

Synovial Chondromatosis of the Elbow With Asymptomatic Ulnar Nerve Compression

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Primary synovial chondromatosis is a rare, benign, proliferative disease of hyaline cartilaginous bodies within the synovium of joints. We report a rare case of primary synovial chondromatosis diffusely affecting the ulnohumeral joint causing pain and motion limitations with extrusion into the cubital tunnel and compressing the ulnar nerve but without any preoperative signs or symptoms of ulnar nerve compression. The patient was successfully treated with an open synovectomy to limit disease progression and improve motion. This case highlights that synovial conditions of the elbow may involve the ulnar nerve even when a patient is asymptomatic. Preoperative use of magnetic resonance imaging of the elbow should be considered in patients undergoing either an open or arthroscopic synovectomy. (*J Hand Surg Am. 2016;41(11):e429–e431. Copyright © 2016 by the American Society for Surgery of the Hand. All rights reserved.*)

Key words Elbow, PSC, synovial chondromatosis.



P RIMARY SYNOVIAL CHONDROMATOSIS (PSC) is a rare, benign, proliferative disease of hyaline cartilaginous bodies within the synovium of joints.¹ Although PSC can occur in any joint, the majority of reported cases involve the knee.² Cases of PSC affecting the elbow joint have been reported.^{1,3,4} Although ulnar nerve compression has been reported in a single case of elbow PSC,⁴ the presence of PSC was noted to be an incidental finding in a patient with normal

motion and otherwise symptomatic cubital tunnel syndrome undergoing ulnar nerve transposition. We report a case of painful PSC diffusely affecting the ulnohumeral joint with extrusion into the cubital tunnel and compressing the ulnar nerve but without any preoperative signs or symptoms of ulnar nerve compression.

CASE REPORT

A 43-year-old, otherwise healthy, right-handed man presented with complaints of elbow stiffness and pain for more than 2 years. He denied numbness or tingling and had no pain at rest; however, pain was associated with elbow motion. Two years before presentation the patient had undergone left elbow arthroscopic debridement at an outside institution for a diagnosis of chondrocalcinosis. This provided him with a short period of minimal relief. Subsequent nonoperative treatment included a steroid injection and a topical anti-inflammatory that provided minimal improvement of his symptoms. He had no complaints consistent with a compressive ulnar neuropathy. Physical

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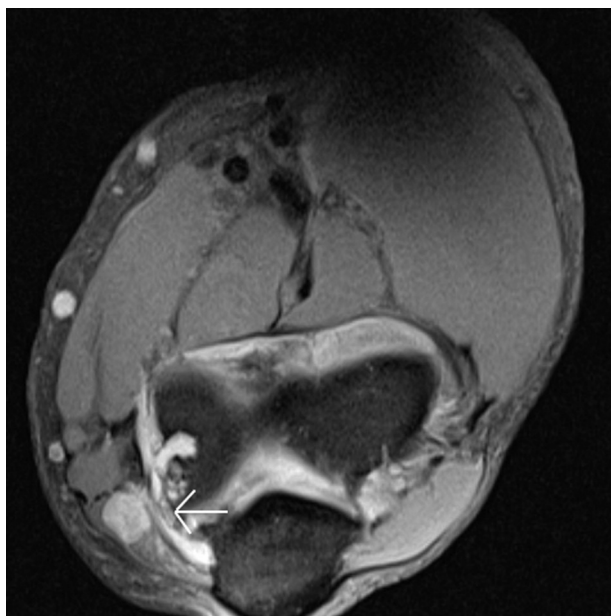


FIGURE 1: Axial view of a magnetic resonance arthrogram T2-weighted image demonstrating a mass pushing out on and effacing the ulnar nerve. The white arrow depicts the ulnar nerve at the site of compression by the lesion.

examination revealed an elbow range of motion limited to a 30° flexion contracture and 95° of flexion both actively and passively. He had tenderness to palpation over the posterolateral aspect of the elbow. Grip strength was 82% of the contralateral side when correction was made for hand dominance. Tinel's sign at the cubital tunnel was negative and there was no evidence of a subluxating ulnar nerve. The neurologic examination demonstrated 2-point sensation of 3 mm in the thumb through ring finger, and 4 mm in the little finger, which was equal to the contralateral (unaffected) side. He had grade 5 strength in the thenar muscles and the first dorsal interosseous muscle. Active digit extension strength was also normal.

Radiographs showed mild narrowing of the ulnohumeral and radiocapitellar joints with osteophytes of the olecranon and coronoid fossae, as well as the radial fossa. A magnetic resonance arthrogram (Fig. 1) demonstrated intra-articular synovial proliferation, and on close inspection of the cubital tunnel there was synovial proliferation extruding into the cubital tunnel. These findings were consistent with synovial chondromatosis with secondary degenerative changes.

Given the failure of previous arthroscopic management, the patient elected to proceed with an open synovectomy, capsular release, and anterior/posterior osteochondroplasty in an attempt to limit further disease progression and improve elbow motion and pain. A medial approach was performed using a curvilinear

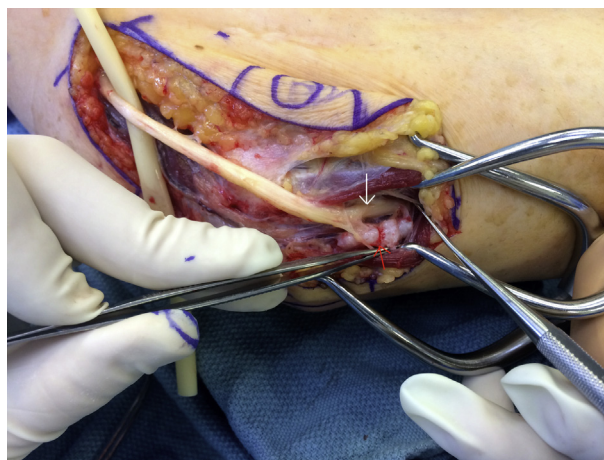


FIGURE 2: Intraoperative view from a medially based incision showing the initial exposure with a portion of a cartilaginous mass (red arrow) seen initially to be compressing the ulnar nerve (white arrow).

incision along the intermuscular septum proximally and extending distally in line with the expected location of the ulnar nerve. An isolated medial exposure was chosen because the patient had limited lateral disease and no radiocapitellar pain or tenderness, and it was felt that the ability to address the capsule and ulnar nerve could be best done from the medial exposure. The posterior ulnohumeral exposure was achieved by bluntly releasing the triceps off of the intermuscular septum and posterior capsule. The anterior ulnohumeral exposure involved raising the brachialis bluntly off of the humerus, then incising the flexor pronator mass in line with its fibers at the junction of the middle and posterior one-thirds and raising the anterior portion up with the brachialis, as a single soft tissue sleeve, off the anterior elbow capsule.

On entering the cubital tunnel, a large herniating mass was encountered that was directly compressing the ulnar nerve (Fig. 2). The nerve was carefully dissected free and the extruded synovial tissue excised (Fig. 3). The remainder of the planned procedure was performed through this medial incision, including anterior and posterior capsulectomies and a subcutaneous transposition of the ulnar nerve, after which the passive range of motion improved to 0–130.

Postoperatively, the patient began a physical rehabilitation program with an immediate focus on range of motion. Final pathology confirmed synovial chondromatosis. At final follow-up 6 months postoperatively, the patient had retained 15° to 115° of elbow motion, and reported no further pain in the elbow. The neurologic examination findings were consistent throughout the patient's follow-up and included 2-point sensation at 4 mm in all digits, as well as grade 5 strength

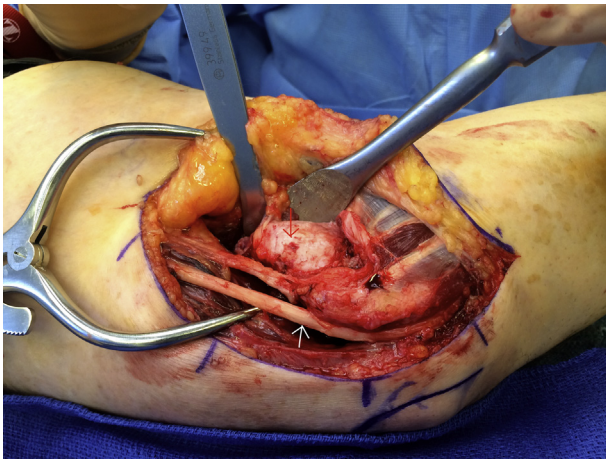


FIGURE 3: Intraoperative view from a medially based incision showing the final exposure with the ulnar nerve (white arrow) freed from the previously compressive soft tissue mass proximally, and the anterior exposure showing a large amount of disease in the anterior ulnohumeral joint (red arrow).

of the thenar and intrinsic musculature. As had been the case preoperatively, there were no symptoms of a sensory disturbance in the ulnar nerve distribution.

DISCUSSION

Primary synovial chondromatosis is a benign intra-articular disease that primarily affects the knee; involvement of the elbow is rare.¹ Patients with PSC of the elbow may initially present with painful range of motion and subsequently develop mechanical symptoms and tenderness to palpation diffusely about the elbow.³ Although there has been a single case report of PSC found incidentally during ulnar nerve decompression for symptomatic cubital tunnel syndrome, the masses were proximal to the medial epicondyle rather than in the cubital tunnel proper.⁴

Mueller et al³ reported 20 cases of PSC of the elbow in which there were no patients with ulnar nerve symptoms nor any documented cubital tunnel involvement secondary to the PSC. The authors treated 80% of their cases with arthroscopy. The risk of nerve injury during elbow arthroscopy, including the ulnar nerve, is well documented.⁵ This report shows that synovial chondromatosis can herniate into the cubital tunnel; thus we recommend that any arthroscopic debridement in the posteromedial gutter, in the setting of presumed synovial chondromatosis, should be undertaken with caution and after a careful review of preoperative imaging, including magnetic resonance imaging of the cubital tunnel. If cubital tunnel involvement is noted either on imaging or arthroscopically, we would recommend resection through a completely open approach, or a smaller open medial incision to dissect and protect the ulnar nerve during arthroscopic debridement.

Although cubital tunnel involvement of PSC appears to be a rare entity, we recommend a high index of suspicion, because patients can be neurologically asymptomatic and, if unrecognized, the ulnar nerve could be at risk during surgical debridement especially if this is done arthroscopically.

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