

Tibials Anterior Cutaneous Tenosynovial Fistula of The Lower Leg - A Report of Two Cases

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ABSTRACT

A fistula of the tenosynovium of tibialis anterior tendon and the skin in front of lower leg with discharge as a sequela of injury has not been previously reported in literature. We described two patients of cutaneous tenosynovial fistula of tibialis anterior tendon between 1994 and 2008. Both the patients were male with a mean age of 49 years. The cause of fistula was tight plater cast in one patient while the other had skin puncture by wooden stick of bushes in the jungle. Both patients presented with spontaneous drainage of clear viscous synovial fluid. Conservative treatment by immobilization and prophylactic antibiotics and surgical treatment by primary closure proved unsuccessful. In both patient's excision of necrotic tissue and coverage with a flap resolved the drainage and healing of wound. No complication of flap noted. No recurrence was reported.

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INTRODUCTION

Cutaneous tenosynovial fistula in front of lower leg is quite an uncommon complication following penetrating trauma or prolonged pressure. There are only a few documented case reports series namely traumatic synovial fistula of the flexor tendon sheath of the hand,^{1,2} iatrogenic fistula between radiocarpal joint and extensor tendon sheath extensor carpi radialis after diagnostic wrist arthroscopy³ and one after arthroscopic repair of large and massive rotator cuff tear.⁴ However a fistula of the tenosynovium of tibialis anterior tendon and the skin in front of lower leg with discharge as a sequela of injury has not been previously reported in literature.

In this article, we report two interesting cases of unhealed open wounds of cutaneous teno-synovial fistula of tibialis anterior tendon on the lower leg having causes other than instrumentation or surgical intervention. Excellent results were achieved by us after treatment using surgical excision of the fistula and local flap coverage. Written consent was given by the patients for publications of their cases and photographs.

CASE REPORT I

A chronic discharging fistula above the right ankle was reported in a 42 years old otherwise healthy man. He had a history of un-displaced fracture tibia treated with cast for three months. After removal of cast, he noted a localized necrotic skin area in front of lower leg. Daily dressing with immobilization was advised but the wound, instead of going into healing phase, started yielding some clear viscous fluid. On examination, there was a 1.5 cm diameter deep wound in front of lower 1/4th of lower leg and tendon of tibialis anterior muscle was visible through it. There was persistently draining discharge through the wound (Fig 1A). No signs of inflammation was noted.

Pressure over tibialis anterior sheath and active ankle movement caused extrusion of synovial fluid from fistula. Sample of clear viscous fluid being drained was collected for Gram stain and culture and reports were negative. Radiographs of tibia showed healed fracture of mid- shaft of the tibia. Being low clinical suspicious of active infectious tenosynovitis, the patient was put on prophylactic oral antibiotics.

We diagnosed this chronic wound due to a cutaneous tenosynovial fistula of the tibialis anterior tendon. After curettage and freshening of wound margins wound was closed primarily. After ten days stitches cut through and same discharge continued. He

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underwent re-operation and wound was closed with local flap coverage.

Postoperatively, foot was immobilized for five weeks in a splint. Stitches were removed after three weeks. Drainage from the skin was completely stopped with full ankle mobility and no complications of the flap

and no recurrence reported at three months follow up. (Fig IB) The follow up was short because the patient missed his recent scheduled visit due to his domestic problem but had no complaints when contacted on phone.



Fig. I A. Pre-operative photo showing discharging fistula **IB.** Post-operative photograph three months after closure of fistula with local rotation flap and resolution of intermittent synovial fluid drainage.

CASE REPORT II

A 56-year-old male laborer while working in jungle got a punctured wound from a wooden stick of bushes in front of lower leg. The wound was sutured thrice by local practitioner but it did not heal. Wound did not heal despite sutures three times at a local hospital and prescription of prophylactic antibiotics. On examination

suspicious for suppuration. On proximal-to-distal compression over the tibialis anterior synovial fluid was seen coming out. Culture and sensitivity of the fluid was negative. Immobilization of the ankle and treatment with antibiotics did not cure the patient. We treated the patient with debridement and supra-malleolar flap coverage and spontaneous synovial fluid drainage

at the time of presentation in orthopedic OPD, there was a 1.5 cm diameter deep wound with crusts at the margin at front of lower 1/4th of right leg. Clear viscous synovial fluid discharge was consistently drained (Fig. 2A). There was no pain with passive dorsiflexion of ankle. There was no signs of infection suggestive of low clinical

problem was resolved. A splint was applied was applied post operatively for four weeks. Stitches were removed at 10 days. At two year follow up no recurrence was reported and the patient had full range of ankle mobility.



Fig. II A. Pre-operative photograph showing open wound over the right tibialis anterior tendon. **IIB.** Post-operative photograph 05 months after closure of fistula with supra-malleolar flap and resolution of spontaneous synovial fluid drainage problem.

DISCUSSION

These are two very interesting cases of development of tenosynovial fistula of tibialis anterior tendon with unhealed open wounds caused by pressure necrosis and puncture. Poor vascularity can cause delay in wound

healing.⁵ The connection between the synovial sheath and the skin can cause delay in wound healing. Whenever contractures of muscle cause synovial fluid to force frequently into the defect or the sinus and ultimate epithelization of the sinus tract results in fistula formation.⁶ Previously no case report of tibialis anterior

fistula caused by puncture or pressure necrosis has been reported in the literature.

Tendon sheath fistula can be arbitrarily divided into¹: inter-synovial fistula⁷, and² cutaneous tenosynovial fistula. Inter-synovial fistula (e.g., between the tendon sheath of tendons passing around wrist and in between the carpal joints) are better visualized with contrast studies. However a tentative diagnosis of cutaneous tenosynovial fistula is almost obvious on clinical examination by having continuous synovial fluid drainage.

Tenosynovial fistula is the connection between the synovial tendon sheath and overlying skin. This kind of situation around ankle following injury has not been previously described. However, post arthroscopy iatrogenic ankle fistulas are reported in the literature.⁸ Tenosynovial fistula of tibialis anterior tendon other than developing after ankle arthroscopy are uncommon and not reported in the literature before.

Naam⁹ reported 15 cases of synovial fistulas but the aetiology was iatrogenic and injections of steroid. Synovial fistulas have been reported following knee and shoulder arthroscopy or repair of the rotator cuff.¹⁰⁻¹² Park¹³ reported a case of ankle fistula possibly as a complication from an ankle sprain. But there is no reported case of teno-synovial fistula caused by other than instrumentation or surgical intervention around the ankle.

There is no consensus on the ideal treatment teno-synovial fistula of the ankle. Reports of treating the knee fistula with immobilization for two weeks was found to be effective.¹¹ Conservative treatment with immobilization and antibiotics were used in our case report I but the fistula did not heal. The reason can be the decreased soft tissue bulk around ankle and necrotic nature of wound margins. Excision and flap, however completely cure the fistula.

Plaster pressure sores can occur as result of bumping of plaster in front of ankle leading to pressure on the skin and its break, so the technique of application of plaster cast must be optimum to stabilize and hold anatomical structures around ankle.

CONCLUSION

Persistent cutaneous teno-synovial fistulas of tibialis anterior tendon are a cause of anxiety among the patients. When aetiology of the fistula is other than instrumentation or surgical intervention, conservative treatment with immobilization and prophylactic antibiotics usually fails. Recommended definitive

treatment of this problem can be debridement and soft tissue coverage by local or regional flap.

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