure. This may occur several days after the initial wounding.

Prognosis
Several retrospective studies have demonstrated that the prognosis for return to soundness is favourable (63–82%), with a fair prognosis for return to athletic performance (48–60%) (Baxter 1987; Belknap et al. 1993; Bertone 1995; Jansson 1995; Mespoulhes-Riviere et al. 2008). However, these studies were conducted either on mixed-use horse populations or on populations that almost entirely comprised sport horses. We conducted a retrospective analysis of 34 racehorses with completely severed extensor tendons, and found that the overall prognosis for return to racing in treated horses was 30% (Standardbred 50%; Thoroughbred 18%) (Elliot et al. 2012). All horses discharged were alive at the time of follow-up, >1 year after surgery.

References and further reading

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