

Case report

Valgus toe deformity of fourth proximal phalanx due to osteochondroma treated with closing wedge osteotomy



Toshinori Kurashige MD*, Seiichi Suzuki MD

Department of 1st Orthopaedic Surgery, Mito Red Cross Hospital, 3-12-48, Sannomaru, Mito City, Ibaraki 310-0011, Japan

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ABSTRACT

Osteochondroma is the most common benign tumor of all benign and primary bone tumors. It rarely occurs in the proximal phalanx of the lesser toe. The treatment of osteochondroma usually consists of simple resection. However, if other deformities remain, added procedures may be considered. We report a case of a valgus toe deformity of the fourth proximal phalanx due to osteochondroma. The patient was a 21-year-old man who noticed a valgus deformity of his fourth toe over 10 years earlier. He began to experience pain in his fifth toe because of crossover of the fourth toe when wearing formal shoes. Although resection of osteochondroma was performed, the valgus deformity was not sufficiently corrected. Therefore, closing wedge osteotomy of the proximal phalanx was performed at the same time. A good outcome was achieved for this patient.

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1. Introduction

Osteochondroma is the most common benign tumor of all benign and primary bone tumors [1,2]. It arises from the periphery of the cartilaginous growth plate and occurs most often around the long tubular bones and rarely in the small bones of the foot [2–4]. Most frequently involved sites are distal femur, proximal humerus, proximal tibia and ilium. Unni et al. [2] reported only one case of phalange in their 884 series of solitary osteochondromas. Osteochondroma rarely occurs in the proximal phalanx of the lesser toe. Only a few related reports have been published [3,5,6]. Malignant transformations to chondrosarcoma have been most commonly reported in patients with hereditary multiple lesions, but such change occurs in fewer than 1% [2]. Malignant transformation of a solitary lesion is extremely rare. Symptoms are usually caused by mechanical factors. Therefore, the treatment of osteochondroma usually consists of simple resection [2,3,5,6]. However, if other deformities remain, added procedures may be considered [7,8]. We report a case of a valgus toe deformity of the fourth proximal phalanx due to osteochondroma. To our knowledge, there are only two previous case reports in the

English literature about osteochondroma of the proximal phalanx of the lesser toe in which resection was performed [5,6]. We also believe that this is the first case in which closing wedge osteotomy was performed for a valgus toe deformity of the proximal phalanx due to osteochondroma.

2. Case report

The patient was a 21-year-old man who noticed a valgus deformity of the left fourth toe over 10 years earlier. He had no history of trauma or surgery to the foot. He had never visited a hospital because he had experienced no restriction in his activities of daily living and recreational sports. He became a college student and began to wear formal shoes for job interviews. He had no complaints regarding his fourth toe; however, he began to experience pain in the fifth toe due to crossover of the fourth toe when wearing these shoes. Therefore, he was referred to our department.

On physical examination, the fourth toe had a valgus deformity and crossed over the fifth toe (Fig. 1a). There was no pain or numbness in the fourth toe; however, a painful callus had formed beneath the tip of the fifth toe (Fig. 1b). Palpation revealed a bony hard mass on the dorsal side of the third web. Flexibility of the toe was normal. There was no other apparent deformity in his feet or body and no family history of congenital or developmental skeletal deformities.

* Corresponding author. Tel.: +81 29 221 5177; fax: +81 29 227 0819.
E-mail addresses: kurashige@mito.jrc.or.jp, to-kurashige@mito.jrc.or.jp
(T. Kurashige), se-suzuki@mito.jrc.or.jp (S. Suzuki).

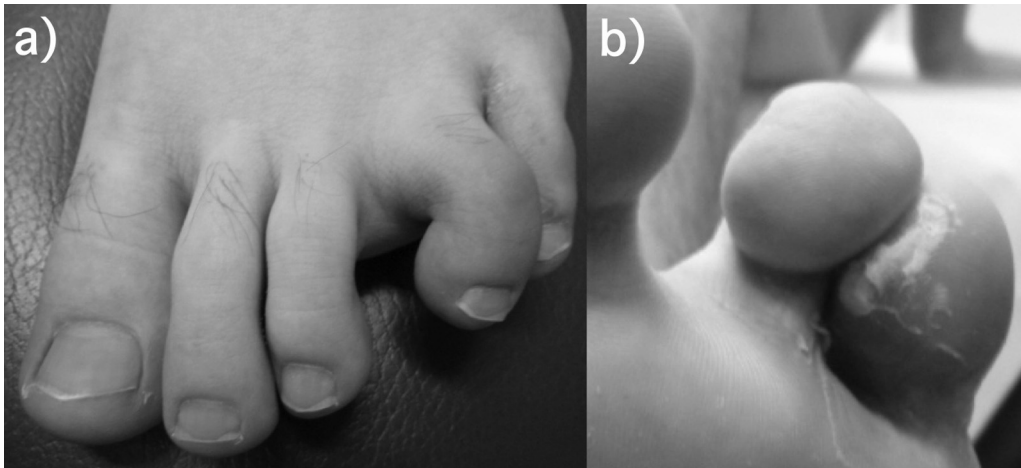


Fig. 1. Macroscopic findings. (a) The fourth toe with a valgus deformity is shown; the fourth toe has crossed over the fifth toe. (b) A painful callus is present beneath the tip of the fifth toe.

3. Imaging findings

Radiography revealed a bone tumor on the medial side of the fourth proximal phalanx. The phalanx had a valgus deformity (Fig. 2a). Computed tomography (CT) revealed that the bone tumor had a wide base that was continuous with the proximal phalanx (Fig. 2b). Coronal T2-weighted fat suppression magnetic resonance imaging (MRI) revealed that the lesion was in continuity with the medulla of the proximal phalanx and had a thin cartilage cap (Fig. 3).

4. Operative technique

The patient was placed in the supine position. A pneumatic tourniquet was used. The bone tumor was exposed through a longitudinal incision at the dorsal medial aspect of the fourth proximal phalanx. The bone tumor was resected from its base at

the proximal phalanx. The fourth toe remained in valgus after tumor resection (Fig. 4a). Fluoroscopic images revealed that the proximal phalanx had a valgus deformity in the anteroposterior view (Fig. 4b) but had neither flexion nor extension deformity in the lateral view (Fig. 4c). Therefore, closing wedge osteotomy of the proximal phalanx was performed at the same time. After removing the dorsal and plantar periosteum, a side-cutting burr 2 mm in diameter and 5 mm in length was inserted from the medial aspect of the proximal phalanx at the apex of the deformity. Care was taken not to penetrate the lateral cortex. Wedge osteotomy was performed using a sweeping motion of the burr keeping the lateral cortex intact. The osteotomy site was closed with gentle finger pressure; however, a fracture of the lateral cortex occurred. Therefore, 1.2-mm Kirshner wire fixation was percutaneously performed (Fig. 5).

Pathological examination identified the tumor as an osteochondroma.

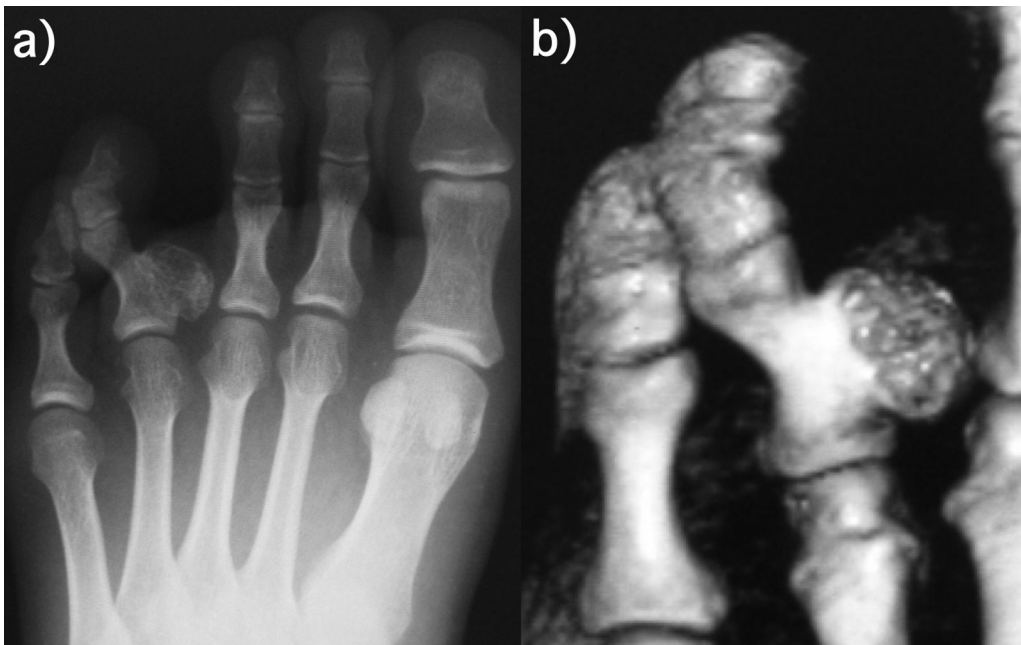


Fig. 2. Preoperative images. (a) Radiograph showing the bone tumor at the medial side of the fourth proximal phalanx. The bone has a valgus deformity. (b) Computed tomographic image showing that the bone tumor has a wide base continuous with the proximal phalanx.

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