



A Variant Accessory Belly of Extensor Indicis Muscle: An Anatomical Variation

Srinivasa Rao Sirasanagandla¹, Bhagath Kumar Potu², Satheesha Nayak B¹, SN Somayaji¹, Narendra Pamidi¹

¹Department of Anatomy
Melaka Manipal Medical College
Manipal University
Madhav Nagar
Manipal, Karnataka, India

²Department of Anatomy
Faculty of Medicine and
Health Sciences
UCSI University
School of Medicine
Cheras, Kuala Lumpur, Malaysia

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Corresponding author:
Dr. Bhagath Kumar Potu, Ph.D
UCSI University
School of Medicine
Jalan Menara Gadin
Taman Connaught
Cheras, Kuala Lumpur, Malaysia
potu_kumar2000@yahoo.co.in

Abstract

Muscular variations of the extensor compartment of the forearm are generally encountered during surgical and dissection procedures. Additional bellies, extra tendons, and abnormal attachment are such reported variations. Knowledge of these kinds of variation are important for hand surgeons to plan the surgical procedure and modify their approach to that case, or the surgeon can take the advantage of these variations during muscle graft and tendon transplantation procedures. Here we report a case of an additional belly of the extensor indicis muscle. The additional belly arose from the interosseous membrane. Its tendon passed through the fourth compartment deep into the extensor retinaculum and divided into two tendinous slips on the dorsum of the hand. One of these slips attached to the ulnar side of the tendon of the extensor digitorum for the middle finger; the other slip was merged with fascia over the dorsum of the hand. The additional belly was supplied by the posterior interosseous nerve.

Key words: Additional bellies, extensor indicis, muscle grafts, tendon transplantation, clinical importance

Introduction

The extensor indicis (EI) muscle belongs to the deep set of muscles of the extensor compartment of the forearm, which lies medial and parallel to extensor pollicis longus (EPL). It originates from the posterior surface of the ulna, distal to the origin of EPL and from the adjacent interosseous membrane. Its tendon passes under the extensor retinaculum in the fourth dorsal compartment, along with tendons of the extensor digitorum (ED). It joins the ulnar side of the tendon of the extensor digitorum for the index finger opposite the head of the second metacarpal bone [1].

Case report

An anomalous additional belly of EI was found in the right forearm of approximately a 50-year-old male cadaver during routine dissection classes for Phase-I undergraduate medical students. The EI originated from the posterior surface of the ulna and adjacent interosseous membrane, passed through the fourth compartment deep to the extensor retinaculum, and inserted in the ulnar side of the tendon of the extensor digitorum (ED) for the index finger. In the present case, we observed an additional belly, which arose from the interosseous membrane partially fused with

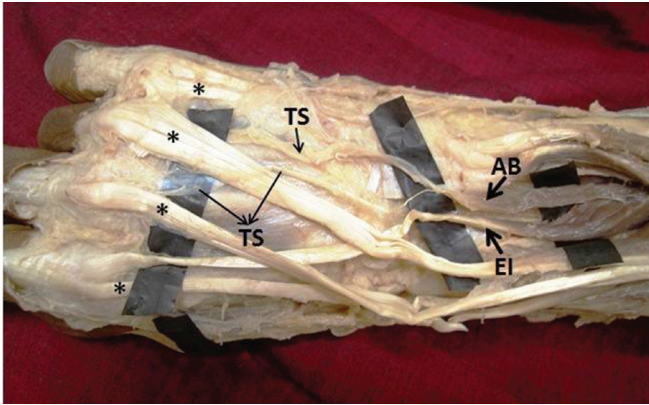


Figure 1. Photograph showing the additional belly of extensor indicis muscle and its mode of insertion (EI: extensor indicis; AB: additional belly; TS: tendinous slip; *: extensor digitorum tendon).

the muscle belly of EI. The tendon of this additional belly passed through the fourth compartment deep to the extensor retinaculum, along with tendons of ED and EI. On reaching the dorsum of the hand, the tendon of the additional belly divided into two tendinous slips. One of these slips attached to the ulnar side of the tendon of ED for the middle finger; the other slip was very thin and merged with fascia over the dorsum of the hand (Figure 1). The additional belly was supplied by a branch from the posterior interosseous nerve. The opposite limb of the same cadaver did not reveal any variation.

Discussion

Presence of an anomalous muscle belly, occurrence of an extra tendon and variation in its insertions are the reported variations of EI. In the present case, we are reporting a unique variation of the EI. Earlier, Yoshida et al. [2] classified the variations of the extensor indicis muscle into four types: a) extensor indicis radialis, b) extensor indicis ulnaris, c) extensor pollicis et indicis accessories, and d) extensor medioproprius. El-Badawi et al. [3] described a variation of extensor medii brevis. Mohandas KG et al. [4] reported a small muscle on the dorsum of the hand inserted into the index finger (in addition to normal EI) and termed this extensor indicis brevis. Kosugi et al. [5] observed that the EI could be absent in 0.6 to 3% of specimens. Our case is in conformity with the extensor medioproprius (EMP), but the tendon of the muscle belly was divided into two tendinous slips. One of these slips attached to the ulnar side of the tendon of ED for the middle finger; the other slip was very thin and merged with the fascia over the dorsum of the hand. In a report by Yoshida et al. [2], the EMP had two slips and both were attached to

the tendon of ED for the middle finger; in contradiction to this, our case demonstrated two tendons with two different sites of insertion.

If the additional bellies are small, they are asymptomatic and may go unnoticed. Such muscles are found during surgeries or dissection procedures. The additional bellies can be used for the muscle graft purpose without sacrificing the normal muscle. If the muscle is large, it may confuse clinicians during diagnosis of various soft tissue conditions or it may also lead to some confusion for surgeons operating in the forearm extensor and hand regions. Knowledge about the presence of multiple tendons of extensors is useful in identifying and planning tendon transfer or graft surgeries. If the tendon of the additional belly is thick, it may decrease the space in the respective compartment and may increase the risk of tenosynovitis. Extension of a bulky, musculotendinous portion of extensor indicis proprius into the fourth dorsal compartment of the wrist may lead to extensor indicis proprius syndrome [6]. Therefore, clinicians must be aware of these variations for a successful diagnosis and treatment.

Conflict of interest statement

The authors have no conflicts of interest to declare.

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