Sesamoid tumors of the foot are rare, and there are few reports on their incidence and etiology. Their differential diagnosis includes variable benign neoplasms or tumor-like conditions such as gouty tophus, chondromyxoid fibroma, Nora’s lesion, and infection.1-4 To our knowledge, there have been no reports of primary or secondary malignant tumors of the sesamoids. We present a case of a bizarre callus formation of the tibial sesamoid that mimicked a bone tumor.

Case Report

A 56-year-old woman was admitted to our clinic at Pamukkale University School of Medicine, Kınıklı-Denizli, Turkey, with a large mass on the plantar aspect of her left first metatarsophalangeal joint. The lesion had appeared spontaneously 3 years previously and had been growing during the last year. The mass had been painful for 6 months, and the patient was unable to walk because of pain during weight-bearing. There was no history of major trauma.

During clinical examination, a 4 × 4-cm solid mass fixed to the plantar medial aspect of the first metatarsophalangeal joint was observed. Although the mass was fixed, the overlying skin was mobile. The mass was painful on palpation, although flexion and extension in a nonweightbearing position did not elicit pain. There was no localized callus, hyperemia, or proximal lymphadenopathy. All of the routine laboratory test results, such as erythrocyte sedimentation rate, total blood cell count, and serum biochemistry panel, were normal.

Plain film radiographs revealed a well-defined mass directly plantar to the first metatarsophalangeal joint. Sesamoid views showed a mass with irregular contours originating from the tibial sesamoid (Fig. 1). Computed tomography showed a bizarre new bone formation with a peripheral soft-tissue density component that suggested a sarcomatous tumor arising from the tibial sesamoid (Fig. 2).

Open excisional biopsy through a plantar medial incision was performed. The lesion was easily demarcated through a pseudocapsule and was dissected free from the surrounding structures. Histologic examination revealed fibrocartilage and hyaline cartilage areas, bone formation surrounded by activated mesenchymal cells in the soft tissue, and small punctate necrotic bone fragments (Figs. 3 and 4). The pathologic diagnosis was callus formation. The patient was followed for 3 years, during which she was asymptomatic and had no recurrence of the mass (Fig. 5).
Discussion

In this case, although a sarcoma could not be excluded on the basis of radiographs, histologic examination revealed that the tissue was benign and very similar to a callus formation. Bizarre callus formation of the tibial sesamoid probably had developed as a result of occult stress fracture of the sesamoid bone in the absence of major trauma. We hypothesized that a vicious circle had developed at the lesion site because of the continued mechanical stress and increased volume of the mass. It is well known that hallucal sesamoids increase the mechanical advantage of the flexor hallucis brevis tendons and furnish protection for the flexor hallucis longus tendon, which runs in the groove between the hallucis brevis tendons. However, hallucal sesamoids are prone to injury because they are exposed to mechanical stresses from the load applied by the metatarsal head. Sesamoid proliferation, hypertrophy, and hyperostosis are common consequences of the mechanical stress and trauma. These injuries usually affect the medial side because of the greater weightbearing role of the tibial sesamoid.
We considered several benign conditions in the differential diagnosis. Nora’s lesion was excluded radiologically because there was no intense calcification and ossification of the tumor; moreover, histologically it did not show atypical chondromatous proliferation and large atypical chondrocytes. Myositis ossificans was excluded because of the absence of its characteristic ossification at the periphery of the lesion and because the mass arose from the tibial sesamoid instead of soft tissue.

Although there have been some reports of tumor-like conditions, bizarre callus formation of the sesamoid has not been reported previously, to our knowledge. Clinicians should remember that most pathologic conditions of the hallux sesamoids are secondary to chronic trauma. It is also important to be aware that the atypical callus formation in the traumatized sesamoid can mimic an osseous tumor of the sesamoid.

References


Figure 3. New bone formation surrounded by activated mesenchymal cells, vascular channels, and a few osteoclasts (H&E, ×100).

Figure 4. Callus tissue containing degenerated and necrotic areas with hyaline cartilage (H&E, ×100).

Figure 5. Sesamoid view of the patient in the third postoperative year.