

RETAINED FOREIGN BODY: Time as a Factor in Clinical Assessment

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Soft-tissue masses and draining lesions of the foot and ankle can present an interesting diagnostic challenge. Residents are taught, and it is well for experienced practitioners to remember, the importance of “time” as a factor in clinical practice and patient assessment. This case demonstrates the importance of respect for time in the logical and systematic approach to an unusual soft-tissue mass with an associated draining sinus.

CASE PRESENTATION

A 31-year-old caucasian female presented with a draining lesion of 1 year duration on the plantar aspect of the right foot. There was no history of trauma. The lesion seemed to appear and later resolve, but remained open for several weeks at a time. Pain was associated with the lesion during stance and gait. The remaining history and physical examination was noncontributory.

A well-circumscribed, papular lesion was evident with serous drainage of a minimal degree in the plantar, non-weight-bearing area of the right arch (Fig. 1). Local tenderness to palpation was evident. Mild peri-lesional erythema and edema were noted, and induration of deeper tissues was palpable. No lymphangitis or lymphadenitis was evident. Past treatment by the patient included saline soaks and topical acid plasters, as she felt that the lesion was a wart.

The initial evaluation included unremarkable radiographs (Fig. 2). A culture and sensitivity revealed no growth of organisms. A working diagnosis of chemical burn with superficial abscess was made. The patient was scheduled for debridement, with incision and drainage, and deep culture.

The procedure was performed under a local anesthetic block. The lesion was noted to be



Figure 1. Clinical appearance of the wound, prior to surgical exploration. This is similar to all presentations, as noted in the case report.



Figure 2. Radiographic evaluation is noted to be essentially unremarkable, without evidence of any soft-tissue or osseous changes.

superficial within the dermis and no deep sinus tract was identified with blunt probing. The lesion appeared primarily as granulation tissue. A pathological specimen verified this finding. Operative culture and sensitivity grew *Pseudomonas aeruginosa*, sensitive to ciprofloxacin. The patient was placed on 10% acetic acid soaks, and a 2-week course of oral antibiotics.

The surgical area healed uneventfully over a 2 to 3 week period. At 6 weeks postoperative, the patient presented with a similar lesion recurrence. Further surgical exploration was performed under a local anesthetic block. A sinus track was identified deep within the dermis. Deep curettage and debridement was carried out. A tentative diagnosis of inclusion cyst was made. Operative cultures again demonstrated *Pseudomonas aeruginosa*. Follow-up care and antibiotics were similar to the previous course of treatment. At 4 weeks following the second procedure, the lesion resolved with uneventful healing.

DISCUSSION

Time, as a factor in this case, demonstrated a satisfactory immediate response to treatment with reduction in erythema, drainage, and pain over the short-term. Recurrence over a longer term at 4 weeks was met with further exploration, and uneventful healing following deeper debridement. Milestones, both immediate in terms of days, as well as long-term in terms of months, appeared to have been met for this patient. Setting goals based on time, for the clinician as well as for the patient, is important for re-assessment and re-evaluation. Setting goals aids in patient expectation, and may reduce the stigma of surprise or fear. Goal setting in terms of time, likewise helps to identify when it is appropriate for further investigation based upon a lack of response to what would appear to be appropriate therapy. The patient should be kept informed in advance that if treatment A is not satisfactory by a given time interval, then further testing, and treatments B or C may be necessary.

CASE PRESENTATION – CONTINUED

Six-months later, the patient again presented with a recurrence of a similar lesion. Further investigation prior to surgical exploration was indicated and carried out. Initial testing procedures were repeated to evaluate for change as well as to assess the current status. If no testing was done originally, the opportunity for comparison is lost. Complete blood count and chemical profiles were within normal limits and unchanged from prior values. Additional testing procedures were added to further assist in the evaluation process.

Follow-up radiographs were likewise unchanged. A three-phase technetium bone scan revealed only mild to moderate uptake in the blood pool image. Later phase studies did not identify any osseous involvement (Figs. 3A, 3B). MRI identified a deep, cystic mass within the plantar aspect of the arch area of the foot (Figs. 4A, 4B). The differential diagnosis included a deep inclusion cyst, or the potential for soft-tissue carcinoma. Surgical exploration was planned and carried-out to include excisional biopsy.

Just prior to the surgical exploration, the patient and family remembered an incident which occurred 12 years prior. They recalled that the patient had stepped on a toothpick. The family had assumed that all of the toothpick had been removed. Healing was uneventful with no complications or medical care remembered.

The incisional approach was planned to excise the skin lesion, as well as provide sufficient exposure for the deep mass as guided by the MRI findings (Fig. 5). During surgical exploration and excision, a deep soft-tissue cystic mass was identified. A wooden foreign body (toothpick) was identified within the cystic mass (Fig. 6). Evidently, 90% of the toothpick had remained within the foot for over 10 years, with eventual sinus track formation and chronic drainage (Fig. 7). Healing, following excision of all of the soft tissue elements involved in the pathology, was uneventful (Fig. 8). There has been no recurrence of the draining sinus at 2 years postoperative.

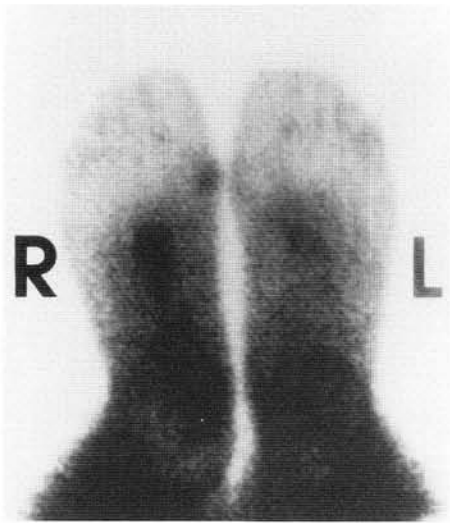


Figure 3A. Blood pool phase of technetium tri-phase bone scan is unremarkable.

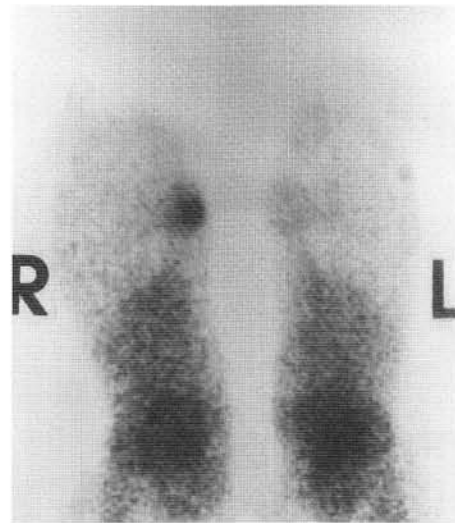


Figure 3B. Delayed technetium tri-phase bone scan at 3 hours demonstrates primarily soft-tissue inflammation without findings consistent with osseous involvement.

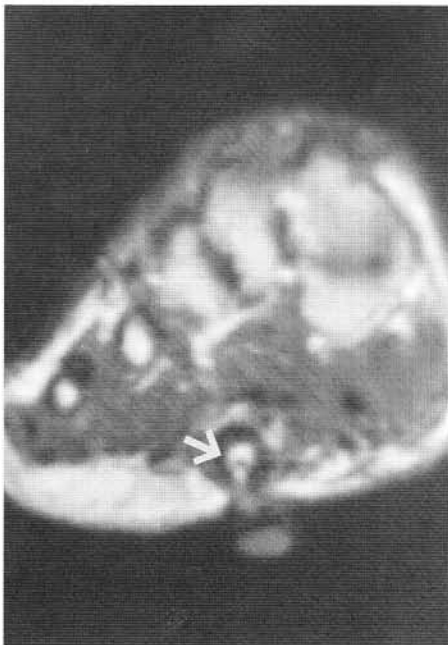


Figure 4A. Coronal plane MRI of the foot with the third recurrence of the lesion, demonstrates a cystic mass in the plantar arch of the foot.



Figure 4B. Sagittal plane MRI demonstrating a deep cystic mass deep to the plantar fascial layer of the foot.



Figure 5. Surgical approach with a planned Z-shaped incision. The central arm included wide excision of the skin lesion. Extension of the Z arms is planned only as necessary for exposure.

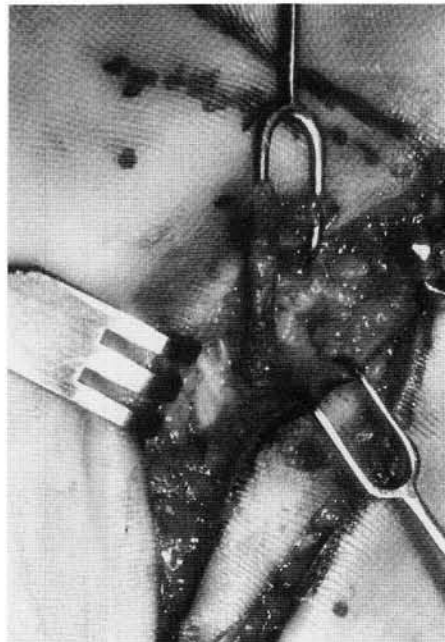


Figure 6. Intraoperative demonstration of extrusion of a wooden foreign body from the wound. Deep cultures at the time of surgery were negative.

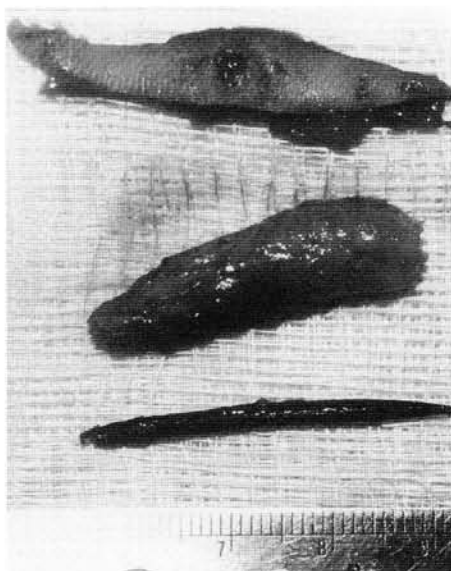


Figure 7: Excised skin lesion, with soft-tissue fibrous cocoon, as well as wooden foreign body removed from the foot.

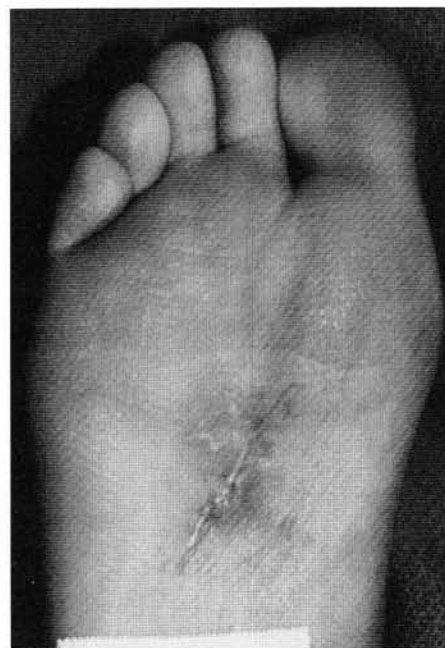


Figure 8: Appearance of the foot 2 months following excision, demonstrating satisfactory wound healing without evidence of reoccurrence of the draining lesion. At 2 years postoperative, the foot appears essentially unchanged without recurrence or complications.

CONCLUSION

Time and anticipated response to the short-term treatment met all expectations for this patient. Long-term recurrence in the early phases of treatment required further investigation, yet time expectations appeared to have been met. Longer term recurrence required more intensive investigation prior to surgical exploration. The patient was kept informed of time expectations, and surprises were hopefully kept to a minimum. The real surprise was the final diagnosis. Anxiety can run high for both the patient and clinician alike during such challenging cases. The establishment of a logical plan with realistic time expectations helps to relieve those anxieties and keep treatment programs on track.

Concerns for soft-tissue masses or tumors of a cancerous nature are unlikely in the foot, yet must be considered and remembered. The chance for unusual foreign body retention is also an uncommon, yet important, differential diagnosis in the soft-tissue assessment of masses of the foot. Responsiveness or unresponsiveness in terms of "time", as well as meeting the "goals" for the patient in terms of clinical response, are essential to a logical and systematic approach to difficult cases.