



Unusual origin of Abductor digiti minimi – A Case Report

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ABSTRACT

Compression neuropathies of median and ulnar nerves are of frequent occurrence and result from narrowing of carpal tunnel and/or Guyon's canal by space occupying lesions or anomalous or hypertrophied muscles on anterior aspect of wrist. During routine anatomical dissection of right upper limb of a 52-year-old male cadaver, an unusual origin and course of Abductor digiti minimi (ADM) muscle was observed. In the present report the variant muscle is described and the possibility

of both ulnar nerve entrapment and ulnar artery thrombosis though it is of rare occurrence is suggested. The Abductor digiti minimi muscle on right side is found taking origin from radial side of palmar carpal ligament and passing superficial to flexor retinaculum and crossing superficial to ulnar nerve and vessels. Few muscle fibres are attached to piso-hamate ligament and inserted on the medial side of base of proximal phalanx of little finger.

Key words: *abductor digiti minimi, entrapment, ulnar nerve, ulnar vessels, variant origin*

Introduction

Compression neuropathies are more common in upper limb. In the literature, there are descriptions of entrapment neuropathies of median and ulnar nerves. They occur in areas where nerves pass through unyielding passages as in carpal tunnel and Guyon's canal. Any external structure compressing median or ulnar nerves in the carpal or Guyon's canal is responsible for neuropathies of these nerves.

Compression of ulnar nerve is more frequent at cervical spine or elbow level than at wrist [1]. Ulnar tunnel syndrome is less common than carpal tunnel syndrome. Extrinsic factors like trauma, repetitive stress, synovial cysts, lipoma, ulnar artery thrombosis are most common causes of ulnar nerve compression but anomalous muscles also may cause this condition [1,2,3].

The ulnar nerve entrapment usually results from anomalous palmaris longus (reversed or accessory), anomalous hypothenar muscle (duplication or abnormal insertion) most common being abductor digiti minimi or sometimes aberrant flexor carpi ulnaris [1].

Abductor digiti minimi (ADM) lies on the ulnar side and arises from the pisiform bone, tendon of flexor carpi ulnaris and piso-hamate ligament. It is inserted by one slip to the ulnar side of base of proximal phalanx of little finger and other slip joins the ulnar border of dorsal digital expansion of little finger. Variations in origin and course of this muscle are very important for surgeons in hand surgeries and also neurophysicians to exclude the cause for neuropathies.

An unusual case of variant origin and course of ADM is reported with its clinical importance.

Case Report

During regular Anatomy dissection classes for first year medical students in RIMS Ongole, AP, India an embalmed adult male cadaver presented an unusual origin and course of ADM in the right palm.

The Abductor digiti minimi (ADM) muscle was taking origin from radial side of palmar carpal ligament at the level of flexor carpi radialis tendon and proximal to flexor retinaculum (Figure:1) about 2.4 cm lateral to the normal origin. The muscle was extending medially superficial to

flexor retinaculum anteromedial to pisiform bone (Figure: 1), crossing superficial to ulnar vessels and ulnar nerve (Figure: 2). Few muscle fibres were attached to pisohamate ligament and it is inserted on the medial side of base of proximal phalanx of little finger (Figure: 2) and the ulnar border of dorsal digital expansion of the little finger. No variations in the contra lateral palm were observed.

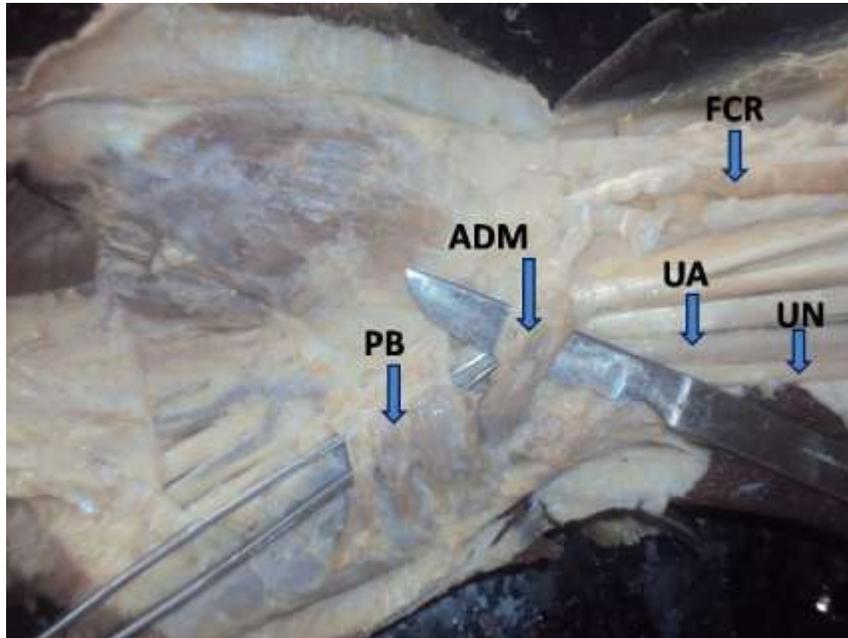


Figure: 1. PB: Palmaris brevis muscle, ADM: Abductor digiti minimi muscle, UA: Ulnar artery, UN: Ulnar nerve, FCR: Flexor carpi radialis muscle

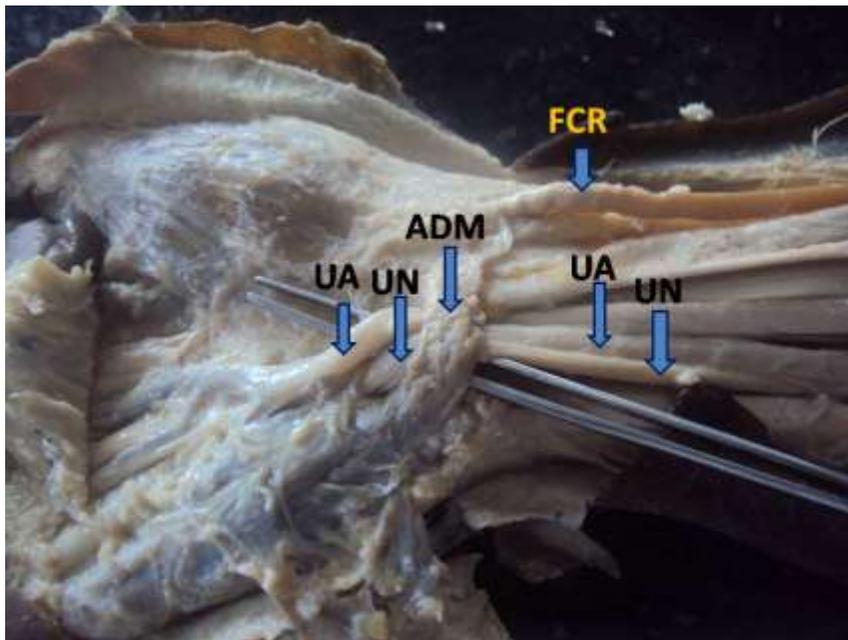


Figure: 2. UA: Ulnar artery, UN: Ulnar nerve, ADM: Abductor digiti minimi muscle, FCR: Flexor carpi radialis muscle

Discussion

Compression neuropathies of ulnar nerve at the wrist can be provoked by ganglia, neoplastic masses, vascular abnormalities, ligamentous attachments, and also different anomalous muscles [3,4]. Dodd's et.al.,[5]based on their observations on 58 palm dissections reported 22.4% incidence of anomalous muscles in Guyon's canal. Ghabriel [2] reported 2.5% incidence among 120 hands observed. According to Dodd's et.al.,[5] these variations are bilateral and though their insertion and termination are normal their origin is variable and they called these muscles as accessory ADM.

Different authors have described variations of ADM based on cadaver dissections and surgical interventions. The percentage incidence of anomalous muscle reported in literature varies from 22 % to 35% with ADM being the most common anomalous muscle [6]. Georgiev et.al., [2007] summarized the variations of ADM as either absence, presence of two heads, three origins, variant origin (from the fascia of the forearm, palmaris longus tendon, fascia of the flexor carpi radialis, intermuscular fascia, flexor carpi ulnaris, flexor retinaculum, both from the flexor retinaculum and antebrachial fascia), fusion of ADM with the flexor digiti minimi brevis or unusually variant ADM co-existing with reversed palmaris longus [7,8,9].

In clinical practice, variant muscular structures in the anterior wrist region are either incidental finding during surgical procedures or may mimic a soft-tissue tumour. Some musculo-tendinous anomalies, including those belonging to ADM may cause median and ulnar nerves compression with slow progression of symptoms or rarely can cause acute nerve compression leading to serious complaints in certain professional groups [3,4].

The incidence of ulnar nerve compression in relation with anomalous muscle is approximately 2.9% [3].When the anomalous muscles produce clinical symptoms, they appear to be related to two factors: the anatomical site of the muscle and the presence of a muscle hypertrophy [10].

Conclusion

Variation of the ADM described here, may cause rare entrapment of ulnar nerve or ulnar artery thrombosis or both. This type of rare variation in ADM origin and course

hitherto not described in literature should be born in mind by clinicians.

References

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