

Cubital tunnel syndrome due to the anconeus epitrochlearis in an amateur weight lifter

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Abstract

A Cubital tunnel syndrome caused by hypertrophy of the aberrant muscle, anconeus epitrochlearis in an amateur weight lifter is presented.

Résumé

Un syndrome de tunnel cubital causé par l'hypertrophie du muscle aberrant, anconeus epitrochlearis chez un haltérophile amateur est présenté.

Introduction

We present a case of a cubital tunnel syndrome secondary to the aberrant muscle anconeus epitrochlearis in an amateur weight lifter.

Case-Report

This 28-year-old right-handed man had an eight-week history of tingling sensation and weakness of the grip power. He denied any trauma to his elbow and his symptoms progressed despite the use of splints and medication for 3 months. He was a businessman and had to do computer works for several hours a day. He attended classes in physical fitness and lifted weight to develop his muscles. Numbness of the 4th and 5th fingers and difficulty in fine motion like touching computer key board became constant recently and weakness of flexor profundus of ulnar 2 digits was present. Examination revealed positive Tinel sign at the cubital tunnel with radiating pain into the ring and little fingers. However, Tinel sign was negative at the Guyon's canal. There was no atrophy of the thenar, hypothenar, and interosseous muscles. His symptom was aggravated by elbow flexion beyond 90 degrees. Laboratory test was within normal limit including test for syphilis. Electromyography of the left ulnar nerve showed the prolonged distal latency compared to the opposite (2.46msec: 2.38msec). The motor amplitude of the ulnar nerve above the elbow was 8.40 compared to 3.37 of the below elbow. Conduction velocity above the elbow was 54.8m/sec compared to 45.9m/sec of the below elbow. Spontaneous fibrillation of left adductor digiti quinti muscle was observed. In addition, recruitment pattern of left adductor digiti quinti was decreased. Sensory nerve conduction was within normal range. Ultrasound of the cubital tunnel showed no ganglion or mass like lesion, but increased diameter of the ulnar nerve compared to the opposite. He was diagnosed as having an idiopathic cubital tunnel syndrome and planned to surgical release of the cubital tunnel retinaculum. At exploration of the left cubital tunnel, a group of muscle fibers approximately 3-centimeter in width and 3-centimeter in length (Figure 1) crossed the ulnar nerve from olecranon to medial epicondyle, which was found to be the anconeus epitrochlearis muscle. The ulnar nerve was compressed by the aberrant muscle and a fusiform thickening and induration of the nerve trunk were observed just proximal to the muscle. The muscle was tight in flexion and significantly compressed the ulnar nerve. The ulnar nerve was strained proximal to the muscle bulk at elbow flexion beyond 90. The aberrant muscle was split longitudinally and flexor retinaculum as well. Splitting of the muscle revealed the aberrant muscle was hypertrophied as thick as 5 millimeter in depth and compressed the nerve during elbow flexion. It disclosed narrowed area of ulnar nerve 10mm under the muscle (Figure 2) No epineural or perineural neurolysis was performed. No transposition of the nerve was carried out. Three weeks after surgery, there was gradual recovery and at 6 weeks sensation in the ulnar digits were subjectively and objectively close to normal and his symptoms almost relieved. Electromyography at this time showed improvement in motor nerve conduction velocity and motor distal latency.

Discussion

Various incidence of the anconeus epitrochlearis muscle has been reported in the literature from 34% to 4% in the cadaver study [6,8]. LeDouble [5] reported the

muscle present in 32 of 102 cadavers. However, Clemens [2] reported only four cases out of 100 cadavers, one of which was completely developed and other three having only a rudimentary muscle. Although sexes and arms may have nearly equal incidences, the anomalous anconeus epitrochlearis has been reported to be more well developed in men and in the right arm [6]. Hirasawa et al [4] reported similar findings. They reported a weight lifter with bilateral ulnar nerve neuropathy, which was caused by hypertrophy of the muscle. In our study, the patient was also muscular and enjoyed weight lifting. The boundary for potential ulnar nerve compression begins approximately 10cm proximal to the elbow and end about 5cm distal to the joint. One of them is olecranon groove bounded anteriorly by medial epicondyle, laterally by the olecranon and ulnohumeral ligament, and medially by a fibroaponeurotic covering, which is also called cubital tunnel retinaculum (CTR). This retinaculum has exactly same course as did anconeus epitrochlearis. Thus, O'Driscoll et al [7] considered the CTR as a remnant of the anconeus epitrochlearis muscle and its function is to hold ulnar nerve in position. Compression at this site can be caused by a wide variety of conditions. Aberrant anconeus epitrochlearis is one cause of lesions outside of the groove. In humans, the muscle is probably atavistic and is replaced by a band passing in the same direction as the muscle, called the epitrochleoanconeus ligament. The treatment for ulnar neuropathy at elbow joint with an associated anconeus epitrochlearis muscle varied from excision of the mass to anterior transposition. Vanderpool et al [9] and Dahner LE [3] suggested local decompression and excision of the muscle. Although Chalmers [1] recommended anterior transposition of the ulnar nerve, we split the anconeus muscle and local decompression of the ulnar nerve at the cubital tunnel was carried out without anterior transposition. Subluxation has not noted after splitting of the muscle in this study. Masear et al. [6] presented improvement of electrophysiologic study between 8 and 12 months after operation. We also aware of improvement of electrophysiologic study after surgical release. It is probable that the syndrome can be caused by weight lifting and other overuse condition. If isolated compression by the aberrant muscle, in situ decompression only can achieve satisfactory result.

Legends

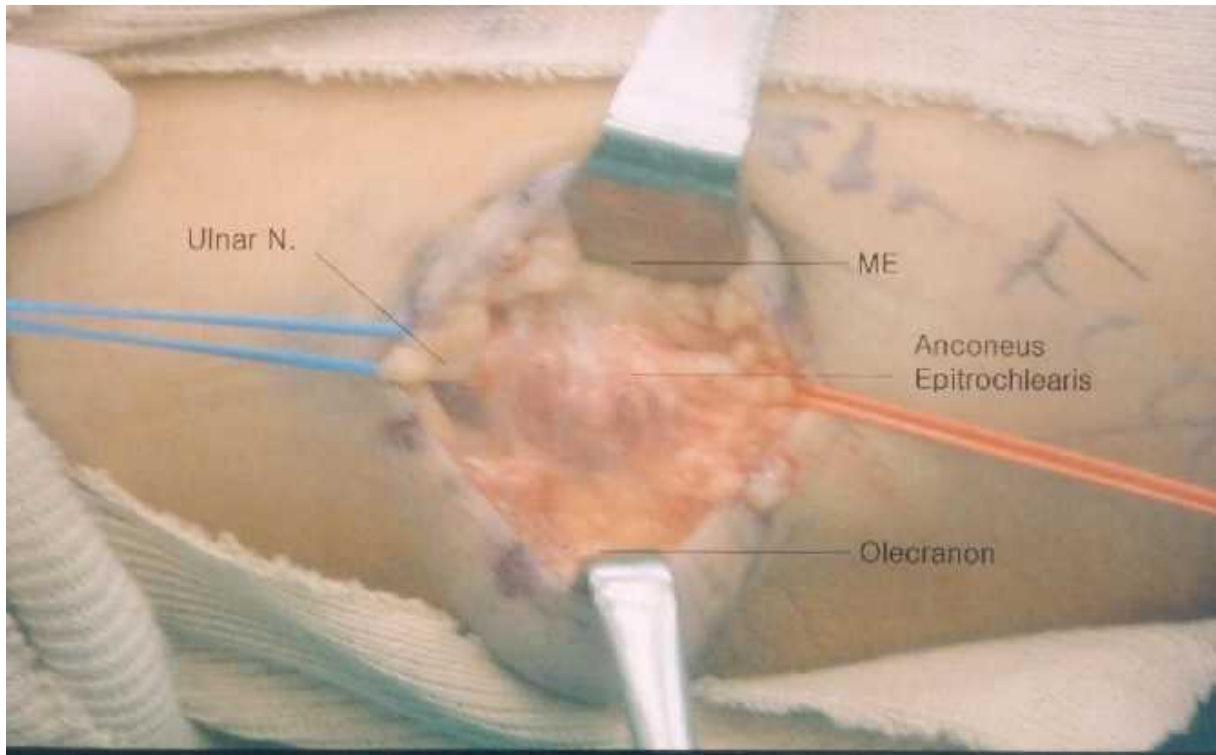


Figure 1: The anconeus epitrochlearis muscle compresses the ulnar nerve (Ulnar N.) against the medial epicondyle. This is the left elbow with the hand being to the right in the photograph. The anconeus epitrochlearis is seen extending from olecranon to the inferior surface of the medial epicondyle (ME).

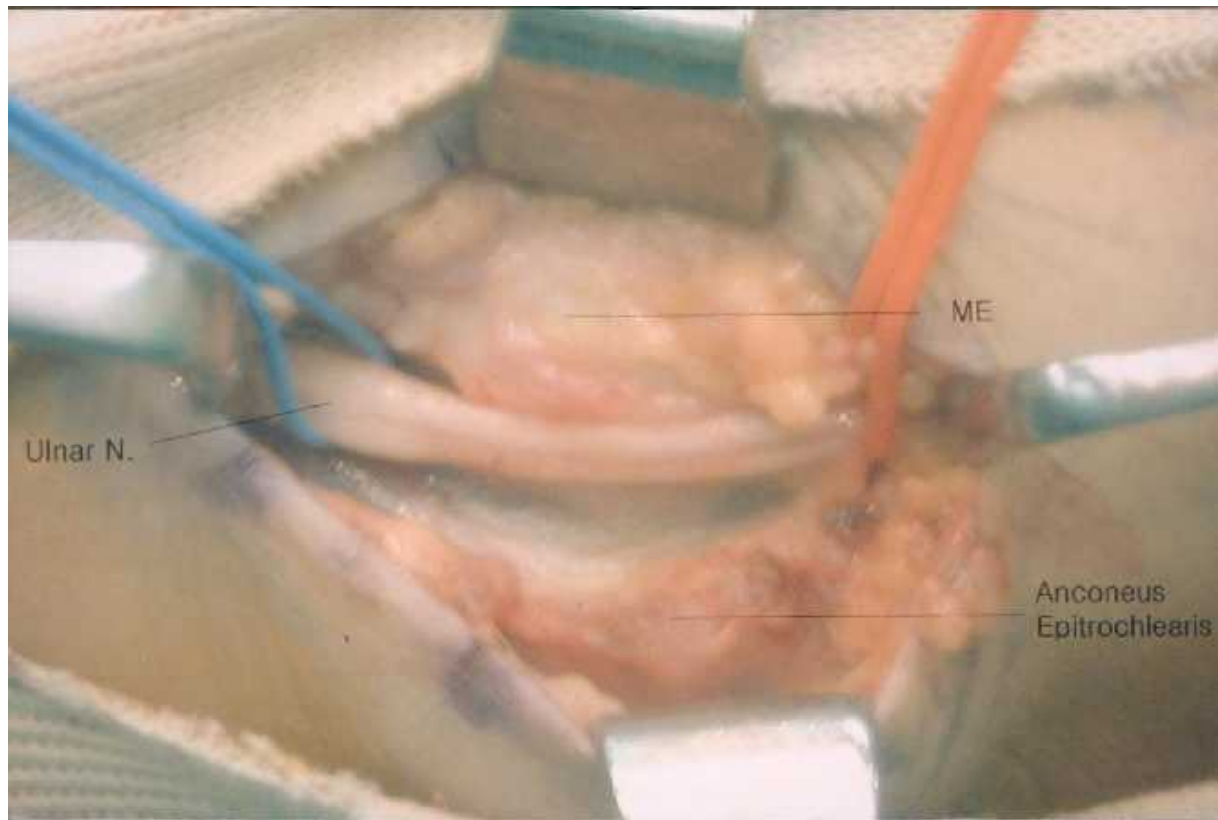


Figure 2: Operative photograph of the ulnar nerve after anconeus epitrochlearis has been reflected. Note the impression and hyperemia of the ulnar nerve beneath the muscle and pseudoneuroma just proximal to the aberrant muscle. The cut surface of the anconeus epitrochlearis was about 5mm thick and hypertrophied.

References

1. Chalmer J. (1978) Unusual causes of peripheral nerve compression. *Hand* 10:168-175
 2. Clemens HJ. (1957) Zur morphologie des ligamentum epitrochleo-anconeum. *Anat Anz* 104:343-344
 3. Dahners LE and Wood FM. (1984) Anconeus epitrochlearis, a rare cause of cubital tunnel syndrome: A case report. *J Hand Surg [Am]*. 9: 579-580.
 4. Hirasawa Y Sawamura H and Sakakida K. (1979) Entrapment neuropathy due to bilateral epitrochleoanconeus muscle: A case report. *J Hand Surg*. 4:181-184
 5. LeDouble AF. (1897) *Traite des variations du syteme musculaire de l'homme et de leur signification au point de vue de l'anthropologie zoologiques*. 2nd ed. Paris: Schleicher Freres. : 60-75
 6. Masear VR, Hill JJ and Cohen SM. (1988) Ulnar compression neuropathy secondary to the anconeus epitrochlearis muscle. *J Hand Surg [Am]* 13: 720-724.
 7. O'Driscoll SW, Horii E, Carmichael SW and Morre BF. (1991) The cubital tunnel and ulnar neuropathy. *J Bone Joint Surg. [Br]* 73:613-617
 8. O'Hara JJ and Stone JH. (1996) Ulnar nerve compression caused by a prominent medial head of the triceps and an anconeus epitrochlearis muscle. *J Hand Surg [Br]* 21:133-135
 9. Vanderpool DW, Chalmers J, Lamb DW, Whiston TB. (1968) Peripheral compression lesion of the ulnar nerve. *J Bone Joint Surg [Br]* 50 : 792-803
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