How to Surgically Treat and Postoperatively Rehabilitate Acute Athletic Rupture of Superficial Digital Flexor Tendon (SDFT)

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Sectioning the palmar annular ligament of the fetlock within 3 to 5 days of injury, followed by continuous turnout for unforced voluntary exercise with no medication, restored nearly normal physical and ultrasonographic anatomy and strenuous athletic capacity following complete superficial digital flexor tendon (SDFT) rupture in 4 of 5 Thoroughbred geldings. Author’s address: 1038 Carters Line Road, White Post, VA 22663. © 2001 AAEP.

1. Introduction
Superficial digital flexor tendon (SDFT) rupture with fetlock joint hyperextension has been disappointing to treat. Box rest, support, medication, ultrasonic monitoring of healing, and graduated programmed return to exercise have been standard, time-consuming, and expensive. It seemed that the horse at liberty might elect as good or better self-rehabilitation, and that the annular ligament of the fetlock contributed to the tendon choking with persistent tendon deformity and disability so often resulting from this injury.

2. Materials and Methods
Five Thoroughbred race geldings with high-speed rupture of a foreleg SDFT and 30°–60° hyperextension of the M-p joint on weight bearing were donated for treatment within 1 to 3 days after injury. One had a “guillotine” rupture 3 cm above the proximal sesamoids, with 3 cm distraction of the ends. The other 4 had palpably and ultrasonographically discontinuous SDFT with more diffuse, ragged margins.

Surgical Procedure
The affected distal metacarpus was routinely prepared after intramuscular (i.m.) injection of 0.75 ml dormosedan and 3 ml procaine penicillin G. Regional anesthesia was given by subcarpal carbocaine infusion near the palmar metacarpal nerves. The affected leg was lifted and the M-p joint was cradled in the fingers of a surgically gloved hand, with the thumb palpating and marking the proximal border of the annular ligament. A 1.5 cm axial incision over the center of this margin was carried down to expose the margin. The tips of heavy (Kelly) surgical scissors were introduced, slightly open, so that one tip could be placed under the annulus, the other subcutaneously. The M-p joint was slightly flexed by the fingers of the holding hand. The scissors were advanced without further opening or closing, so the annulus was divided by the “V” between the tips. The advance was tracked by the holding hand’s thumb on the skin surface, down to the level of the distal border of the proximal sesamoids, where reduced resistance to the advancing scissors...
was felt. The scissors were removed, and the annulus palpated for completeness of the section. The skin was approximated with a single horizontal mattress suture, with minimal eversion.

Aftercare
The wound was covered with nonstick sterile dressing, flexible gauze wrap, quilting, and self-adhering (cohesive) bandage. The horse was stabled until the local anesthesia wore off or the next day, approximately 2–12 hours. The horse was 4/5 to 5/5 lame when sedated with 1.1 mg/kg Xylazine and turned out in a grassy paddock about 30 m × 50 m with a 6 m × 7 m, open-fronted shed. Either a quiet companion or visual contact with sedentary horses was provided to discourage compulsive running. Alfalfa–grass mixed hay was the sole supplement to grazing. The bandage and suture were removed in 7–10 days.

3. Results
All horses were 5/5 lame or nearly so for 1–3 weeks after surgery. They grazed and took considerable voluntary exercise, always with carefully protected injured/operated legs. Gradually, with some setbacks, the horses progressed to 4/5 lame for a few weeks, then more rapidly through 3/5. In 90–120 days they were generally 1/5, occasionally 2/5. The leg improved in profile and posture in parallel with the lameness. By 6 months after surgery, a limping step was very rare, and the tendon profile was straight. No horse developed contralateral laminitis.

All wounds healed by first intention. One horse became 4/5 lame at 3 months postoperatively in the opposite foreleg from progression of pre-existing carpiotis and was euthanatized. Within 1 to 2 years, the other 4 were in strenuous athletic occupations and have continued sound for 5, 4, 4, and 3 years of follow-up. One returned to steeplechasing, 2 went to eventing and foxhunting, and 1 went to show jumping. In all, expert examination was required to detect the operated leg. All had ultrasonically “acceptable dimensions and fiber pattern” in the affected SDFT, even the one with the 3 cm square-ended gap.

4. Discussion
In this limited series of subjects, SDFT rupture healed more anatomically (visual and ultrasonogram) and athletically than was the author's experience with traditional rest, re-examination, and programmed rehabilitation. Apparently, the tendon swelled as much as necessary after being surgically released from annular constraint, and the horse limped and exercised as much as necessary to do no further harm and organize the best replacement tendon. The initial swelling and limping may have discouraged other clinicians from pursuing this strategy. The cost-effective and durable recovery of 4/5 Thoroughbred geldings from rupture of the SDFT achieved by section of the annular ligament of the fetlock and unforced voluntary exercise with no medication, should encourage wider use of this strategy.

References