

Arthroscopic Management of Primary Synovial Chondromatosis.

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ABSTRACT

Primary synovial chondromatosis is a rare disorder. The clinical symptoms are usually non-specific, and therefore, the clinical diagnosis of synovial chondromatosis may be difficult and delayed. Loose bodies in the joint can cause severe pain, locking and if neglected can lead to subluxation or secondary degenerative osteoarthritis of the joint. In our case series we have evaluated patients of synovial chondromatosis of various joints which were operated by us in the past decade, with a minimum follow-up of 2-years. All these patients were operated using arthroscopic synovectomy and removal of the loose bodies and majority of the patients were satisfied with the final functional outcome.

Introduction

Synovial chondromatosis is a rare benign condition which involves synovial joint membrane proliferation with formation of multiple cartilaginous loose bodies in the later stages [1]. The knee joint is the most common site to get involved. Other joints commonly involved are elbow, hip and ankle joint. The optimal treatment of primary synovial chondromatosis treatment is still controversial. Traditionally treatment for this disorder is an open removal of the loose bodies with synovectomy, but recent advances in the arthroscopic technique indicate that even for this disorder good results with lesser morbidities can be achieved arthroscopically. However, Arthroscopic technique is a technically demanding procedure requiring a learning curve, and it is associated with complications such as higher recurrence rate, iatrogenic damage to the joint or the cartilage.

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We present here a case series of primary synovial chondromatosis of the various joint. All these patients were managed with arthroscopic surgery, and were followed-up for minimum of two years.

Material and Methods

This is a retrospective evaluation of patients with primary synovial chondromatosis who were managed by arthroscopic surgery by surgeons AG and MS in the past decade. More than 1200 arthroscopic surgeries were performed by the surgeons (AG & MS). Out of these arthroscopic surgeries, a total of 18 patients were diagnosed as cases of primary synovial chondromatosis. Total of 16 patients were included in the study.

The inclusion criteria were

- 1) Patients with primary synovial chondromatosis who were managed with arthroscopic technique.
- 2) Minimal follow-up of two year.

The exclusion criteria were

- 1) Patients who were managed with open procedure.
- 2) Patients who were managed at some other centre and presented to us with re-occurrence.

All these patients were followed up regularly and were assessed clinically and radiologically pre-operatively and at the final follow-up.

Results

16 patients with primary synovial who operated arthroscopically were included in the study. The mean age of the patients was 29.35 years (range 15-55 years). There were 13 male and 03 female patients. All of the patients had mono-articular involvement of the joint. The involvement of the knee joint was seen in 10 patients, hip joint involvement in 03 patients, shoulder joint involvement in 02 patients, while the ankle joint involvement was seen in 01. The patients presented at a mean of 20.93 months (range 3-56 months) after the onset of the symptoms. The main symptoms seen were pain in 93.75% of the patients (15 out of 16), restriction of movements in 56% of the patients (9 out of 16), locking of the joint movements in 43.75% of the patients (7 out of 16).

On radiological evaluation, 68% (11 out of 16) patients were having osseous loose bodies in the joint on the x-ray at the time of the presentation. While 32% (05 out of 16) of the patients were having normal x-ray at the time of presentation and in these patients CT or MRI were done to confirm the findings.

All the patients were managed arthroscopically. There were no major complications post-operatively. At the mean follow-up of 26.62 months (range 24-36 months), the mean VAS score improved from 3.93 (range 3-5) pre-operatively to 1.43 (range 0-3) at the time of final follow-up. Three patients had recurrence of the disease (one case each of shoulder, knee, and hip synovial chondromatosis). These patients were re-operated with open procedure. 4 out of 16 patients had evidence of osteoarthritis at the time of final follow-up.

Discussion

Synovial chondromatosis is rare benign disease. The knee joint is the most commonly involved joint accounting for 60 to 70% of cases while the other commonly involved joints are shoulder, elbow, hip and ankle joints. In the present study 66.6% (10 out of 16) had involvement of the knee joint, 18.7% (3 out of 16) had hip joint involvement, 12.4% (2 out of 16) had shoulder joint involvement while 6.2% (1 out of 16) had ankle joint involvement. The aetiology of this disease is not very clear. Milgram has described three stages of synovial chondromatosis. In stage 1 disease is active in synovial tissue only with no loose bodies. In Stage 2, the disease is active with intrasynovial proliferation and loose bodies and in stage 3 there are large number of loose bodies but

the intrasynovial disease is not active.



Figure 1: x-rays shoulder AP view showing multiple loose bodies.

The presentation of the disease is vague and clinical symptoms are non-specific which includes pain and swelling in the joint with restriction of joint movements secondary to mechanical block. [2-4] In the present series also pain was the main symptom which was present in 93.75% of the patients while the other commonly seen symptoms were restriction of movements and locking of the joint .

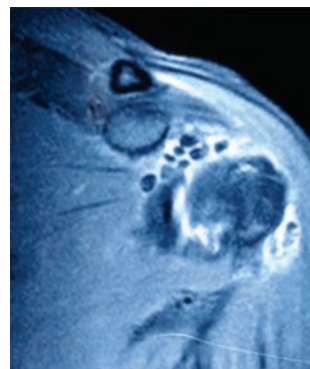


Figure 2: MRI shoulder showing ossified loose bodies suggestive of synovial chondromatosis

Plain x-rays of joint are nonspecific in early stage but osseous loose bodies are visible in later stages. Computed tomography (CT) scan and Magnetic resonance imaging (MRI) has immensely improved the radiological diagnosis of disease, these modalities can show synovial hypertrophy, ossified loose bodies, erosion of articular cartilage even in stage 1, when an x-ray of the joint is normal. In the present series 68% (11 out of 16) patients were having osseous loose bodies in the joint at the time of the presentation on the x-ray. While 32% (05 out of 16) were having normal x-ray at the time of presentation. These patients were diagnosed to have loose bodies on the CT scan or MRI.

The optimal treatment for synovial chondromatosis is debatable. There are reports that document self-limiting nature of the disease and the conservative treatment in the form of nonsteroid anti-inflammatory drugs, activity

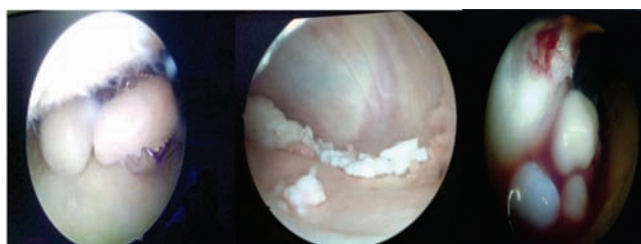


Figure 3: Intra-articular loose bodies in shoulder, knee and hip joint.

modification, and cryotherapy might be used in treating these patients especially when non-weight bearing joints are involved [5-6]. But problems associated with conservative treatments are the progression of disease with painful mechanical symptoms, joint subluxation or dislocation, bursitis and osteoarthritis [7-8]. Rarely, malignant transformation can also occur [9].

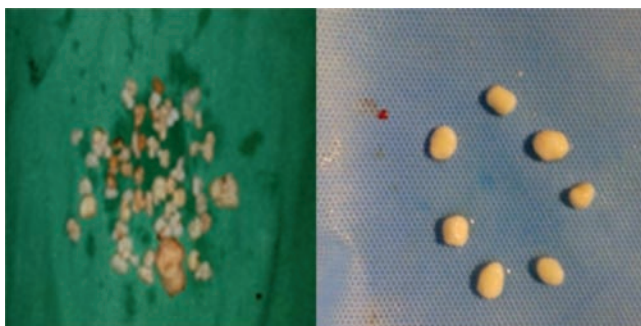


Figure 4: Intra-articular loose bodies after removal



Figure 5: X-rays & MRI shoulder at one year follow-up showing no evidence of recurrence.



Figure 6: Clinical photographs at final follow-up with good functional status.

The treatment of choice in synovial chondromatosis is surgical intervention in symptomatic patients; options are the open or arthroscopic removal of the loose bodies combined with a partial or complete synovectomy. Open technique is associated with bigger exposure, more blood loss, insufficient repair of tendon, longer healing time and delayed rehabilitation while arthroscopic technique has advantages like minimal blood loss, lesser morbidity, earlier healing, rehabilitation and earlier return of functional activities. In our case series we have performed arthroscopic removal of loose bodies and synovectomy in all the patients. Majority of the patients 82% (13 out of 16) in our case series showed complete recovery with pain-free full functional range movements at the final follow-up. But arthroscopic technique has reported disadvantages like limited access to certain areas of joint and higher recurrence rate by some studies [10]. However, other studies have reported similar recurrence rate using open and arthroscopic technique [11-13]. In our case series 18% of the patients had recurrence of the disease at the final follow-up. Our results are similar to the various other studies which have reported recurrence rate of 0-31% using open and arthroscopic technique [11-16].

The limitation of our study is that we have not assessed the time taken to return to full functional activities after the surgery.

In conclusion, synovial chondromatosis is a rare disorder. We believe that arthroscopic surgery is effective in the treatment of patients with synovial chondromatosis. It has advantages like good visualisation, lesser morbidity and early return of functional activities. However, patients must be counselled about the recurrence and should be followed up regularly.

Conflict of interest: All authors declare no COI

Ethics: There is no ethical violation as it is based on voluntary anonymous interviews

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