

Compressing Lipoma of the Guyon Canal

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Abstract

Lipoma is a common benign tumor of soft tissues but rarely located in the hand or being responsible for neuropathy. A case of compressive lipoma of the Guyon canal with purely sensory disorders has been evolving for 04 years in a 56-year-old woman. The mass was removed without any damage to vascular, neural, or tendinous structures. Postoperative recovery was straightforward, and the patient regained good mobility in the hand and fingers.

Keywords: Lipoma, hand.

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INTRODUCTION

Benign soft tissue tumors of the hand are common, with lipomas accounting for only 1 to 3.8% of cases [1]. Compressing palmar lipoma of the ulnar nerve is relatively rare. Its diagnosis is often straightforward, thanks to advancements in complementary imaging studies. We report a rare case of ulnar neuropathy caused by the presence of a lipoma in Guyon's canal.

PATIENT AND OBSERVATION

This is a 56-year-old female patient with no notable medical history, who presented with a swelling in the left palm, progressively evolving over the past four years. For the past year, the patient has reported the onset of acroparesthesia along the little finger and the ulnar side of the ring finger.

Physical examination revealed a firm, hard mass at the left hypothenar eminence, with no signs of muscle atrophy or motor deficit. Wartenberg's sign and Froment's test were negative. Tinel's sign was positive at the level of Guyon's canal. Sensitivity was decreased in the ulnar nerve distribution. The vascular examination of the fingers showed no abnormalities.

Standard radiography of the left hand showed no visible lesions. Ultrasound revealed a well-defined echogenic mass in the hypothenar eminence. Magnetic resonance imaging (MRI) suggested a lipoma localized in the left hypothenar compartment, measuring 26 mm in height, 29 mm in transverse diameter, and 19 mm in thickness, with smooth and regular contours, homogeneous signal, hyperintense on T1 and T2 sequences, and hypointense on fat-saturation sequences. It did not enhance after contrast injection. The MRI also showed preservation of the hypothenar muscles. An electromyogram (EMG) showed a slowing of sensory conduction velocities at the Guyon canal, while motor conduction velocity was normal.

The patient was then operated on under general anesthesia with a tourniquet at the base of the left upper limb, in a dorsal decubitus position. A longitudinal incision was made over the hypothenar compartment. The exploration revealed a well-encapsulated adipose tumor, located beneath the aponeurosis, compressing the ulnar nerve, which was completely removed. Histological examination of the surgical specimen confirmed the diagnosis. After an eight-month follow-up, the outcome was marked by complete resolution with total and permanent disappearance of the symptoms.



Figure 1: Preoperative clinical appearance



Figure 2: Intraoperative appearance showing fat mass

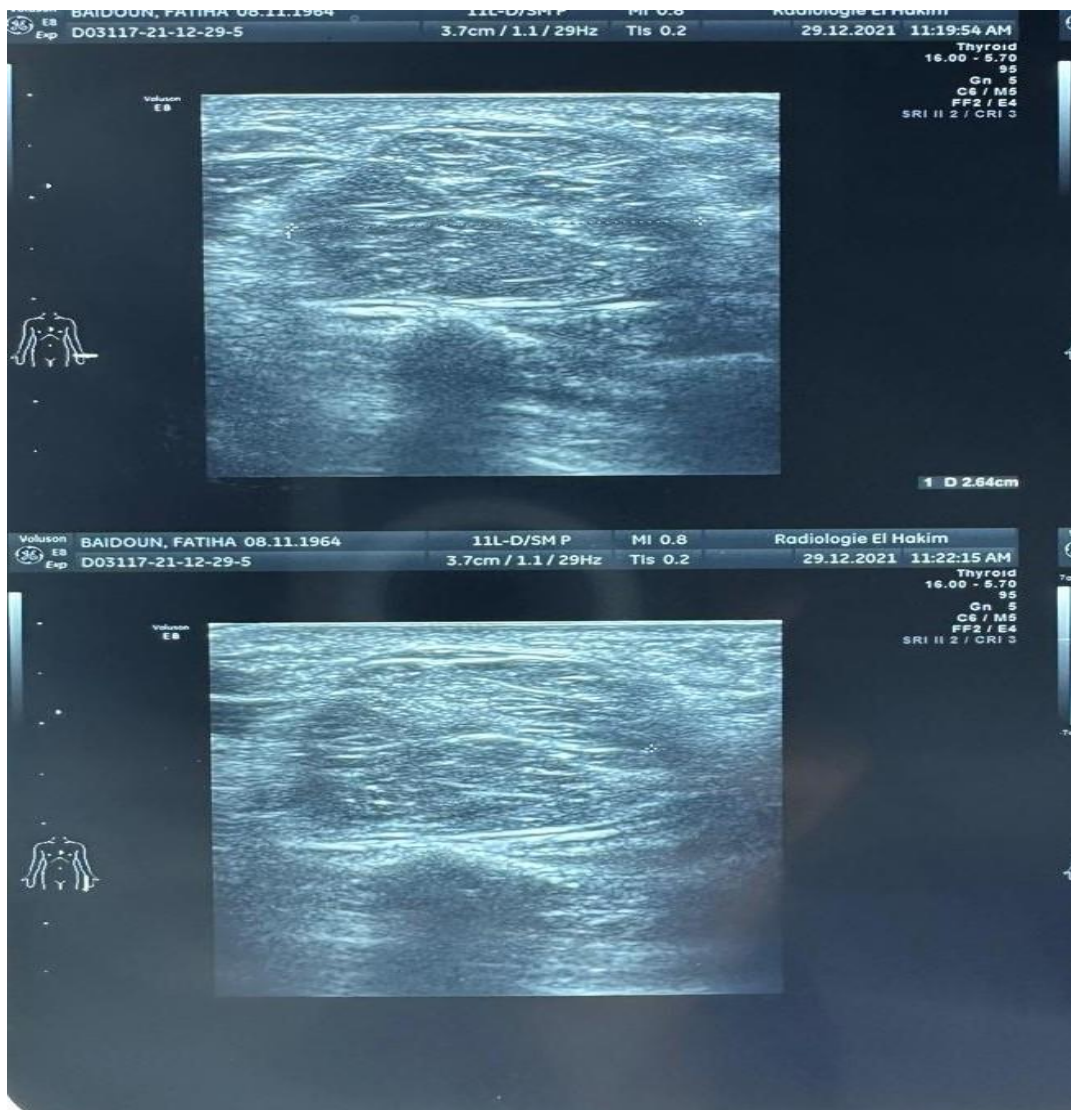


Figure 3: Appearance of the mass on ultrasound

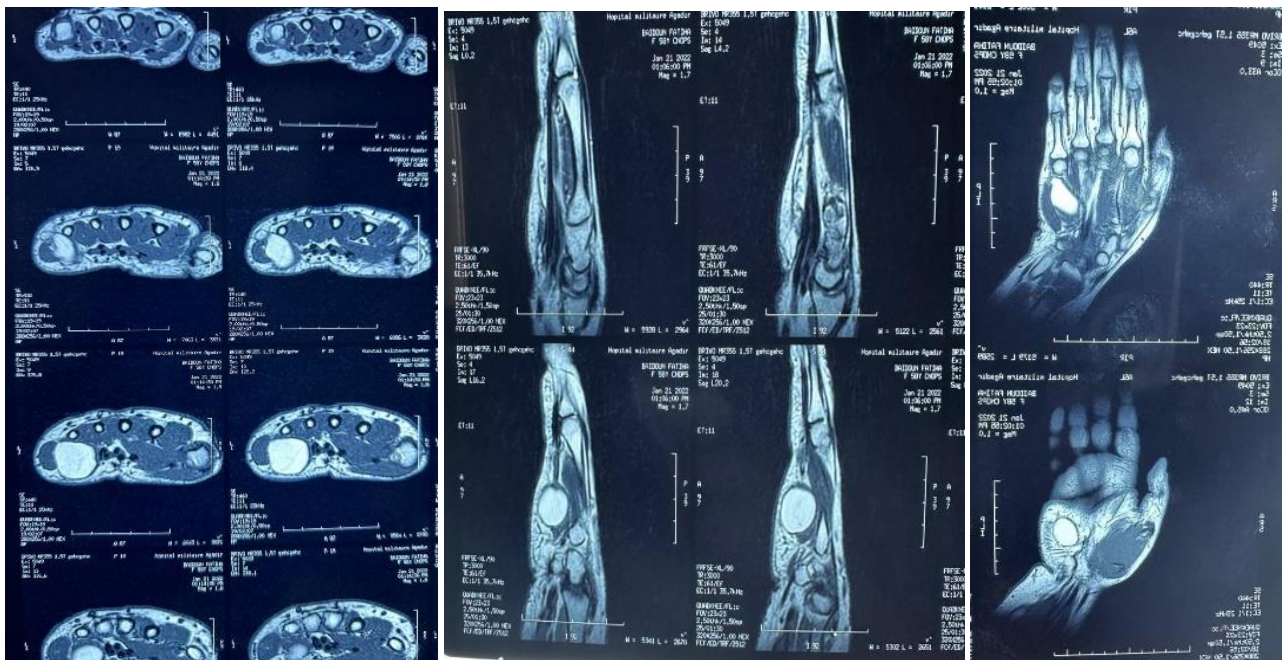


Figure 4: Appearance of the mass on MRI

DISCUSSION

Guyon's canal, named after the French surgeon Félix Guyon, is a fibro-osseous tunnel located on the ulnar side of the wrist. In general, Guyon's canal is defined as follows [2-4]:

- Laterally by the hook of the hamate, the flexor tendons, and the transverse carpal ligament
- Medially by the pisiform, the tendon of the flexor carpi ulnaris, and the abductor digiti minimi
- Palmarly by the palmar carpal ligament, the palmaris brevis, and the hypothenar connective tissue
- Dorsally by the transverse carpal ligament, the pisohamate ligament, the pisometacarpal ligament, and the tendons of the flexor digitorum profundus and the opponens digiti minimi.

Within Guyon's canal, the ulnar nerve is a mixed nerve that divides into superficial sensory branches and deep motor branches along its course. Accordingly, Shea and McClain classified ulnar lesions based on the affected regions, which can be defined into 3 zones [5]:

- Zone 1: Proximal part of the ulnar nerve within Guyon's canal, proximal to the motor/sensory bifurcation, causing both motor and sensory symptoms.
- Zone 2: Distal to the bifurcation, affecting only the deep motor branches, leading to motor deficits and muscle atrophy. This is the most commonly affected region.
- Zone 3: Distal to the bifurcation, affecting only the superficial sensory fibers, resulting in sensory symptoms.

The elbow is the most common site of ulnar nerve compression, while the fibro-osseous tunnel known as Guyon's canal remains a rare site for this type of compression [6, 7]. Numerous etiologies have been described in the literature and have been implicated in ulnar nerve compression at Guyon's canal: tumors such as lipomas, ganglion cysts, expansion of adjacent vascular structures (such as ulnar artery aneurysm), repetitive trauma, metabolic disorders, wrist degeneration, changes in the structure of Guyon's canal, and idiopathic causes. The ganglion cyst remains the most frequent causative agent of ulnar nerve compression at Guyon's canal [8].

Surgical treatment is preferred in patients with severe symptoms lasting more than three months, while there is no surgical indication for patients with moderate symptoms lasting less than three months. In such cases, it is recommended to refrain from activities that put pressure on the wrist, such as cycling. Repetitive movements and static postures that lead to mechanical overload should also be limited [9].

It should be emphasized that the injection of corticosteroids and non-steroidal anti-inflammatory drugs (NSAIDs) was not very useful or effective in the treatment of Guyon's canal syndrome [10]. Several surgical approaches have been described, including the ulnar hypothenar approach, the Brunner approach, the carpal tunnel incision, and the ulnar hypothenar approach. However, there is no consensus on the best surgical approach for the release of Guyon's canal [11].

CONCLUSION

Guyon's canal syndrome is less common than carpal tunnel syndrome or cubital tunnel syndrome, and many causative agents have been described. A lipoma is

a benign soft tumor that rarely compresses neighboring structures. However, it can lead to compression in a closed compartment such as Guyon's canal. The outcomes of surgical removal of the lipoma can be excellent, although case series and comparative studies are currently limited due to the rarity of this condition.

Conflicts of Interest: The authors declare no conflict of interest.

REFERENCES

- Glicenstein, J., Ohana, J., & Leclercq, C. (1988). Lipomes In: Glicenstein J, Ohana J, Leclercq C: tumeurs de la main. Berlin, Springer-Verlag, 78-83.
- Gross, M. S., & Gelberman, R. H. (1985). L'anatomie du tunnel ulnaire distal. *Clin Orthop Relat Res*, 196, 238-247.
- Pierre-Jerome, C., Moncayo, V., & Terk, M. R. (2011). Le canal de Guyon en perspective: évaluation par IRM 3-T de l'anatomie normale, des variations anatomiques et du syndrome du canal de Guyon. *Surg Radiol Anat*, 33, 897-903.
- Zeiss, J., Jakab, E., Khimji, T., & Imbriglia, J. (1992). The ulnar tunnel at the wrist (Guyon's canal): normal MR anatomy and variants. *AJR. American journal of roentgenology*, 158(5), 1081-1085.
- Aleksenko, D., & Varacallo, M. (2022). Syndrome du canal Guyon. 2022. StatPearls, StatPearls Publishing Copyright © 2022, StatPearls Publishing LLC Treasure Island (FL).
- Erkin, G., Uysal, H., Keles, I., Aybay, C., & Ozel, S. (2006). Neuropathie ulnaire aiguë au poignet : rapport de cas et revue de la littérature. *Rheumatol Int*, 27, 191-196.
- Papathanasiou, E. S., Loizides, A., Panayiotou, P., Papacostas, S. S., & Kleopa, K. A. (2005). Neuropathie ulnaire au niveau du canal de Guyon: résultats électrophysiologiques et chirurgicaux. *Electromyogr. Clin Neurophysiol*, 45, 87-92.
- Depukat, P., Mizia, E., Kuniewicz, M., Bonczar, T., Mazur, M., Pełka, P., ... & Tomaszewski, K. (2015). Syndrome of canal of Guyon: definition, diagnosis, treatment and complication. *Folia Medica Cracoviensia*, 55(1), 17-23.
- Aguiar, P. H., Bor-Seng-Shu, E., Gomes-Pinto, F., Almeida-Leme, R. J. D., Freitas, A. B. R., Martins, R. S., ... & Tedesco-Marchese, A. J. (2001). Surgical management of Guyon's canal syndrome, an ulnar nerve entrapment at the wrist: report of two cases. *Arquivos de neuro-psiquiatria*, 59, 106-111.
- Scarborough, A., MacFarlane, R. J., & Mehta, N. (2020). Syndrome du tunnel ulnaire : pathoanatomie, caractéristiques cliniques et prise en charge. *Br J Hosp Med (Londres)*, 81, 1-9.
- Mansi, Z., Ahmed, M., & Tounsi, A. (2024). Un lipoblastome fessier géant chez une fille de 24 mois: rapport de cas. *Int J Surg Case Rep*, 118.