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Arthroscopic Treatment of Knee Joint Synovial Chondromatosis - A Case Report

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Abstract: ***A benign rare synovial proliferative disease, synovial chondromatosis is characterised through more than one cartilaginous nodule in synovial space. Most commonly affected joint is the knee joint. This is a case report of a male patient of age 18 years presented with right knee joint pain. On radiological assessment using MRI indicates moderate knee joint effusion with synovial thickening and multiple calcified and non-calcified loose bodies were identified. Synovectomy was performed to remove several loose bodies and synovial membrane which was sent to histopathological examination. The results suggest that the procedure, arthroscopy, is an effective diagnostic and therapeutic tool for synovial chondromatosis.***

Keywords: Synovial Chondromatosis, Knee Arthroscopy, Loose Bodies in Knee Joint, Arthroscopic Synovectomy, Cartilaginous Metaplasia, Intra-articular Loose Bodies, Minimally Invasive Orthopaedic Surgery, Histopathological Diagnosis

1. Introduction

Synovial chondromatosis which is also referred to as synovial osteochondromatosis, is a uncommon benign disorder characterised through multiple cartilaginous nodules believed to be loose tissues in the synovial joints [1]. This affects the single large joints, where knee joint being the most common, and the hip, elbow, shoulder, and ankle also reported later [2]. However, it also affects the smaller joints, especially the distal radio-ulnar, tibio-fibular, metacarpo-phalangeal and metatarso-phalangeal joints [3-5]

Clinical features may vary from being completely asymptomatic to symptomatic with subtle history of pain, associated with swelling, joint crepitus or may also present with history of locking of the knee joint [6].

Diagnosis is mainly based on radiological investigation like X-Rays and computed tomography scans. The tools used for definitive diagnosis are Magnetic resonance imaging (MRI) and Histopathological examination. This disorder is clinically managed by excision of loose bodies using arthroscopic technique to avoid further joint destruction [7]

This is a case of synovial chondromatosis of the knee in adult patient with pain in knee
joint for past 5 years

2. Case Report

- A male patient of age 18 years came to outpatient department with past history of trauma to right knee 5-years ago and currently presented with complaints of increase in pain over right knee for the past 3 months associated with swelling.
- Pain aggravated on weight bearing and walking and relieved by rest.
- Pain gradual in onset and progressive in nature, dull aching type of pain.

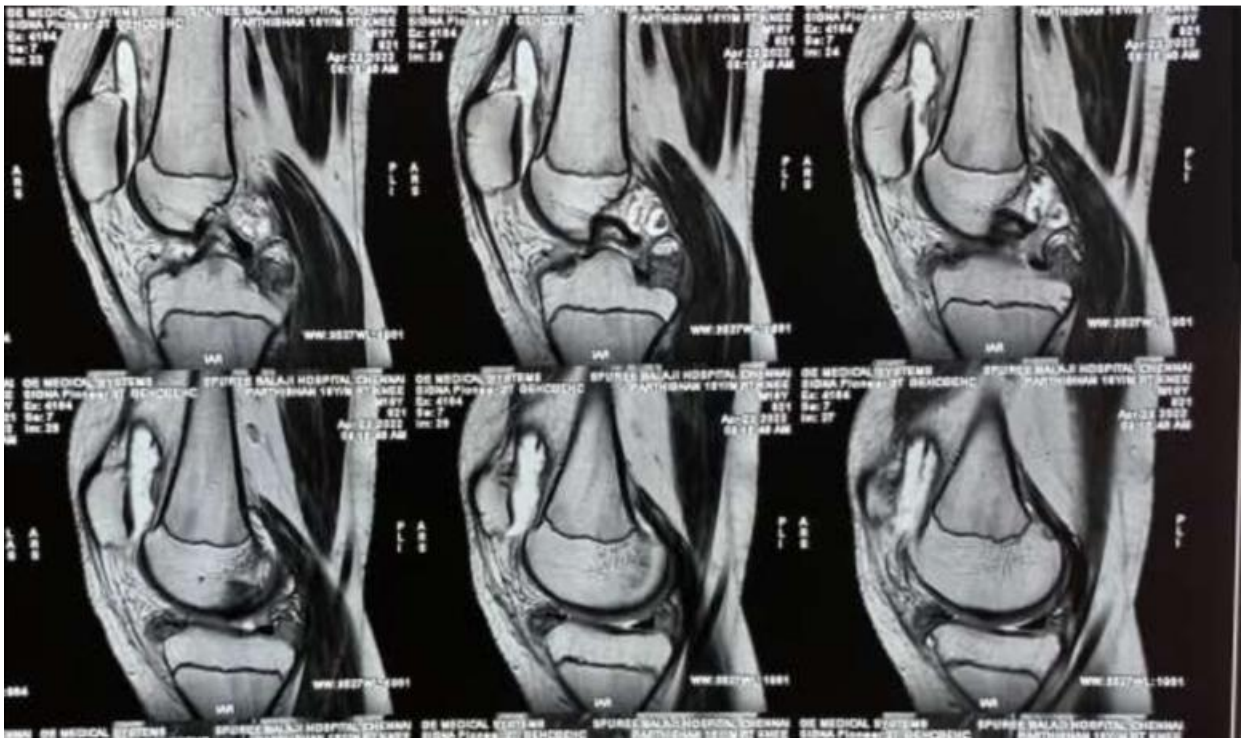
On clinical examination:

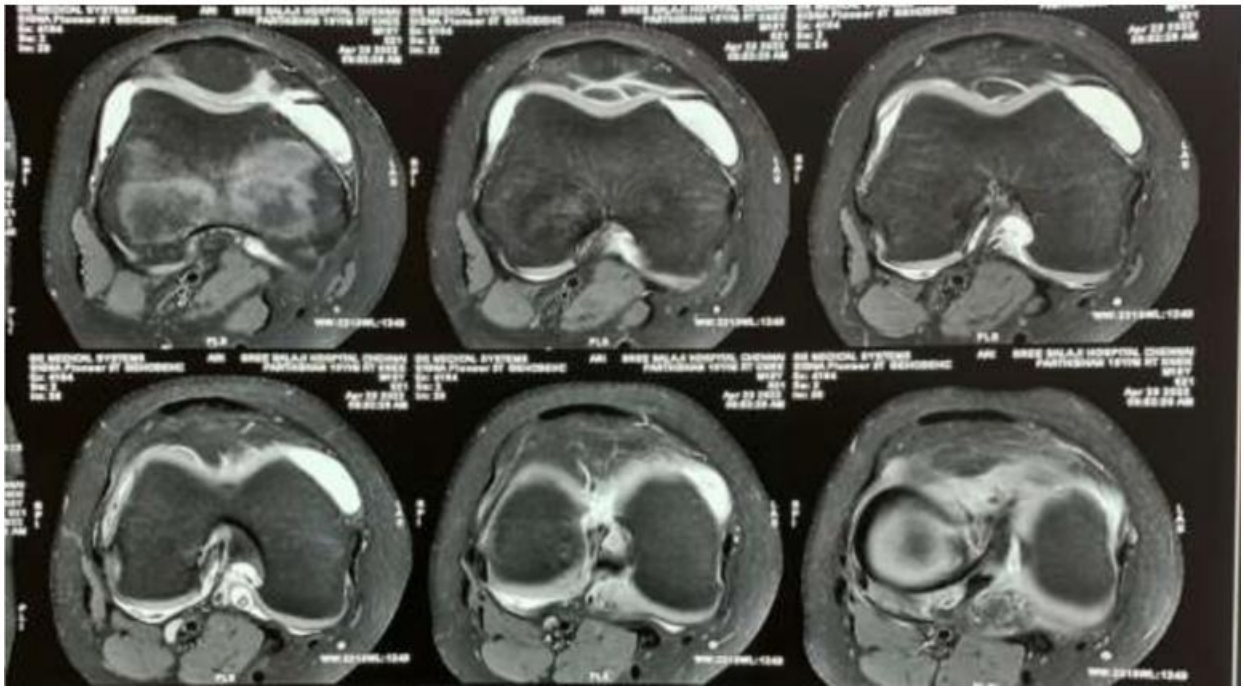
- Swelling associated with tenderness along medial joint line of right knee. The range of movements flexion was found to be 0 to 70 degrees and it was painful more than 70 degrees
- Special tests was not able to elicit due to pain.

Clinical Picture

Preoperative X-Ray

Pre-op planning
MRI of right knee showed multiple





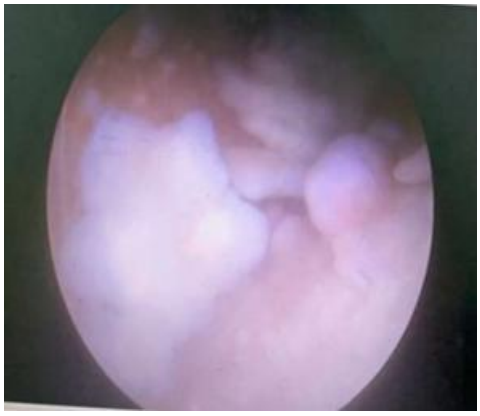
calcified and non-calcified loose bodies and moderate knee joint effusion with synovial thickening

Patient was posted for Arthroscopic Synovectomy with meniscal repair.

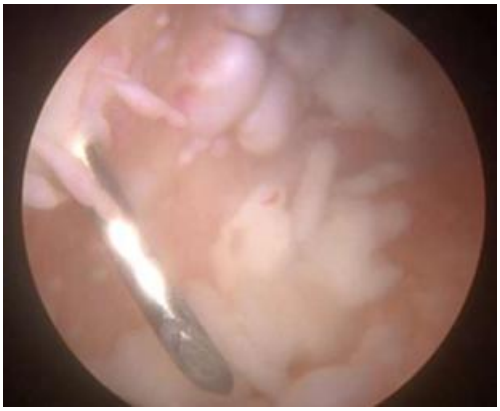
Procedure:

- Under Spinal Anaesthesia, patient in supine position, under tourniquet control standard
- Antero-medial, Antero-lateral, Supero-lateral and Supero-medial portals were used. ACL and PCL were intact.
- Multiple loose bodies seen. Loose bodies were reamed, washed and removed. Thorough wash was given. Loose bodies and synovial membrane were sent for histopathological examination and reported synovial chondromatosis with dystrophic calcification.

Intraoperative Picture



Postoperative Status



Patient started mobilising on postoperative

Day 2.

Range Of Movements:
End of 1st WEEK: 100 degree FLEXION and painless.
End of 2nd WEEK: 120 degree FLEXION and painless

3. Discussion

- Synovial osteochondromatosis is an disorder with a underlying etiology associated with synovial metaplasia [8]. Cartilaginous nodules present in the synovium or in the joints leads to the formation of subchondral fibroblasts in the tendon and tendon sheath [9]. These extrusions from the synovial capsule turns out to be loose bodies that float in the synovial space or extend to extra articular soft tissues [10]
- **Milgram** identified three stages of synovial chondromatosis based on gross and pathological observations.
- Stage I is referred to as active lesions of the synovium, without free bodies and metaplasia of synovial cartilage.
- Stage II is referred to as transitional lesions with active intra- synovial proliferation along with free loose bodies and these free bodies may remain within the proliferated membrane.
- Stage III is referred to as multiple loose bodies in joint space and synovitis subsides. During stages II and stage III, free body removal can be performed by partial or total synovectomy.
- This patient was diagnosed to be in stage III of the disorder. • Synovial chondromatosis is most common in individuals between the ages of 30 and 50 [11]
- For diagnosis, radiological examinations such as AP and lateral X-rays, as well as MRI scans, are required. X-ray and MRI revealed many irregular loose bodies with moderate joint effusion.
- According to Urbach et al, loose body removal by local synovectomy eliminates aberrant synovial tissue and prevents recurrence [14]
- In a study by Coolican et al, out of 18 knees, 14 knees were either symptom free or has only minor symptoms after arthroscopic removal of loose bodies. Out of these, three required two arthroscopic operations [15]

4. Conclusion

This case report comes to a conclusion that the technique, arthroscopy, is safe and fruitful method in the treatment of synovial chondromatosis with loose bodies. In terms of post-surgical early recovery, shorter operating time, small incision, and complete instrumentation, arthroscopy has a better clinical outcome than arthrotomy, and arthroscopy has a more successful treatment outcome.

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