

A Case Study of the Anomalous Extensor Digitorum Brevis Manus Muscle

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Abstract

During routine forearm dissection of 12 cadavers, which originated from the PCOM Georgia Body Donor Program at PCOM South Georgia, an aberrant muscle was discovered on the dorsal surface of the hand of a 72-year-old Caucasian male. The muscle, known as the Extensor Digitorum Brevis Manus (EDBM), was located bilaterally and deep to the tendons of the Extensor Digitorum. On assessment, the left hand of the donor had two EDBM tendons that intersected and attached to the proximal phalanx of the third digit. The tendon of the right hand inserted onto the third digit of the proximal phalanx. An investigation of the cadaveric origin and insertion sites as well as the anatomical structure is presented. In addition, this case study analyzes the anomalous EDBM muscle along with its clinical significance and prevalence.

Introduction

Students at the Philadelphia College of Osteopathic Medicine discovered an anomalous muscle on the dorsum of the hand of a 72-year-old Caucasian male cadaver during a class dissection. With the exception of the dorsal interossei muscles within the digits, there are usually no other muscles located on the dorsal aspect of the hand as it contains tendons alone¹. The muscle discovered was identified as the Extensor Digitorum Brevis Manus (EDBM). The first documented discovery of the EDBM muscle was in 1734 by the German anatomist Bernhard Siegfried Albinus. A meta-analysis conducted in 2015, discovered that this muscle is found in approximately 2.5% of the population². Out of 12 cadavers at PCOM South Georgia this was the only cadaver with a deviation on the dorsum of the hand.

Results

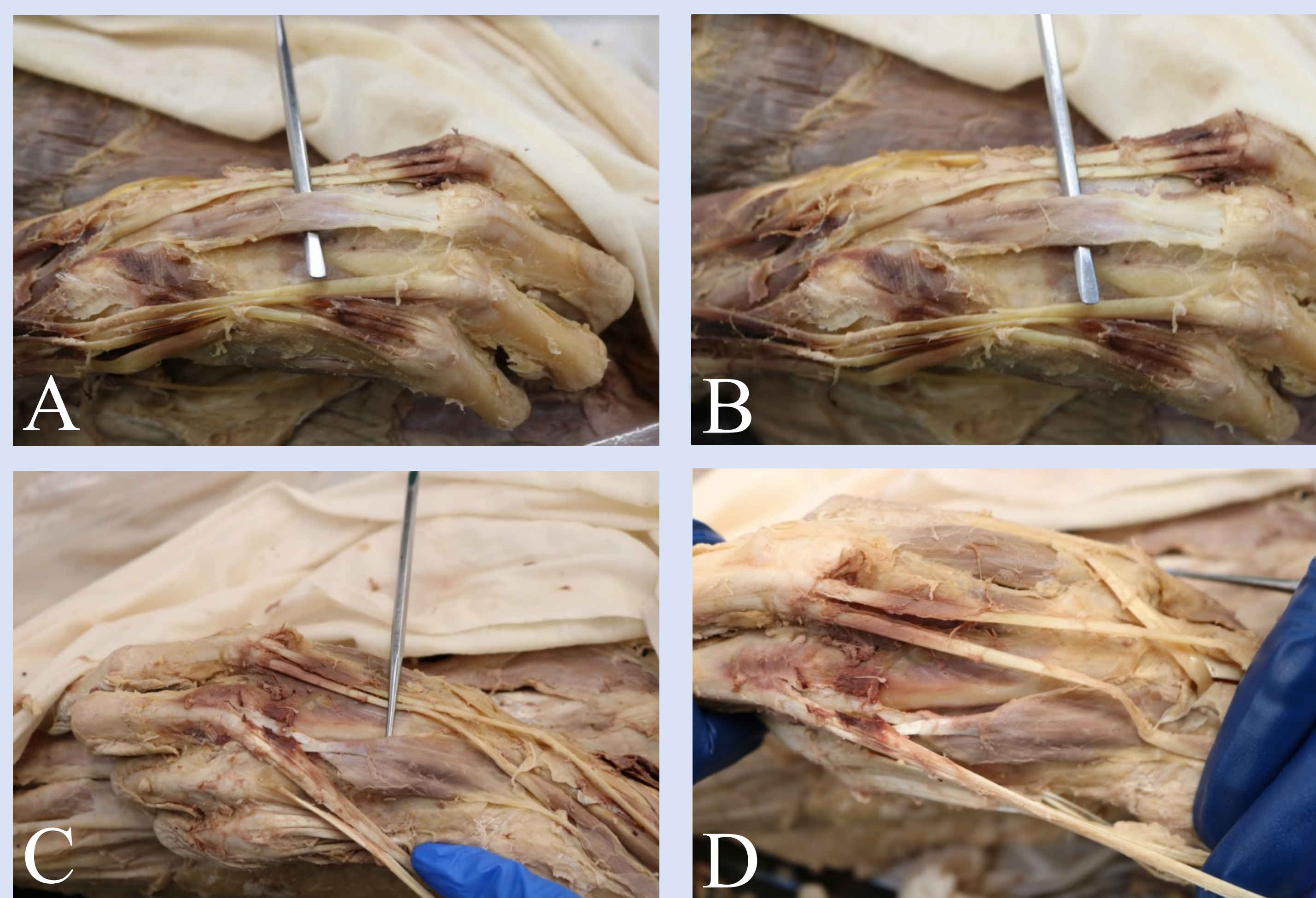


Figure 1
(A, B) Images of **Right** hand showing the insertion and origin point of the EDBM muscle. Muscle originated on the distal end of the radius and inserted to the third metacarpal bone.

(C, D) Images of **Left** hand showing the insertion and origin point of the EDBM muscle. Muscle originated on the distal end of the radius. The inserted point for one of the tendons is the extensor digitorum while the other tendon inserts on the third metacarpal bone.

Arm	Length	Width	Tendon Direction
Left	Muscle Belly: 6.4 cm	Muscle Belly: 2.3 cm	Two tendons that cross. One tendon attaches to the tendon of the extensor digitorum muscle while the second tendon inserts on the third metacarpal bone
	Laterally originating tendon: 2.5 cm		
	Medially originating tendon: 3.6 cm		
Right	Muscle Belly: 6.4 cm	Muscle Belly: 1.5 cm	Tendon inserts on the metacarpal bone of the third digit
	Tendon: 3.0 cm		

Table 1 – Measurements and observations for the extensor digitorum brevis manus on each arm

Methods

- Blunt dissection was performed to remove skin and underlying superficial fascia from the area, exposing the musculature of the posterior forearm and dorsum of the hand.
- A midline incision was made to reflect the extensor retinaculum, allowing for better movement and visualization of the underlying tendons³.
- When an aberrant muscle was discovered deep to the tendons of the extensor digitorum, no more cuts were made or deemed necessary in order to allow for better observation of the muscle. The muscle was identified on both right and left hands utilizing the same technique and procedure.
- The origin and insertion of the aberrant muscle were recorded along with measurements.

Discussion & Conclusion

The extensor digitorum brevis manus muscle has been an object of study due to its rarity and clinical significance. Clinically, patients have presented with pain and numbness on the dorsal aspect of the hand. The pain is exacerbated by tasks such as writing, typing, and clenching of fist⁴. Due to its rarity, this muscle has been linked to incorrect diagnoses resulting in exploratory surgery of the hand⁵.

References

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