

# Synovial Osteochondromatosis in Metacarpophalangeal Joint: A Case Report

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## ABSTRACT

Synovial osteochondromatosis is a benign metaplasia involving the synovial membrane, bursas, and tendon sheaths. In the literature, involvement of the hand joints is not common. Pain, swelling, and limitation of movement in the affected joints can be seen, as well as joint locking in the advanced stages of the disease. Diagnosis is usually made using imaging methods. Accurate diagnosis and follow-up of such cases are important due to the risk of malignant degeneration.

## INTRODUCTION

Synovial osteochondromatosis is a benign synovial metaplasia involving the synovial membrane, bursa, and tendon sheaths in which clusters of osseocartilaginous nodules develop in an intra-articular area.<sup>[1-3]</sup> It is more frequently seen in men than women.<sup>[4]</sup> Synovial osteochondromatosis is classified as either primary or secondary. The etiology of primary synovial osteochondromatosis is not yet known; cytological atypia may be present, and malignant progression can be seen. Secondary synovial osteochondromatosis is the result of a degenerative change in the joint, and is more frequently associated with osteoarthritis, osteochondritis dissecans, neuropathic arthropathy, and trauma. Involvement of knee, hip, shoulder, or elbow is most common for both types, while the hand joints are rarely affected. The interphalangeal and metacarpophalangeal joints are the most frequently impacted hand joints.

<sup>[3,5-7]</sup> Pain, swelling, limited range of motion, and stiffness may be seen.<sup>[8]</sup>

Diagnosis can be made based on plain radiograms, though magnetic resonance imaging (MRI) is the most valuable modality for early diagnosis and differential diagnosis.<sup>[9,10]</sup> Conservative treatments and physical therapy achieve symptomatic improvement. However, in patients with persistent symptoms, surgical resection is recommended.

Presently described is a case of synovial osteochondromatosis involving the metacarpophalangeal joint, which does not appear often in the literature.

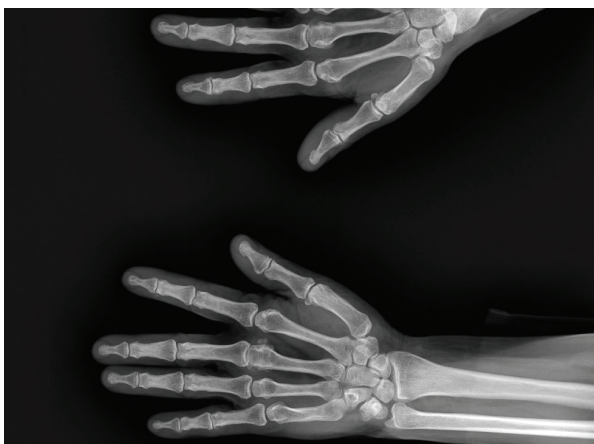
## CASE REPORT

A 63-year-old female patient presented at the outpatient clinic with complaints of transient stiffness in her hand, swelling and distortion of the joint of the third digit of her

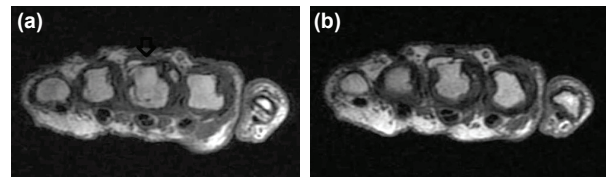
left hand, and pain, partially relieved with the application of heat. She had no paresthetic complaints. She used her hands a great deal as a result of her occupation. There was no history of a traumatic event; her overall medical history and rheumatological anamnesis were unremarkable. On physical examination, enlargement of the metacarpophalangeal joint of the third finger of her left hand with local tenderness on manual pressure were detected. There were no signs of limitation of joint movement, increased local warmth, or effusion.

Laboratory parameters and routine biochemical test results, including whole blood count and measurement of inflammation markers, were normal. Rheumatoid factor and antinuclear antibody test results were negative. Plain radiograms of her hands revealed a narrowing of the joint space; multiple round, heterogeneous, millimetric nodules with smooth, regular contours on the periphery of the joint; and osteophytic formations on the corners of the joint (Figure 1). Osteophytic enlargement of the head of the third finger metacarpophalangeal joint and corners of the proximal phalanx was observed, as well as subchondral resorptive changes of the radial and ulnar side of the third metacarpal head, and a few loose bodies with the same intensity as the adjacent bone. The largest was detected on the radial side, with dimensions of 2.2x2.4 mm. No separate bone fragments were seen on MRI. Slightly prominent osteophytic spikes and minimal degenerative resorptive changes were observed. These findings suggested osteochondral bodies developing secondary to detached osteophytes, which is consistent with secondary synovial osteochondromatosis (Figures 2a and b).

Medical treatment with nonsteroidal anti-inflammatory drugs was initiated to treat symptoms and regression was achieved. During follow-up visits, she reported that she abandoned tasks that overstrained her hands, and



**Figure 1.** On a plain radiogram of both hands, narrowing of the third metacarpophalangeal joint space and multiple round, heterogeneous, millimetric nodules with regular contours can be seen on the periphery of the joint of the left hand.



**Figure 2.** (a) MRI demonstrating subchondral resorptive changes on the radial and ulnar aspect of the third metacarpal head of the left hand, as well as loose bodies with the same intensity as the adjacent bone on the radial side. (b) MRI demonstrating subchondral resorptive changes on the radial and ulnar aspect of the third metacarpal head of the left hand, as well as loose bodies with the same intensity as the adjacent bone on the radial side.

Her complaints of pain and stiffness were completely relieved.

The patient provided written, informed consent for publication of this case report.

## DISCUSSION

Synovial osteochondromatosis is a rarely seen disease affecting the synovial membrane, tendon sheaths, and bursas. Nodules that develop in the involved region subsequent to metaplasia break down and enter into the joint space, leading to the emergence of osseocartilaginous loose bodies.<sup>[1]</sup> It is most frequently encountered in men. Primary synovial osteochondromatosis generally has an unknown etiology, and it is seen more frequently during the third and fourth decades of life. Secondary synovial osteochondromatosis develops more often with a degenerative background, and is seen at a later age. Generally, osteoarthritis develops secondary to osteochondritis dissecans, trauma, or neuropathic arthropathy.<sup>[5]</sup> Synovial osteochondromatosis more frequently affects major joints, such as the knee, elbow, shoulder, and hip joints; very rarely are the hand joints affected, and in these cases, usually the interphalangeal and metacarpophalangeal joints are involved.<sup>[3]</sup> Patients most often complain of pain localized in the involved joint. In addition, limitation of joint movement, and at an advanced stage, locking may be observed. On physical examination, swelling and distortion of the affected joint, tenderness on manual compression, and a palpable nodule can be detected.<sup>[12]</sup> The presently described patient is a female in her sixth decade of life whose third metacarpophalangeal joint was affected. She did not relate any traumatic event; however, she used her hands excessively in her work. She reported that the application of heat had decreased her pain and stiffness. On physical examination, an apparent disfiguration and enlargement of the affected joint and tenderness on manual pressure were noted. However, suggestions of arthritis, such as limitation of joint movement, effusion, and increased local warmth were not found. Therefore, degenerative pathologies were considered.

In cases where synovial osteochondromatosis has affected the hand joints, it is important to consider inflammatory arthropathies and osteoarthritis in the differential diagnosis. Though laboratory tests do not have a role in the establishment of diagnosis of osteochondromatosis, inflammation markers should be evaluated for differential diagnosis with inflammatory disease.<sup>[13]</sup>

Definitive final diagnosis of synovial osteochondromatosis is made based on radiological findings. On plain radiograms, detection of ossified nodules on the periphery of the joint establishes the diagnosis and is valuable in the evaluation of osteoarthritis. However, in 5% to 30% of cases, the nodules are not ossified and cannot be seen on plain radiograms.<sup>[9]</sup> Milgram classified osseocartilaginous lesions in 3 phases based on the developmental stages of the disease. In the early phase, active synovial disease is present without any loose bodies in the joint space. In the transient phase, both active synovial disease and loose bodies in the joint space are detected. In the late phase, active synovial disease is not detected, despite the presence of loose bodies.<sup>[14]</sup> Within this context, advanced imaging modalities, such as computed tomography and MRI may be required to establish an early diagnosis and differential diagnosis.<sup>[9]</sup> MRI has an important role in the detection of unmineralized nodules, in making an early diagnosis, and for the differential diagnosis with inflammatory pathologies.<sup>[15,16]</sup> Measurements of inflammatory markers in our case were within normal limits. On plain radiograms, intra-articular narrowing of the third metacarpophalangeal joint, osteophytic changes on the joint edges, and multiple, heterogeneous, millimetric nodules with smooth, regular contours were detected on the periphery of the joint. On MRI, a few loose bodies, the largest with dimensions of 2.2x2.4 mm, with the same intensity as adjacent bone were observed, as well as degenerative findings in the second, third, and fourth metacarpophalangeal joints. When the clinical findings, radiological signs, and laboratory parameters were evaluated, the case was thought to be consistent with secondary synovial osteochondromatosis developed with the background of osteoarthritis.

Surgery is the accepted treatment for synovial osteochondromatosis. Based on the Milgram classification, synovectomy at an early phase, and synoviectomy, and extraction of intraarticular foreign body are performed at the transition, and late phases.<sup>[14]</sup> Surgical treatment is thought to be important given the possibility of malignant transformation, the favorable effect of extraction of intra-articular foreign bodies on symptoms, and to decelerate articular degeneration.<sup>[9,17]</sup> Symptomatic treatment can be achieved with conservative treatments and physical therapy modalities.<sup>[18]</sup> Especially in non-weight bearing upper extremity joints, conservative treatments can be applied for symptomatic improvement; however because of the risk of progression, as well as benefits to be obtained, the patient

should be referred to surgery.<sup>[17]</sup> In our case, a decrease in symptoms was observed using nonsteroidal anti-inflammatory drugs and avoiding of pain-eliciting hand movements. The patient declined surgery thanks to the regression of her complaints, so she was kept under clinical surveillance.

In conclusion, even though most often major joints are affected by synovial osteochondromatosis, involvement of small hand joints should not be forgotten. A differential diagnosis with rheumatological diseases should be performed. It is also important to recall that primary synovial osteochondromatosis, in particular, may demonstrate malignant progression; therefore, cases of synovial osteochondromatosis will require further examination and follow-up.

### Informed Consent

Approval was obtained from the patient.

### Peer-review

Internally peer-reviewed.

### Authorship Contributions

Surgical and Medical Practices: Ç.A.K.; Concept: Ç.A.K.; Design: Ç.A.K.; Data collection &/or processing: Ç.A.K.; Analysis and/or interpretation: Ç.A.K., A.S.; Literature search: Ç.A.K., A.S.; Writing: Ç.A.K., A.S., A.E.; Critical review: Ç.A.K., A.S.

### Conflict of Interest

None declared.

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### Metakarpofalangeal Eklemde Görülen Sinovyal Osteokondromatozis: Bir Olgu Sunumu

Sinovyal osteokondromatozis sinovyal membran, bursa ve tendon kılıflarını tutan benign bir metaplazidir. Literatürde el küçük eklemlerinin tutulumuna sık rastlanmamaktadır. Tutulan eklemlerde ağrı, şişlik ve hareket kısıtlılığı, ilerleyen dönemlerde kilitlemeler yapabilir. Tanısı genellikle görüntüleme yöntemleri ile konulmaktadır. Malign transformasyon riski açısından bu tür olguların tanısı ve takibi önemlidir.

**Anahtar Sözcükler:** El; manyetik rezonans görüntüleme; metakarpofalangeal; osteokondromatozis.