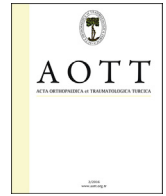


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## An unusual presentation of synovial chondromatosis of the knee in a 10-year-old girl

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### ABSTRACT

Synovial chondromatosis commonly occurs in the anterior compartment of the knee joint, predominantly in middle-aged men. It is relatively unusual in female children and is rarely encountered in the synovium beneath the meniscus. The present report describes a rare case of synovial chondromatosis that developed in the synovium just inferior to both menisci of the right knee in a 10-year-old girl. At this unusual age and location, there is a greater probability of missed diagnosis, due to the lack of definite informative incidence, and difficulty in finding the lesions during arthroscopic examinations. In the present case, multiple loose bodies were hidden by the meniscus, and thus, there were no structural abnormalities in the initial arthroscopic views before probing the meniscus. After careful inspection, we found numerous cartilaginous loose bodies and removed them as much as possible with arthroscopy. © 2017 Turkish Association of Orthopaedics and Traumatology. Publishing services by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

### Introduction

Synovial chondromatosis is an unusual proliferative and metaplastic disorder characterized by the formation of multiple cartilaginous nodules in the synovial membrane of the joint, tendon sheath, and bursa.<sup>1</sup> It usually occurs in middle-aged and elderly patients with a minor male predominance.<sup>2,3</sup> Although synovial chondromatosis can develop in any joint where synovium exists, it is most prevalent in the knee followed by the hip joint.<sup>4</sup> Within the knee, the disease predominantly occurs in the anterior compartment such as the suprapatellar pouch, medial or lateral gutter, and infrapatellar fat pad.<sup>5</sup> Recently, there have been some reports regarding synovial chondromatosis in the unusual location of the knee joints, such as posterior compartment.<sup>6,7</sup> However, to our knowledge, there have been no reported cases occurred in the submeniscal area of the knee joint.

The present report describes a case of a 10-year-old girl who presented with synovial chondromatosis that had occurred in the synovium just inferior to both menisci in the right knee, with a

locking sensation for 6 months. In the present case, synovial chondromatosis occurred in the common joint but in a less common age group and in an unusual location of the joint. In the arthroscopic examination, multiple loose bodies were hidden by the meniscus initially. After careful inspection with probing, multiple loose bodies were successfully managed with arthroscopic removal.

### Case report

A 10-year-old girl presented to our orthopaedic outpatient clinic with a chief complaint of flexion deformity of the right knee joint and limping gait that had begun a half year previously without any specific injury event. Physical examination revealed lack of extension by approximately 20°, but knee flexion was unimpaired. Tenderness over the medial and lateral joint line was also noted. No effusion was visible, and there was no palpable mass across the joint line. During the gait, a slight limp was observed due to the fixed flexion deformity of the right knee. Laboratory test results were within normal limits, and there was no evidence for infectious or other inflammatory arthritis. There was also no specific familial history for any musculoskeletal disorders.

Plain radiographs revealed no mass or bony lesion in the right knee joint. Magnetic resonance images (MRI) revealed innumerable tiny nodular lesions in anterior and posterior part of the knee just inferior to the both menisci (Fig. 1). These lesions could only be

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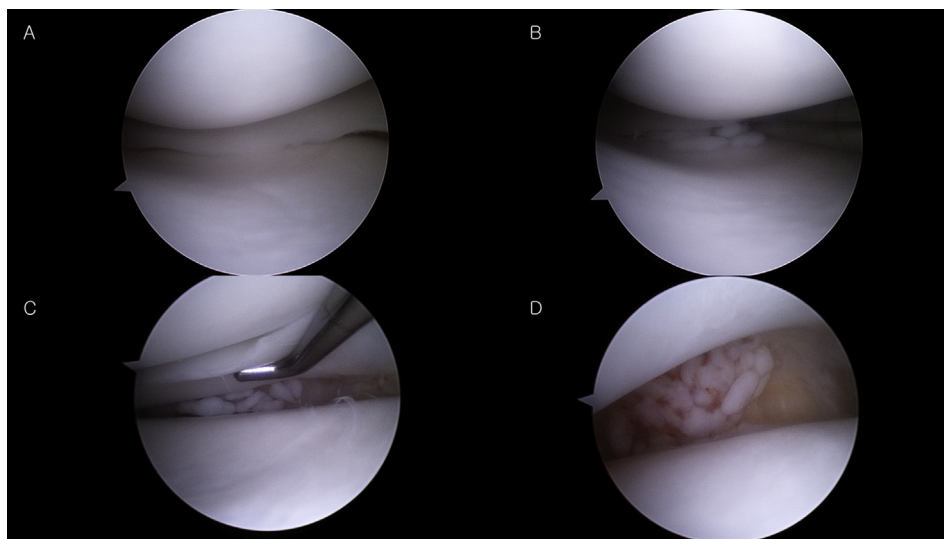
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**Fig. 1.** Magnetic resonance imaging. T2 axial (A) and PD sagittal (B) MRI showed innumerable low signal intensity, tiny, nodular lesions (arrowhead) in the anterior and posterior parts of the knee just inferior to both menisci. T1 sagittal (C) MRI, which were cut with the same slice cut as in Fig. 1B, showed obscure synovial lesions without mass configuration.



**Fig. 2.** Arthroscopic view. Initial arthroscopic view (A) of the medial compartment through the anterolateral portal showed normal configuration of the articular cartilage and meniscus. Elevation of medial (B) and lateral (C, D) menisci revealed multiple cartilaginous loose bodies.

identified as numerous small round masses with low signal intensity on T2-weighted axial and proton density (PD) sagittal images. However, on T1-weighted sequence, the lesions appeared isointense to the skeletal muscle, and thus could not be distinguished from the surrounding tissues. Other intra-articular structures, including cartilage, meniscus, and ligaments, showed normal appearance. Surgery was decided to resolve the symptoms and to make a definite diagnosis.

The patient was placed in the supine position, and surgery was performed under tourniquet control. Diagnostic arthroscopy was performed using a 30° arthroscope through an anterolateral portal. On the arthroscopic examination, there were no floating loose bodies in the knee joints. Meniscus, cartilage and ligament structures were normal in appearance. However, elevation of both menisci by the probe revealed numerous tiny cartilaginous materials, which were loosely attached in the synovium just inferior to the meniscus (Fig. 2). The loose bodies were removed and washed out as much as possible, and synovial tissue was debrided in the parts where there were cartilaginous bodies in it. We then created anteromedial and anterolateral submeniscal portals to access loose bodies located inferior to the anterior horn of both menisci. Via the submeniscal portal, numerous chondromatous loose bodies were also removed (Fig. 3). Histologic examination revealed a neoplastic

cartilaginous tumor resembling hyaline cartilage with a lobulated configuration encapsulated by synovial tissue (Fig. 4). In the lacunae of the cartilaginous tissue, there were clusters of chondrocytes with single nuclei of regular contour and diameter, which was consistent with a diagnosis of synovial chondromatosis.



**Fig. 3.** Gross photograph. There were numerous brilliant white, cartilage-like loose bodies each with an average diameter of 2–5 mm.

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