

Synovial Chondromatosis of the Ankle Treated with Combined Anterior and Posterior Arthroscopy

Mehmet Erkilinc^{1*} and Emre Baca²

¹*Division of Pediatric Orthopaedic Surgery, Rainbow Babies and Children's Hospital, University Hospitals Cleveland Medical Center, Cleveland, OH, USA*

²*Orthopedics and Traumatology Department, Bakırköy Dr. Sadi Konuk Training and Research Hospital, Istanbul, Turkey*

***Corresponding Author:** Mehmet Erkilinc, Division of Pediatric Orthopaedic Surgery, Rainbow Babies and Children's Hospital, University Hospitals Cleveland Medical Center, Cleveland, OH, USA.

Received: December 27, 2019; **Published:** February 28, 2020

Abstract

Synovial chondromatosis monoarthritis is a synovial proliferative disease. In this disease, cartilaginous or osteocartilaginous metaplasia develops in the synovial membranes of the joints, bursas or tendon sheaths. In this case a 29-year-old man presented with a 2-year history of pain, swelling and limitation of motion in the ankle. There were calcific islands in front and back of the ankle in the x-ray of the patient, and the image was compatible with synovial chondromatosis in magnetic resonance imaging (MRI). The patient underwent synovectomy with combined anterior and posterior arthroscopy, and intraarticular free fragments were removed. The diagnosis was confirmed histopathologically. There was no recurrence, pain, or joint limitation complaints in the 3-year post-procedure follow-up of the patient.

Keywords: *Magnetic Resonance Imaging (MRI); Synovial Chondromatosis Monoarthritis; Arthroscopy*

Introduction

Synovial chondromatosis is a monoarticular synovial proliferative disease. In this disease, cartilaginous or osteocartilaginous metaplasia develops in synovial membranes of the joints, bursas or tendon sheaths [1]. Increased soft tissue density and multiple loose bodies may be seen on routine radiographs but MRI is often required in the diagnosis.

Synovial chondromatosis most commonly occurs in the knee and hip joints, however all joints, bursas and tendon sheaths can be involved. Treatment is synovectomy and removal of loose bodies [1]. Postoperative recurrence is frequent. Unusual cases of malignant transformation have been reported in rare cases [2,3]. In this article, we presented the treatment of a patient with synovial chondromatosis at the ankle using combined anterior and posterior ankle arthroscopy.

Case Report

A 29-year-old male patient presented with pain, swelling and limited movement on his right ankle for about 2 years. The complaint was having difficulty with movements that especially increased while walking on uneven grounds and going up and down the stairs. Physical examination revealed ankle swelling without redness or increase in temperature. The patient was suffering from pain during dorsal

and plantar flexion movements. The dorsiflexion of the patient's ankle was 5 degrees and the plantar flexion was 30 degrees. No pathology was found in the vascular and neurological examination of the foot. The ankle was stable in stress tests. The pre-op Aofas score was 67.

There were a large number of calcifications at both anterior and posterior of the ankle in the x-ray (Figure 1). Complete blood count and biochemical values were within normal limits.



Figure 1: Preoperative plain ankle lateral radiography.

The patient was diagnosed with synovial chondromatosis and combined anterior and posterior ankle arthroscopy was performed. Under spinal anesthesia, the ankle was inserted through anteromedial and anterolateral ports using a pneumatic tourniquet. 10 loose bodies with the largest being 5 mm in diameter were removed from the anterior portion of the ankle. Synovitis was present in the joint; synovectomy was performed with a motorized instrument. Afterwards, the patient was turned into the prone position and arthroscopically entered through the posterolateral and posteromedial ports. Loose bodies were removed following synovectomy. It was seen that the joint space in the posterior was narrowed. The operation was terminated after the scope control was performed.

The microscopic examination of the extracted loose bodies confirmed diagnosis of synovial chondromatosis pathologically. The patient underwent elastic bandage application, elevation and cold application after the operation. Early joint range of motion was permitted, full load bearing was allowed after 10 days of partial load. No recurrence was observed on postoperative third year x-ray of the patient (Figure 2 and 3). There was no tenderness in the ankle joint, joint range of motion was 10 degrees on dorsiflexion and 40 degrees on plantar flexion, aofas score was 90.



Figure 2: Postoperative third year plain ankle anteroposterior radiography.



Figure 3: Postoperative third year plain ankle lateral radiography.

Discussion

Synovial chondromatosis is a benign, monoarticular proliferative disease that involves the mesenchymal subintimal layer of synovium [2,3]. It is often seen in adult men and most commonly in the knee joint [4]. Etiology is not entirely clear [5]. There are rare case reports of conversion to chondrosarcoma [2,3]. Synovial chondromatosis is rarely seen in the ankle [6].

This disease was histopathologically divided into 3 stages by Milgram [7]. There is synovial chondrometaplasia in the early stage but there are no loose bodies. Active synovial disease and loose bodies coexist in the transitional phase. The late phase presents with loose bodies but synovial disease is absent. According to this definition, our case was a stage 3 synovial chondromatosis.

Symptoms such as chronic and nonspecific pain, joint crepitus and stiffness, limited range of motion, swelling in the joints, locking and snagging can be observed at rest or with movement during the course of the disease. On physical examination loose bodies can be palpable; joint swelling and tenderness, and limitation of joint movements can be detected [7,8].

Plain x-ray, computed tomography (CT) and MRI are used for diagnosis. Increase in soft tissue density is seen on x-ray in the early stage, and cartilaginous loose bodies are seen in the late stage. MRI is often used for diagnosis. There are publications that indicate that MRI is better than CT [9]. MRI is also useful in pre-operative evaluation and determining the stage of the disease.

Degenerative joint disease, osteochondritis dissecans, tuberculous arthritis and neuropathic arthritis can present with similar clinical signs to synovial chondromatosis and should be considered in differential diagnosis [8]. Synovial lesions should also be kept in mind in the differential. Pigmented villonodular synovitis should be distinguished from benign lesions such as synovial cysts and malignant lesions such as synovial chondrosarcomas and synovial sarcomas [10,11].

Treatment is open or arthroscopic synovectomy and removal of loose bodies. Arthroscopic treatment has less morbidity than open treatment. The patient does not have to be immobilized after surgery and can walk painlessly. There are publications reporting that recurrence of synovial chondromatosis is 11,5% - 37,5% [12,13]. It has been observed that most recurrences develop after 5 years of operation. Recurrence has been shown to be associated with incomplete synovectomy [14]. Bojanic and his colleagues treated 5 ankle synovial chondromatosis patients with a combined anterior and posterior arthroscopic technique for a mean follow-up of 3 years without recurrence and with good results [15].

Conclusion

Combined anterior and posterior arthroscopic techniques provide a better appearance of the posterior portion of the ankle than the open technique [16]. We believe that combined anterior and posterior arthroscopic technique will make better synovectomy, but publications showing long-term results are needed. Less morbidity and earlier return to work are other advantages of arthroscopic technique treatment. However, experience required to perform ankle arthroscopy and the proximity of the posterior ports to the vascular nerve pack are disadvantages [17].

Bibliography

1. S Terry Canale and James H Beaty. "Campbell's Operative Orthopaedics". Elsevier Health Sciences (2012).
2. Elmali N., *et al.* "Synovial chondromatosis: a report of four cases with three diverse localizations". *Acta Orthopaedica et Traumatologica Turcica* 37 (2003): 173-177.
3. Jazrawi LM., *et al.* "Synovial chondromatosis of the elbow". *The American Journal of Orthopedics* 30 (2001): 223-224.
4. Murphy FP., *et al.* "Articular synovial chondromatosis". *Journal of Bone and Joint Surgery* 44 (1962): 77-86.

5. Mohr W. "Is synovial osteo-chondromatosis a proliferative disease?" *Pathology - Research and Practice* 198 (2002): 585-588.
6. Sekosky M., et al. "Osteochondromatosis of the ankle". *The Journal of Foot and Ankle Surgery* 29 (1990): 330-333.
7. Milgram JW. "Synovial osteochondromatosis: a histopathological study of thirty cases". *Journal of Bone and Joint Surgery* 59 (1977): 792-801.
8. Mussey RD Jr and Henderson MS. "Osteochondromatosis". *Journal of Bone and Joint Surgery* 31A (1949): 619-627.
9. Matsumoto K., et al. "Cubital bursitis caused by localized synovial chondromatosis of the elbow. A case report". *Journal of Bone and Joint Surgery* 78 (1996): 275-277.
10. Narvaez JA., et al. "MR imaging of synovial tumors and tumor-like lesions". *European Radiology* 11 (2001): 2549-2560.
11. Wittkop B., et al. "Primary synovial chondromatosis and synovial chondrosarcoma: a pictorial review". *European Radiology* 12 (2002): 2112-2119.
12. Galat DD., et al. "Synovial chondromatosis of the foot and ankle". *Foot Ankle International* 29 (2008): 312-317.
13. Murphey MD., et al. "Imaging of synovial chondromatosis with radiologic-pathologic correlation". *Radiographics* 27 (2007): 1465-1488.
14. Ogilvie-Harris and DJ Saleh, K. "Generalized synovial chondromatosis of the knee: a comparison of removal of the loose bodies alone with arthroscopic synovectomy". *Arthroscopy* 10 (1994): 166 - 170.
15. Ivan Bojanic., et al. "Posterior Arthroscopic Portals for Loose Body Removal and Synovectomy for Synovial Chondromatosis". *Foot and Ankle International* 30.11 (2009).
16. Van Dijk CN. "Hindfoot endoscopy". *Foot and Ankle Clinics* 11 (2006): 391-414.
17. Sitler DF., et al. "Posterior ankle arthroscopy: an anatomic study". *Journal of Bone and Joint Surgery* 84-A (2002): 763-769.

Volume 11 Issue 3 March 2020

©All rights reserved by Mehmet Erkiliñç and Emre Baca.