Primary synovial osteochondromatosis
of the first metatarsophalangeal joint

Case Report
A 35-year-old man presented with a 4-year history of intermittent pain and swelling of the metatarsophalangeal joint of the right great toe. The symptoms had been progressing recently. No previous history of trauma was elicited. On examination, there was no limitation of movement or signs associated with arthritis. Routine laboratory tests including uric acid were normal.

Radiographs of the right foot taken when the patient was 31 years old had shown a soft tissue mass around the first metatarsophalangeal joint with erosion of the distal portion of the metatarsal bone. Finely stippled radiopacities were dispersed throughout the mass. The metatarsophalangeal joint was well preserved. Radiographs taken on this admission revealed slightly increased radiopacities without evidence of the progressive growth of the soft tissue mass and secondary osteoarthritic changes (Fig. 1). A benign synovial tumor with calcification was considered. The most likely diagnosis was primary synovial osteochondromatosis, and the patient underwent a debulking procedure.

Microscopically, the synovium revealed cartilaginous proliferation with calcification and ossification (Fig. 2). The chondrocytes were arranged in clumps separated into lobules by acellular septa. The pathological diagnosis was synovial osteochondromatosis. A residual soft tissue mass with radiopacities was visi-
Primary synovial osteochondromatosis is more common in men, usually in the third to fifth decades of life, and without any apparent inciting cause [1]. This disorder should be differentiated from the secondary form in joints affected by trauma, osteoarthritis, osteochondritis dissecans or neuropathic arthropathy [3]. Malignant transformation to low-grade chondrosarcoma has been documented but is rare [4].

Although primary synovial osteochondromatosis generally occurs in large joints, it also has been reported in the wrist [5], temporomandibular joint [6], facet joint of the spine [7], sternoclavicular joint [8] and small joints of the hands and feet [9, 10, 11, 12]. According to Milgram [2], the disease process is characterized by three recognizable stages: (1) active intrasynovial disease only, with no loose bodies; (2) a transitional lesion with both active intrasynovial proliferation and loose bodies; and (3) multiple free osteochondral bodies with no demonstrable intrasynovial disease.

The radiographic appearance of synovial osteochondromatosis depends on the stage of the disorder and the degree of mineralization within the cartilaginous nodules. Prior to mineralization, a soft tissue mass representing the thickened encrusted synovium has rounded contours against the adjacent, relatively radiolucent fat plane. Erosion of the adjacent bone due to a mass effect may be seen. Loose bodies, appearing late in the disorder, can be demonstrated by either arthrography or MRI.

When mineralized, the radiopacities within the soft tissue mass are finely stippled due to calcification and/or ossification of the cartilaginous nodules in the synovium. Proliferative changes can be seen in the intra-articular cartilaginous nodules, leading to a laminated appearance [13]. Secondary osteoarthritic changes may result from mechanical trauma to the articular cartilage caused by late-stage loose bodies.

In our patient, the clinical presentation raised the possibility of gouty arthritis. However, a normal uric acid level, lack of the typical radiographic lag behind clinical symptoms, and lack of a history of acute clinical attacks made gout an unlikely diagnosis. Radiographically, the soft tissue mass around the metatarsophalangeal joint suggested a synovial proliferative disorder, such as pigmented villonodular synovitis, synovial hemangioma, synovial osteochondromatosis, synovial sarcoma and synovial chondrosarcoma. The extensive, finely stippled radiopacities, thought to be associated with cartilage, made synovial osteochondromatosis and synovial chondrosarcoma more likely. We favored the former due to absence of frank ble on the postoperative radiographs 2 weeks later. The patient was subsequently lost to follow-up.

**Discussion**

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