CASE REPORT

Compression of Ulnar Nerve by Ganglion Cyst in Guyon's Canal–a Case Report

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doi: 10.5455/aim.2023.31.326-328
ACTA INFORM MED. 2023, 31(4): 326-328
Received: JUL 25, 2023
Accepted: SEP 04, 2023

ABSTRACT

Background: Compression of the ulnar nerve at the level of Guyon's canal is a very rare compressive neuropathy. Due to the vast range of symptoms that can manifest depending on the degree of ulnar nerve compression, the clinical picture is not consistent. Objective: The aim of the study is to outline the diagnostic techniques and therapeutic options. Case report: We reported a case of ganglion cyst-induced compression of the ulnar nerve in Guyon's canal. A 45-year-old female patient underwent surgical ulnar nerve release in Guyon's canal at the Clinic for Plastic and Reconstructive Surgery. Discussion: After a thorough medical history and physical examination, the diagnosis of the syndrome is made, and ultrasound and magnetic resonance imaging (MRI) testing are used to determine the origin of the neuropathy. A ganglion cyst was identified pathohistological one month following the surgical excision of the soft tissue tumor. In order to hasten the patient's nerve recovery, physical therapy was recommended, and the patient was monitored for the following two years. After two years of treatment, the patient has made a very good recovery of the functionally damaged hand, as determined by a modified Bishop scoring method for evaluating functional ulnar nerve recovery. Conclusion: In virtually all cases, early surgical intervention can lead to an outstanding functional recovery. If the symptoms are more severe and continue or get worse for more than three months, early surgical intervention is the gold standard for treating Guyon's canal syndrome. If soft tissue formations are compressing the ulnar nerve in Guyon's canal, MRI is thought to be the gold standard for diagnosis.

Key words: Guyon's canal, compressive neuropathy, ulnar nerve

1. BACKGROUND

Guyon's canal syndrome is a collection of symptoms brought on by compression of the ulnar nerve in the tunnel known as Guyon's canal, which is situated in the medial region of the wrist (1). Even though this compressive neuropathy is extremely uncommon, it is the second most common compression of the ulnar nerve (2). A tumor, trauma, aneurysmal dilatation of the ulnar artery, arterio-venous malformation, degenerative diseases of the wrist, instability of the os pisiform, abnormal hand musculature, and other causes can all result in compression of the ulnar nerve in Guyon's canal (3, 4). Compression of the ulnar nerve in Guyon's canal is rarely encountered, although ganglion cyst compression is the most frequent cause of this condition (5).

2. OBJECTIVE

The purpose of the study is to outline the diagnostic techniques and therapeutic options performed on a 45-year-old female patient who had a ganglion cyst-induced compression of the ulnar nerve in Guyon's canal.

3. CASE REPORT

The 45-year-old female patient underwent surgical treatment for compressive neuropathy of the ulnar nerve in Guyon's canal of the left hand that was caused by a ganglion cyst. For the past six months, there have been complaints of discomfort and tingling in the left hand's fourth and fifth fingers as well as the medial portion of the palm. In the last two months, the symptomatology has progressed to an almost non-existent sensation in the previ-

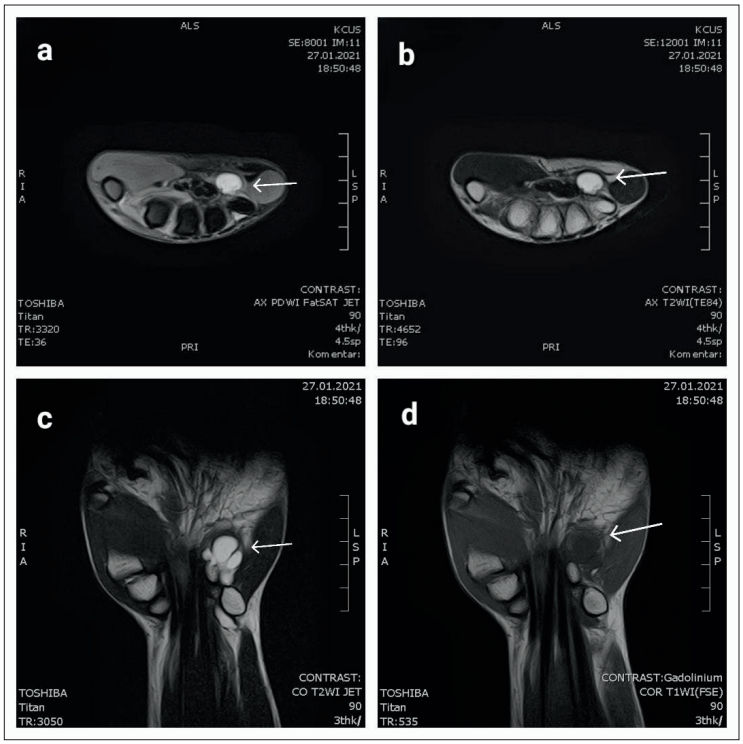

Figure 1: MRI scans of the left hand's Guyon's canal reveal a well contained thin-walled cystic lesion with somewhat lobulated outlines and a homogenous hyperintense signal on T2WI sequence. It is in hyposignal on the T1 postcontrast sequence with no evidence of signal intensity amplification, which is consistent with a benign ganglion cyst; a) PDWI FATSAT axial sequence; b) T2WI axial sequence c) T2WI coronary sequence; d) T1WI (FSE) postcontrast coronary sequence;

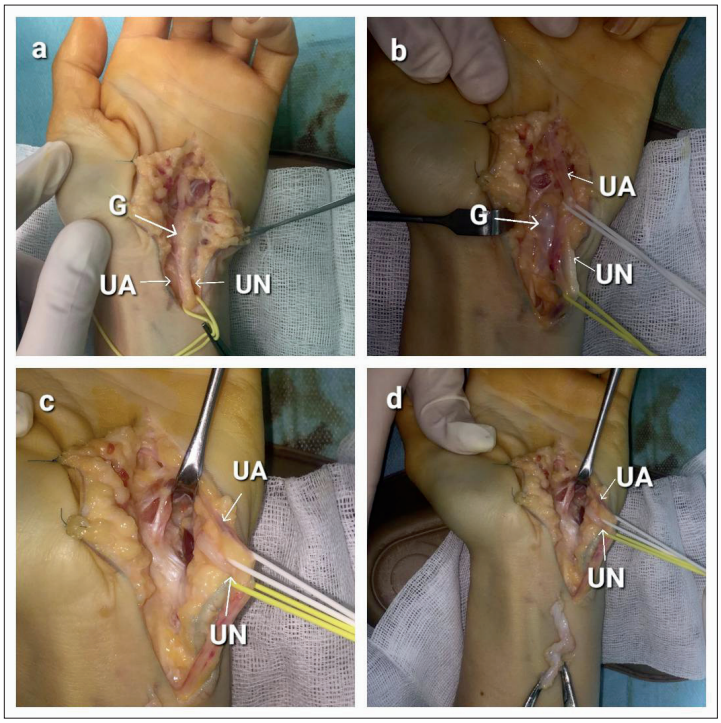

Figure 2. Intraoperative view of a ganglion cyst (G), the ulnar artery (UA), and the nerve (UN) (a); an intraoperative presentation of a ganglion cyst following preparation and detachment of the ulnar artery and nerve from the cyst (b); an image of the ulnar artery and nerve following cyst removal (c); and an image of the ulnar artery and nerve and the extruded ganglion cyst below (d).

ously described locations, and the impossibility of certain finger movements of the hand. She utilizes both hands a lot while working on a microscope as a laboratory technician. The patient had intense physical therapy and used analgesics as part of the conservative management of compressive neuropathy, but there was no clinical improvement.

On the X-ray of the left hand, there were no signs of traumatic interruption of the continuity of bone structures. Nerve conduction testing did not indicate pathological results. An ultrasound (US) examination of the left hand was performed, where a cyst in Guyon's canal was recorded, size 1,8 x 0.8 cm, length 4 cm. On the magnetic resonance imaging (MRI) of the left hand, a cyst of identical dimensions descended caudally at the level of the hypothenar, between the os pisiforme and the hamulus ossis hamati, and was compressing the ulnar nerve in the canal (Figure 1). MRI also recorded denervation muscle edema of the hypothenar musculature, which partially affected the medial aspect of the musculus adductor pollicis.

After admission to the hospital, a thorough physical examination was done, and it was discovered that the intrinsic muscles had hypertrophied. The volar side of the fifth finger and the volar-medial half of the fourth finger had lost their sensitivity, along with the hypothenar region on the palm side. The thumb's troublesome adduction as well as the II-V finger's incapacity to conduct abduction and adduction were noted. At the level of Guyon's canal, Tinel's signs was positive. Additionally, Wartenberg's sign and Froment's sign were also noted.

Surgical exploration was performed under general anesthesia, and tourniquet was used. Following the incision, the mass protruded, and it had compressed both the trunk of the ulnar nerve and the ulnar artery in Guyon's canal (Figure 2). The ulnar artery and nerve were kinked around the mass, but after the ganglioma was removed, excellent pulsation was observed (Figure 2). On the fourth postoperative day, the patient was sent home with a normal local finding. After the suture material has been removed, the patient was sent for physical therapy. In the early postoperative period, there was relief of complaints in terms of sensation. The pathohistological analysis one month following the surgical procedure revealed the presence of the ganglion cyst's.

After six months, a control physical exam revealed normal sensibility with anamnestically sporadic discomfort and tingling in the ulnar nerve's distal projection to the level of Guyon's canal, mostly in the mornings after waking up. The local finding, functionally, was significantly improved in terms of evident recovery of muscle trophism and correction of the abducted deformity of the fifth finger six months after the operative treatment. At 24 months, an almost complete recovery is recorded.

4. DISCUSSION

Anamnestic data of our patient, who received care at the Clinic for Reconstructive and Plastic Surgery, reveals that

	Points
Satisfaction	
Satisfied	2
Satisfied with reservation	1
Dissatisfied	0
Improvement	
Better	2
Unchanged	1
Worse	0
Severitiy of residual symptoms	
Asymptomatic	3
Mild	2
Moderate	1
Severe	0
Work status	
Working or able to work at previous job	1
Not working because of ulnar neuropathy	0
Leisure activity	
Unlimited	1
Limited	0
Strenght	
Normal muscle strenght M5	2
Msucle strenght reduced M4	1
Muscle strenght less than or equal to M3	0
Sensibility (two point discrimination)	
Normal (<6 mm or 6 mm)	1
Abnormal 6 mm<	0
Total	12

Table 1. Modified scoring system according to Bishop (9)

complaints of hand weakness, pain, and tingling that progressed to total loss of sensation in the area of the IV and V fingers began six months prior to the hospitalization, with motor symptoms getting worse particularly in the last two months. The clinical appearance of Guyon's canal syndrome might vary depending on the height of the lesion. According to the Shia and McClain categorization, the mixed clinical picture showed TYPE I level of compression (6).

The MRI results, which according to all reviewed studies constitute the gold standard in diagnosis, were used to make the final diagnosis (6, 7). Because the EMNG examination was conducted too soon, it's possible that the EMNG did not reveal a pathological outcome. In the later course of the disease, the examination was not repeated due to the more reliable diagnostic methods. In situations where an MRI examination is not feasible, US is seen to be a very good substitute. After conservative treatment passed without clinically significant improvement we performed surgical decompression, which is preferred by most studies and cited as the gold standard for the treatment of Guyon's canal syndrome if the symptoms are of a more serious nature and persist or worsen through a period of longer than 3 months (8). Early decompression is linked to nearly full and, in some circumstances, full recovery (8). A month, six months, and 24 months after the procedure, control exams were conducted. Functional recovery improved with each subsequent examination. A modified version of Bishop's scoring system (table 1) was used (9, 10). Excellent (10–12 points), very good (7-9 points), good (4-6 points), and bad (1-3 points) were the categories we used to categorize the clinical improvement (9, 10).

Twenty-four months after surgery our patient is satisfied with the outcome, but with reservations because her hand's sensation and function are not entirely identical to those of the contralateral, healthy hand (1 point), but the improvement in function is noticeably better (2 points). Only in the morning after waking up, mild symptoms continue in the form of paresthesias in the projection of the ulnar nerve distal to Guyon's canal (2 points). The patient continues to work at her previous place of employment (1 point) and claims that her everyday activities are unrestricted (1 point). Muscle strength at the M4 level (1 point) and adequate sensitivity (1 point) are assessed during the physical examination. With a total score of 9 points, the treated patient had a very good result after 24 months.

However, an excellent result may not have been achieved due to the fact that the surgery was carried out outside the ideal time window for nerve decompression (within 3 months of the onset of symptoms).

5. CONCLUSION

A thorough medical history and physical examination serve as the foundation for diagnostic techniques, and MRI results provide a conclusive diagnosis. Ultrasound is regarded as a useful option. In virtually all cases, early surgical intervention can lead to an outstanding functional recovery.

- **Declaration of patient consent:** The authors certify that they have obtained all appropriate participant consent forms.
- **Author's contribution:** All authors were involved in all steps of preparation for this article. Final proofreading was made by the first author.
- **Conflicts of interest:** There are no conflicts of interest.
- **Financial support and sponsorship:** None.

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