

Anatomical Variations in relation to Anterior Group of Forearm Muscles -A Case Report

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Abstract: The muscles are notoriously variable and is quite common to find muscular anomalies in the course of routine dissection of human body. The anterior group of muscles are often divided into three layers i.e Superficial, Intermediate and deep layer. During routine dissection of upper limb for medical undergraduates, the forearm was dissected in a 86 years old embalmed female cadaver in the department of Anatomy, Punjab Institute of Medical sciences Jalandhar. In the present case two variations were observed. Firstly ulnar nerve in the anterior compartment of forearm was passing through the flexor digitorum profundus muscle before running between it and flexor carpi ulnaris. Secondly there was an accessory muscle with short belly and its tendon was merging with flexor pollicis longus muscle. Both the variations were present bilaterally. In the practical sense one's awareness of man's anatomical variability may forestall surgical errors and excite new methods of restoration.

Keywords: Flexor Digitorum Profundus, Ulnar Nerve, Accessory Muscle, Flexor Pollicis Longus.

INTRODUCTION

The deep plane of flexors in the forearm is represented by three groups of the muscles, all of them spindle shaped, prolonged by long tendons and inserting into the distal phalanges of the five digits of the hand. They are classically described as two separate muscles:

Flexor digitorum profundus, which includes:

- The medial part, with tendons ending in the medial three fingers;
- The lateral part, whose tendon inserts into the index finger.

Flexor Pollicis Longus[1].

Flexor digitorum profundus arises from upper three quarters of the anterior and medial surfaces of the ulna, from depression on the medial side of the coronoid process, upper three quarters of the posterior ulnar border by an aponeurosis shared with flexor and extensor carpi ulnaris and anterior surface of the ulnar half of the interosseous membrane.

The muscle ends in four tendons, run initially posterior to the tendons of flexor digitorum superficialis and flexor retinaculum. Anterior to their proximal phalanges, the tendons pass through the tendons of flexor digitorum to insert on the palmar surfaces of the bases of the distal phalanges. Its medial part is supplied by ulnar nerve and lateral part by the anterior

interosseous branch of the median nerve (C8 and T1). The ulnar nerve enters the forearm between the two heads of flexor carpi ulnaris [2].

CASE REPORT

During routine dissection of upper limb for medical undergraduates, the forearm was dissected in a 86 years old embalmed female cadaver in the department of Anatomy, Punjab Institute of Medical sciences Jalandhar. The skin was reflected from the front of forearm, the palm and digits. The superficial fascia was removed, then deep fascia was reflected carefully after isolating the flexor retinaculum and securing its attachments. This exposed the muscles and tendons of the anterior group of forearm. Then the flexor retinaculum was divided longitudinally for the full exposure of the tendons. After studying superficial and intermediate group of muscles, deep group of muscles were exposed. In the present case two variations were observed. Firstly ulnar nerve in the anterior compartment of forearm was passing through the flexor digitorum profundus muscle before running between it and flexor carpi ulnaris (Fig 1). When traced further it was found that tendon going to index finger was lying superficial to the nerve and rest of the muscle was lying deep to it. Secondly there was an accessory muscle with short belly and its tendon was merging with flexor pollicis longus muscle (Fig 2). Its

origin was from humerus along with other flexor group of muscles.

Both the variations were present bilaterally.

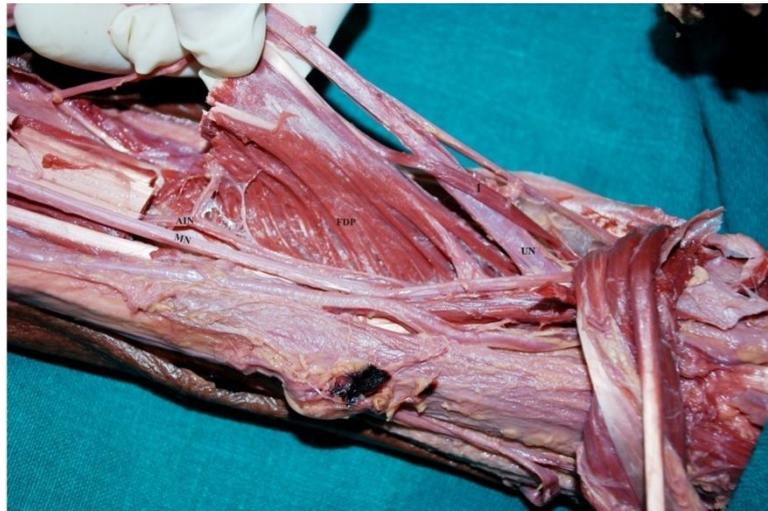


Fig-1: Showing FDP-Flexor digitorum profundus UN-Ulnar nerve 1-Part of FDP passing above the ulnar nerve MN-Median nerve AIN- Anterior Interosseous nerve

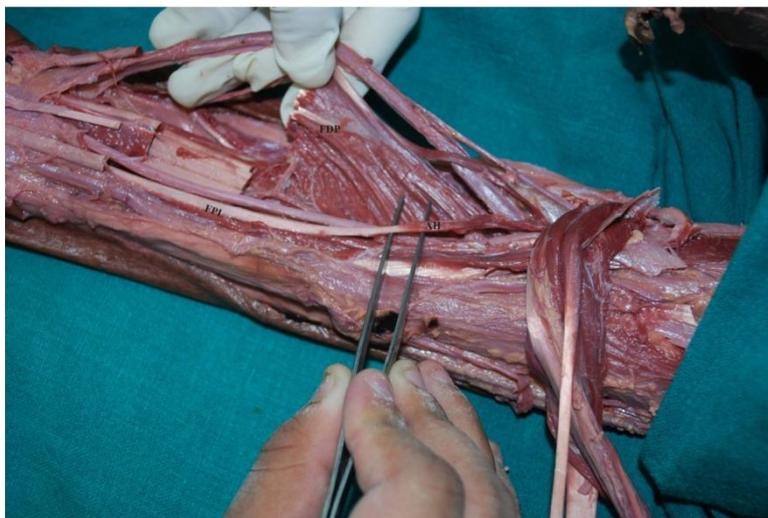


Fig- 2: Showing FDP- Flexor digitorum superficialis FPL-Flexor pollicis longus AH- Accessory Head

DISCUSSION

The division of flexor digitorum profundus into two elements one for index and one for the three ulnar fingers is functional as well as anatomical in 90 percent of the cases. The separation of flexor indicis, as well as flexor pollicis longus, represents distinctly a human characteristic[3]. As the ulnar nerve was passing through flexor digitorum profundus, compression of nerve may occur. It is universally accepted axiom that nerve supply to any muscle, particularly in extremity is of definite surgical importance. A thorough knowledge of anatomic variants of nerve will assist the surgeon in avoiding inadvertent placement of retractors that can result in direct injury to the nerve or indirectly through traction [4].

The accessory belly per se may cause entrapment neuropathy of the anterior interosseous

nerve. Also cicatricial contraction of the accessory belly of the flexor pollicis longus muscle may lead to entrapment of the median nerve and anterior interosseous nerves since they are so closely related to this belly. The presence of accessory belly has to be born in mind during anterior approaches to the proximal radius and the elbow joint, as also during a decompressive fasciotomy for compartment syndrome of the forearm. In a case of long standing contracture of the interphalangeal joint of the thumb

Following a fracture dislocation of the elbow which was later found to be due to the cicatricial contraction of the accessory belly of the flexor pollicis longus and had to be subsequently elongated to correct the deformity. Hence in a flexion deformity of the thumb, involvement of the occasional head has to be kept in mind [5]. Anomalous muscle usually donot

cause symptoms and are of academic interest. They become surgical problem when they produce symptoms or are difficult to differentiate from soft tissue tumour[6].Anatomy instructors and health professionals should be aware of the common variations in muscles and tendons of the forearm, not only for their academic interest but also for their clinical and functional implications [7].

CONCLUSION

Hence any surgical procedure in this particular region should be planned carefully in advance keeping in mind all the variations which can be encountered

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