

Case Report

Rapidly Progressive Ulnar Neuropathy in the Guyon's Canal by a Ganglion Cyst

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ABSTRACT

Ulnar nerve neuropathy can occur due to a variety of causes. Compression at the Guyon's canal is also an important cause. Fractures of the hook of hamate, repeated trauma, ulnar artery aneurysm are some of the major causes which cause ulnar nerve compressive neuropathy at the Guyon's canal. The case report we present here is of a 51 year old lady who presented to us with a sudden loss of hand grip and sensory disturbances of the palm for two months. The clinical examination was suggestive of a progressive ulnar neuropathy. Radiological evaluation was suggestive of a ganglion cyst arising from the wrist compressing the ulnar nerve in the Guyon's canal. Early decompression and excision of the ganglion with post-operative rehabilitation led to full recovery of symptoms and improvement of grip strength and motor power.

Keywords: Ulnar nerve, neuropathy, interossei, palmaris brevis, hypothenar muscles, claw hand.

INTRODUCTION

Repetitive trauma, swellings, tumors etc are major causes for ulnar nerve compression in the Guyon's canal. ^[1] A ganglion cyst causing compressive neuropathy of the ulnar nerve at the Guyon's canal is extremely rare, ^[1] Rapid onset of motor deficits and sensory deficits can occur depending on the location of the ganglion cyst at the Guyon's canal. ^[2] Early diagnosis and surgical intervention and rehabilitation can bring about recovery of the symptoms. ^[2] In this report we present a lady who developed partial claw hand with sensory deficits of her dominant

hand caused by ulnar nerve neuropathy caused by the ganglion cyst.

CASE REPORT

A 51-year-old housewife presented with rapidly progressive weakness and paraesthesia in fourth and fifth digits of her dominant right hand with clawing of 4th and 5th fingers for two months. There was no history of any trauma or neck symptoms. On examination, she had weakness of interossei and hypothenar muscles (MRC grade 3) and sensory deficits on the palmar surface of hypothenar eminence and fourth and fifth fingers. Cervical spine examination and

imaging were normal. EMG showed abnormal spontaneous activities in the abductor digiti minimi muscle and nerve conduction velocity studies showed prolonged latency of ulnar nerve. A sonography of the right wrist was performed which showed a cystic lesion 14 X 10 X 10 mm on the volar aspect between the ulnar nerve and the wrist joint at the zone 1 of Guyon's canal.

Under tourniquet control, the right ulnar nerve was exposed through a zig-zag incision over Guyon's canal. The palmar carpal ligament was divided longitudinally and the ulnar nerve and artery were identified and protected. The ganglion was arising from pisotriquetral joint which was compressing the ulnar nerve before its division (Figure 1). Ulnar nerve was decompressed by complete excision of the ganglion. On post-operative day four, rehabilitation exercises of the wrist and hand was started. Histopathological examination of the specimen confirmed the diagnosis of ganglion. On follow up at 2 months, patient had complete recovery of her motor and sensory symptoms.



Fig 1: Showing the ulnar nerve (retracted with the gauze) exposing the ganglion (marked by the scissor tip).

DISCUSSION

Guyon's canal syndrome is a compressive neuropathy of the ulnar nerve at the wrist which affects isolated motor, sensory or motor and sensory functions of the nerve. [3] Guyon's canal begins proximal to hypothenar eminence and

extends to the fibrous arch of hypothenar muscles. The roof is composed of palmar carpal ligament, palmaris brevis and fibrous tissue. The floor is composed of tendons of flexor digitorum profundus proximally, the transverse carpal ligament, and the pisohamate and pisometacarpal ligaments distally. The medial wall includes the flexor carpi ulnaris, the pisiform and the abductor digiti minimi. The lateral wall is formed by the tendons of finger flexors, transverse carpal ligament, and the hook of hamate. [4]

Within the Guyon's canal lie the ulnar nerve and the artery. The nerve divides into superficial branch, which is sensory to the palmar surface of little finger and the ulnar aspect of the ring finger and is motor to palmaris brevis muscle, and a deep motor branch which innervates hypothenar muscles, third and fourth lumbricals, interossei, adductor pollicis and deep head of flexor pollicis brevis. [4]

Ulnar nerve lesions in Guyon's canal are classified into one of the three categories [5] Type I syndrome includes motor weakness of all muscles in the hand innervated by ulnar nerve and sensory deficits in the palmar surfaces of hypothenar eminence and the fourth and the fifth digits, whereas sensation over the dorsum is maintained. Type II syndrome, includes no sensory deficits but motor weakness of muscles innervated by deep branch of ulnar nerve. Type III syndrome is comprised purely of sensory deficits without motor deficits. Type I is caused by a lesion in the proximal part of the Guyon's canal; type II caused by a lesion at piso-hamate hiatus or more distally; type III is caused by lesion in the canal's most distal part. [5] According to this classification, our patient had type I syndrome.

Ganglion cysts have an age incidence of second to fourth decade of life. They have a incidence towards women than men. The history usually is of an asymptomatic mass for a long duration.

[6] The masses can develop gradually or suddenly and may suddenly disappear [7] History of trauma is usually absent. [6]

Kwak and colleagues published their report of management of a case of ulnar nerve neuropathy by a ganglion cyst and concluded that early decompression and cyst removal led to early recovery of symptoms. [2]

In our case, our patient presented with sudden onset of symptoms for two months. The clinical and radiological analysis led to a conclusion of a ganglion cyst causing the symptoms. Early diagnosis and surgical cyst excision with rehabilitation led to complete recovery of the patient's hand functions.

CONCLUSION

Rapidly progressive compressive neuropathy of ulnar nerve at Guyon's canal due to a ganglion cyst is rare. However, with a high suspicion of index by the clinician aided by imaging and neuro-diagnostic studies, ganglion cyst at the Guyon's canal should be considered as a possible cause of compression. Early decompression with removal of the ganglion leads to complete recovery.

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