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Case Report

Synovial Chondromatosis of the Knee: Management with Arthroscope-Assisted Synovectomy and Removal of Loose Bodies: A Case Report

Ajay Surwade[1], Amit Chaudhary[2], Yashwant Mahale[3]

[1]Assistant Professor, Department of Orthopaedics, GMCH, Nagpur.
[2]Assistant Professor, Department of Orthopaedics, ACPM Medical College, Dhule.
[3]Professor and HOD, Department of Orthopaedics, ACPM Medical College, Dhule.

Corresponding Author: Ajay Surwade

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ABSTRACT

Synovial chondromatosis (also called synovial osteochondromatosis) is a rare, benign condition that involves the synovium, which is the thin layer of tissue that lines joints. Although this type of tumor does not spread to other parts of the body, it can cause severe damage to the joint and lead to osteoarthritis. Early treatment is important to relieve painful symptoms and prevent further damage. We remove loose bodies and synovium through Arthroscope- Assisted Synovectomy and removal of Loose Bodies. This procedure is safe, have minimal blood loss and surgical dissection was minimal.

Key words: Synovial chondromatosis, Arthroscope- Assisted Synovectomy and removal of Loose Bodies, safe procedure.

INTRODUCTION

Loose bodies in the joint space may be due to a number of conditions. Loose bodies composed primarily of fibrin, "rice bodies", are due to bleeding into the joint or to synovitis as in rheumatoid arthritis or tuberculosis. [(1)] Cartilaginous or osteocartilaginous loose bodies are most commonly secondary to injury to the joint cartilage from trauma or fracture, or degeneration of the cartilage as in osteoarthritis or osteochondritis dissecans. [(2)] Synovial chondromatosis (SC), sometimes referred to as primary synovial chondromatosis, is a rare disorder in which cartilaginous or osteocartilaginous loose bodies, usually in large numbers, form in the joint space without an apparent underlying injury to the cartilage or synovium. [(2)] Although morphologic overlap with the secondary types may occur, the histopathologic features of loose bodies in SC are usually distinctive, allowing the pathologist to identify them as such, whereas the clinical findings may be ambiguous.

CASE REPORT

A 52 year male farmer by occupation came in OPD with complaints of pain and swelling over left knee with intermittent locking since 2 years. Symptoms were insidious in onset and were gradually increasing over time. There was no history of trauma or constitutional symptoms like weight loss or fever. On examination patients limb was kept in 10 degree of flexion. On examination there was diffuse swelling over suprapatellar pouch and signs of effusion with no local rise of temperature. Diffuse tenderness present over medial and lateral joint line. Multiple

movable and palpable ,bony hard loose bodies were present in the suprapatellar pouch. Due to repeated mechanical locking patient had fixed flexion deformity of 10^0 with further flexion possible upto 90^0. X ray (figure1,2) reveals multiple radiopaque round bodies in front of femoral condyle.

To remove the mechanical block surgical management was planned. Arthroscopic assisted removal of loose bodies with synovectomy was done (figure 3,4) . Small incisions and miniature surgical tools are used to remove the loose bodies. But access to some large bodies was not possible with arthroscope so a 2cm incision taken over lateral aspect of knee joint and remaining loose bodies removed and extensive synovectomy done. Synovium and loose bodies were sent for histopathological examination. Microscopy showed synovial tissue with attached and embedded lesions composed of mature hyaline cartilage islands, many with foci of ossification. There was no evidence of malignancy. Histopathology confirmed the diagnosis of primary synovial osteochondromatosis. Post-operatively patient was instructed about passive and active physiotherapy exercises, knee mobilization and strengthening exercises. Patient's range of movement was $0\text{-}135^0$ of flexion without pain at three months post-operative period. There was no recurrence at one year after the surgery.

X-ray of clinical image:

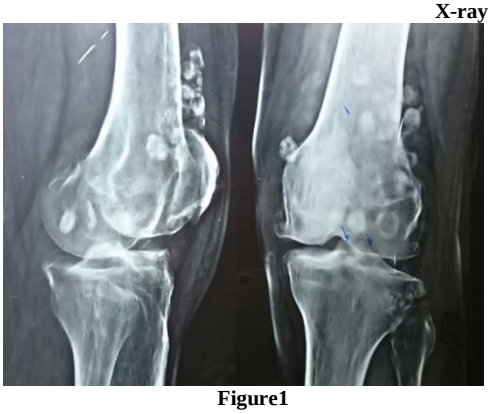

Figure1

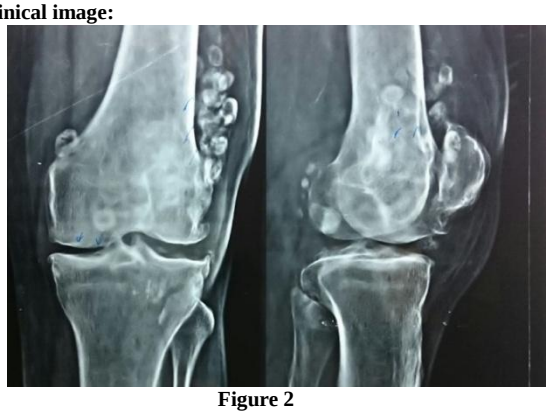

Figure 2

Loose bodies after removal:

Figure 3

Figure 4

DISCUSSION

Synovial chondromatosis is a benign metaplastic proliferative disorder of the synovium [(3-5)] which affects subintimal fibroblasts [(6)] in synovial joints [(7)] tendons and bursae. [(8)]

Synovial chondromatosis is characterized by the formation of osteocartilagenous bodies in the synovial membrane. [(9)] The condition is most commonly monoarticular, affecting the knee or hip and communicating bursae. The

etiology is unknown, but presence of clonal chromosomal aberrations suggests that it represents a neoplastic condition. [(10)] Innumerable small bodies can be seen in the resected lesion the disease seems to follow the sequence:1) active intrasynovial disease with no loose bodies.2) intrasynovial proliferation and free loose bodies,and 3)multiple free osteochondral bodies with no demonstrable intrasynovial disease. [(11)]

Plain radiograph, ultrasound, CT and MRI are the imaging modalities which can be used to assist in diagnosing this condition. MRI is definitely the modality of choice because of its superior soft tissue contrast. [(12)]

Management is mainly surgical. Open and arthroscopic procedures can be used to treat this condition. [(13,14)] Synovectomy gives better results as compared to loose body removal alone. [(14)] Total knee arthroplasty is also an option if synovial chondromatosis is coexistent with osteoarthritis. [(15)]

We did the arthroscopic assisted removal of loose bodies with extensive synovectomy of all compartments.

Primary synovial chondromatosis is an uncommon disorder is a non-aggressive condition with a fairly good prognosis. Rare cases of malignant transformation of primary SOC have been documented, the relative risk being 5% according to a study by Davis. [(16)] Treatment includes synovectomy (open or arthroscopic) with loose body removal. Synovectomy alone without loose body removal leads to local recurrence. [(17,18)]

Differential diagnosis

1) Trauma-related:
- Fracture with avulsed fragment
- Fragmentation of meniscus with calcification

2) Degenerative joint disease related:
- Degenerative joint disease with detached spur

3) Synovial proliferation:
- Pigmented villonodular synovitis

4) Neoplastic: Synovial chondrosarcoma

CONCLUSION

Primary synovial chondromatosis is an uncommon disorder. The clinical symptoms are usually non-specific, and a clinical diagnosis of synovial chondromatosis of the knee may be difficult and delayed, especially before the ossifying nodules become evident. Loose bodies in the joint can cause secondary degenerative osteoarthritis of the knee. Herein we report on a case of synovial chondromatosis of the knee, which were managed with an arthroscope-assisted synovectomy and removal of the loose bodies. We believe this is an easy and safe method for management of this disorder.

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