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The Disappearing Phalanx: A Case Report of a Vascular Tumor of the Toe

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ABSTRACT

We report a unique case of an epithelioid hemangioma of the third middle phalanx in which the lesion replaced the phalanx, became symptomatic, and then required resection, bone grafting, and joint arthroplasty. To the best of our knowledge, this is the first report of an epithelioid hemangioma in the toe that was treated using this approach.

Hemangiomas are benign vascular tumors that arise from the blood vessels and can occur in any location and organ of the human body. The histologic classification encompasses a variety of types, such as capillary, cavernous, hobnail, spindle cell, and epithelioid, and also includes vascular malformations, either venous or arteriovenous (1,2). Capillary and cavernous hemangiomas are the most frequent types occurring in bone and are most common in the skull and vertebrae, although they are also observed less frequently in the long bones and ribs (3,4). Epithelioid hemangiomas occur infrequently in bone and can be misdiagnosed as low-grade malignant epithelioid hemangioendotheliomas or even high-grade malignant epithelioid angiosarcomas, especially from a limited tissue biopsy specimen, in part because of the lack of clear, objective criteria for the classification of this uncommon subset of vascular tumors. Rare case series have been reported (5,6), and most of the other cases were miniseries or single reports, some of which used the previous term histiocytoid hemangioma (7–16). In a series of 50 cases of epithelioid hemangioma of the bone, the most frequent location was the foot (18%), followed by the vertebrae (16%), tibia (14%), humerus (12%), and hand (8%) (5). Occurrence in the forefoot has been reported in the metatarsal bones, with only 1 case reported in the phalanx (5,6,17,18).

We report a case of epithelioid hemangioma of the left third toe middle phalanx with total involvement and extension into the adjacent soft tissues. The lesion became symptomatic and required resection, bone grafting, and joint arthroplasty. To the best of our knowledge, this is the first report of this type of treatment for a case of epithelioid hemangioma occurring in a toe.

Case Report

A 25-year-old female with no significant medical history presented with left third toe pain of insidious onset for 1 year without any trauma in April 2015. She also denied injury or trauma to any other musculoskeletal areas. She reported swelling, stiffness, and pain in the affected area during activity. On physical examination, the alignment of her foot and toes was within normal limits. Examination of the third toe showed soft tissue swelling over the middle phalanx and some decreased range of motion of the proximal interphalangeal joint and no restriction of the metatarsophalangeal joint.

Standard routine anteroposterior, lateral, and oblique radiographs of the left foot showed complete obliteration of the third middle phalanx with soft tissue swelling and a residual thin shell of cortical bone (Fig. 1). Previous radiographs showed that the lesion had expanded over time. No other osseous abnormalities were identified. These findings were consistent with a tumor with slightly aggressive growth features. Magnetic resonance imaging of the left forefoot was performed using coronal and axial inversion recovery, axial sagittal and coronal fast spin sequences, and axial multiple planar gradient recalled. The magnetic resonance imaging scan revealed an expansile

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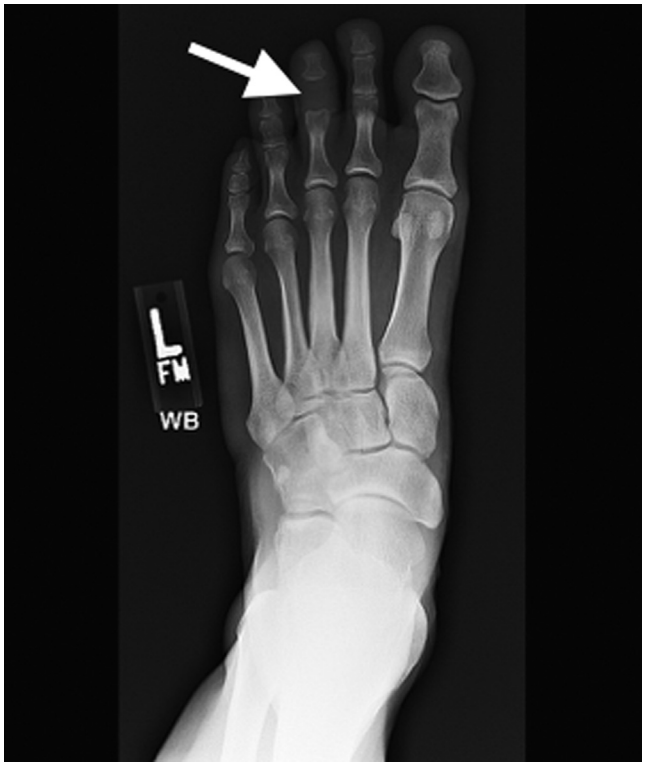

Fig. 1. Preoperative anteroposterior radiograph showing complete obliteration of the third middle phalanx *(arrow)*.

heterogeneously hyperintense mass replacing the near entirety of the third middle phalanx (Figs. 2 and 3). Areas of central dephasing were present within the lesion, consistent with calcification and the presence of a thin peripheral cortical shell of the middle phalanx. The differential diagnosis included enchondroma, vascular tumors, and giant cell lesions. Because the tumor was causing the patient considerable pain and the definitive diagnosis required histologic

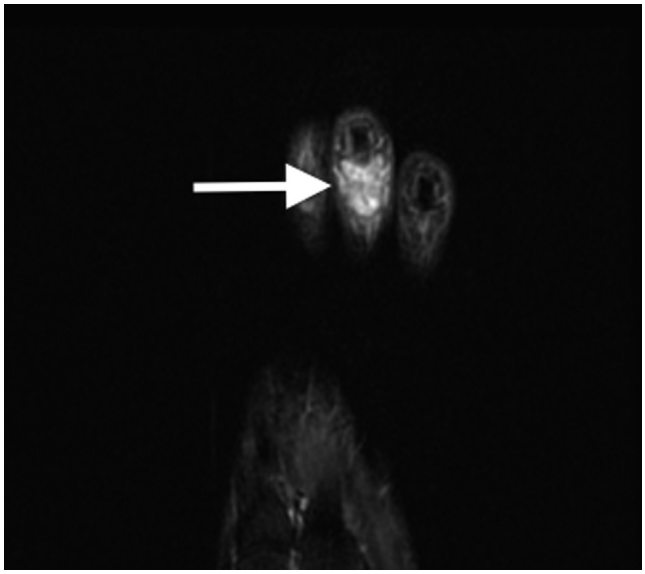

Fig. 2. Fat suppressed magnetic resonance image showing an expansile hyperintense mass that has replaced much of the third middle phalanx *(arrow)*.

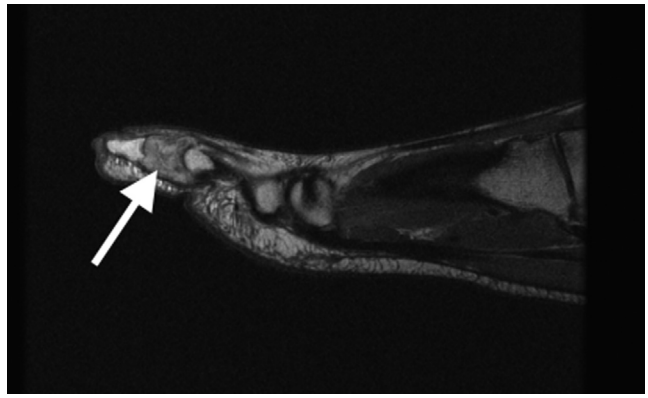

Fig. 3. Pro-time density magnetic resonance image showing an expansile hyperintense mass that has replaced much of the third middle phalanx *(arrow)*.

examination, resection of the lesion and third interphalangeal joint arthroplasty, with additional calcaneal bone grafting, was recommended. The patient underwent surgery in May 2015. She was placed in a supine position, and anesthesia was administered. A tourniquet was inflated to 250 mm Hg. At surgery, all visible tumor in the bone and its soft tissue extension were removed. On macroscopic examination, the tumor appeared confined to the middle phalanx without involvement of either the distal or proximal phalanx.

Approximately 1 cm of bone void resulted from the tumor resection. Approximately 2 cm^3 of autologous calcaneal graft was harvested laterally just distal to the tuberosity and placed into the void area. We then prepared the distal aspect of the proximal phalanx and the proximal aspect of the distal phalanx with the goal of obtaining bony union. Two 3.5-in. Kirschner wires were used to maintain fixation (Fig. 4). The specimen consisted of a portion of articular bone

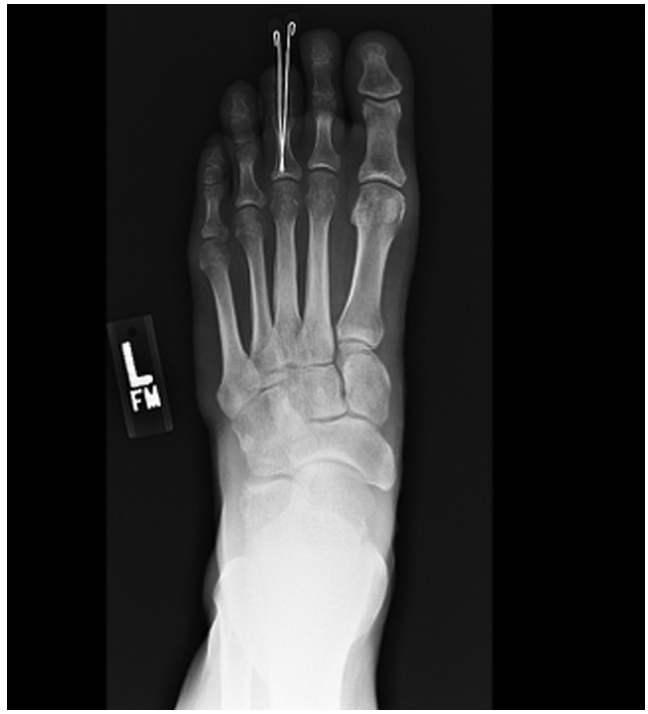

Fig. 4. Postoperative anteroposterior radiograph showing Kirschner wires used to maintain fixation of the bone graft.