

Ulcerated Gouty Tophous at the Posterior Leg and Achilles Tendon Requiring Radical Debridement and Application of Bilayer Matrix Wound Graft

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Purpose

Tophaceous development within soft tissue structures such as tendons leading to ulceration are infrequently reported. Surgical procedures that have been used to address tophaceous involvement of the Achilles tendon include removal of the tophaceous mass as well as debridement of the tendon. There are no cases in the literature of treatment of a tophaceous mass requiring radical debridement and application of bilayer matrix wound graft.

Case Study

An 88-year-old African American male with long-standing history of poorly controlled polyarticular tophaceous gout presented with an ulcerated, tophaceous mass to the posterior Achilles tendon. His therapeutic regimen consisted of colchicine 0.6 mg daily. His other medical included stage 3 chronic kidney disease, hypertension, hyperlipidemia, and aortic stenosis. At the time of presentation, the Achilles tendon was exposed with serous drainage but no purulence. (Figure 1 A,B). The patient was admitted to the hospital. Vital signs were normal and laboratory tests were not significant except for hyperuricemia (9.6 mg/dL). An MRI was performed and revealed significant involvement of the Achilles tendon with large heterogeneous fluid collection within the posterior soft tissues of the ankle (Figure 2 A,B). The patient was taken to the operating room for excisional debridement. Upon incision of the deep tissues there was evidence of significant liquefactive necrosis. Attention was directed to the large soft tissue mass engulfing the Achilles tendon. The entire mass was removed; however, upon inspection of the residual tendon it was noted to be degenerative, frayed, and non-viable. The tendon was incised proximally, mobilized, and then resected at its insertion. Nonviable soft tissue and remaining gouty tophi were debrided using a rongeur down to a healthy, bleeding base. The deep posterior tendons were inspected and left intact. The surgical deficit measured 10 x 2 x 2 cm deep and was packed open. Cultures obtained of the deep soft tissues were positive for Enterobacter cloacae and the patient was placed on 2 weeks of Ciprofloxacin 500 mg BID.

Literature Review

Gout is an inflammatory arthritis characterized by hyperuricemia, and deposition of monosodium urate crystals within joints and other tissues. With inadequate control of hyperuricemia, up to 30% of patients develop chronic deposition of crystals leading to tophaceous gout (1). Tophi typically occur within or around joints, but can also develop on tendons (1). While these tophi can become relatively large and cause joint deformities, the incidence of skin ulceration is very uncommon with no set guidelines regarding treatment. This is especially true of the lower extremity where a literature review yielded five case reports representing eight patients with ulcerative gout (2-7). Of these eight patients only three underwent surgical debridement (5-7). One technique which has been described was removal of the tophaceous mass from the Achilles tendon with debridement and primary closure (7). Unique to the presented case was the staged approach with radical debridement of the posterior leg which included Achilles tendon resection, negative pressure wound therapy, and application of bilayer wound matrix.

Figure 1. Pre-operative Clinical Photos



Figure 2. Pre-operative MRI (A. T1 Sagittal view B. STIR Sagittal view)

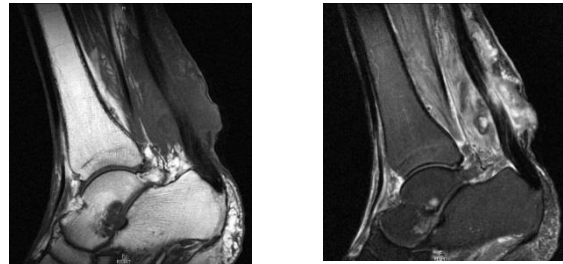


Figure 3. Post-operative Photos (A. Debridement Post-operative day 1 B. Application Integra day 14)



Case Study

On post-operative day 1 negative pressure wound therapy was applied (Figure 3A). 1 month after the initial procedure the patient returned to the operating room for application of INTEGRA® bilayer wound matrix. The surgical site was amenable to split thickness skin grafting at week 2 post-application of INTEGRA (Figure 3B). However, the patient declined further surgical intervention and elected to heal the site by reepithelialization. The patient went on to heal uneventfully. The patient had limited strength with plantarflexion but was able to return to full weight bearing and ambulation.

Discussion

The development of tophi in patients with gout is related to the duration of disease and associated with untreated hyperuricemia (1). Tophaceous involvement of the Achilles tendon is a rare finding even though gout commonly affects the joints of the foot and ankle. Rarer still is an ulceration overlying the Achilles tendon secondary to a gouty tophi. The main indications for surgery in patients with tophaceous gout are infection of ulcerated tophi and associated mechanical problems. One case report described removal of the tophaceous mass from the Achilles tendon with primary closure (7). However, the skin overlying gouty tophi is often taut making closure tenuous. Additionally the surgical deficit may be too extensive for closure. In the presented case, it became obvious this was a limb salvage procedure due to the extent of nonviable soft tissue as well as the necrotic, degenerative Achilles tendon.

Discussion

In cases such as these, a staged approach described above may be an acceptable technique. Although the above case only represents one patient, the results have been comparable to previous studies describing surgical treatment for ulcerated tophaceous gout of the lower extremity (5-7). This staged approach appears to be a reasonable option for deficits too large for primary closure or limb salvage.

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