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Variations of the Hypothenar Muscles

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During routine anatomical dissections, in two hands, a number of variations of the hypothenar muscles were observed. In the first case, an absence of the flexor digiti minimi brevis muscle (FDMB) and short muscular bundle between the pisiform bone and the flexor retinaculum were found. In the second case, an additional lateral origin of the FDMB and unknown variant muscle, located deep to abductor digiti minimi (ADM) and FDMB, were described. Some of the present variant structures may be considered as possible entrapment site for the ulnar nerve at the wrist and must be borne in mind by the clinicians.

Key words: hypothenar muscles, variations, ulnar nerve compression, human.

Introduction

Anatomical variations of the hypothenar muscles are common. The knowledge of these anomalous muscles is important for the clinical practice because some of them may provoke symptomatic compression of the ulnar nerve at the wrist [1, 5].

In this paper, we describe some interesting variations of the hypothenar muscles found during anatomical dissections in formol-carbol fixed human cadavers from the autopsy material available at the Department of Anatomy, Histology and Embryology at the Medical University of Sofia.

Results

In case A (Fig. 1), in a right hand, an unusual arrangement of the hypothenar muscles was found. After removing the palmar aponeurosis and the palmaris brevis muscle, only two hypothenar muscles were observed. The medial well-defined muscle arose from the pisiform bone and from the tendon of the flexor carpi ulnaris muscle and inserted into the ulnar side of the base of the fifth finger. Lateral and deep to the medial muscle, the fibers of the opponens digiti minimi (ODM) were discovered, indicating the obvious absence of flexor digiti minimi brevis muscle (FDMB). In addition, an unusual muscular bundle originated from the pisiform bone, crossed in lateral and distal direction under the ulnar artery and nerve and

Fig. 1. Photograph of the variant findings, described in case A
1 — ADM; 2 — ODM; 3 — variant slip extending between the pisiform bone and the flexor retinaculum

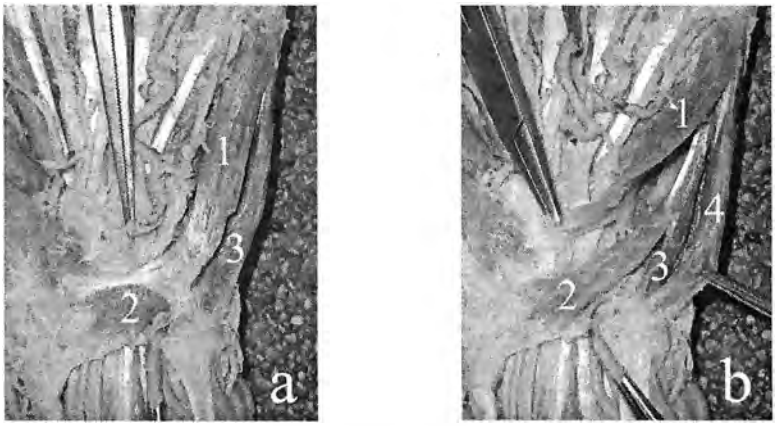

Fig. 2. Photograph of the variant findings, described in case B
a: 1 — FDMB; 2 — lateral belly of the deep aberrant muscle; 3 — ADM. b: 1 — FDMB; 2 — lateral belly of the deep aberrant muscle; 3 — medial belly of the deep aberrant muscle; 4 — ADM

inserted into the flexor retinaculum. The deep branch of the ulnar nerve innervated the medial hypothenar muscle and then pierced the ODM.

In case B (Fig. 2 a, b), in the left hand, a number of variations were observed. The FDMB (Fig.2 a) showed two proximal tendons - medial short one originating from the hamulus of the hamate bone and additional lateral tendon originating from the flexor retinaculum. The latter tendon, located between the ulnar artery and nerve, arched over the attachment of an aberrant muscle. The aberrant muscle (Fig. 2 b) located deep to the FDMB and ADM was composed of two well-defined muscular bellies - the lateral one arose from the lateral part of the flexor retinaculum and the medial one from the hamulus of the hamate bone. The lateral belly crossed ob-

liquely the ulnar nerve over the flexor retinaculum and passed in the same direction as the FDMB. The aberrant muscle was attached to the antero-lateral surface of the base of the fifth proximal phalanx. The deep branch of the ulnar nerve innervated the two bellies of the aberrant muscle.

Discussion

The aforementioned variant muscular structures seem to be related to the FDMB and ADM and therefore we review the reported variations of these two muscles.

The variations of the ADM are the most frequently described among the hypothenar muscles [4]. M a c a l i s t e r [7] reported three origins, second head, fusion with the FDMB, origin only from the pisiform bone and even absence. Other authors [2, 3, 5, 6] described an origin from the fascia of the forearm, palmaris longus, fascia of the flexor carpi radialis, intermuscular fascia, flexor carpi ulnaris and flexor retinaculum and dividing into two or three fascicles.

Compared to the ADM, the variations concerning the FDMB seem to occur less frequently [5]. M a c a l i s t e r [7] reported its absence, presence of an accessory palmaris slip joined to the FDMB, an unciform origin, presence of a slip to the metacarpal bone, union to the abductor. L e D o u b l e [6] reported an origin from the antebrachial fascia and fusion of the ODM and ADM.

In the cases of variations of the hypothenar muscles different relations to the ulnar artery and nerve might be observed [3, 8]. These relations define the role of the hypothenar muscle variations for the ulnar nerve compression [1, 5]. Additionally to nerve compression, an aberrant muscle may be also associated with thrombosis of the ulnar artery [9].

The variant muscles described in our report, have a close relation to the palmar branch of the ulnar nerve and possibly could cause nerve compression, presented by motor and sensory dysfunction. Therefore, the existence of such muscular variations should be taken in consideration by the clinicians.

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