

Intraneural Ganglion Cyst of The Ulnar Nerve Causing Cubital Tunnel Syndrome: Two Case Reports.

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Research Article

Keywords: Intraneural cyst, cubital syndrome, ganglion, ulnar nerve, upper limb,

Posted Date: February 16th, 2022

DOI: <https://doi.org/10.21203/rs.3.rs-1003613/v1>

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Abstract

We present two cases of cubital tunnel syndrome caused by intraneural ganglia of the ulnar nerve at the elbow. This is a rare presentation for this type of ganglia, much more frequent at the peroneal nerve. An association between a history of trauma and the development of the synovial cyst is observed, therefore adequate preoperative imaging such ultrasound or MRI should be prescribed to better plan surgical treatment, in case of identified trauma. Drainage of the cyst and excision of its envelop under loupes magnification appears to be a correct and sufficient treatment when no articular nerve branch is found.

Introduction

Cubital tunnel syndrome is the second most common neuropathy of the upper extremity after carpal tunnel syndrome [1,2] It can gradually lead to sensation loss, muscle weakness and joint contracture. Intraneural ganglia have rarely been described in literature as a cause of nerve compression and more frequently develop in the peroneal nerve [3]. The origin of these cysts remains controversial and different options for treatment have been debated. Some authors have tried ultrasound- assisted aspiration, but found a high recurrence rate. Some others perform a nerve decompression along its course, and under loupe magnification proceed with drainage and removal of any remnant of the cystic wall. Another group of surgeons adds to this procedure the dissection of the intra articular branch of the nerve to eliminate the supposed pathway used by the synovial fluid to fill the ganglion [4,5]. We present here our two cases of intraneural cysts of ulnar nerve treated with a surgical procedure.

Case Presentation

Case N 1

A 57-year-old man, right handed, presented in our Clinic complaining of numbness and paresthesia of the 5th finger of the right hand. He referred the symptoms had begun 2 months earlier and were worsening. No recent trauma was referred although he had a history of an ancient trauma with fracture of the right ulna many years before the consultation. Clinically, he had a decrease in sensation over the medial aspect of the hand, permanent paresthesias, a negative Wartenberg sign, positive Froment and Jeanne signs and decreased grip strength (Jamar 33 kg right, 44 kg left). He presented difficulties in discriminating stimuli on his right 5th digit when a touch-pressure test was performed. Atrophy of the 1st palmar and dorsal interossei muscles was observed but no ulnar clawing deformity was noted. Plain X-ray of the elbow showed an exophytic lesion. The magnetic resonance (MRI) scan highlighted signs of an ancient trauma with fracture of the coronoid process of the ulna and lateral epicondylitis. The scan also showed a 6mm mucoid cyst in direct contact with the ulnar nerve at the medial gutter of the elbow. EMG (electromyography) revealed a severe decrease in motor nerve conduction, sensory and motor axons loss resulting in an advanced stage of nerve compression at the elbow. We then proceeded with a longitudinal small cutaneous incision on the medial aspect of the right elbow. Skin and the muscles were retracted and the Osborne fascia was incised in order to liberate the ulnar nerve. A subcentimeter cyst compressing

the ulnar nerve was detected Fig. 1, evacuated and its remnants were sent for examination resulting in an intraneural pseudocyst. The nerve was further inspected but we did not observe any intra-articular nerve branch connecting the cyst to the joint. Dissection was then carried out distally till the nerve entrance to the flexor carpi ulnaris muscle (FCU) and the aponeurosis was incised. Proximally, a digital inspection to verify the nerve was not compressed at the Struthers arcade was also performed. No subluxation of the ulnar nerve was noted. The operation was concluded with a cutaneous suture and a large dressing in order to avoid elbow flexion. A post-operative consultation after six weeks showed no recurrence of the cyst. A touch-pressure test revealed partial discrimination sensation recovery (2 mistakes on 30 attempts) at the level of his 5th finger. Massage of the scar and rehabilitation was ordered.

Case N 2

A 60-year-old man, presented at our Clinic complaining of pain at the right elbow and at the level of his thenar eminence which had started seven months earlier. The patient referred that the pain had worsened over the past four months and he had begun to experience paresthesia and pain of his 4th and 5th finger. He also had a history of trauma at the wrist and elbow during childhood resulting in movement impairment at the two joints and a scar at the base of the 5th finger. A clinical examination revealed permanent paresthesias of his 4th and 5th fingers with complete anesthesia of the 5th finger, a Weber Test of +12 at the ulnar side of his 4th finger (+4 radial side), + 4 for D (digit) 1,2 and 3, total sensation loss at his hypotenar eminence. A positive Wartenberg sign was noticed, in addition to positive Froment and Jeanne signs. Muscle strength was noticeably decreased (Jamar left 14 and right 40 kg, pinch test left 3 and right 9,5 kg) with signs of amyotrophy and ulnar clawing deformity. A recent MRI of the cervical spine showed small foraminal herniation at C5C6 and C6C7. The EMG revealed a severe loss of nerve fibers and decrease in conduction velocity of the ulnar nerve at the elbow. We decided to perform a surgical decompression, incising the skin at the medial aspect the left elbow to the Osborne fascia to visualize the ulnar nerve. The nerve looked ischemic with a clear central compression that gave it an aspect of hourglass. An approximately 1 centimeter in diameter intraneural cyst was observed, drained and excised. Careful examination of all the possible compression sites was carried out and after checking for an eventual subluxation of the ulnar nerve, the operation was concluded with a cutaneous suture and large dressing. Follow up appointments were scheduled after one week, one month, three months and six month postoperatively. The last clinical examination showed a mild improvement of digital sensation with a Weber test that scored + 8 at the ulnar side of D4 and + 4 for D3, 2, and 1 and a significant increase of muscle strength (Jamar 32 kg left and 39 kg right), a negative Froment and Wartenberg signs and a general improvement of pain sensation. No synovial cyst was detected.

Conclusion

Intraneural ganglia have rarely been reported as cause of cubital syndrome. Only few case reports or small series of patients exist in literature. These formations are not easy to identify preoperatively unless ultrasound or MRI are performed. Very often the cysts are so small that they're not even palpable when

examining the patient, therefore if no concomitant story of trauma or osteoarthritis is reported, only X-rays and EMG are routinely prescribed. Various theories on the origin of these ganglia have been proposed: degenerative [6], tumor [7] and the synovial theory [4]. The latter has gained consent over the past decade with papers published by Spinner [4,8] who correlates the origin of the cyst to a path of low resistance followed by the intra-articular fluid through an articular nerve branch to the main nerve. Although this theory seems very interesting it is not applicable in all cases. Some authors do not identify the swollen intra articular branch and proceed under loupe magnification to drainage and resection of any remnant of the cystic wall [9]. Essential is also surgical decompression of the ulnar nerve in all possible sites of compression before excising the ganglion. Some authors have tried ultrasound- assisted aspiration, choosing a more conservative approach, but found a high recurrence rate and were obliged to perform the classic decompression [10]. A history of trauma or osteoarthritis is recurrent in almost all cases and should lead to prescription of ultrasound or MRI to focus on the possible causes of nerve compression before surgery. In our experience, drainage and an attentive resection of all the remnants of the cyst under loupe magnification appear to be a sufficient treatment. However a longer follow-up and a wider series of patients is necessary to design a protocol of treatment.

Declarations

Funding: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Conflicts of interest: The Authors declare that there is no conflict of interest.

Availability of data and material: all data and materials comply with field standard.

Code availability: Not applicable.

Authors' contributions: All authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by Dr. Ilaria Casula and Dr. Mathilde Gras. The first draft of the manuscript was written by Dr. Ilaria Casula and Dr. Mathilde Gras commented on previous versions of the manuscript. All authors read and approved the final manuscript.

Ethics approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the Institute de la Main of Paris and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards

Consent to participate: informed consent was obtained from all individual participants included in the study.

Consent for publication: The participants have consented to the submission of the case report to the journal.

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Figures

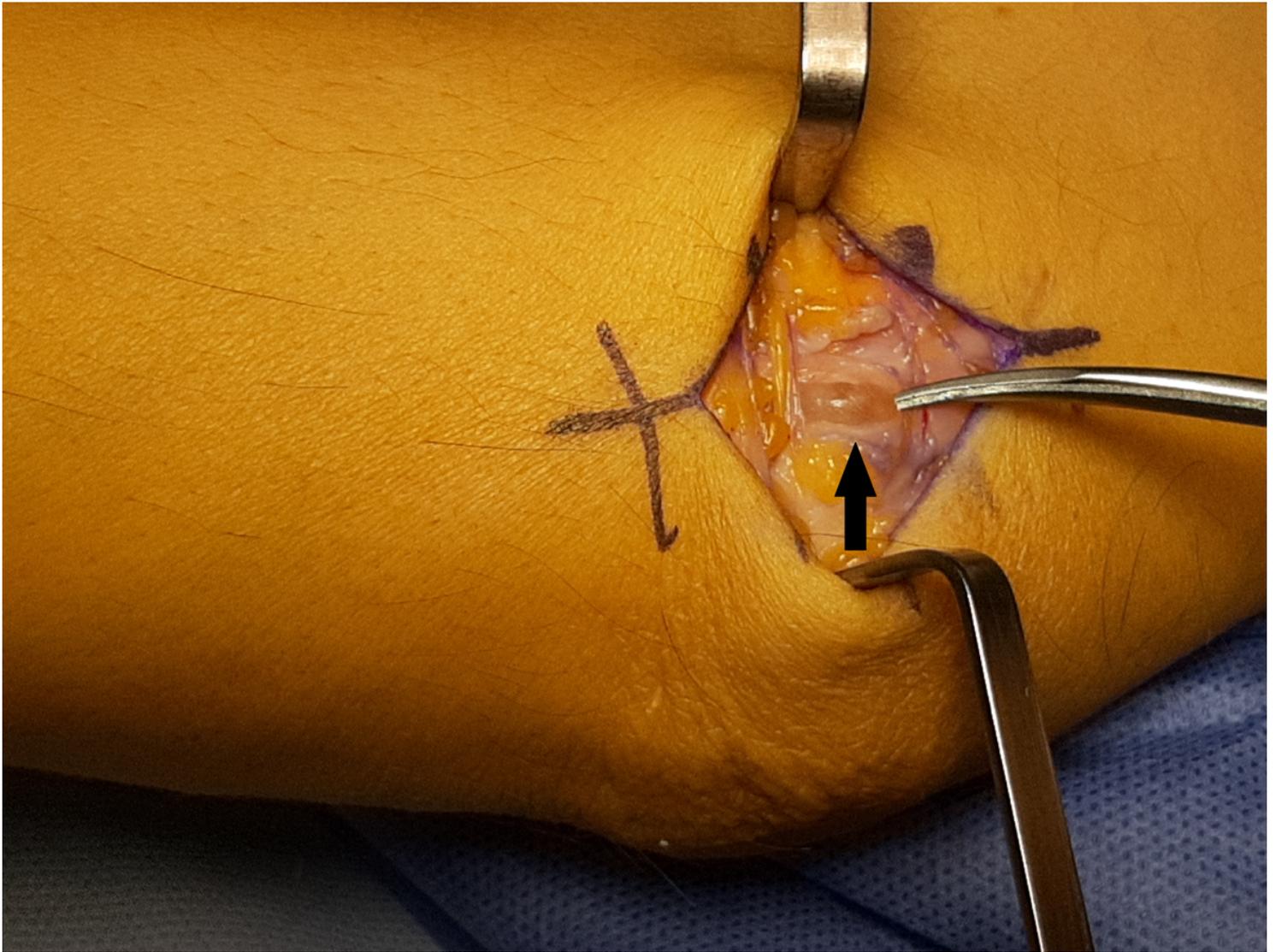


Figure 1

Intraneural cyst of the ulnar nerve, case 1. The black arrow is pointing out the exact location of the ganglion at the elbow.

Supplementary Files

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