

# Anterior Ankle Synovial Osteochondromatosis: a Rare Case in an Adolescent

Synoviální osteochondromatóza předního hlezna: vzácný případ u dospívající

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## INTRODUCTION

Synovial osteochondromatosis is a rare arthropathy of synovial joints, presents as loose bodies within the joint. It is a monoarticular disease of unknown etiology. The peak age is in the 4<sup>th</sup> and 5<sup>th</sup> decades and the incidence rate is 1/100,000. It has been reported rarely in children in the literature. Affects men 2 times more often than women. The complaints of the patients are usually pain, swelling and limitation of movement. The knee joint is most commonly involved in 65–70% of cases. This is followed by the hip with approximately 20%, then elbow and shoulder. Foot and ankle involvement is also very rare (4).

## CASE REPORT

A 15-year-old female patient presented with pain and swelling in the right ankle for 1 year. There was no history of trauma. Physical examination revealed pain-

ful joint traces anteromedially and anterolaterally in the right ankle. Magnetic resonance imaging revealed hypointense signal-free free bodies on coronal and axial T2-weighted images, prominent anteriorly in the ankle. The largest loose body was 10x7 mm in size (Fig. 1 and 2). Sagittal T1 FSE sequence showed irregularity in the talus and degeneration in the joint (Fig. 3). Sagittal T2 STIR showed subchondral lesion and focal bone marrow edema in the talus (Fig. 4). The diagnosis was primary synovial osteochondromatosis.

The differential diagnosis may include secondary synovial osteochondromatosis, tenosynovial giant cell tumor, synovial hemangioma, lipoma arborescens, synovial chondrosarcoma, siderotic synovitis and periarticular melorheostosis. Advanced age group and degenerative changes in SSC are diagnostic clues. In tenosynovial giant cell tumor, the characteristic low intensity of larger masses on MRI is helpful in the diagnosis. Lipoma arborescens shows a characteristic fat signal.



Fig. 1. Coronal PD Fat Sat sequence shows loose bodies anterior to the anterior ankle.

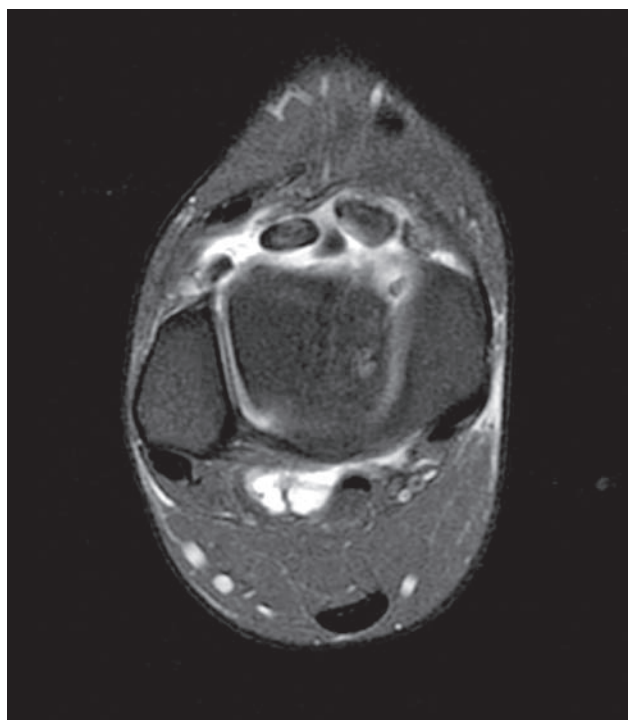


Fig. 2. Axial PD Fat Sat sequence shows loose bodies anterior to the anterior ankle.

## DISCUSSION

Synovial osteochondromatosis is divided into primary and secondary. Primary form occurs in a normal joint and is related to osteoartiric processes. It has a high probability of recurrence and can lead to severe degenerative arthritis. It is considered to be more painful than secondary cases. In secondary synovial chondromatosis cartilage fragments detach from the articular surface and become embedded in the synovium. These loose bodies are nourished by the synovium and produce chondroid nodules. The recurrence rate ranges from approximately 3–23% and is seen in the primary form but not in the secondary form (4).

The pathogenesis is thought to involve undifferentiated mesenchymal stem cells proliferating in the synovium to form hyaline cartilage. In the joint, these cartilaginous structures may protrude and calcify or even ossify. The disease can be divided into three stages on the basis of maturation. Milgram introduced three categories in 1977: early, transitional and late (3). The early stage is defined as synovial disease that is active but without loose bodies. Synovial disease and loose bodies are indicators of the transitional stage. Late stage is defined as no synovial involvement. Synovial osteochondromatosis is usually thought of as metaplasia. Cases of chondrosarcoma arising from synovial osteochondromatosis also suggest a possible neoplastic condition. On histologic analysis, synovial osteochondromatosis has some features found in low-grade chondrosarcoma. However, this does not mean malignancy. The features that successfully differentiate synovial osteochondromatosis from chondrosarcoma are

the presence of chondrocytes in layers in synovial osteochondromatosis but in clusters in chondrosarcoma, myxoid changes in synovial osteochondromatosis but solid matrix in chondrosarcoma, absence of hypercellularity and necrosis in synovial osteochondromatosis, and absence of infiltration of the adjacent bone margin in synovial osteochondromatosis (1).

Primary synovial osteochondromatosis in pre-adolescents has rarely been reported. It has rarely been described in the wrist, acromioclavicular, temporo-mandibular, tibiofibular and metacarpophalangeal or interphalangeal joints and in extra-articular localizations. It may occur as a result of trauma in extra-articular localization (1, 4).

The main aim of treatment of synovial chondromatosis is to reduce pain and prevent the development of early osteoarthritis. It is usually treated surgically. The surgical approach includes synovectomy and removal of intra-articular bodies, depending on the stage of the disease. While the traditional method is open arthrotomy to remove free bodies, the results of arthroscopic treatment, which became widespread after 2007, are also satisfactory (5). This minimally invasive approach to therapy currently allows for early recovery and low morbidity. Numerous benefits of minimally invasive surgery include reduced discomfort, edema, infection risk, and improved patient satisfaction. In addition to being substantially quicker to recover from than open procedures, arthroscopic debridement and loose body removal do not necessitate postoperative immobilization. The patient is pain-free when walking, and no osteoarthritis of the ankle joint or recurrence have been



Fig. 3. Sagittal T1 FSE sequence shows osteoarthritic changes such as irregularity in the talus and osteophyte formation in the tibiotalar joint.

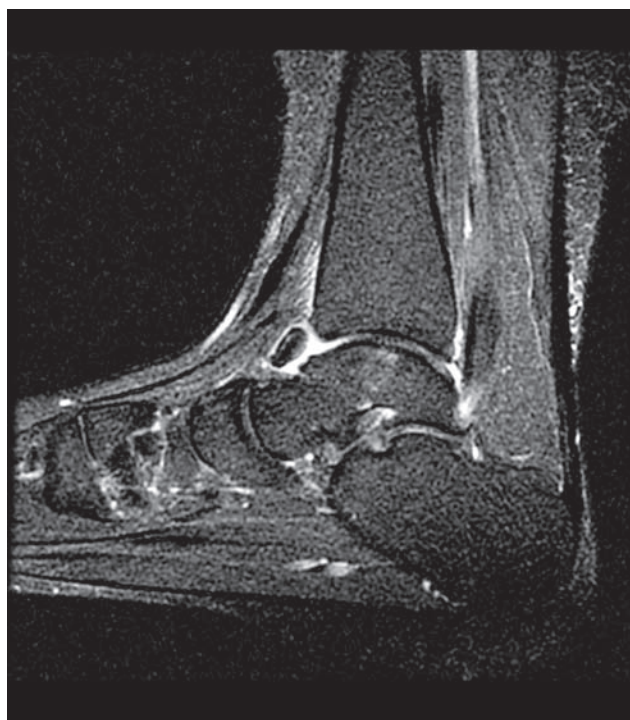


Fig. 4. Sagittal STIR sequence shows focal bone marrow edema of the subchondral lesion in the talus.

seen throughout the observation period (6). However, limited synovectomy with arthroscopy and a residual loose body is also a possibility, which might raise the risk of recurrence and malignant transformation (2).

## CONCLUSIONS

Synovial chondromatosis presents with chronic pain, swelling and limitation of movement. The radiologist's knowledge of this entity, the joints involved and their differential diagnosis will contribute to early diagnosis and treatment with one of the main goals of preventing early osteoarthritis.

## References

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