

Case Reports and Series

Osteochondroma of the Tibial Sesamoid: A Case Report and Review of the Literature

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ARTICLE INFO

Level of Clinical Evidence: 4

Keywords:

bizarre parosteal osteochondromatous proliferation
osteochondroma
sesamoidectomy
tibial sesamoid

ABSTRACT

Osteochondroma, one of the most common benign bone tumors, frequently occurs in the metaphysis of the long bones. We report an extremely rare case of osteochondroma that occurred in the tibial sesamoid. The patient was a 62-year-old Japanese male. He presented with a 1-year history of pain and a hard mass on the plantar aspect of the right forefoot sole. The osteochondroma protruded toward the sole from the tibial sesamoid, leading to pain on weightbearing. After tibial sesamoidectomy, the patient's symptoms were eliminated, and no pain or complications such as hallux valgus occurred after the surgery. Although a potential risk exists of postoperative hallux valgus deformity, tibial sesamoidectomy seems to be an appropriate surgical option for both osteochondroma and bizarre parosteal osteochondromatous proliferation to avoid residual pain or local recurrence.

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Osteochondroma is one of the most common benign bone tumors and accounts for 35% of benign and 8% of surgically treated bone tumors (1). Osteochondroma frequently occurs in the metaphysis of the long bone of the extremities but rarely occurs in the foot or ankle. We describe an exceedingly rare case of osteochondroma of the tibial sesamoid and discuss this case with reference to the published data.

Case Report

A 62-year-old Japanese male with no history of major illness presented with a 1-year history of pain and a hard mass on the plantar aspect of the right forefoot sole. He had no history of trauma. The patient visited our hospital because the protrusion had gradually increased in size.

The physical examination revealed an approximately 1-cm solid mass on the plantar aspect of the right first metatarsophalangeal

joint. Although a formation of callosity and tenderness were present in that region, no erythema, swelling, or local increased temperature was observed (Fig. 1). He had no hallux valgus deformity, and the range of motion of the great toe was not limited.

Plain radiographs of the right foot revealed a bony stalk continuing directly from the tibial sesamoid, projecting in the medial–plantar direction (Fig. 2A and B). Computed tomography showed the bony mass, 5 × 4 × 8 mm in size, with continuity with the cortex of the tibial sesamoid (Fig. 2C). Magnetic resonance imaging showed a thin cartilage cap on the top of the bony stalk with low intensity on T₁-weighted imaging and high intensity on T₂-weighted imaging (Fig. 2D and E). From the radiologic findings, we initially suspected that the tumor was an osteochondroma or bizarre parosteal osteochondromatous proliferation (BPOP).

We decided to perform surgical treatment because the patient was in severe pain and the bony protrusion toward the sole was prominent. A 3.0-cm midline skin incision was made on the medial and slightly plantar side of the first metatarsophalangeal joint of the right foot. The medial plantar sensory nerve was separated carefully, and linear capsulotomy was performed. The plantar side of the first metatarsal bone was exposed to identify the tibial sesamoid from the metatarsal articular surface. The tibial sesamoid was confirmed by intraoperative fluoroscopic guidance and was excised from the metatarsal articular surface.

Financial Disclosure: None reported.**Conflict of Interest:** None reported.

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Fig. 1. A bony protrusion in the plantar region of the patient's right first metatarsal head (arrow).

Because the sesamoid was buried in the flexor hallucis brevis, the attached surrounding soft tissue was excised by a sharp dissection. The tumor protruded prominently toward the plantar side; therefore, the sesamoid was detached circumferentially and carefully to avoid damage to the flexor hallucis longus tendon. After excision of the tibial sesamoid, the defect was reduced with 2-0 absorbable suture.

Grossly, the surgical specimen consisted of a bony pedicle and a thin cartilage cap (7×4 mm) that was directly connected to the sesamoid (Fig. 3A). The microscopic examination revealed the hyaline cartilage cap with matured trabecular-appearing bone (Fig. 3B and C). The lesion contained bone marrow and continued to the medullary

cavity of the sesamoid (Fig. 3B). These findings were consistent with osteochondroma. Hypercellularity, enlargement of chondrocytes (bizarre) in the cartilage tissue, and proliferation of spindle cells, which are the characteristic findings in BPOP (2,3), were not observed (Fig. 3D).

On the day after surgery, the patient started to walk with a heel gait. Walking with full weightbearing was permitted 1 week post-operatively. The patient's right foot pain had disappeared at 8 months after surgery. At 5 years after surgery, the patient was free of pain and local recurrence and had no impairments in his activities of daily living.

The Japanese Society of Surgery of the Foot hallux metatarsophalangeal–interphalangeal scale (4,5) improved from 64 points before surgery to 100 points after surgery. The hallux valgus angle was 16° preoperatively and 16° at 5 years after the surgery, showing no occurrence of postoperative hallux valgus (Fig. 4A and B).

Discussion

Osteochondroma occurring in the foot and toe is unusual and accounted for 1.2% of all osteochondromas in a Mayo Clinic series (3). In particular, osteochondroma occurring in the foot is an exceedingly rare condition. To the best of our knowledge, only 1 case has been reported to occur from the tibial sesamoid (6), with 1 additional case of extraskeletal osteochondroma developing around the tibial sesamoid (7) in the English literature. In contrast, BPOP is a more frequent osteochondroma-like lesion in the hand and foot, especially in the vicinity of the tibial sesamoid (7–10).

The radiologic distinction between osteochondroma and BPOP is frequently difficult, in particular, in small lesions. Although both osteochondroma and BPOP are benign lesions, osteochondroma will nearly always be cured by complete excision of the cartilage cap, and

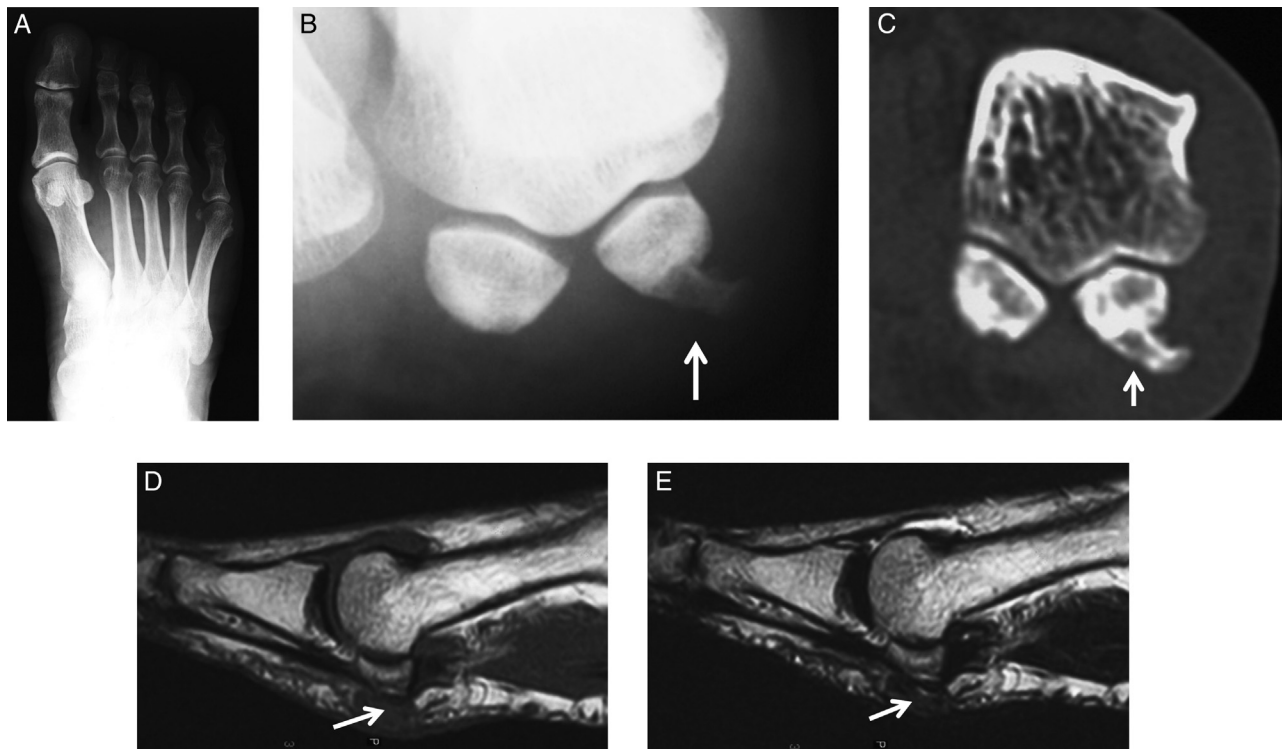


Fig. 2. (A) Dorsoplantar and (B) axial plain radiographs of the right great toe showing a bony protrusion on the plantar side of the tibial sesamoid (arrow). (C) Coronal computed tomography scan showing a distinct bony protrusion continuous with the sesamoid on the plantar side of the tibial sesamoid (arrow). Magnetic resonance imaging scans showing a thin cartilage cap with (D) low intensity on T₁-weighted image and (E) high intensity on T₂-weighted image on the surface of the bony protrusion (arrows).

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