

## Case Report

# Two cases report about the synovial chondromatosis

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**Abstract:** This report presents two rare cases of more severely synovial chondromatosis of knee joint and shoulder joint. The both cases associated multiple intra-articular or peri-articular loose bodies located under the totle cavity of the knee joint or around the shouder joint. The patient with the knee Synovial Chondromatosis presented as a severely painful edema knee joint, while the symptoms of the other patient is little. The two patients were treated with combined open and arthroscopy surgery or open surgery only and both had a better outcome after 1 year or so.

**Keywords:** Synovial chondromatosis, multiple, loose bodies, combined arthroscopy and open surgery

### Introduction

Synovial chondromatosis is a benign condition characterized by metaplastic changes of the synovial membrane typically affecting large joints [1]. The synovium in the synovial chondromatosis grows abnormally and produces chondroid nodules. When these nodules break off from the synovium, loose body inside the joint is formation.

The aetiology of the Synovial chondromatosis remains unclear. In severe cases, the loose bodies may grow large enough to occupy the entire joint space or penetrate into adjacent tissues. Synovial chondromatosis often occurs in the knee, hip, elbow and shoulder, and the most reported cases is the knee [2], followed by hip and shoulder [3]. In most cases, only one joint in the body is affected.

Most cases of synovial chondromatosis occur in middle-aged people between the ages of 30 and 50. Men are affected twice as often as women [4, 5].

Clinical manifestations include pain, swelling, and decreased range of motion of associated extremities [6].

Although low rate of malignant transformation tendency of the tumor, it can damage the joint

severly and lead to osteoarthritis. So it is necessary to relieve painful symptoms and prevent further damage by early treatment. Treatment consists of not only loose bodies removing, but synovectomy is also same crucial, either by arthroscopy or by open operation.

The purpose of this case report is to document two rare synovial chondromatosis, which is characterized with very large amount of loose bodies and required surgery to remove it. So many loose bodies in the knee joint or around the shouder joint have we never seen before. The patient with the knee Synovial Chondromatosis here presented as a severely painful edema knee joint, while the symptoms of the patient associated with the shoulder is little. The loose free nodules around the shoulder joint of the second patient is soft, which has not form the chondroid nodules thoroughly, and to our knowledge such case is very rare.

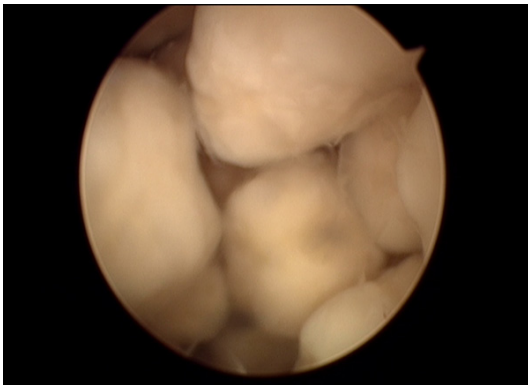
### Case presentation

#### Case one

**Clinical history:** A sixty-four year old man present with thirty-three year history of pain, swelling and restriction of left knee joint. The patient's symptoms were gradually progressed pain and restriction of left knee. The patient



**Figure 1.** Plain X-rays of the knee showed multiple calcified loose bodies around the knee joint and the severely degeneration of the joint.



**Figure 2.** The loose bodies were seen packing the suprapatellar bursa densely under the arthroscopy.



**Figure 3.** The removed multiple loose bodies were showed above. Some loose bodies were fused together forming a larger mass.

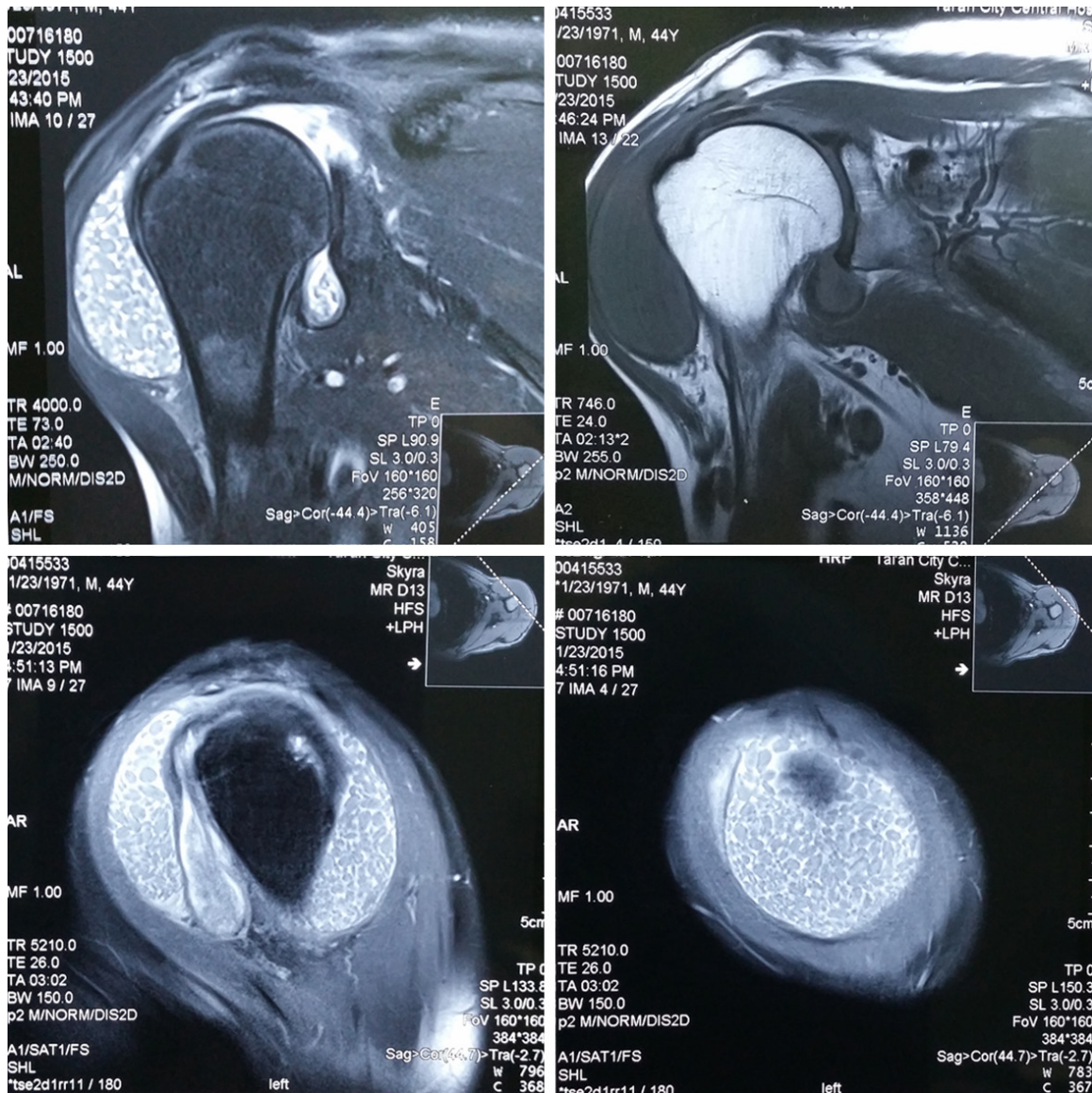
has a left knee injury history. When he was at 35 years old, his knees got injury during running. Except for a few days' resting, no special treatment was given. Since then, the left knee become swelling and pain and gradually the range of motion of left knee was limited. The patient does not give history of any definitive treatment taken for his symptoms of left knee. The patient has a history of diabetes for thirty years.

*Physical examination:* On examination, loose bodies inside the suprapatellar pouch were palpable and marked swelling of the joints could be seen. The range of left knee motion was 45°-85°. The left quadriceps wasting is obviously when compared to the contralateral thigh. There was no ligamentous laxity and the range of patella movement was very small. A feeling of bone friction could be felt when touching the left patella and extension and flexion the left knee. The right knee of the patient is normal.

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*Imaging:* Plane X-ray of the left knee revealed a large amount of calcified loose bodies. The lateral views showed the loose bodies extension into suprapatella bursa and posterior capsule of the knee (**Figure 1**).

Surgical management limited open procedure combined with arthroscopy was planned considering the very large amount of loose bodies in the left knee with severely osteoarthritis. We made a longitudinal limited open incision along the lateral margin of the quadricep about 2 cm proximal to superior border of the patella about 3 cm long, and two standard anteromedial and anterolateral portals of the knee for arthroscopy treatment. The suprapatellar bursa being filled with loose bodies densely could be seen under the arthroscopy (**Figure 2**). Multiple white calcified loose bodies within the knee were removed and the synovium was resected thoroughly (**Figure 3**). Irregular nodular outgrowths were found in the margin of articular surface of femoral condyle and tibia plateau,



**Figure 4.** Axial and coronal STIR MRI of the shoulder joint shows a dilated shoulder joint capsule filled with high signal fluid in which multiple hypointense nodules located.

which were removed by the burr drill. The range of passive movement of the left knee was 10°-110° after operation.

Synovium and the loose bodies were sent for histo-pathological examination, which confirmed the diagnosis.

Post-operatively exercises of left knee mobilization and muscle strengthen were instructed. One year after the surgery, there was still a little pain with the patient in the left knee when walking bearing weight and the range of passive motion was 15°-100°.

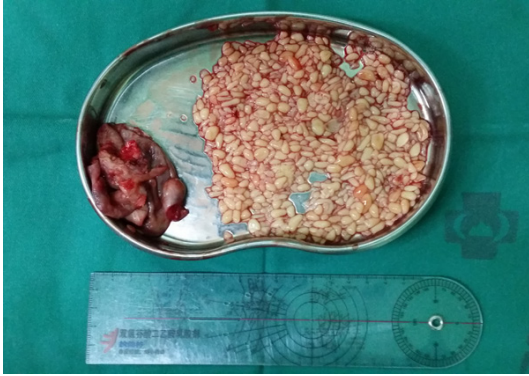
#### Case two

**Clinical history:** A 44-year-old man presented to our hospital with 15 days history of a swelling with the left shoulder. Patient's symptoms were a little restriction of the abduction of left shoulder and occasionally a little painful. There was no history of injury of the shoulder. Patient did not give history of any treatment taken for his symptoms.

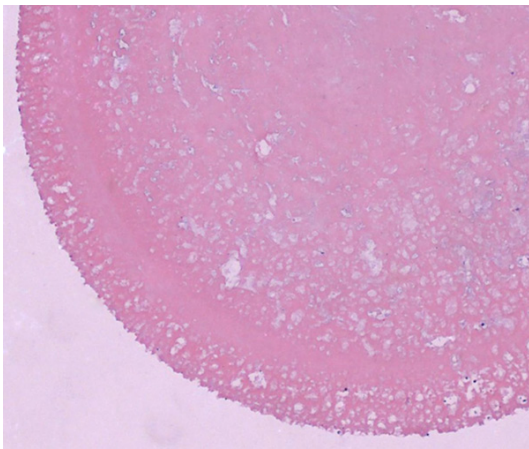
**Physical examination:** Upon examination of the left shoulder, there was an 5×4 cm mass in the anterolateral left shoulder joint. On palpation



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**Figure 5.** The resected synovial and removed loose bodies in the kidney basin.



**Figure 6.** The pathologic image showed the cartilage matrix and the chondrocyte in the removed free nodules.

the mass was soft, the boundary was not defined. The patient could feel little pain when the mass being pressed. The skin overlying the mass looked normal with no vascular markings. There was no fluctuation when palpating the mass. The terminal 15° of abduction was restricted on the affected side.

*Imaging:* A plain radiograph of the patient's left shoulder revealed no abnormal.

The MRI scan showed several synovial sac around the left shoulder joint capsule with a large amount of hypointense nodules (**Figure 4**).

Considering so many small free bodies around the joint and the difficulty removing them with arthroscopy, an open surgical procedure was determined. The synovium was resected and

loose bodies were removed thoroughly. The loose bodies were pink and touched soft (**Figure 5**). During the operation, a large amount of faint yellow fluid was also removed from the left shoulder joint.

The pathologic results of the removed free bodies confirmed the diagnosis of synovial chondromatosis, and indicated the early stage of the cartilage formation (**Figure 6**).

At 10 months follow-up post operation, all symptoms of the patients had been resolved with full range of movement of the left shoulder.

### Discussion

Synovial chondromatosis is a rare and usually monoarticular metaplasia of the synovial [7]. The most common symptoms of synovial chondromatosis are similar to those of osteoarthritis: joint pain, joint swelling, and loss of motion in the joint involved. There also can be fluid in the joint, tenderness, grinding, and popping. The nodules can sometimes be felt in joints close to the skin (knee, ankle, elbow). With the first patient, we could feel the free loose bodies obviously on the skin over the suprapatella bursa. A large amount of faint yellow fluid was removed from the left shoulder joint of the patient in the second case.

Milgram divided synovial chondromatosis into 3 stages [8]: early, no loose bodies but active synovial disease; transitional, active synovial disease, and loose bodies; late, loose bodies but no synovial disease. The first case is in the late stage of the disease, and so many white tough loose bodies can be seen in the left knee joint of the patient. So many loose bodies in the left shoulder joint with the second patient could be examined by the MRI scan, but could not imaging on the X-ray, because the free loose bodies were not calcified and X-ray did not show the cartilage. This patient is in the second stage of the synovial chondromatosis.

Articular damage and subsequent development of osteoarthritis is the typical characteristics of the first case. About one year postoperation, less pain in the left knee could still be felt by the patient and the range of motion of the left knee is 15°-100°.

Removal of the loose bodies and of a partial or full Synovectomy is the main treatment of the

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diseases. The first case presented to us so many calcified loose bodies in the left knee we had never seen before. The traditional surgical approach is an open arthrotomy procedure. With the surgical advances, the arthroscopic techniques have been more favored by the surgeon treating these diseases. We treated the patient by limited open surgical combined with arthroscopy treatment, so the patient got a better outcome with small trauma involvement.

We could not treat the second patient in the same way with the first patient, because the loose bodies were so many and small around the shoulder cuff, and it is difficult to be removed through the arthroscopy.

So many soft loose bodies around the left shoulder joint with the second patient are also rare to see. Although the MR imaging revealed the pattern of lobulated intra-articular signals, we were still confused when we saw the multiple pink soft free nodules being moved out of the shoulder joint. The loose pink soft free nodules were more similar with soft tissues, which had not formed the chondroid nodules thoroughly, and we did not see any chondroid nodules stem attaching to the synovial. Only the results of pathologic examination had removed our doubts. To our knowledge no such cases have been previously reported.

Synovial chondromatosis is typically described as a benign, self-limiting process and recurrent disease. Although the two patients had got an obvious positive effect about 1 year or 10 months after the operation, long-term follow up is necessary to determine the curative effect.

### Disclosure of conflict of interest

None.

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