



Bipennate Extensor Indicis Brevis muscle: an extraordinary variant

Gagandeep Kaur¹, * Shabnam Arora², Prachi S. Aneja³

Tutor¹, Assistant Professor², Professor & Head of Department³,
F.M.H.S, Department of Anatomy, SGT University,
Chandu-Budhera-122505

* **Corresponding Author**-gagandeep_fmhs@sgtuniversity.org

ABSTRACT

During routine cadaveric dissection authors found extensor indices brevis muscle on the dorsal surface of the hand which originates from the capsule of wrist joint & inserted at the base of proximal phalanx, lies medial to the tendon of extensor digitorum for index finger. Length & width of muscle was also noted. Rare variation with incidence of 1%. The superficial location of muscle makes it easily accessible for harvesting tendons and its presence may compress posterior interosseous nerve leading to pain in dorsal wrist.

KEYWORDS: Extensor indicis brevis muscle, variant muscle, tendon transfer

Received 12.10.2022

Revised 23.10.2022

Accepted 21.11.2022

INTRODUCTION

Hand & its various muscles give us the ability to perform the everyday task with ease. Variant muscle, arose from extensor retinaculum, lies medial to extensor digitorum & inserted on the base of proximal phalanx via narrow tendon, found on the dorsum of wrist & hand, called as extensor indices Brevis EIB. Minor belly with tendon is the most common type reported [1]. With male dominance & incidence of 2-3% reported in previous studies [2,3]. Reconstructive procedures on hand require detailed anatomical knowledge to take its full advantage & at the same time its presence may narrow the dorsal compartments of the wrist.

CASE REPORT

In the course of routine academic dissection of the upper limb of 65 years old male cadaver carried out in the Department of Anatomy of SGT Medical College, Gurugram. Skin and superficial fascia were removed to expose the dorsum of the right hand and we found an anomalous presence of Extensor Indicis Brevis (EIB) muscle originating from the wrist capsule, which runs beneath the extensor retinaculum. It narrows to a single tendon, gets inserted into the ulnar side of base of proximal phalanx & in due course passes above 3rd metacarpal and second dorsal interossei muscle. The muscle belly was 2.5cms in length with bipennate in shape, with a width of 1 cm & tendon length of 3.5 cm. It was observed to be supplied by the posterior interosseous nerve and blood supply by the posterior interosseous artery.



Figure 1: shows Extensor Indicis Brevis (EIB) muscle origination from the wrist joint capsule underneath the extensor retinaculum (ER) and inserted into the base of the proximal phalanx (PP) of the

DISCUSSION

Embryologically, the primitive extensor group forms the muscles of the extensor compartment. It divides into a radial group, which further divides into superficial & deep groups [4]. The deep group shows developmental changes like regression, and persistence, which results in the formation of anomalous muscle & tendon. As a result, deep group forms extensor pollicis indices, extensor indices brevis & extensor pollicis may co-exist together in about 2% population [5,6]. The presence of added tendon could be utilized for tendon transfer in cases of dysfunction of thenar muscles [7,8]. As index finger has got tendon of the extensor digitorum for its normal functioning [7]. Extensor indicis brevis can be mistaken as a dorsal wrist ganglion [9,10]. EIB & dorsal wrist ganglion may occur together, on exploration muscle was found over ganglion [10]. Clinically, the extension of the wrist joint makes EIB more prominent & flexion of the wrist delineates cyst [11]. MRI detects muscle very well, whereas ultrasound outlines fluid-filled cysts [10,12].

RESULT

The previous study also reported findings similar to our study with origin from wrist capsule & insertion on the medial side of extensor digitorum, length of 3.6cms, a width of 1.1cm, supplied by posterior interosseous nerve except that it was found in left hand & ours was right hand [13]. A slight longer length of variant muscle was also found, with origin from ligament over scaphoid & trapezium & insertion on the dorsal digital expansion of index finger, different from our study in origin, insertion & length [14]. The presence of variant muscle needs to be documented due to its varied implications & also to prevent injury during surgery.

CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest. The research received no specific grant from any funding agency in the public, community, or non-for profit sectors.

REFERENCES

1. Hirai Y, Yoshida K, Yamanaka K, Inoue A, Yamaki K, Yoshizuka M, An anatomic study of the extensor tendons of the human hand, *J Hand Surg Am*, 2001, 26(6): 1009-15.
2. Caudert, X.,A. Deghrar, G. Lavarde. Supernumerary muscle on the dorsal surface of the hand. A case report.- *Ann. Chir. Main Memb. Super.*, 12, 1993,230-2.
3. Paraskevas, G., B. Papaziogas, S. Spanidou, A. Papadopoulos. Unusual variation of the extensor digitorum brevis manus: a case report.- *J Eur Orthop Surg Traumatol.*, 12, 2002,158-160.
4. Souter WA. The extensor digitorum brevis manu. *Br J Surg* 1996, 53(9); 821-23.
5. Wood FJ. The morphology of the extrinsic muscles. In: *The Principles of Anatomy as seen in the hand*, 2nd ed, Bailliere, Tindall and Cox, London. 1946: 243-255.
6. Gaulke R. The extensor pollicis et indicis: an accessory or rudimentary deep extensor tendon to the thumb? Variants- frequency – clinical relevance, *Handchir Mikrochir Plast Chir* 2001, 33(5):310-20.
7. Gonzalez, M.H., Weinzwieg N., Kay T. and Grindel S. Anatomy of the extensor tendons to the index finger. *J Hand Surg.* 1996 .21A; 988-91.
8. Batra S, Sakamuri R and Kanvinde R.N. Sequential traumatic bilateral extensor pollicis brevis rupture: a case report. *J Hand Surg.* 2007; 32:685-7.
9. Macalister. Additional observations on muscular anomalies in human anatomy (third series), with a catalogue of the principle muscular variations hitherto published. *Trans Roy Irish Acad.* 1875; 25:1-130.
10. Murakami Y, Todani K. The extensor indicis brevis muscle with an unusual ganglion. *Clin Orthop Relat Res.* 1982; 162:207-209.
11. Cauldwell, Anson EB, Wright R. The extensor indicis proprius muscle. A Study of 263 consecutive specimens.- *Quat. Bull. Northwestern Univ. Med. School*, 1943, 17: 267-9.
12. Slavchev, Georgiev SG. Ultrasound diagnosis of a ganglionic cyst within an extensor digitorum brevis manus muscle.- *Chir. Main*, in press.
13. Li J, Ren ZF. Bilateral extensor indicis brevis: a rare muscular variant. *Rom J Morphol Embryol.* 2012;53(1):185-187.
14. Garbelotti Junior S, Yukio Fukuda T, Rodrigues Pereira V, Garcia Lucareli P, Olave E. Extensor indicis brevis muscle: an unusual muscular variant. *Int J Morphol.* 2012;30(3):1071-3.

CITATION OF THIS ARTICLE

G.Kaur, S.Arora, Prachi S. Aneja, Bipennate Extensor Indicis Brevis muscle: an extraordinary variant. *Bull. Env.Pharmacol. Life Sci., Spl Issue* [4]: 2022:01-05