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Case Report

Traumatic ulnar nerve dislocation: an unusual entity

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ABSTRACT

Ulnar nerve dislocation is defined as abnormal movement of the ulnar nerve at the elbow joint. This dislocation has been reported in 16% of asymptomatic arms. However, posttraumatic ulnar nerve subluxation remains a rare clinical entity. We present a unique case of posttraumatic ulnar nerve dislocation and describe clinical characteristics and etiology of this injury and how it was managed.

Keywords: Ulnar nerve, Dislocation, Traumatic

INTRODUCTION

Ulnar nerve dislocation is described as abnormal displacement of the ulnar nerve out of the cubital tunnel during elbow flexion that potentially led to frictional neuritis. Typically, the ulnar nerve moves anteriorly over the medial epicondyle during elbow flexion.[1] This dislocation could be due to trauma or congenital laxity of the elbow ligaments. Although dislocation of the ulnar nerve has been reported in 16% of asymptomatic arms, post-traumatic ulnar nerve subluxation remains a rare clinical entity.[2] The authors present a unique case report of post-traumatic ulnar nerve dislocation and review of literature, in order to describe etiology and treatment of this entity.

CASE REPORT

A 26-year-old handed-right female, a secretary sustained a trauma on the dominant elbow ten months ago. Since this injury, she developed persistent pain on the medial elbow region during manual activities. Moreover, she complained of paresthesia of the 4th and 5th fingers especially during elbow flexion.

Clinical examination showed tenderness to palpation over the medial epicondyle that was aggravated with elbow flexion. Careful palpation revealed subluxation of ulnar nerve occurring with elbow flexion and was reduced with elbow extension. The Tinel's sign was positive and there was no neurological deficit along ulnar nerve territory. The controlateral elbow examination was uneventful. Radiographs, electromyography and nerve conduction velocity were normal. However, the dynamic ultrasound of the right elbow revealed unstable ulnar nerve. Hence, the diagnosis of post-traumatic ulnar nerve instability was retained.

After discussion of therapeutic options, the patient opted for surgical treatment. Initially, the intraoperative exploration confirmed the ulnar nerve instability during passive elbow flexion (Figures 1 and 2). Anterior submuscular transposition of the ulnar nerve was performed with neurolysis (Figure 3).

There were no postoperative complications. At 4-month after surgery, the patient was asymptomatic and was returned to normal activities with no pain residual. The neurologic functions of the ulnar nerve were normal.

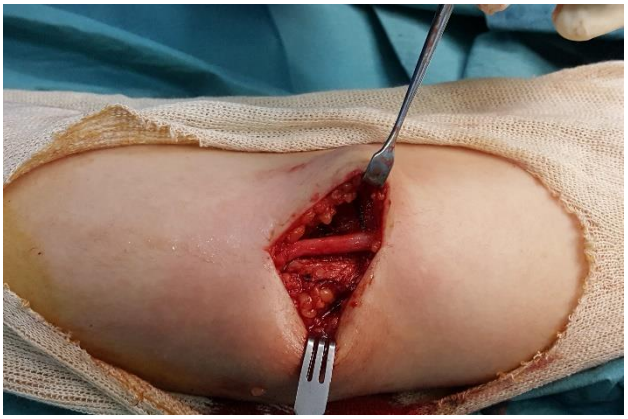

Figure 1: Intraoperative appearance of the elbow showing the dislocation of the ulnar nerve during flexion.

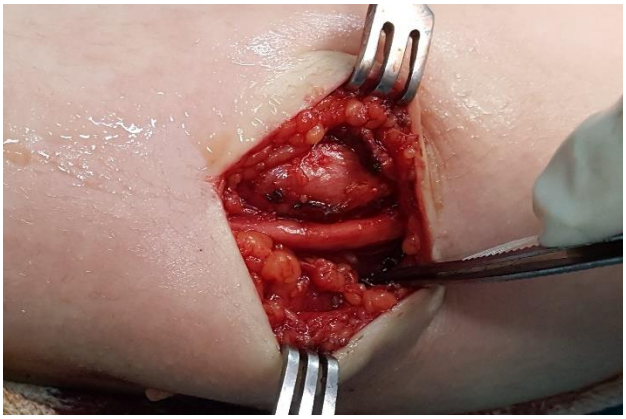

Figure 2: On elbow extension the ulnar nerve returns to its initial position.

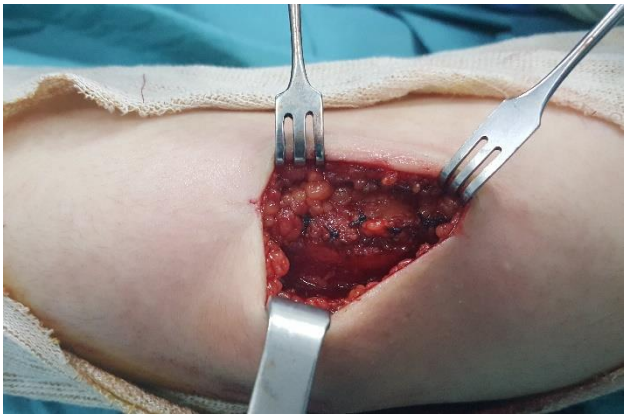

Figure 3: Anterior submuscular transposition of the ulnar nerve.

DISCUSSION

The term ulnar nerve luxation used to describe abnormal movement of the ulnar nerve at the elbow joint. Typically, this displacement occurs when the ulnar nerve leaves the cubital tunnel during elbow flexion and returns to its initial position on elbow extension.[1,2] In this subluxed position, the nerve is considerably vulnerable to direct injury and shear stress that could predispose to frictional neuritis.[3]

Dislocation of the ulnar nerve from the cubital tunnel was reported as common disorder in the medial elbow region. In his study of 1000 patients, Childress found ulnar nerve instability in 16% of asymptomatic arms.[2] In addition, Zaltz et al reported this instability in 17.7% of asymptomatic children.[4] However, posttraumatic ulnar nerve subluxation remains a rare clinical entity.[5]

It seems that knowledge of the anatomy of the cubital tunnel and its dynamic relationship to ulnar nerve is capital to understand the pathomechanism of this entity. Indeed, the roof of the cubital tunnel is formed by the medial epicondyle, the olecranon process and the arcuate ligament of Osborne, whereas the elbow joint capsule and medial collateral ligament forming the floor of this tunnel.[6] It has been reported that dislocation ulnar nerve is commonly caused by congenital laxity of the cubital tunnel roof, variations in the anatomy of the triceps, hypoplasia of medial epicondyle. Moreover, Richard et al reported 18 elbows with various muscular anomalies.[7] Alternatively, this subluxation rarely results from trauma which could be direct trauma such as contusion and haematoma of the soft parts, or indirect trauma.

Clinically, the characteristic symptom is persistent pain at the medial elbow region that was exacerbated with elbow flexion. Generally, the patient has paresthesias of the fourth and the fifth fingers especially during manual activities. The Tinel's sign is usually present and careful physical examination can discover the instability of the nerve out the cubital tunnel as seen in our case. However, clinical diagnosis can be not easy in obese patients.[8]

Dynamic ultrasonography can be used to detect translation of the ulnar nerve over the medial epicondyle with elbow flexion.[9] Rutter et al found preoperative ultrasonography correlated with the intraoperative explorations of ulnar nerve instability in 88% of patients.[10] While the MR imaging permits a static evaluation of the nerve.[9]

Most reports concerning management of the ulnar nerve dislocation demonstrated that the operative option is the treatment of choice with excellent functional outcome. Several treatment techniques have been described in the literature. Anterior transposition of the nerve is often recommended by the most of orthopaedic surgeons.[1] This transposition can be subcutaneous, submuscular or intramuscular.[6] On the other hand, few authors have proposed conservative treatment and rehabilitation for patients with moderate symptoms.

CONCLUSION

Although ulnar nerve instability commonly occurs as result of congenital laxity of the elbow ligaments, we report a typical case of traumatic ulnar nerve dislocation which remains a rare entity. A thorough physical

examination allows the diagnosis that could be confirmed with dynamic sonography of the elbow. In our opinion, the surgical treatment is the best choice for this rare injury.

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