

## CASE REPORT

# ULNAR NERVE ENTRAPMENT IN GUYON'S TUNNEL BY AN ANOMALOUS PALMARIS LONGUS MUSCLE WITH A PERSISTING MEDIAN ARTERY

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**A case of ulnar nerve entrapment in Guyon's tunnel caused by an aberrant palmaris muscle, associated with a patent median artery and duplication of the median nerve, is reported.**

**Keywords :** ulnar nerve ; Guyon's tunnel ; median artery ; anomalous muscle.

**Mots-clés :** nerf cubital ; canal de Guyon ; artère médiane ; muscle anormal.

## INTRODUCTION

Several cases of atypical compression of the ulnar nerve at the wrist have been well described. The great majority involve anomalies of the flexor carpi ulnaris (5, 10), or an accessory palmaris muscle passing through Guyon's canal (7, 8, 9).

A cadaveric study revealed that the incidence of anomalies of muscles in Guyon's canal area is about 20%, with most featuring an aberrant muscle passing through Guyon's canal (1).

A case of ulnar nerve compression in Guyon's canal caused by an aberrant palmaris muscle associated with a patent median artery in the carpal tunnel is reported. This anomaly differs from all other reported cases that we were able to find in the literature.

## CASE REPORT

A 24-year-old white male complained of paresthesias of one year duration in the area of the fourth and fifth digit of the left hand. When he came to our department, examination showed wasting of the

interosseous muscles, with a positive Froment sign, a positive Tinel sign over the ulnar nerve at Guyon's canal and hypoesthesia and paresthesias of the fourth and fifth digits. A diagnosis of ulnar nerve entrapment within Guyon's canal was made. Surgical decompression of the nerve was undertaken.

At operation we found an anomalous muscle arising from the antebrachial fascia in the middle of the distal forearm, and lying over the ulnar nerve just proximal to Guyon's canal and inserting distally into the antebrachial fascia (fig. 1). We did not find the palmaris longus muscle or tendon. We explored the ulnar nerve distal to this site of compression but did not find other sites of entrapment (fig. 2).

We also explored the median nerve and found duplication of the median nerve and a patent median artery (fig. 3), similar to another case we had reported previously (3).

We excised the aberrant muscle to release the ulnar nerve. After hemostasis and skin closure, a soft bandage was applied for 12 days. No complications occurred and two months later the patient was free of symptoms.

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**Fig. 1.** — Ulnar nerve entrapment caused by an anomalous palmaris muscle overlying the ulnar nerve just proximal to Guyon's canal.

## DISCUSSION

We observed three different anomalies in this patient : an aberrant palmaris longus muscle and a persistent median artery with a duplication of the median nerve.

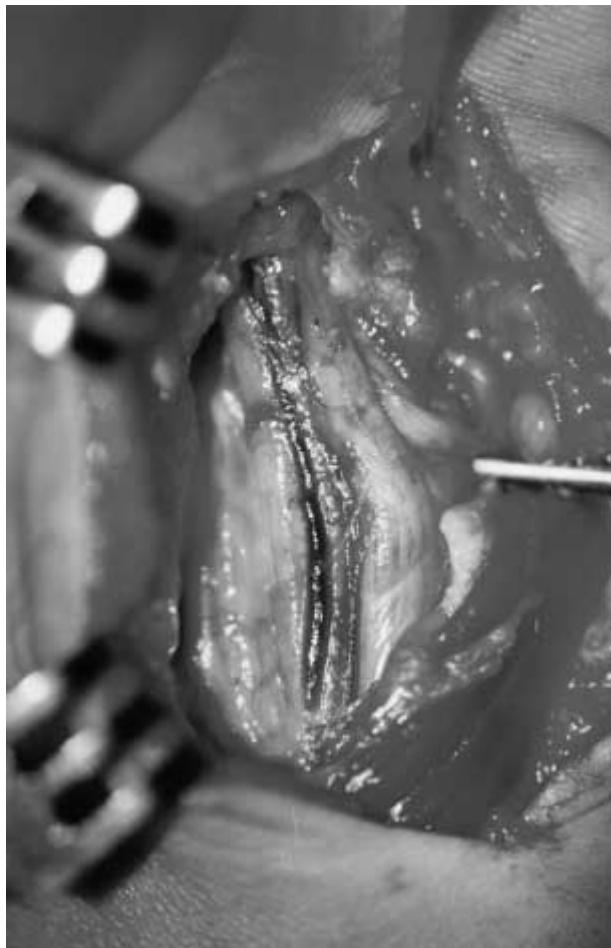
There have been some reports of aberrant muscles passing through Guyon's canal, most of them arising from the antebrachial fascia. Our study of the literature revealed descriptions of anomalies of the palmaris longus muscle in 8.6% of cases, with agenesis in about 13% but always as an anatomical description or related to a carpal tunnel syndrome(4). Only rarely were anomalies of the palmaris longus described as a cause of ulnar nerve



**Fig. 2.** — No entrapment sites of the ulnar nerve beyond this muscle.

entrapment at the wrist : Uriburu *et al.* (9) described two cases in which anomalies such as the presence of a ganglion cyst were found during surgery for ulnar nerve entrapment at Guyon's tunnel ; Shea and McClain (8) described only two anomalies in 136 patients undergoing surgical treatment. More recently Regan *et al.* (7) described four different types of accessory palmaris longus as a cause of ulnar neuropathy at the wrist :

1. The palmaris longus with origin from the proximal palmaris tendon and inserting into the pisiform and hypothenar muscles ;
2. The palmaris longus arising from the antebrachial fascia and inserting into the abductor digiti minimi muscle ;



**Fig. 3.** — Photograph showing an anomalous palmaris muscle, duplication of the median nerve and a patent median artery.

3. An accessory digitation of a reversed palmaris longus muscle ;
4. An anomalous palmaris longus muscle with its origin at the base of the fifth metacarpal and inserting into the palmaris longus muscle proper.

Our case is quite different from those four types : we were not able to find a normal palmaris longus, and the anomalous muscle did not insert into the pisiform, into the base of the fifth metacarpal or into hypothenar muscles.

We also observed another rare anomaly : namely, a patent median artery at the carpal tunnel. Anatomical variations of the arterial supply of the median nerve in the forearm and wrist were

described in detail by Pecket *et al.* (6) ; the median artery often ends at the upper forearm (Type 1) ; more rarely a persistent median artery divides into digital branches supplying the three lateral fingers (Type 2), or continues into the superficial palmar arch (Type 3). Thrombosis of a persistent median artery may lead to carpal tunnel syndrome, often with a sudden onset. (2,4). Some cases of carpal tunnel syndrome with a persisting patent median artery were described (3). We chose to preserve this artery : there were no symptoms or signs of median nerve neuropathy in the carpal tunnel, and we had no angiogram to demonstrate the pattern of vascularization. We therefore decided to avoid injury to the median artery and any risk to digital vascularization. Finally, in addition to the above anomalies in this case, the less rare anomaly of duplication of the median nerve was also present.

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**SAMENVATTING**

*M. LISANTI, M. ROSATI, M. MALTINTI. Inklemming van de n. ulnaris in het kanaal van Guyon door een aberante palmaris longus en een persistende a. mediana.*

In dit geval werd compressie van de n. ulnaris in het kanaal van Guyon blijkbaar veroorzaakt door een aberante palmaris longus spierbuik. Er was bovendien een functionele a. ediana aanwezig en de n. Medianus was ontdubbeld.

**RESUME**

*M. LISANTI, M. ROSATI, M. MALTINTI. Compression du nerf cubital au canal de Guyon provoquée par un muscle palmaris longus aberrant associé à une artère médiane.*

Les auteurs rapportent un cas de compression du nerf cubital au canal de Guyon, en rapport avec une variante anatomique représentée par un muscle palmaire aberrant associé à une artère médiane et une duplication du nerf médian.