



## The Cubital Tunnel Syndrome Caused by an Osteochondroma: A Case Report

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### Abstract

**Background:** Cubital tunnel syndrome is common nerve compression syndrome among peripheral nerve compression diseases in upper extremities. However, the syndrome caused by osteochondroma has been rarely reported. Surgical treatment is the election management but is important a correct clinical assessment.

**Case presentation:** A 41-year-old male patient with progressive pain of 4 months of evolution in the left hand associated with paresthesias. Physical examination revealed pain on palpation in relation to the epitrochlear-olecranon canal and neurological compromise. On images, CT and MRI of the elbow was found an exostosis in the medial epicondyle with no malignant signs and complemented with EMG and VC that reports ulnar entrapment at elbow level. An open surgical resection, excisional biopsy and ulnar nerve neurolysis were performed, which was observed with clear signs of nerve compression. Histopathological report evidenced an osteochondroma. The patient evolves favorably with decreased pain and no symptoms of ulnar compression.

**Conclusions:** Clinical assessment is essential in these cases and should guide the request for complementary imaging and electrophysiological studies to achieve an accurate diagnosis. In this way, a correct treatment can be carried out in order to accomplish good clinical results.

**Keywords:** Cubital Tunnel Syndrome; Nerve Compression; Osteochondroma; Biopsy; Neurolysis

### Abbreviations

CT: Computed Tomography; MRI: Magnetic Resonance Imaging;  
EMG: Electromyography; NCV: Nerve Conduction Velocity

### Introduction

Ulnar nerve entrapment is the second most common compression neuropathy in the upper extremity after carpal tunnel syndrome [1]. Compression of the ulnar nerve at the elbow, known as cubital tunnel syndrome, is the most common site with an annual incidence of 21 per 100,000 [2,3]. There are multiple sites of entrapment in the elbow and it could be caused by arthritis, space occupying lesions, heterotopic ossification, between others [3]. Clinical diagnosis remains the gold standard, and nerve conduction studies support to confirm diagnosis. The treatment depends on the etiology but it generally includes pain management, physical therapy and surgery in refractory cases or with a clear cause [3].

Osteochondroma is a very rare cause of cubital tunnel syndrome [4]. This benign bone tumor is a cartilage-capped bony proje-

ction on the external surface of bone, typically in metaphysis and in general growth is slow, so it's clinical evolution can take several years [5,6].

Here we present an unusual cause of ulnar nerve entrapment at the elbow.

### Case

A 41-year-old male patient, administrative work, with a medical history of insulin resistance. He consulted for progressive pain of 4 months of evolution in the left hand associated with paresthesias in the ring and little finger. He described pain as "electric" in the ulnar nerve territory, with worse symptoms at night.

Physical examination revealed pain on palpation in relation to the epitrochlear-olecranon canal, positive Tinel's sign in the ulnar territory at the level of the elbow, forearm and hand, with no evidence of ulnar nerve dislocation or mass. The patient had full joint ranges and a stable elbow. The neurological evaluation revealed M4

paresis of intrinsic hand muscles, little finger adduction and deep flexor of annular and little left fingers, rest of the muscular groups with M5. The patient also presented S1 in the ulnar nerve territory in the palm and fingers, rest with S2.

CT and MRI of the elbow was carried out, where an exostosis of 1.5 x 1.7 x 3.6 cm was observed in the medial epicondyle (Image 1 and 2 respectively), without signs of aggressiveness, determining mass effect and posteromedial displacement of adjacent structures with signs of entrapment and segmental neuropathy.

The study is complemented with EMG and NCV that reports ulnar entrapment at elbow level.

An open surgical resection, excisional biopsy and ulnar nerve neurolysis were performed, which was observed with clear signs of nerve compression. The patient evolves favorably, the histopathological report evidenced an osteochondroma and the patient underwent 30 sessions of kinesiological rehabilitation and physiotherapy.

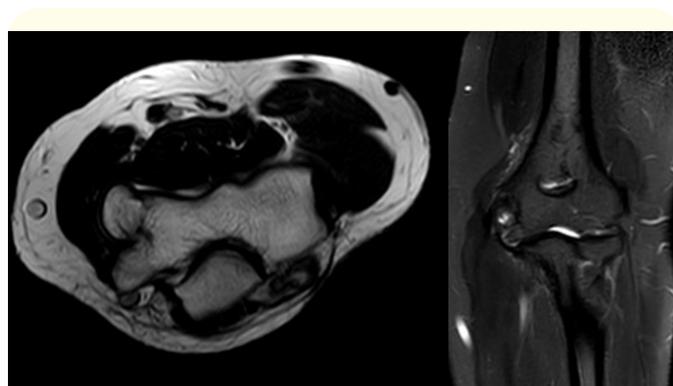
During the 6-month clinical follow-up, the patient progressed favorably, with decreased pain and no symptoms of ulnar compression.



**Figure 1:** Computed tomography of the elbow. Axial cut (A) and 3D bone reconstruction including the exostosis from the medial epicondyle (B and C).

**Discussion**

The ulnar nerve compression at the elbow is the second most frequent nerve entrapment of the upper extremity. There are multiple causes of compression of the ulnar nerve at the level of the elbow. Potential ulnar nerve entrapment can occur at five sites around the elbow: the arcade of Struthers, the medial intermuscular septum, the medial epicondyle, the cubital tunnel (most common), and the deep flexor pronator aponeurosis. Etiologic factors



**Figure 2:** MRI of the elbow. Axial T1 cut (A) and a coronal STIR cut (B) of the left elbow showing an exostosis from the medial epicondyle with characteristics of osteochondroma and without signs of malignancy.

that may cause nerve compression are arthritis, space occupying lesions, heterotopic ossification, recurrent occupational trauma, and metabolic conditions such as diabetes and alcoholism [1-3].

Compression secondary to tumors can occur, but in the literature there are very few reports on cases of cubital tunnel secondary to osteochondroma, this being one of the first reports in the international literature [4,7-9]. The osteochondroma is a benign tumor, which is characterized by a growth of cartilage, specially from the physis where endochondral growth takes place. In general, growth is slow, so its evolution can take several years. Diagnosis is clinical-imaging, so histopathological confirmation can often be dispensed with [6,9].

Clinical diagnosis continues to be the gold standard, which must be complemented with electromyography (EMG) and conduction velocity (VC) of the upper extremities, as well as an imaging study, including radiography, ultrasound, computed tomography (CT) and/or MRI magnetic (MR).

Osteochondroma is a benign bone lesion that is characterized by osteocartilaginous proliferation in the physis, which is why it generally develops during growth during the first and second decade of life, so growth generally stops later. The diagnosis is based on imaging and anatomopathological study, but a correct diagnosis must be made prior to surgery to avoid complications [5,6].

Growth is slow and can last for years, so compression of peripheral vessels and nerves can occur progressively when edema and other vasomotor disorders appear. These symptoms subside when the tumor is removed. Histopathologically, it appears as an exophytic mass consisting of a bone axis and a hyaline cartilaginous cap, which may differ in size [5,6].

Clinical assessment is essential and should guide the request for complementary imaging and electrophysiological studies to achieve an accurate diagnosis. In this way, a correct treatment can be carried out, which in this case is surgical, managing to reverse the symptoms of this patient. In addition, it should always be accompanied by a biopsy of the lesion for pathological confirmation of the diagnosis. Clinical diagnosis remains the gold standard, and nerve conduction studies support to confirm diagnosis.

In this case the patient suffered progressive pain of 4 months of evolution in the left hand associated with paresthesias in the ring and little finger. During surgery the trajectory of the ulnar nerve was thoroughly explored surgically. Besides full excision of the osteochondroma tumor. This is important because besides the tumor, there could be more anatomic factors causing compression along the nerve, so complete decompression of the nerve is demanded.

### Conclusion

The cubital tunnel syndrome caused by an osteochondroma needs to be well diagnosed in order to be treated well and achieve good clinical results. Patients history and physical examination are essential for an adequate diagnostic hypothesis, EMG and images can confirm it, and a multidisciplinary treatment is fundamental to achieve good clinical results.

### Acknowledgements

None.

### Conflict of Interest

The authors denies any conflict of interest for the realization of this study.

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