Case Report

Solitary osteochondroma of the third toe causing claw deformity: A rare presentation

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ABSTRACT

Osteochondroma is a benign osteocartilaginous lesion that commonly develops in the metaphyseal region of growing bones. Although it is the most prevalent benign tumor of the skeleton, its occurrence in the foot is uncommon, and involvement of the toe phalanges is rarely encountered. We present the case of a 16-year-old male who developed a progressively enlarging bony swelling over the third toe of the right foot, resulting in claw toe deformity and difficulty with footwear. Clinical and radiological assessment identified a pedunculated lesion originating from the proximal phalanx. Surgical excision of the mass, combined with correction of the associated deformity, was performed successfully. Histopathological examination confirmed the diagnosis of osteochondroma. The patient achieved good functional recovery with no evidence of recurrence during follow-up. This report draws attention to an unusual presentation of osteochondroma and emphasizes the importance of considering osseous lesions in the evaluation of acquired toe deformities.

Key words: Claw toe, Foot lesion, Osteochondroma, Proximal phalanx, Third toe, Toe deformity

Among benign bone tumors, osteochondroma is the lesion encountered most frequently. It is characterized by an outgrowth of bone covered by a cartilaginous cap and usually develops near active growth plates [1,2]. The distal femur, proximal tibia, and proximal humerus are among the most commonly affected sites. In contrast, the bones of the foot are involved infrequently, and osteochondromas arising from the phalanges of the toes are exceptionally rare [3,4]. Most lesions remain clinically silent and are discovered incidentally [5]. However, symptomatic cases may occur when the lesion enlarges sufficiently to interfere with surrounding structures [6,7]. Clinical manifestations can include pain, limitation of motion, footwear-related discomfort, visible deformity, or compression of adjacent soft tissues [8]. Development of claw toe deformity due to an osteochondroma is unusual and only rarely described in the literature [9,10].

This case is rare because osteochondromas most commonly occur in the metaphysis of long bones, such as the distal femur, proximal tibia, and proximal humerus. Involvement of the foot is uncommon, and lesions affecting the phalanges of the toes are particularly rare. Among toe phalanges, a solitary osteochondroma arising from the third toe is exceptionally uncommon, with only isolated case reports described in the literature. Furthermore, the presentation with a progressive claw toe deformity caused by the mass effect of the lesion is even more unusual, making this combination of location and clinical presentation exceptionally rare. We report a case of a solitary osteochondroma of the proximal phalanx of the third toe presenting primarily as a progressive clawing deformity.

CASE PRESENTATION

A 16-year-old boy presented with deformity of the third toe of the right foot that had gradually progressed over a 2-year period. The patient reported increasing discomfort during ambulation and difficulty fitting into closed shoes. There was no preceding history of injury, infection, constitutional symptoms, or similar lesions elsewhere in the body.

Examination of the affected foot revealed a clawed third toe (Fig. 1). A hard bony prominence measuring approximately 2 × 1.5 cm was palpable along the plantar and medial aspect of the third toe. The swelling was

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Figure 1: Clinical image

non-tender and fixed to the underlying bone. The skin overlying the lesion was mobile, with no evidence of erythema, warmth, or ulceration. Distal neurovascular status was preserved. Range of motion at proximal and distal interphalangeal joints was restricted with claw toe deformity.

Plain radiographs demonstrated an exophytic bony growth arising from the proximal phalanx, displaying continuity of both cortical and medullary bone with the parent structure (Fig. 2). Magnetic resonance imaging (MRI) confirmed the benign nature of the lesion and showed no radiological features suggestive of malignant transformation.

The patient underwent operative treatment under regional anesthesia. Through a dorsal incision, the lesion was exposed and excised in its entirety, including the cartilage cap (Figs. 3 and 4). Correction of the claw toe deformity was performed during the same procedure. Histopathological evaluation of the specimen established the diagnosis of osteochondroma (Fig. 5).

The post-operative course was uncomplicated. At follow-up assessment, the toe maintained satisfactory alignment, symptoms had resolved, and there was no clinical or radiographic evidence of recurrence.

DISCUSSION

Osteochondromas involving the toes represent a rare subset of these otherwise common benign skeletal tumors. Due to their unusual location, diagnosis may be delayed until secondary symptoms such as deformity, irritation from footwear, or functional limitation become apparent [11,12].



Figure 2: Radiology

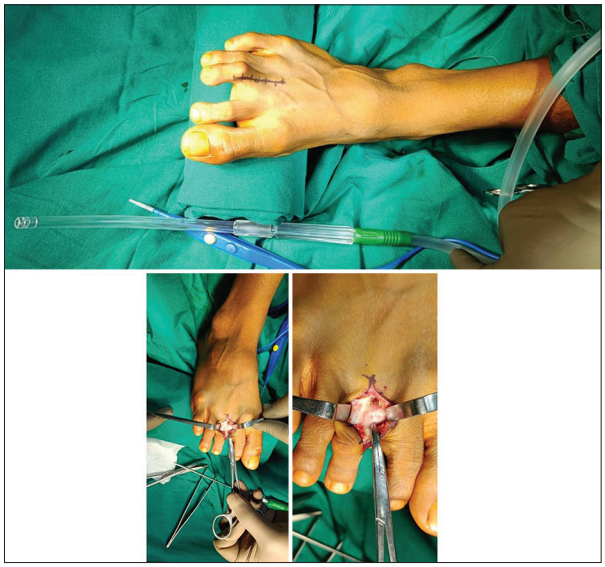


Figure 3: Incision and exposure

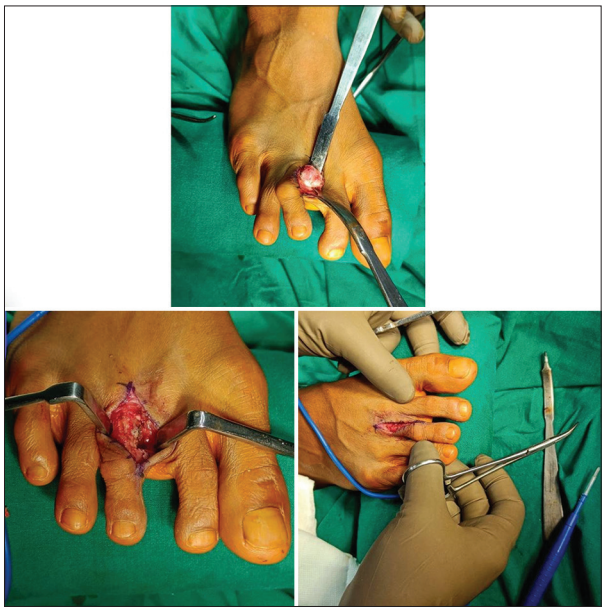


Figure 4: Dissection and exposure



Figure 5: Specimen

Osteochondromas arise from displaced growth plate cartilage that undergoes endochondral ossification. Because they originate adjacent to the physis, they grow away from the joint and usually enlarge until skeletal maturity. The osteochondroma mechanically displaces tendons and surrounding soft tissues, causing extensor-flexor imbalance. Chronic traction and adaptive soft-tissue contracture produce metatarsophalangeal hyperextension with interphalangeal flexion, resulting in a claw toe deformity.

Clinical presentation varies according to the lesion's size and position. In the foot, symptoms frequently arise from mechanical effects rather than tumor growth itself. Progressive enlargement may alter the normal balance between tendons, ligaments, and joints, ultimately producing digital deformities. In the present case, this mechanism likely contributed to the development of claw toe deformity [13].

Radiographic evaluation is typically sufficient to suggest the diagnosis because the lesion demonstrates direct continuity with the cortex and medullary cavity of the parent bone [14-16]. MRI serves as an important adjunct by providing information regarding cartilage cap thickness and the relationship of the lesion to surrounding soft tissues.

Symptomatic osteochondromas are best managed through complete surgical excision. Removal of the lesion together with its cartilaginous cap minimizes the risk of recurrence and generally provides excellent outcomes [17,18]. Histopathological examination remains necessary for definitive diagnosis and exclusion of malignant change.

CONCLUSION

Osteochondroma of the proximal phalanx of the third toe is an uncommon lesion that may manifest as progressive claw toe deformity. Recognition of this rare presentation is important for timely diagnosis and treatment. Surgical excision offers effective symptom relief, correction of deformity, and a low likelihood of recurrence. Osteochondroma should therefore be considered when evaluating patients with acquired toe deformities associated with a localized bony mass.

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