

Case Report

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Anterior Knee Swelling in Severe Knee Osteoarthritis - Co-existence of Intra and Extra-Articular Synovial Chondromatosis Within Quadriceps Muscle and Suprapatellar Bursae: An Uncommon Presentation

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Abstract

Synovial chondromatosis is a benign condition found in the knee (up to 70%), followed by the hip, elbow, wrist, and shoulder joints. It has a rare incidence of 1 per 100 000 people. We report a case of a 68-years-old lady who presented with progressive left knee pain for the past two years associated with a swelling of the knee, which later migrated proximally to the distal thigh. The patient did not notice any increase in size but complained of pain especially in the extended knee position. Physical examination showed bilateral genu varus, and the right knee lateral collateral ligament laxity with tenderness over the medial joint line. Range of motion knee was 5 to 90°. The lesion was a 4 x 3cm hard non-tender swelling with a well-defined border localized to the anterior thigh distally. It was mobile and moves with quadricep muscles contraction. Radiological imaging showed knee osteoarthritis grade 4 with congregations of multiple calcified nodules located in the thigh with solitary intra-articular calcified nodular mass. Intra-operatively, there were multiple lesions of different sizes found within the quadriceps muscle. Total knee replacement was performed, and tissue samples were sent for histopathological examination which was later reported as synovial chondromatosis with no evidence of malignancy. This case report highlights the even rarer presentation of extra-articular synovial chondromatosis located within the quadriceps and superficial to the patellar bursae. Post-operatively, the patient was “pain free” and there was no recurrence of the lesion at one year follow up.

Keywords: osteoarthritis, intracapsular, extracapsular, anterior knee swelling, synovial chondromatosis

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Introduction

Synovial chondromatosis is a benign condition formed by foci of cartilage found in the synovial membrane, bursae or tendon sheath. The pathophysiology of this condition is the result of metaplasia of synovial tissues. Therefore, it commonly affects arthrodial joints. Seventy percent of cases reported are in the knee, followed by the hip, elbow, wrist, and shoulder joints. Febel et al reported the condition has a preponderance of 1 in 100,000 population making it a rare disease ^[1].

We present a case of knee osteoarthritis with co-associated intra and extracapsular synovial chondromatosis of the knee joint. The patient underwent total knee replacement and synovectomy. To the author knowledge, extracapsular synovial chondromatosis is rare as most reported cases of synovial chondromatosis are intracapsular. After surgery, the patient was pain free with improved range of motion of the knee. During our subsequent follow-up, there was no recurrence of the lesion.

Case Report

A 68-years-old lady presented with progressive right knee pain worsening over the last two years. The pain worsened when the patient tried to stand up from sitting, on climbing up or down stairs and had now reduced her walking distance. She noticed a swelling at the upper part of the knee which had been static in size but caused pain on movement. She also noted the swelling had extended proximally from the knee within the last year. The swelling was painless but due to the worsening knee pain, she decided to seek treatment.

Examination showed bilateral genu varus. The right knee had lateral collateral ligament laxity with a range of motion between 5 to 90°. Patella grinding test was positive and the medial joint line tender. There was no knee effusion. The swelling measured 4x3cm, was well-defined, hard and localized to the anterior distal thigh. It was mobile and moved along with quadriceps muscle contraction. There were no overlying skin changes.

Radiological imaging of the knee showed knee osteoarthritis, marked loss of medial joint space with surrounding osteophytes. There were several congregations of calcified nodules located anterior to the distal thigh. No other imaging was performed. Samples of the swelling were sent for histopathological examination which later confirmed synovial chondromatosis. Blood infective markers screen were within normal limits.

Total knee replacement was performed through a midline incision via a medial parapatellar approach. The procedure was straightforward and apart of the osteoarthritic changes to the knee, intraoperative findings were multiple hard “cauliflower” like nodules. These nodules were located within the quadriceps muscle. Rehabilitation was uneventful and the patient was discharged well at day 5 post-surgery as per our standard post-operative plan. Figure 5 showed the histopathological picture of synovial chondromatosis.



Fig 1: The arrow shows the location of swelling at the anterior of the left knee.



Fig 2: The radiological images in AP and lateral. The arrows show the extracapsular calcified lesion. There is a small oval intra-articular calcified lesion located anteriorly between the femur and tibia.



Fig 3: Intra-operative shows the femoral, patella and tibia part. There is no calcified lesion seen intracapsular.



Fig 4: Intra-operative picture shows the “cauliflower” like calcified nodules.

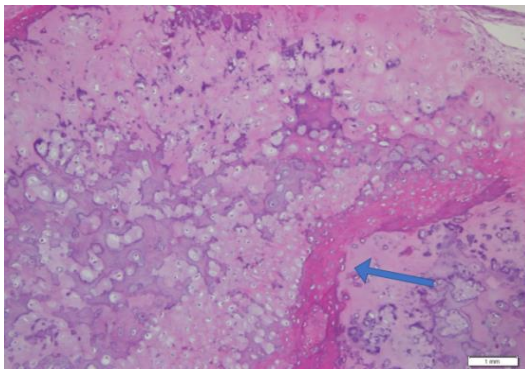


Fig 5: Microscopically image. The arrow shows the endochondral ossification within synovial tissue.

Discussion

Pathogenesis of synovial chondromatosis is poorly understood. Nakanishi et al isolated the diseased synovium and found high levels of bone morphogenic proteins (BMP) 2 and 4, which led to the pathologic metaplasia^[2].

Primary synovial chondromatosis is a condition where the ectopic cartilage presents in the synovial tissue of the normal joint. In secondary synovial chondromatosis, the lesions are presented in pre-existing joint pathologies such as osteoarthritis, rheumatoid arthritis, osteochondritis dissecans and osteochondral fractures. Free fragments from the joint disease are thought to induce the metaplastic cartilage formation in the synovium tissue^[3].

In most cases, management is debatable. Most agree that the decision for surgery or conservative treatment depends on symptoms. Surgery is recommended in the presence of a painful knee or mechanical block. Arthroscopic excision is recommended for smaller lesions. However, no specific study has conducted to determine the ideal lesion size for arthroscopic excision. The study which conducted by Houdek et al found that 5 out of 20 patients had recurrence of synovial

chondromatosis. This result is similar to Ackerman et al study result^{[4][5]}.

In this case, the patient had knee osteoarthritis which had failed to improve with conservative management. The knee pain was due to the joint disease, but the knee swelling was not painful. The tissue sample was sent for histopathological examination and come back as synovial chondromatosis, without suggestion any signs of malignancy transformation. In terms of outcome, the patient had improved range of motion from pre-operative range of 5 to 90 degree to post-operative range of 0 to 130 degree. No signs of recurrence were noted at one year of our follow up.

This case report highlights the possibility of having extra-articular synovial chondromatosis in a severe degenerative joint disease like osteoarthritis. In this case it was located within the quadriceps muscle and suprapatellar bursae.

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