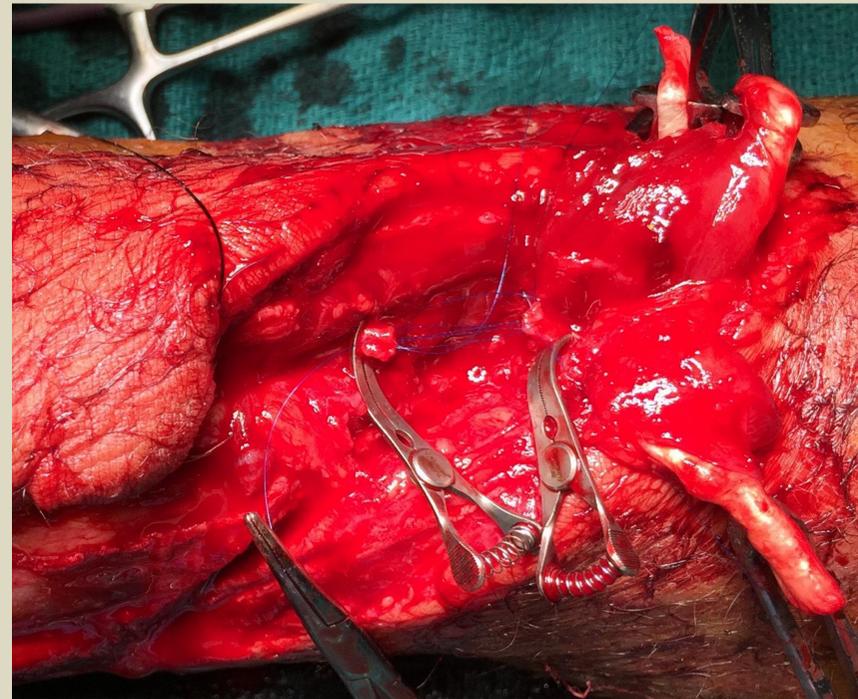


Purpose

Trauma to the extensor tendons of the leg can cause significant complications and long-term deformity. Trauma to the anterior tibial artery sacrifices a large source of arterial blood flow to the foot and ankle. Delicate and meticulous approximation of all structures can optimize functional results and restore vital blood flow.

Literature Review

Despite being less common than osseous or ligamentous trauma, tendon injuries in the foot and ankle present a significant management challenge to the physician and can demonstrate long-term functional consequences if not addressed correctly. Trauma to the anterior tibial artery sacrifices 1/3rd of the major arterial blood supply to the foot. A step wise approach to the complex soft tissue injury is imperative to insure optimal surgical results (1). Evaluation of the structures from superficial to deep is done to identify what structures have been affected by the trauma. Soft tissue viability is also assessed, as well as contamination of the wound. X-rays are taken to determine if there exists trauma to the bone. Irrigation and debridement is necessary to removed devitalized tissue and any foreign debris (2). The "zone of injury" must be determined to decide whether temporary wound coverage is needed or definitive wound closure (3,4). It's important to realize that long-term management and rehabilitation is required and plays a vital role in the surgical success and outcome (5).

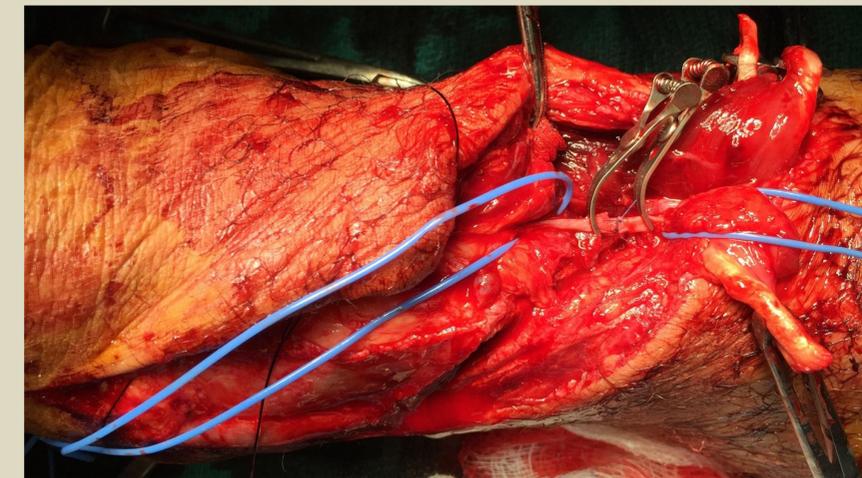
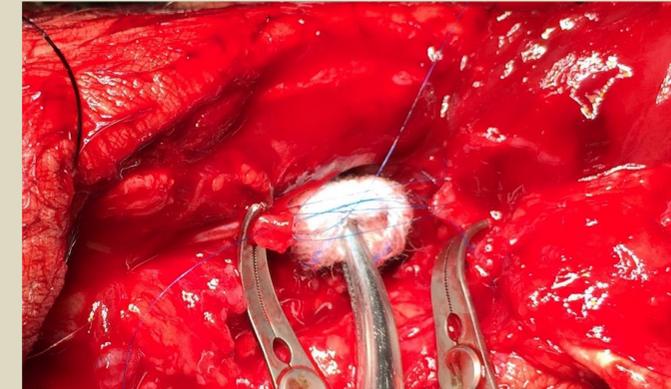


Procedure

A case study is presented on a 25-year-old male who sustained a traumatic injury to the right anterior leg. The patient had an accident from a skill saw cutting through the extensor tendons and anterior tibial artery. He was taken immediately to the OR for repair of the anterior tibial artery, TA tendon, EHL tendon, and EDL tendon. After the initial wound evaluation it was determined that the patient had lacerated all major extensor tendons and the anterior tibial artery. The injury extended to the anterior tibia, as was evident on the AP ankle radiograph. Copious low pressure irrigation was performed to remove foreign debris. The extensor tendons were identified and tagged with suture. The extensor tendons were cleanly cut with no frayed ends. The anterior tibial artery was located at the proximal and distal end. The artery was pulsating and had clotted off proximally when localized. The two arterial ends were secured with bulldog clamps and the ends were incised cleanly to remove the clot and to prepare for approximation. Heparin was injected into the IV to decrease the ability of the anterior tibial artery to clot off after approximation. The artery was approximated with 6-0 prolene suture. After the artery was approximated the bulldog clamps were removed and good blood flow was assessed. Additional heparin with dye was injected and the artery was assessed under active fluoroscopy. Doppler assessment was also performed to support the patency of the artery. After the artery was approximated the extensor tendons were approximated with 2-0 vicryl. The tendons were repaired without any difficulty and than layered closure was performed. The "zone of injury" was small due to the sharpness of the skill saw and the localization of the high energy trauma. The patient was kept on heparin during the postoperative recovery, while in the hospital and sent home on Lovenox injections to decrease the risk of the artery clotting off from the trauma. The patient could move all digits to the right foot the day after recovery.

Results

The patient is 10 months postop with good function of the extensor tendons and normal blood flow through the anterior tibial artery. The patient has full cutaneous sensation along the dorsal aspect of the foot and leg. He has adequate ankle joint range of motion. Muscle strength to the extensor tendons are 4-5/5 with continued rehabilitation and strengthening exercises. The patient currently ambulates without assistance, after being transitioned out of a low tide fracture boot during his rehabilitation.



Analysis/ Discussion

This case study demonstrates the need for immediate surgical intervention to restore blood flow to the anterior tibial artery and repair of the extensor tendons to optimize functional outcomes. We have found that the attention to the patients recovery and rehabilitation is equally as important to the surgical outcomes as the surgery steps themselves. The patient needed continual encouragement and assessment of the tendon function and extensive work with physical therapy for strengthening and rehabilitation. Informing the patient on realistic expectations can help with the rehabilitation process.



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