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Case Report

Nerve compressions in upper limb: a case report

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ABSTRACT

Entrapment of a peripheral nerve may lead to painful tingling, numbness and weakness. These entrapment or compressive neuropathies are important and wide spread debilitating clinical problems. During a routine dissection of an adult male cadaver we found median artery arising from the ulnar artery and piercing the median nerve. This variation may be clinically important because symptoms of median nerve compression arising from similar variations are often confused with more common causes such as radiculopathy and carpal tunnel syndrome. We also observed an accessory belly of abductor digiti minimi muscle. The accessory belly was found to take origin from the deep forearm fascia, traversed Guyon's canal superficial to the ulnar nerve and vessels to reach the hypothenar eminence. Its course through Guyon's canal could be a cause for ulnar tunnel syndrome. The ulnar nerve trunk innervated the muscle. Accessory fasciculi of the hypothenar muscles have been involved in vascular and nerve compressions. ***Neuroanatomy; 2005; 4: 35–36.***

Key words [median nerve] [ulnar nerve] [entrapment] [median artery] [muscle]

Case Report

During the gross anatomy dissection of a 50-year-old male cadaver, we observed persistent median artery piercing median nerve (Figure 1). The median artery was long and slender. It arose from the ulnar artery, just above the origin of the common interosseous artery. Immediately after its origin, it pierced the median nerve and terminated before reaching the wrist. The cadaver also showed an accessory belly of abductor digiti minimi muscle crossing ulnar nerve and ulnar vessels (Figure 2). These variations were bilateral.

Discussion

Entrapment or compressive neuropathies are important and wide spread debilitating clinical problems. They are caused frequently as the nerve passes through a fibrous tunnel, or an opening in fibrous or muscular tissue. The most common is the median nerve entrapment in the wrist leading to carpal tunnel syndrome. There are reports of median nerve compression by persistent median artery [1], large superficial palmar branch of the radial artery [2]. In some cases, the median nerve splits, forming a cleft in the forearm and allowing the ulnar artery or one of its branches. The median nerve may be perforated by median artery when present [3]. In the present report, the median artery, arose from the ulnar artery, pierced the median nerve and terminated before reaching the wrist. This could be a cause for pronator syndrome. As a result of median artery piercing median nerve, the median nerve may be compressed. This variation may be clinically important because symptoms of median nerve compression arising from similar variations are often confused with more common causes such as radiculopathy and carpal tunnel syndrome.

The ulnar nerve, after descending in the forearm between the flexor digitorum profundus and flexor carpi ulnaris muscles, pierces the deep fascia and enters the wrist through the Guyon's canal. The walls of this canal consist of the pisiform medially and the hook of the hamate laterally; the floor is formed by the flexor retinaculum, and the roof is formed by the palmar carpal ligament and the palmaris brevis muscle. The Guyon tunnel houses the ulnar nerve, ulnar artery, and ulnar vein. In the distal canal, the ulnar nerve bifurcates into a superficial sensory branch and a deep motor branch, which supplies the hypothenar muscles and then passes across the palm, distributing to other intrinsic hand muscles. The ulnar nerve may be compressed in the guyon's canal by the presence of an anomalous muscle of hypothenar eminence [4].

In the present case there was an accessory belly of abductor digiti minimi muscle which took origin from the deep forearm fascia, traversed Guyon's canal superficial to the ulnar nerve and vessels and inserted into the lateral side of abductor digiti minimi. The nerve supply arose from the ulnar nerve. Its course through Guyon's canal could be a cause for ulnar tunnel syndrome. The accessory belly of the abductor digiti minimi muscle may compress the ulnar nerve when grasping objects with the

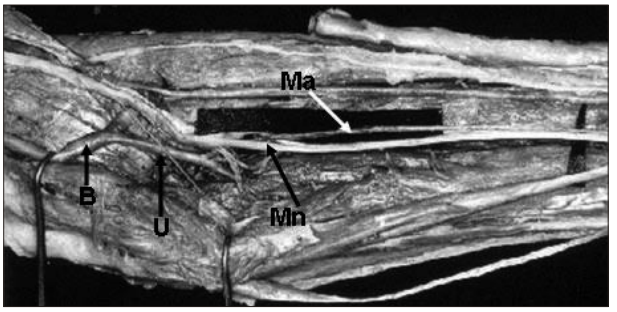

Figure 1. The Median artery arising from the ulnar artery and piercing the median nerve. *(**B:** brachial artery; **U:** ulnar artery; **Mn:** median nerve; **Ma:** median artery)*

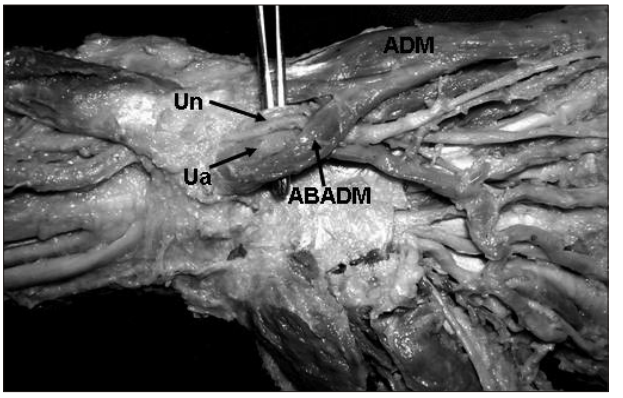

Figure 2. Accessory belly of abductor digiti minimi crossing ulnar nerve and ulnar vessels. *(**ABADM:** accessory belly of abductor digiti minimi; **ADM:** abductor digiti minimi; **Un:** ulnar nerve; **Ua:** ulnar artery)*

hand leading to sensory or motor abnormalities of ulnar nerve. Compression of ulnar nerve by accessory belly of abductor digiti minimi is reported [4, 5, 6]. Compressive neuropathies of the ulnar nerve in the canal of Guyon are less common, but they can also result in significant disabilities. Compression can occur in 1 of 3 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, and zone 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 occured [7]. This knowledge can assist the surgeon in the diagnosis and treatment of conditions associated with the ulnar aspect of the hand. The crossing of accessory belly of the abductor digiti minimi muscle over the ulnar nerve and compressing it remind physicians that not every instance of numbness and tingling in the hand represents carpal tunnel syndrome. Careful clinical examination may not only localize compression of the ulnar nerve at wrist level but also may reveal its etiology.

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