Synovial Chondromatosis of the Hip Joint: A Case Report

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ABSTRACT

Synovial chondromatosis of the hip joint is a rare, benign synovial disorder that results in loose body formation because of metaplastic transformation. The diagnosis of hip involvement is frequently delayed due to the gradual onset of symptoms. In this case, the radiographic features were not conclusive, so we performed an ultrasound-guided synovial biopsy before surgical intervention. Arthroscopic-assisted mini-open surgery was used to treat the synovial chondromatosis of the hip joint. There were no issues during the procedure or afterward. The patient was symptom-free and had no radiological signs of a recurrence at the most recent check-up. The recurrence rate could be decreased by using the arthroscopic-assisted mini-open technique to complete the objectives of thorough synovectomy, debridement, and loose body removal. This technique lowers the risk of surgical complications by preventing femoral head dislocation. We present synovial chondromatosis of the hip in our study, and to our knowledge, no paper has been published in our setting till date.

Keywords: Arthroscopy; Hip joint; Synovial biopsy; Synovial chondromatosis.

INTRODUCTION

Synovial chondromatosis is a rare disease characterized by the formation of multiple metaplastic cartilaginous masses in the synovium that may detach and develop into loose bodies in the joint, causing damage to the articular surface and subsequently leading to osteoarthritis.[1-3] The majority of cases are monoarticular, with the knee being the most commonly involved joint, accounting for 50-65% of cases, followed by the hip, elbow, shoulder, and ankle joints. These are most common in men aged 30 to 50 years.[4,5] Early diagnosis of hip synovial chondromatosis often means a better prognosis but in most cases, the diagnosis is often delayed until a more advanced stage of the disease, when symptoms like pain, swelling, and restriction of joint movement occur. If not treated, the synovial chondromatosis results in secondary osteoarthritis due to cartilage wear. So, early diagnosis and treatment are very important.[6,7,8] Few scientific studies have been published on synovial chondromatosis of the hip. However, due to the unique anatomy of the hip joint, surgical management of synovial chondromatosis is much more difficult. There have been reports of an open arthrotomy with femoral head dislocation to expose the entire hip joint or an arthroscopic approach to the hip joint. However, the best approach for successfully managing this condition remains debatable.[9-12] We present a case of a female patient with left hip synovial chondromatosis, along with a description of the disease course, radiographic presentations, and surgical management.

CASE REPORT

A 69-year female visited our outpatient department with a complaints of back pain for the last 15 years and left hip pain for 10 years. Her chief complaint was pain and difficulty walking. There was no previous history of

trauma, swelling, or constitutional symptoms. She was a known case of hyperthyroidism and hypertension under medications. The range of motion of the hip joint was restricted during abduction, internal rotation, and external rotation. The neurologic and vascular status of the limbs were unremarkable. She was diagnosed with degenerative disc disease and was taking medications when she came to see us.

Figure1: Preoperative X-ray films

The radiography of the pelvis and left hip showed early osteoarthritic changes with marginal osteophytes and subchondral sclerotic changes at the articular surfaces. There were no intra-articular loose bodies or abnormal para-articular soft tissue density seen in the radiograph (Figure 1).

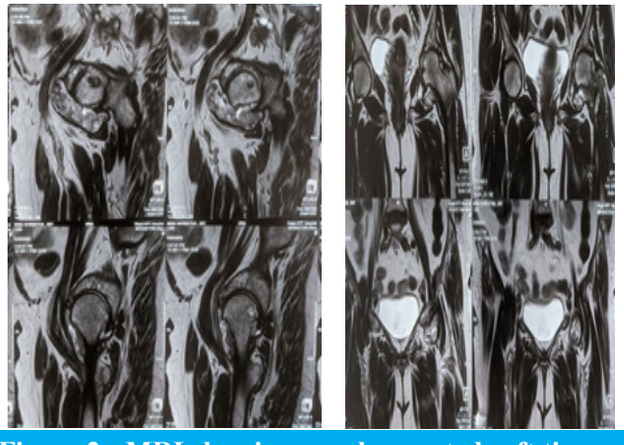

Figure 2: MRI showing conglomerated soft tissue lesion

The patient was then sent for a magnetic resonance imaging (MRI) scan, which showed a distended left hip joint synovial space with a large, well-defined conglomerated soft tissue lesion collectively measuring about 7x2x6 cm seen filling the synovial space of the left hip joint predominantly on the anterior and inferior aspects. Synovial enhancement was seen along the anteromedial aspect of the joint. MRI differentials included synovitis with synovial debris, pigmented villonodular synovitis, and synovial growth with osteoarthritic changes of the left hip (Figure 2).

The MRI findings were also inconclusive, and there was a diagnostic dilemma, we planned for an ultrasound-guided synovial biopsy before surgical intervention.

We performed an ultrasound-guided synovial biopsy from the synovial mass under local anesthesia. We used a semiautomatic co-axial biopsy system for the biopsy. Four cores of the biopsy were taken from synovial tissue and sent for histopathological examination which suggested synovial chondromatosis.

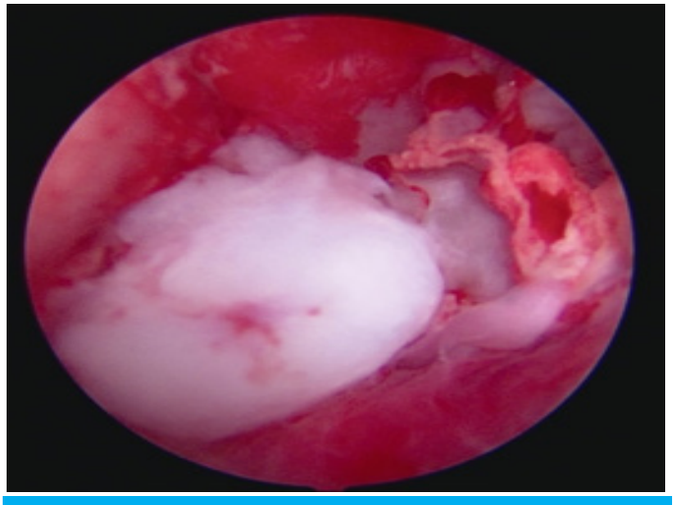

Figure 3 :Loose bodies seen during arthroscopy

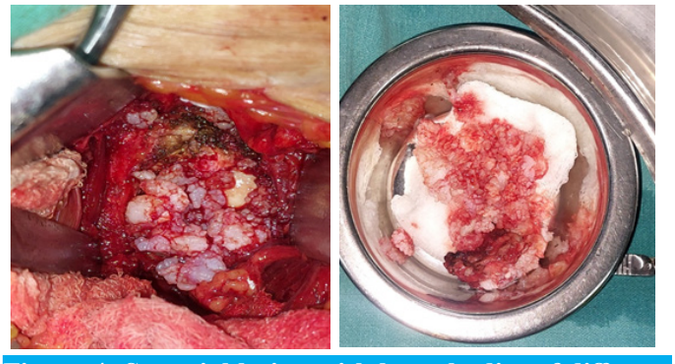

Figure 4: Synovial lesion with loose bodies of different sizes after mini open anterior approach

We planned a surgical intervention because the patient was disabled by the pain, with a restricted range of motion, and difficulty performing activities of daily living. Hip arthroscopy was performed, and a partial synovectomy was done, but it was difficult to remove all loose bodies (Figure 3); so a mini-open anterior approach was given to gain access to the joint capsule. A T-shaped incision was given on the capsule anterior to the hip joint, and multiple loose bodies were found (Figure 4). Synovial tissue was resected and loose bodies were removed without dislocating the hip. The capsule was sutured and the wound was closed in layers. The resected tissue and loose bodies were sent for histopathological examination.

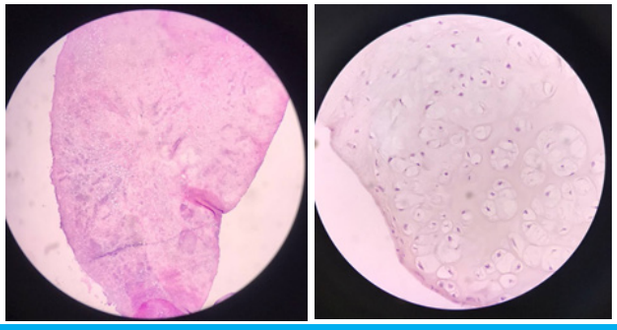

Figure 5: Section showing hyaline cartilage with synovial hyperplasia

The histopathologic examination showed multiple hyaline cartilaginous nodules lying beneath the synovium, with the clusters of chondrocytes and a scant metachromatic chondroid matrix in the background. The chondrocytes were hypercellular with minimal atypia, including binucleate cells. However, no calcification was noted in the entire sections examined, which confirmed the diagnosis of synovial chondromatosis (Figure 5). There were no postoperative complications and further recovery was uneventful.

DISCUSSION

Synovial chondromatosis is a benign osteochondral condition that appears as multiple ossified or cartilaginous nodules in the synovial joints.[13] It can be primary or secondary. The conditions causing secondary synovial chondromatosis are trauma, osteochondritis dessicans, and inflammatory and non-inflammatory arthropathies.[14] Synovial Chondromatosis was first reported by Ambrose Pare in 1958.[15] Any synovial joint can be affected by synovial chondromatosis however, the most commonly affected joint is the knee.[16-18] The etiology of the disease is unknown. Many studies have been done to find out the cause of the disease, but the exact cause of synovial chondromatosis is still unknown.[1] Due to the lack of specific symptoms and signs, as well as its rarity, hip joint synovial chondromatosis is frequently missed or delayed in diagnosis. Our patient was also being treated for PIVD and visited us after several years of hip pain. According to the Milgram staging, our patient was in Stage 2, a transition stage from intrasynovial lesions to loose bodies containing both active synovial and loose bodies.[19] X-rays, CT scans, and MRIs are very important diagnostic tools pre-operatively. Radiographs may be normal in the early stages, which combined with the non-specific clinical presentation make the diagnosis difficult.[20] The differential diagnoses for this condition are synovial hemangioma, pigmented villonodular synovitis, synovial cyst, osteosarcoma, and synovial sarcoma.[21-23] We faced a diagnostic dilemma in our case due to the nonspecific clinical presentation and radiological findings. The gold standard for diagnosis is histopathological examination. So to confirm the diagnosis before surgical intervention we performed an ultrasound-guided synovial biopsy, which suggested synovial chondromatosis.

Ultrasound-guided synovial biopsy has been carried out for various indications, especially to find out the cause of synovial thickening.[24] Biopsy of the synovium in other joints is carried out using high-frequency linear transducers, however, for biopsy of the hip joint, a low-frequency curvilinear transducer is usually used due to the deeper location of the joint.[24] The success rate of the synovial biopsy is very good, and a study found up to 88% success rate in getting adequate tissue samples on synovial biopsy from the hip joint. The complication rate was very less with ultrasound-guided biopsy and the study showed no complications among the patients who underwent synovial biopsy under ultrasound guidance of various small and large joints including the hip.[25]

In symptomatic patients, surgical excision of loose bodies is the preferred method of treatment, which includes open or arthroscopic loose body removal and synovectomy.[26,27] Early open or arthroscopic debridement, synovectomy, and loose body removal before articular cartilage damage showed good results,[28,29] but open debridement and loose body removal require hip dislocation, which may increase the risk of femoral head avascular necrosis in the future. The arthroscopic procedure is associated with a high rate of recurrence and incomplete debridement.[26,27] The surgical intervention in different articles varied, so we planned for an arthroscopy-assisted mini-open approach.[26,27] We could not remove all loose bodies arthroscopically so we had to make a mini anterior incision and performed a synovectomy and remove all loose bodies. Clinical suspicion, early detection, and surgical treatment with the appropriate approach may result in an excellent postoperative outcome and a faster return to active life. Arthroscopic-assisted mini-open surgery for hip synovial chondromatosis proved to be a feasible and effective method.

CONCLUSION

Synovial chondromatosis is a rare cause of hip pain and swelling, but it should be considered when evaluating any cases of insidious hip joint pain. An ultrasound-guided synovial biopsy should be performed whenever there is a diagnostic dilemma, so that the appropriate surgical intervention can be planned. Surgical treatment is indicated for the synovial chondromatosis of the hip joint. The arthroscopic-assisted mini-open technique did achieve the goals of extensive synovectomy and complete loose body removal. This is, therefore, a viable alternative for orthopedic surgeons to treat this rarely encountered disease.

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