CHAPTER **23**

# HALLUX SUBUNGUAL EXOSTECTOMY: Surgical Technique

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Subungual exostoses, an overgrowth of bone on the dorsal aspect of the distal phalangeal tuft, are most often seen on the hallux. The exostosis may develop from trauma or an osteochondroma. The deformity may result from abnormal biomechanics, such as the case being presented in this paper. These exostoses can cause painful nail deformities and difficulty wearing closed toe shoes. Removal of the exostosis is the treatment of choice when change in shoe gear to a deeper toe box fails to relieve symptoms.

## CASE PRESENTATION

A fifteen-year-old female presented with complaints of painful nail deformities on both great toes that made it difficult for her to find a shoe to fit comfortably. She denied any history of trauma. The remainder of her medical history was unremarkable. On examination, a dorsally directed curvature of the hallux nail plate was noted bilaterally (Figures 1, 2). There was no thickening of the nail plate or paronychia noted. There was mild pain with direct pressure to the nail plate distally. A dorsal prominence of the first metatarsal head was noted in stance. There was hypermobility noted at the medial column on both feet. Plain film radiographs (Figure 3) revealed a dorsal prominence at the tip of the distal phalangeal tuft with a dorsally directed curvature of the distal phalanx on both feet. Elevation of the first metatarsal was also noted. The patient was scheduled for bilateral exostectomy.

Due to the size of the exostoses and deformity of the nails, three separate structures were considered: the nail, the skin, and the exostosis. The preoperative plan was to avulse the nail, excise a wedge of skin, and remove the exostosis. In this case the exostosis was so large that there would be enough redundant skin to allow for a potential hematoma formation postoperatively. Although not a routine part of this procedure, it should be considered with large exostoses.

The procedure was performed under intravenous sedation and digital block. A digital tourniquet and epinephrine 1:200,000 concentration in the local anesthetic was used for hemostasis. The nail was avulsed using a Freer elevator (Figure 4). A transverse elliptical wedge of skin was excised from the distal tip of the toe (Figure 5). The soft tissue structures were freed from the dorsal aspect of the exostosis using blunt dissection and a Freer elevator to prevent "button-holing" of the nail bed. The exostosis was identified (Figure 6) and resected creating a smooth surface (Figure 7). The incision was then closed with 4-0 prolene in a horizontal mattress fashion (Figures 8, 9). The tourniquet was removed and sterile gauze dressing with adaptic over the nail bed was applied. Sutures were removed ten days later (Figures 10, 11). Plain film radiographs showed smooth osseous contours on the dorsal aspect of the distal phalanx (Figure 12). The patient was allowed to return to conventional shoes and activity. Three months after surgery the nail was growing normally and the patient had no complaints (Figure 13, 14). One month later the patient developed paronychias on both great toes. A partial nail avulsion with phenol matrixectomy was performed. She healed the second surgeries well and was discharged.

## DISCUSSION

This is a unique case in both the etiology of the deformity and the surgical approach. In theory, the metatarsus primus elevatus deformity resulted in increased force at the interphalangeal joint and the epiphysis of the distal phalanx. This constant force could have caused the curvature of the distal phalanx to develop prior to epiphyseal closure. The patient had a callus beneath the interphalangeal joint on both toes that would support the theory of increased force at that level. Because of the size of the lesion the skin and soft tissue had to be addressed in addition to the nail and the exostosis.

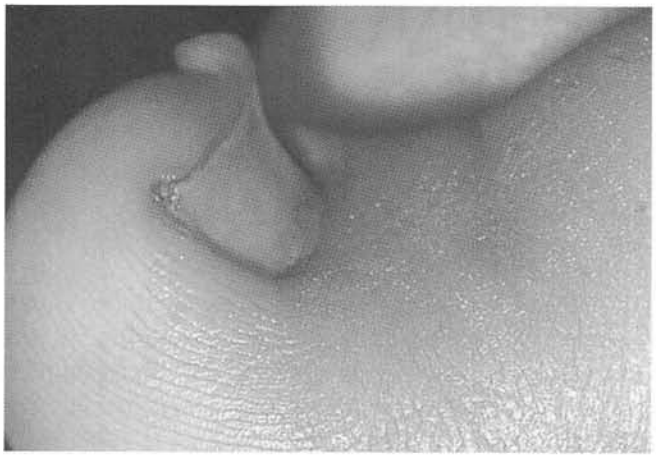

Figure 1. Clinical photo preoperative lateral view.

Figure 2. Clinical photo preoperative dorsoplantar view.

Figure 3. Preoperative lateral radiograph.

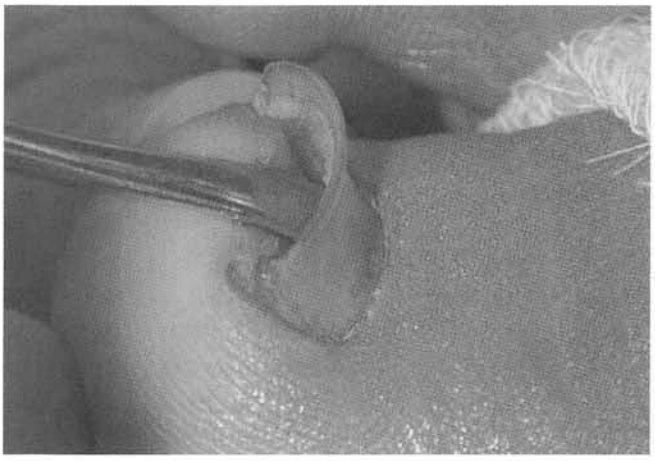

Figure 4. Avulsion of nail.

Figure 5. Incision lines.

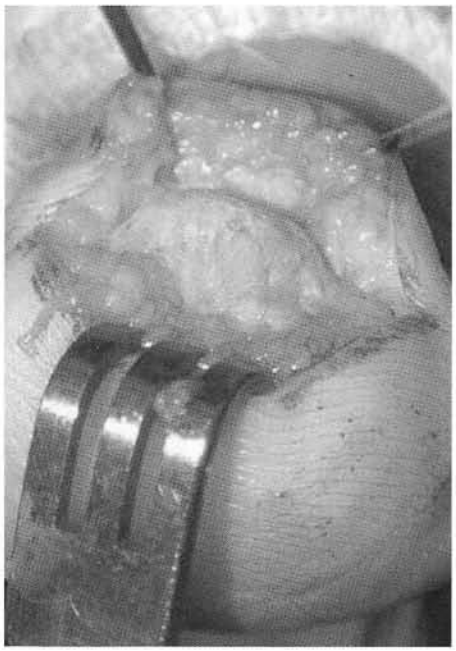

Figure 6. Intraoperative photo of exostosis.

Figure 7. Intraoperative photo after exostectomy. Note the smooth osseous contour.

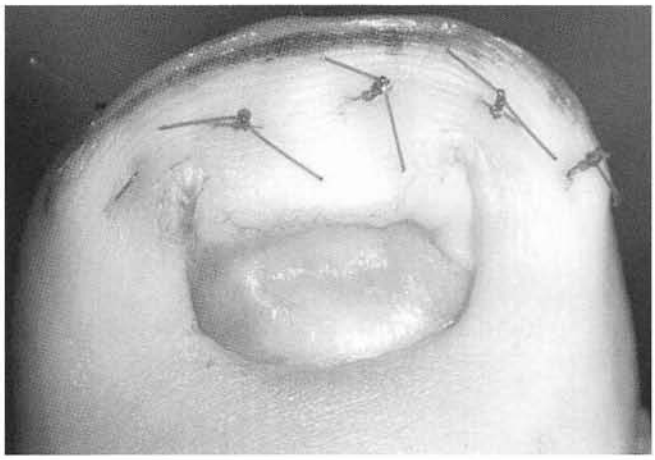

Figure 8. Intraoperative photo after closure.

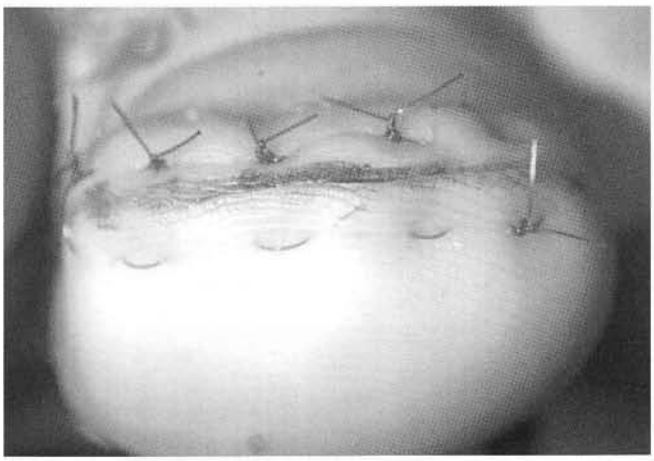

Figure 9. Intraoperative photo after closure.

Figure 10. Clinical photo 10 day postoperative lateral view.

Figure 12. Postoperative radiograph. Note the smooth dorsal surface of the distal phalanx.

Figure 14. Clinical photo 3 months postoperative dorsoplantar view.

Figure 11. Clinical photo 10 day postoperative dorsoplantar view.

Figure 13. Clinical photo 3 months postoperative lateral view. Note the normal appearance of the nail plate.