Arthroscopic Management and Treatment of Synovial Chondromatosis with loose bodies in knee joint

Running title : Arthroscopic Management and Treatment of Synovial Chondromatosis

Abstract

Synovial chondromatosis, is a rare and it is a benign condition characterized by multiple cartilaginous nodules in synovial facet spaces. Synovial chondromatosis affects joints, the most common being knee. This report examined a 30-year-old male with chief complaints of pain in the left knee joint. Investigations were done and MRI showed loose body, for which he underwent, arthroscopic exploration. Viscous fluid and loose bodies were identified and showed synovial hyperemia. Synovial debridement done and loose body was removed and sent to histopathological examination. The results of the current report signify that arthroscopy is efficient method both in diagnostic as well as therapeutic management of synovial chondromatosis.

Keywords:

Synovial chondromatosis, knee joint, arthroscopy, loose bodies.

Introduction

Synovial chondromatosis furthermore called as synovial Osteo-Chondromatosis, is infact a rare and benign disorder characterized multiple cartilaginous nodules deemed to be loose bodies within the synovium of joints [1.2]. Synovial chondromatosis affects single large joints, knee being more common, affections in hip, elbow, shoulder and ankle [3] are also reported. But affections are reported in smaller joints as well, especially in distal radio-ulnar, tibio-fibular, metacarpo-phalangeal and metatarso-phalangeal joints [(4-7)]. Clinical features may vary from being completely asymptomatic or may present with subtle history of pain, associated with swelling, joint crepitus or may present with typical history of locking of the knee joint [(8)]. Diagnosis mainly based on radiological investigations x-ray, computed tomography (CT) scans that identifies mineralized / calcified nodules or magnetic resonance imaging (MRI). Investigations not only help as a diagnostic tool, but also aids in surgical management as well. However definitive diagnosis is based on histopathological examination. Clinically management involves excision of loose bodies using arthroscopic technique [9] to eliminate symptoms and to avoid further joint destruction [(10)]. This current reports a case of synovial chondromatosis of the knee in a young patient with pain in knee joint since 1 year.

Case report

A 30-year-old male with past history of trauma 1 year back presented with pain in the left knee since 1 month. Following which patient was admitted to Sree Balaji medical college for further examination and treatment. Pain was insidious at onset, intermittent (initially) and progressive and severe since 1 month. Symptoms exacerbated after a history of climbing stairs associated with swelling and pain of the left knee and experienced difficulties in activities of daily living like squatting, walking and gives a history of locking of the knees. On clinical examination, there was swelling associated with local tenderness at the front and back of the left knee. The range of movements was not restricted but terminally painful. MRI scans identified loose bodies in anterior inter-condylar region.

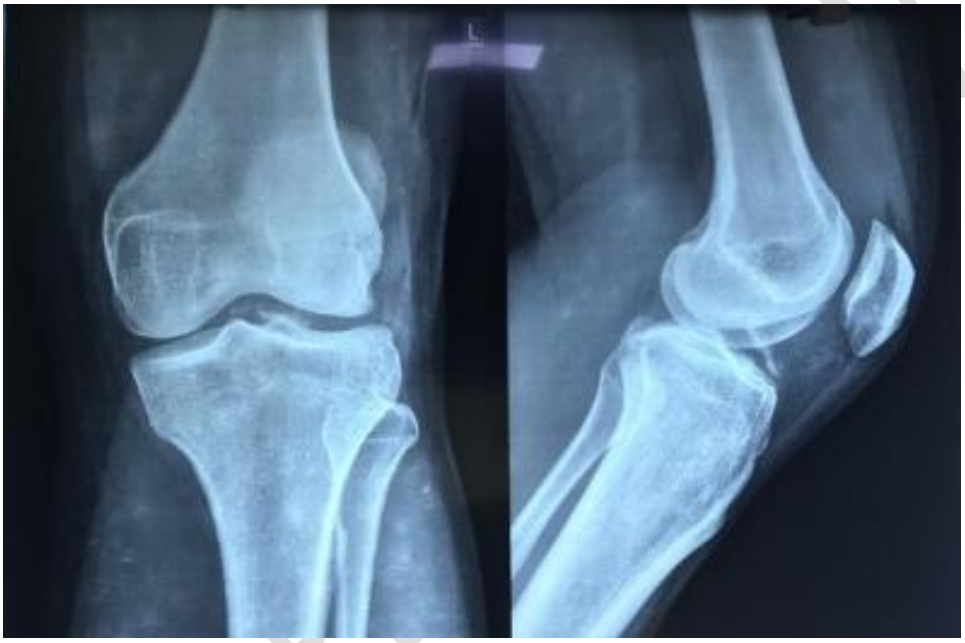
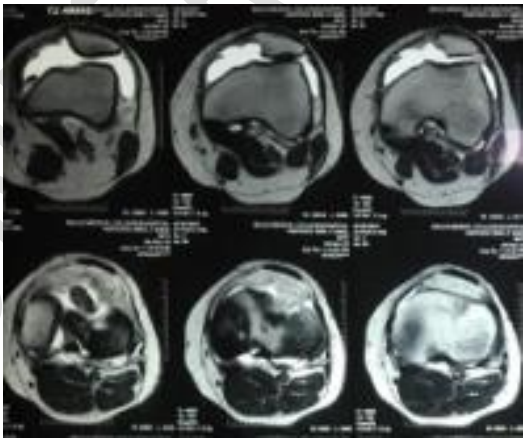
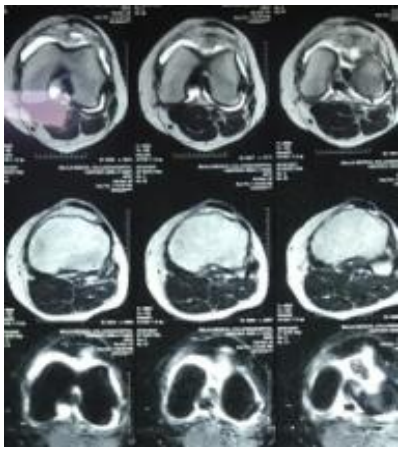


Fig 1. X-Ray image of knee





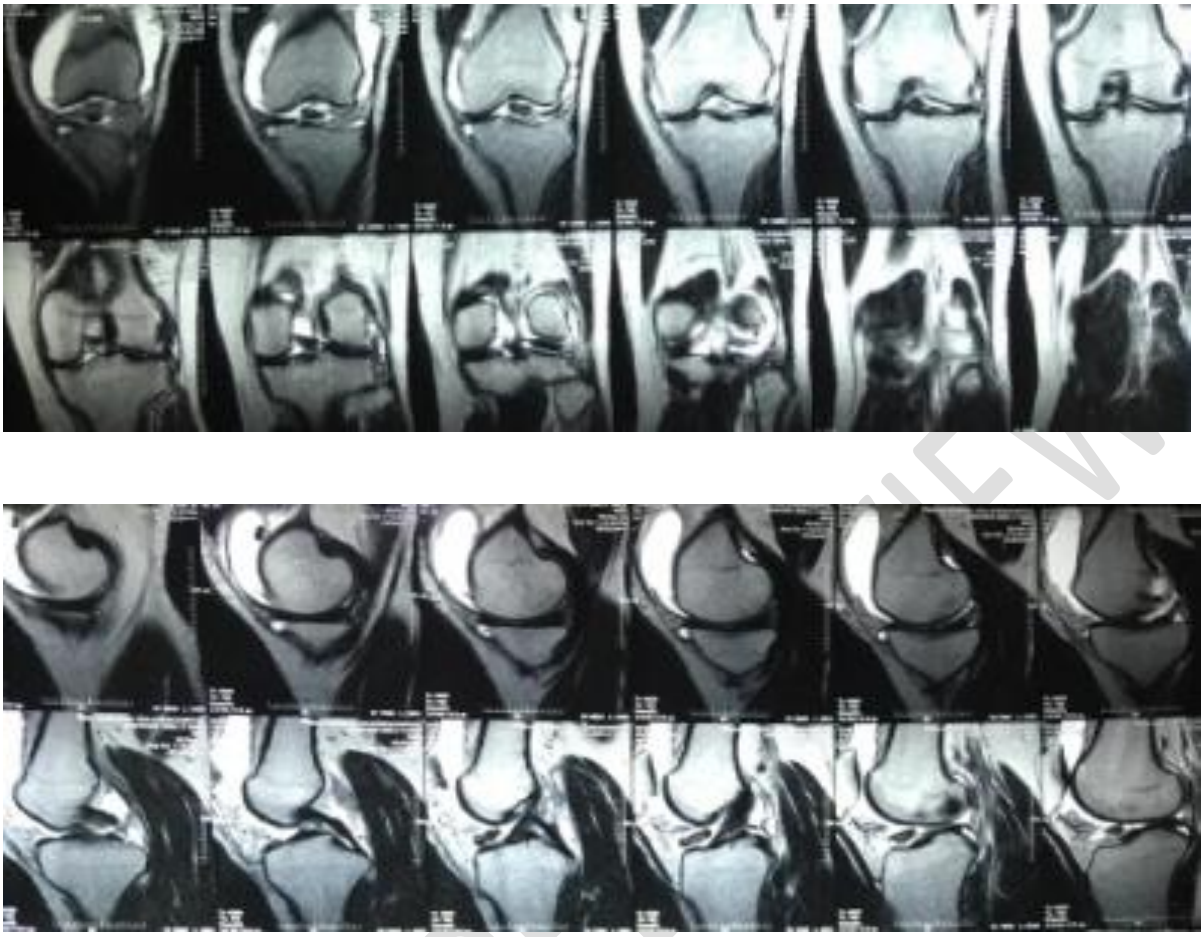
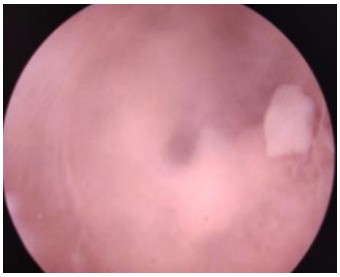


Fig 2. MRI scans

Patient was posted for Arthroscopic removal of loose bodies. Under Spinal anesthesia, under tourniquet control standard medial and lateral portals were used. With the help of Probe hooks, joint spaces and structures were initially assessed in all directions. Articular cartilages were examined as well. Intra operatively it was observed that there was hyperemia and edema in the medial and lateral recesses. Partial synovectomy performed. Irregular cartilage-like bodies of ~16x7 mm, identified and subsequently removed with forceps. Synovial membrane and the loose bodies were sent to Histopathological analysis.



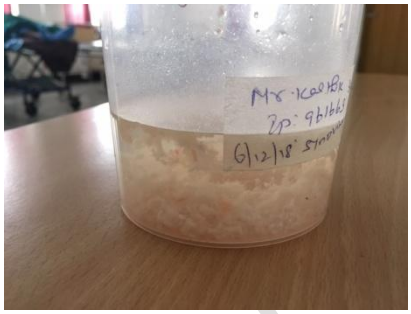


Fig 3. Histopathological analysis

Pathological gross specimen showed multiple white loose bodies and were reported as synovial hyperplasia with cartilage island , that was consistent with synovial chondromatosis.

Patient underwent standard post operative protocol with antibiotics, analgesics and physical therapy. Post operative period was uneventful. Patient improved symptomatically and terminal pain was relieved. Patient could sit crossed legs and squat without pain.

Fig 4. Post operative X-ray image

Discussion

Synovial chondromatosis is a condition that has an etiology pertaining to synovial metaplasia [(19)]. The cartilaginous nodules in the synovium or in joints leads to formation of sub-intimal fibroblasts in tendons and bursae [(20).] These extrudes from synovium to become loose bodies found to be floating in the synovial spaces or extend to the extra articular soft tissue [(21)].

Milgram's classified, synovial osteochondromatosis in three stages based on gross and pathological findings. Stage I, active lesions of the synovium, without loose bodies and synovial cartilage metaplasia. Stage II, transitional lesions with active intra-synovial proliferation with free loose bodies .Loose bodies may remain within proliferated membrane. Stage III, multiple loose bodies in joint space and synovitis

subsides [2]. Partial or total synovectomy done during stages I and II and stage III free body removal. This patient was found to be in stage III.

Synovial chondromatosis mostly seen in patients aged 30-50 years [22],. Routine examinations, including AP and lateral X-ray, CT and MRI scans are mandatory for diagnosis. Multiple irregular loose bodies [24]. In the present report, loose bodies were identified in x-ray and MRI, with minimal effusion. Arthroscopy has replaced arthrotomy, in view of post-operative early recovery, less operative time period, minimal incision and complete instrumentation and arthroscopy is a more effective treatment than loose body removal alone [27,28]. According to Urbach et al [29] loose body removal with local synovectomy, eliminates abnormal synovial tissue and prevent recurrence. This concludes that arthroscopic technique is safe and effective method in the treatment of synovial chondromatosis.

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