

# Solitary Nodule of the Great Toe

CPT R. John Young III, MD, Fairfield, California

MAJ Joseph L. Wilde, MD, Fort Riley, Kansas

LTC Christopher R. Sartori, MD, San Antonio, Texas

COL Dirk M. Elston, MD, San Antonio, Texas

*We describe a 21-year-old woman with a subungual exostosis exhibiting both skin and nail findings. The patient presented with a firm, flesh-colored, nontender, subungual nodule in the distal nail bed of the great toe. Radiographic examination revealed focal calcification of the nodule, with direct communication to the underlying phalanx. Subungual exostosis should be considered in the differential diagnosis of any digital mass. Surgical excision, followed by curettage of the base, is the treatment of choice.*

Subungual exostosis is a benign, osteochondilaginous tumor arising from the distal phalanx beneath the nail.<sup>1-3</sup> Generally, it appears in the second to third decade of life, with a predilection for the great toe and an equal incidence in both sexes. We describe a case of subungual exostosis that presented as a nodule elevating the nail plate.

## Case Report

A 21-year-old white woman complained of a slow-growing, asymptomatic nodule of the distal right nail bed on the great toe. She denied any associated pain but did complain of uncomfortable pressure secondary to displacement of the nail plate by the nodule. She had progressively cut away the nail plate over the area to relieve this associated discomfort. She denied any specific antecedent trauma to the digit. Physical examination revealed a firm, flesh-colored, semimobile, nontender, subungual nodule in the distal lateral nail bed of the right great toe with extension into the adjacent tissue (Figure 1). Radiographic examination



**Figure 1.** Subungual nodule, with granulation tissue of the opposing lateral nail bed.

revealed focal calcification of the nodule, with direct communication to the underlying distal phalanx.

The nodule was excised under local anesthesia, followed by curettage of the underlying bone. The wound healed without sequelae. After healing, the digit appeared normal, with no skin or nail deformity.

Histopathologic examination of the submitted specimen revealed a cap of hyaline cartilage with underlying bone extending to the base of the biopsy specimen (Figure 2).

## Comment

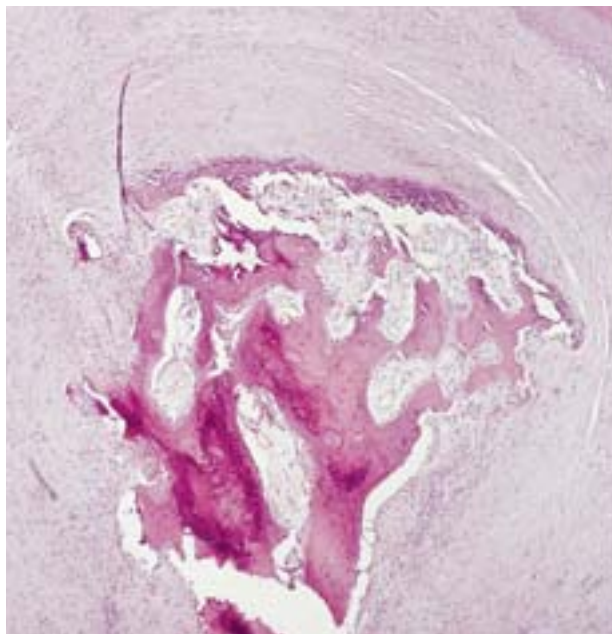
Histologically, lesions of subungual exostosis are osteochondromas characterized by a cap of hyaline cartilage with underlying bone. The base of the lesion is connected to the distal phalanx. Clinically, subungual exostosis is sufficiently distinct from other osteochondromas to warrant a separate designation. Ballet dancers wearing toe shoes and bicyclists using toe clips have a higher incidence of the lesion, presumably secondary to irritation.<sup>2,4</sup> It is thought that irritation may produce a fibrocartilaginous reaction in which metaplastic cartilage proliferates and eventually undergoes endochondral ossification.<sup>2,4</sup> Subungual exostosis occurs

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Dr. Young is from David Grant Medical Center, Fairfield, California. Dr. Wilde is from the Department of Dermatology, Irwin Army Community Hospital, Fort Riley, Kansas. Drs. Sartori and Elston are from the Department of Dermatology, Wilford Hall Medical Center and Brooke Army Medical Center, San Antonio, Texas.

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Reprints: COL Dirk M. Elston, MC, USA, Department of Dermatology (MCHE-DD), 3851 Roger Brooke Dr, Brooke Army Medical Center, Fort Sam Houston, TX 78134-6200.



**Figure 2.** Biopsy specimen shows nodular lesion with prominent bone formation extending to the base (H&E, original magnification  $\times 2$ ).

almost exclusively as a solitary tumor, except in the rare multiple exostosis syndrome.<sup>5</sup>

The clinical presentation of subungual exostosis is usually as a tender, firm, fixed, flesh- to pink-colored subungual nodule, measuring less than 0.5 cm in diameter.<sup>2</sup> The nodule tends to displace the nail plate, causing significant functional disability. Antecedent trauma is reported in 25% of cases.<sup>2,4</sup> In a series of 280 patients, 85% of the lesions occurred on the toes—with 80% of those on the great toe. The remainder of the lesions were equally distributed among the other toes. Only 15% of the lesions occurred on the fingers, with most occurring on the index and middle fingers.<sup>4</sup> Pain frequently precedes the onset of a clinically apparent nodule. In another study, the mean duration of the first symptom, usually pain or throbbing sensation before treatment, was

12 months. Subungual masses were noted to develop after 2 to 5 months, usually with overlying nail distortion and concomitant enlargement of the tumor.<sup>1</sup>

The differential diagnosis for subungual exostosis includes subungual verruca, endochondroma, subungual fibroma, squamous cell carcinoma, glomus tumor, subungual melanoma, pyogenic granuloma, ingrown toenail, and subungual epidermal inclusion cyst. It differs from other osteochondromas in its relatively smaller size, location at the terminal phalanx, fibrocartilaginous cap versus a pure hyaline cartilaginous cap, and surrounding granulation tissue.<sup>2,6</sup> Radiographic findings typically show the subungual exostosis arising from the distal phalanx and correlate with histologic features. Early lesions may be incompletely calcified and appear radiographically as a soft tissue density, without obvious association with the underlying phalanx.<sup>2,4</sup>

Treatment for subungual exostosis is surgical and can be performed under a digital block. The overlying nail is avulsed, and the incision is made through the nail bed longitudinally, with subsequent removal of the bony tumor and curettage of the base. Recurrences may occur in 5% to 11% of cases.<sup>2,4</sup>

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