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Case Report

Co-Occurrence of Synovial Chondromatosis and Distal Humeral Osteochondroma of the Elbow in a Young Athlete: A Case Report

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ABSTRACT

Synovial chondromatosis and osteochondroma rarely present concurrently in the elbow. We report a 19-year-old male football goalkeeper with an 8 month history of progressive right elbow pain and restricted range of motion (flexion 90°, extension 30°) likely related to repetitive microtrauma. Imaging revealed multiple intraarticular small, loose bodies; known as rice bodies consistent with synovial chondromatosis and a distal humeral osteochondroma measuring >2.5 cm. In the first stage, arthroscopic synovectomy with excision of rice bodies was performed, while the osteochondroma was left for a planned second stage open resection. This case highlights the importance of staged surgical management and rehabilitation in restoring function in a young patient with concurrent benign elbow pathologies.

Keywords: *Synovial chondromatosis. Osteochondroma. Arthroscopy. Synovectomy.*

INTRODUCTION

Primary synovial chondromatosis is a rare metaplastic disorder with an estimated incidence of approximately 1 per 100,000 individuals, and the elbow is an uncommon site of involvement.[1] Osteochondroma is the most common benign bone tumor, representing approximately 30% of all benign bone tumors; however, its occurrence in an intraarticular location of the distal humerus is exceedingly rare.[2] The simultaneous occurrence of these two distinct entities is exceptionally uncommon, with only a few isolated cases reported in the literature.[3] Repetitive microtrauma has been proposed as a contributing factor in the development of secondary synovial chondromatosis.[4] This case report describes the diagnostic workup, staged surgical management, and early rehabilitation of a goalkeeper affected by both pathologies.

CASE REPORT

A 19-year-old male football goalkeeper presented with an 8 month history of progressive pain and restricted movement of his dominant right elbow, with an insidious onset. He attributed his symptoms to repetitive goalkeeping training, and no significant comorbidities were identified. Physical examination revealed a painful arc of motion with a mechanical block to elbow movement, limited flexion to 90°, and a 30° extension deficit. Routine laboratory investigations were within normal limits. Plain radiographs (Figure 1), magnetic resonance imaging (MRI) (Figure 2a), and computed tomography (CT) (Figures 2b and 2c) demonstrated an osteochondroma measuring >2.5 cm involving the anterior and distal aspects of the humerus, along with numerous intraarticular loose (rice) bodies, confirming the coexistence of synovial chondromatosis.[5]

The treatment plan consisted of staged management, including initial arthroscopic synovectomy and rice body removal followed by planned open osteochondroma excision, with the goals of relieving pain, restoring elbow range of motion, and facilitating a return to sporting activities.

Under general anesthesia, the patient was placed in the lateral decubitus position. Standard anteromedial, anterolateral, and posterior arthroscopic portals were established. Diagnostic arthroscopy (Figure 3a) revealed multiple cartilaginous rice bodies, and extensive synovectomy with removal of all accessible rice bodies was performed (Figure 3b).[6] Because of its size, location, and proximity to critical neurovascular structures, osteochondroma was not considered for arthroscopic excision and was left in situ for planned second stage open resection.[7]

Histopathological examination confirmed the diagnosis of synovial chondromatosis. Immediate postoperative rehabilitation emphasized edema control and gentle assisted exercises while avoiding forceful stretching. Functional range of motion exercises progressively advanced from the second postoperative week onward.

A planned second stage open resection through anteromedial and posterolateral approaches was performed 8 weeks after the index procedure. Following completion of both surgical stages, the patient achieved normal elbow motion, pain relief, and return to competitive sporting activity.

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DISCUSSION

The elbow's constrained anatomy makes it particularly susceptible to mechanical impingement by space occupying lesions. Synovial chondromatosis typically presents with pain, swelling, mechanical locking, and restricted motion, whereas osteochondroma commonly presents as a painless bony prominence and is rarely encountered in an intraarticular location around the elbow.[1,2] The simultaneous occurrence of the two pathologies is exceptionally uncommon, making diagnosis and management challenging.[2,3] In athletes subjected to repetitive valgus and axial loading, microtrauma has been hypothesized to induce synovial metaplasia.[4]

In the present case, the coexistence of numerous intraarticular rice bodies with a large distal humeral osteochondroma resulted in significant functional limitation and a mechanical block to elbow motion. Some reports have described delayed diagnosis because symptoms are often attributed to sports related overuse injuries or repetitive microtrauma.[4]

Figure 1: Anteroposterior and Lateral Radiographs of the Right Elbow showing a Radiopaque Mass Arising from the Anterior Distal Humerus, Consistent with Osteochondroma

Figure 2a: Sagittal T2-Weighted MRI Demonstrating Multiple Intraarticular Rice Bodies and an Anterior Distal Humeral

Figure 2b: Sagittal CT Image Demonstrating Multiple Intraarticular Rice Bodies within the Anterior Compartment of the

Figure 2c: (c) Axial CT Image Demonstrating the Distal Humeral Osteochondroma and Associated Intraarticular Rice Bodies Elbow

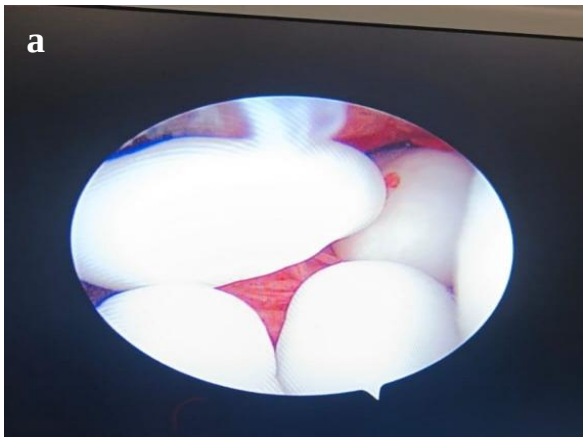

Figure 3a: Arthroscopic View of the Elbow Joint showing Rice Bodies

Figure 3b: Rice Bodies Removed from the Elbow Joint

Arthroscopic synovectomy with removal of rice bodies is considered the standard treatment for synovial chondromatosis because it provides superior visualization, lower morbidity, and faster rehabilitation.[1,6] A study described the arthroscopic management of elbow synovial chondromatosis and highlighted the advantages of arthroscopy, including shorter rehabilitation and improved patient satisfaction. However, long term surveillance is necessary, as recurrence of synovial chondromatosis has been reported in a small proportion of patients.[6]

Management of osteochondromas around the elbow depends on lesion size, location, symptoms, and proximity to neurovascular structures. Larger osteochondromas are associated with an increased risk of incomplete excision and iatrogenic neurovascular injury, whereas arthroscopic excision is generally reserved for carefully selected cases.[7] A study published in 2024 reported successful surgical treatment of intraarticular elbow osteochondroma with favourable functional outcomes, supporting the role of complete lesion excision in symptomatic patients.[8] Given the confined anatomy of the elbow, surgical planning must balance complete tumor resection with preservation of surrounding neurovascular structures.[7]

Arthroscopic soft tissue clearance followed by planned open osteochondroma excision was selected, as arthroscopic management may not be suitable for all intraarticular osteochondromas, particularly when lesion characteristics raise concerns regarding complete and safe resection.[9]

CONCLUSION

The concurrent occurrence of synovial chondromatosis and distal humeral osteochondroma of the elbow is exceptionally rare and may cause significant pain, mechanical blockage, and restricted motion in young athletes. Accurate radiological assessment is essential for diagnosis and treatment planning. In this case, arthroscopic synovectomy with removal of rice bodies provided effective initial management, while staged open excision of the osteochondroma was planned to ensure safe and complete resection. This case highlights the importance of individualized surgical planning and rehabilitation in achieving optimal functional recovery and return to sporting activity.

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