eISSN 1308-4038

International Journal of Anatomical Variations (2013) 6: 216–217

Case Report

A robust flexor digiti minimi brevis muscle

Published online December 27th, 2013 © http://www.ijav.org

Janet M. COPE ✦
Traci LITTLE

Department of Physical Therapy Education, Elon University, Elon, North Carolina, USA.

✦ Janet M. Cope
Dept. of Physical Therapy Education
School of Health Sciences
Campus Box 2085
Elon University
Elon, NC 27244, USA.
☎ +1 (336) 278-6355
✉ jcope2@elon.edu

Received January 17th, 2013; accepted May 31st, 2013

Abstract

Flexor digiti minimi brevis (FDMB) is a hypothenar muscle innervated by the ulnar nerve and acts as a flexor of digit V at the metacarpophalangeal joint. While numerous variations of hypothenar musculature are documented in the literature, in this case study the researchers report on an interesting variation of the FDMB in regards to size as well as proximal and distal attachment sites which include crossing the pathways of the ulnar and median nerves. This particular variation of the FDMB has the potential to cause effort-related compression of both of these nerves and thus should be of interest to clinicians and surgeons.

Key words [hypothenar muscle variation] [median nerve compression]

Introduction

The hypothenar muscle flexor digiti minimi brevis (FDMB) typically attaches from the hook of the hamate and anteromedial aspect of the flexor retinaculum to the ulnar side of the proximal phalanx of digit V (Figure 1). The FDMB is innervated by the ulnar nerve and acts as a flexor of digit V at the metacarpophalangeal joint. Multiple variations of hypothenar muscles, specifically the FDMB, are reported in the literature including fusion [1], duplication [2], absence [3], and alternate attachment sites [4–7].

Case Report

In this case study the researchers report a variation of the FDMB as related to size (length and breadth), as well as the proximal and distal attachment sites. While dissecting the left volar wrist and hand of a 70-year-old female donor the researchers noted a variation of the FDMB with connections to both the abductor digiti minimi (ABDM) and palmaris longus (PL) (Figure 2). The left FDMB was dissected away from the surrounding structures, exposing its distal attachment at the anteromedial surface of the proximal phalanx of digit V and its proximal attachments on the hamate and flexor retinaculum. The muscle was 118 mm in total length and had an atypically robust muscular attachment of 53 mm to the medial aspect of the tendon of PL (Figure 2). In addition, ABDM had two distal slips of attachment to the medial aspect of the musculotendinous segment of FDMB (Figure 2).

The median and ulnar nerves were assessed for signs of compression or attenuation from the proximal wrist and into the hand. No signs of compression were observed in this donor.

There was no variation in the FDMB of this donor's right hand (Figure 1). Measurements and photographs were taken throughout the course of dissection to document all relevant structures for location and morphology.

Discussion

In this donor, the FDMB muscle had variations in the proximal and distal attachments and the muscle belly was quite robust, coursing from digit V through to its most proximal attachments along the tendon of PL and the flexor retinaculum. As it travelled obliquely from digit V to PL it passed just superficial to the ulnar nerve and artery at Guyon's canal (lateral to the pisiform and medial to the hook of hamate). Additionally, the FDMB crossed the median nerve just distal to the carpal tunnel, thus creating a potential for compression of each of these neurovascular structures [4, 5, 7].

Because of its robusticity and its path crossing both the ulnar and median nerves, this particular variation of FDMB may cause a patient to have effort-related pain during prehension

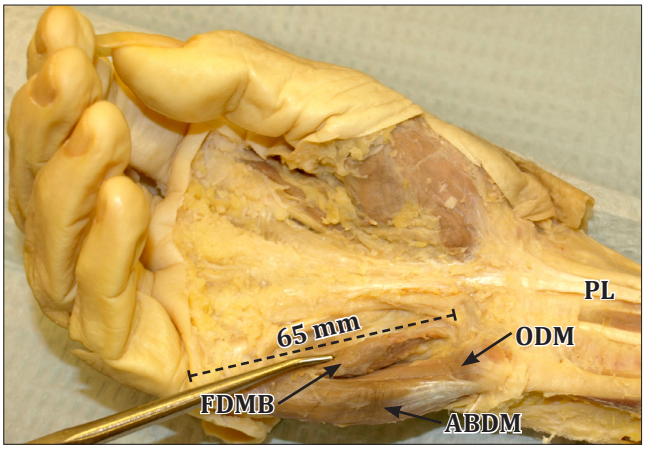

Figure 1. Right hand demonstrating typical *flexor digiti minimi brevis (**FDMB**)* muscle, 65 mm in length, attaching from digit V at the base of the proximal phalanx to hamate. *(**PL**: palmaris longus; **ODM**: opponens digiti minimi; **ABDM**: abductor digiti minimi)*

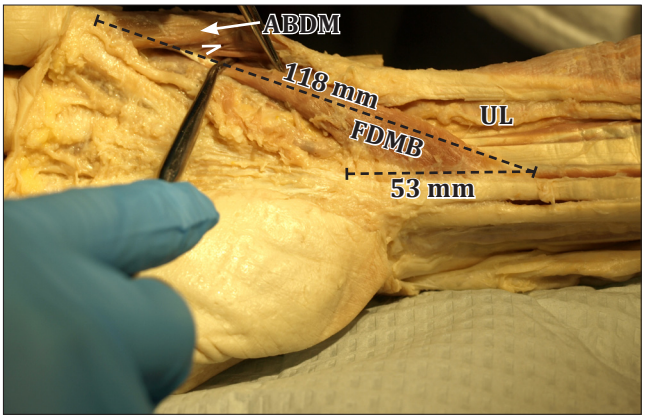

Figure 2. Left hand with *robust flexor digiti minimi brevis (**FDMB**)* muscle 118 mm in length and 53 mm wide at its proximal attachment on the tendon of palmaris longus. Note that *abductor digiti minimi (**ABDM**)* has two distinct slips of attachment (marked with a chevron) to the distal tendinous segment of FDMB. *(**UL**: ulnar nerve & artery)*

activities. The same patient may exhibit false negatives with classic peripheral nerve testing (Tinel, Phalen's, EMG studies). It is clinically important to be aware of anatomical variations in the hand when evaluating and treating patients, particularly when such variations can lead to otherwise unexplained peripheral neuropathy.

References

[1] Bakinde N, Yotovski P, Voigt T, Rager G. Accessory muscle in the hypothenar region: A functional approach. Ann Anat. 2005; 187: 149–152.

[2] Wahba MY, Singh GD, Lozanoff S. An anomalous accessory flexor digiti minimi profundus muscle: A case study. Clin Anat. 1998; 11: 55–59.

[3] Williams, PL, Warwick R, Dyson M, Bannister LH, eds. Gray's Anatomy. 37th Ed., New York, Churchill Livingstone. 1989; 1127–1137.

[4] Georgiev GP, Jelev L. An aberrant flexor digiti minimi brevis manus muscle. J Hand Surg Am. 2011; 36: 1965–1967.

[5] Madhavi C, Holla SJ. Anomalous flexor digiti minimi brevis in Guyon's canal. Clin Anat. 2003; 16: 340–343.

[6] Wingerter S, Gupta S, Le S, Shamasunder S, Bernstein R, Rabitaille W, Kukuyeva Y, Downie S. Unusual origin of the flexor digiti minimi brevis muscle. Clin Anat. 2003; 16: 531–533.

[7] Spinner RJ, Lins RE, Spinner M. Compression of the medial half of the deep branch of the ulnar nerve by an anomalous origin of the flexor digiti minimi. A case report. J Bone Joint Surg Am. 1996; 78: 427–430.