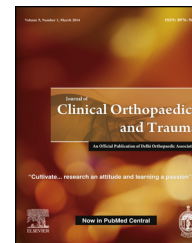


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Case Report

Disseminated synovial chondromatosis of the knee treated by open radical synovectomy using combined anterior and posterior approaches



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ARTICLE INFO

Article history:

Received 26 June 2014

Accepted 21 July 2014

Available online 7 August 2014

Keywords:

Synovial chondromatosis

Knee

Baker's cyst

Radical synovectomy

Anterior & posterior approach

ABSTRACT

Synovial chondromatosis of the knee is a rare benign neoplasm of the synovium. Likewise, uncertainty on management still prevails. Though rare, it nevertheless warrants greater emphasis than it receives in the literature to allow correct diagnosis and accurate early surgical intervention. It predominantly involves the anterior compartment of the knee and disseminated disease is extremely rare. The optimal approach for surgical treatment of such an extensive synovial chondromatosis of knee remains unclear. Herein, we describe a case of extensive generalized synovial chondromatosis of the knee extending into the Baker's cyst in a 30 years old female. A diagnosis of synovial chondromatosis was made by clinical evaluation and MR imaging and confirmed by histopathological examination. Patient was successfully treated by open radical synovectomy of knee using both anterior and posterior approaches in a single step procedure.

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1. Introduction

Synovial chondromatosis or synovial osteochondromatosis is an uncommon entity in which there is proliferative metaplasia of the synovial membrane of the joint, tendon sheath or bursa into chondrocytes resulting in the formation of cartilaginous nodules.¹ These nodules may enlarge and detach from the synovium resulting in multiple intra-articular loose bodies. Further active

growth and enlargement of these loose bodies can occur due to nourishment by synovial fluid. First described by Leannac² in 1883, synovial chondromatosis can be classified in primary and secondary forms. Primary synovial chondromatosis is an idiopathic benign neoplastic process typically affecting adults, predominantly males, in their third to fifth decade of life.^{2,3} In contrast, secondary synovial chondromatosis represents metaplasia of synovial tissue into cartilaginous tissue without cytogenetic aberrations and occurs in association with pre existing

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<http://dx.doi.org/10.1016/j.jcot.2014.07.005>

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traumatic, inflammatory or degenerative pathology of synovial joints.¹ Although synovial chondromatosis may develop in any synovial joint, it is most prevalent in knee followed by hip joint.¹ Within the knee, disease predominantly involves the anterior compartment including suprapatellar pouch and infrapatellar fat pad.⁴ A few rare instances of disseminated primary synovial chondromatosis of knee has been reported in the literature.⁵ Herein, we describe a case of disseminated generalized synovial chondromatosis of the knee extending into the Baker's cyst in a thirty year old lady and highlight the single step open radical synovectomy using combined anterior and posterior approaches.

2. Case presentation

A 32-year-old woman presented to outpatient Department of Repatriation General Hospital with a 7 months history of insidious onset pain and stiffness with associated swelling around left knee. Pain was progressively worsening, aggravating by weight bearing activity and thus restricting her day to day activities. The swelling around knee was progressively increasing in size. Patient also had few experiences of locking of the knee in the past two months. She denied for history of trauma, constitutional symptoms, other joint involvement or giving way of the knee.

Physical examination revealed marked wasting of quadriceps of left thigh and gross swelling around the left knee along with a prominent cystic swelling in the popliteal fossa with evidence of mild knee effusion giving the feel of "bag of worms". Joint line tenderness was noted on posteromedial and lateral aspect of the knee along with crepitation over the patellofemoral joint. The knee range of motion was from 0 to 110° without evidence of any ligamentous instability or meniscal abnormality. The overlying skin was normal and there was no evidence of any neurovascular deficit. Plain radiographs of the knee demonstrated multiple small radio opaque densities in the suprapatellar, infrapatellar and popliteal regions without evidence of osteoarthritis. Routine hematological investigations and ESR were within normal limits. A sagittal T2W magnetic resonance image showed diffuse marked synovial proliferation along with mild to moderate joint effusion with multiple intra-articular foci displaying hypo-intermediate signal intensity indicating calcific/chondral nature (calcification and ongoing ossification) diffusely distributed throughout the joint space. A loculated fluid pocket (Baker's cyst) with similar foci was also present in popliteal fossa with possible communication to joint space (Fig. 1). These clinico-radiological findings established the diagnosis of synovial chondromatosis of the knee extending into the Baker's cyst. Due to this extensive disease, we planned to perform open anterior and posterior synovectomy of the knee in a one step procedure. The patient was kept in lateral position with tourniquet kept around the proximal thigh. The knee joint was exposed with a 12 cm median skin incision and medial parapatellar capsulotomy. Multiple friable white loose bodies of varying size and shape were found in the knee joint (Fig. 2). The hypertrophied synovium was permeating between these loose bodies and several similar nodules were loosely attached to it. The anterior pathological synovial tissue and loose bodies were removed meticulously.

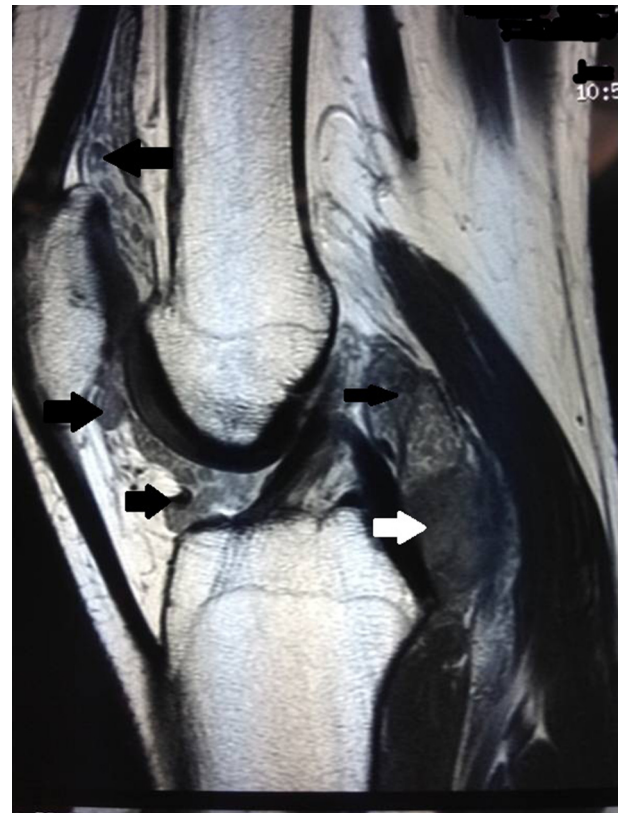


Fig. 1 – A sagittal T2 weighted magnetic resonance image showing marked synovial proliferation along with multiple intra-articular foci (black arrows) displaying hypo-intermediate signal intensity indicating calcific/chondral nature diffusely distributed throughout the joint space. A Baker's cyst seen as a loculated fluid pocket (white arrow) with similar foci in popliteal fossa.

The knee joint was then exposed posteriorly by an 'S' shaped incision in the popliteal fossa. A similar nodular hypertrophied synovium and multiple loose bodies were noted. In addition, a large Baker's cyst filled with similar loose bodies was also found. All remained synovium, loose bodies and Baker's cyst were excised and send for histopathological examination. Histopathological sections showed islands of disorganized abundant cartilage along with the synovial tissue. The lobules of cartilage were of variable size and the chondrocytes in some areas were rather crowded and vary considerably in size and shape. These histological findings were consistent with the diagnosis of primary synovial chondromatosis.

Full weight bearing was allowed from the day after the surgery with the help of crutches. The patient underwent regular physiotherapy sessions focusing on reinforcement of quadriceps and hamstring muscles and active range of motion exercises. She made an uneventful recovery and regained a full range of motion equal to the other knee.

3. Discussion

Disseminated primary synovial chondromatosis of the knee is a very rare benign neoplastic disorder of synovium. Its clinical

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