

## Guyon's canal syndrome: a rare case of venous malformation

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**Abstract** This paper describes an unusual case of paraesthesia in the medial two fingers of the hand in a 56-year-old lady. MRI suggested a space occupying lesion and on exploration this proved to be a venous malformation causing a pressure neuropathy of the ulnar nerve.

**Keywords** Guyon's canal · Ulnar nerve entrapment · Venous malformation

### Introduction

Ulnar nerve compression at the wrist is a rare diagnosis. A literature review on entrapment at Guyon's canal documents only case reports and short case series. The epidemiology of this neuropathy is not clear.

In contrast to carpal tunnel syndrome, the ulnar nerve entrapment within the Guyon's canal is uncommon. The most common reported cause is a ganglion within the canal; the next most common cause is repeated trauma to the hypothenar eminence [1]. In one retrospective study of 31 cases, idiopathic neuropathy was the most common aetiology [2]. Vascular causes are reported as cases and include aneurysms of the ulnar artery [3], arteriovenous malformations [4], haemangiomas of the ulnar artery [5], ulnar artery thromboses [6] and tortuous ulnar artery [7]. Accessory muscles can cause a compression neuropathy, the two most commonly reported muscles being the accessory palmaris muscle [8] and the accessory abductor digiti minimi [9]. Rarer causes also include amyloidosis [10] (which also caused a carpal tunnel syndrome in the case), Duputren's [11], lipomas [12] and ganglia [13].

We report a case of ulnar nerve entrapment at the Guyon's canal due to an arteriovenous malformation arising from the ulnar vein. Following a literature search we believe that this is the first reported case with a vascular tumour arising from the vein.

### Case report

A 56-year-old midwife presented to us with a history of pins and needles in the left ring and middle finger present for four months. She also had some clumsiness in the left hand. This did not prevent her from working. Pain occasionally used to wake her up in the night.

Examination of the left hand revealed localizing tenderness over the hypothenar eminence. There was no evidence of swelling. There was no palpable thrill. Tinel's sign was positive, just distal to the pisiform bone. Although touch sensation was present, it was diminished over the little finger and the ulnar aspect of the ring finger.

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There was no evidence of any wasting of the small muscles of the hand. The intrinsic muscles (namely hypothenar, lumbrical, interossei and adductor pollicis) of the hand were grade IV [MRC grading]. Froment's sign was weakly positive. The range of movement of the hand joints was normal. The elbow and neck examination were also normal.

The total cell count was 8000 cells/mm<sup>3</sup>, the ESR was 14 mm at one hour and the CRP was 4 mg/l. The radiological examination was unremarkable. The nerve conduction study was inconclusive but reported as normal at the wrist and elbow. However EMG studies could not be performed.

The MRI revealed a soft tissue swelling pressing over the ulnar nerve at Guyon's canal using intermediate signal on T1 and high signal on fat suppressed T2 (Fig. 1a, b). A benign lesion was diagnosed.

On exploration of the Guyon's canal, a well encapsulated vascular swelling measuring 3 × 2 cm arising from the ulnar vein (Fig. 2) was demonstrated. There was pressure on the ulnar nerve distal to the pisiform bone. This was carefully dissected and sent for biopsy (Fig. 3). The biopsy was consistent with a vascular malformation

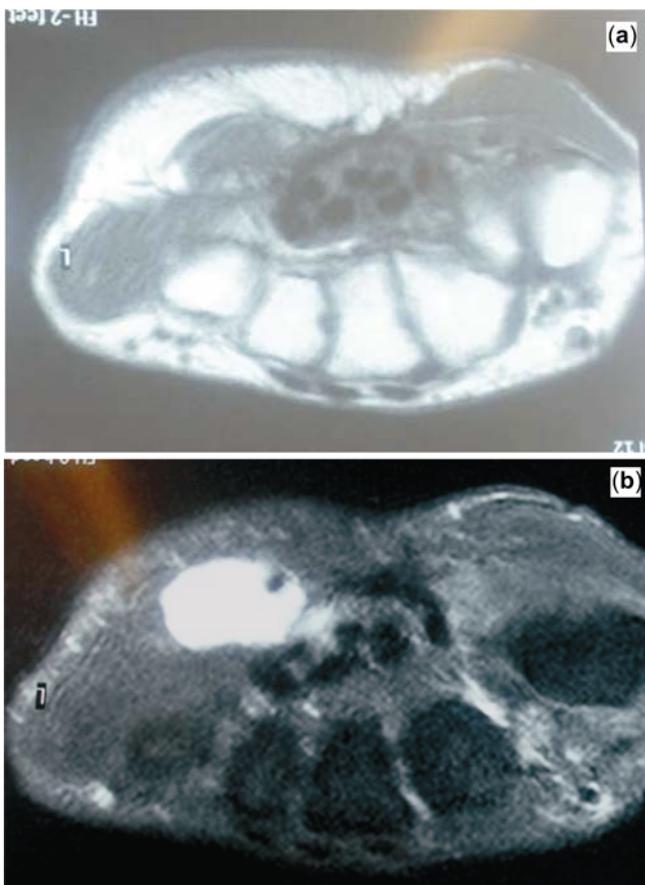
and was characterised by irregular vascular channels, some of which were surrounded by smooth muscle. There was no evidence of malignancy.

The postoperative course was uneventful and the symptoms had resolved within 4 weeks.

## Discussion

Compressive neuropathies of the ulnar nerve in the canal of Guyon are uncommon compared to ulnar nerve entrapment at the elbow. These entrapments can also result in significant disabilities.

Guyon's canal is bounded medially by the pisiform, laterally by the hook of the hamate, floor by flexor retinaculum and the roof by the volar carpal ligament. The contents medial to lateral are ulnar nerve, ulnar artery and ulnar vein. Compression can occur in one of three zones. Zone 1 is in the most proximal portion of the canal, where the nerve is a single structure consisting of motor and sensory fascicles. Zones 2 and 3 are distal where the ulnar nerve has divided into motor and sensory branches. The clinical picture correlates with the zone in which compression occurs.



**Fig. 1** a and b: T1 and T2 images showing space occupying lesion in the Guyon's canal



**Fig. 2** Intra-operative photograph showing ulnar nerve and the vascular malformation



**Fig. 3** After dissection: showing ulnar nerve and the artery

Vascular malformations [14] are errors of vascular morphogenesis with normal endothelial turnover and normal numbers of mast cells. Unlike haemangioma, they manifest late and do not resolve spontaneously. Although the exact aetiology is unknown it may arise as a result of miscommunication between cells during the process of vasculogenesis. It may be sub-grouped as: capillary, venous, lymphatic or combined. It has no gender predilection. It may be symptomatic or asymptomatic depending on its site.

The common presentation of an ulnar nerve entrapment at the wrist is pins and needles in the little and ring finger with some weakness of the small muscles of the hand. Because of variable clinical presentation and paucity of radiological finding, the diagnosis is very often delayed. It has been suggested that a high index of suspicion is required for early proper diagnosis. When the diagnosis is suspected an MRI examination is essential. Although positive nerve conduction or EMG is useful it is not always helpful. When a space occupying lesion is demonstrated the majority require surgical excision. The outcome after surgery is usually favourable.

In summary, we emphasize that the diagnosis of entrapment of the ulnar nerve at the wrist is not easy. Early diagnosis may help in early treatment and hence avoid unnecessary suffering and late complications such as permanent nerve damage.

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