

An Accessory Flexor Muscle of the Forearm: Anatomical Variation in an African Male

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ABSTRACT

We report on an accessory muscle discovered bilaterally on dissection of the forearms of a 26 year old black African male, which had not been described previously. The muscle originated by two fleshy heads from the aponeurotic undersurface of flexor digitorum superficialis muscle and inserted by two long tendons, one into the tendon of flexor pollicis longus and the other into the ring finger tendon of flexor digitorum profundus. Pulling on the muscle produced flexion of the thumb and ring fingers and it presumably helped in this movement during life. We propose the name *accessory flexor muscle of the forearm*.

Keywords: Accessory flexor muscle, Anomaly.

INTRODUCTION

Accessory muscles occur most commonly in limbs although the reason for this occurrence is unknown. Wood [1] found in 5 of 36 Caucasian subjects a separate muscular slip derived from the flexor digitorum superficialis that joined the tendons of flexor digitorum profundus. Wood-Jones [2] noted that from the radial extremity of the fibrous arcade of flexor digitorum, some fibres are usually given off to join the deep flexor layer. One such set of connecting fibres commonly unites the superficial flexor to the flexor pollicis longus being sometimes known as muscle accessories and flexorem profundus digitorum. The flexor digitorum superficialis itself is a very variable muscle, particularly in its deep portion that serves the index and little fingers. Chowdhary [3] reported in Caucasians an anomaly of the flexor digitorum superficialis muscle. He found tendon slips which connected the tendons of flexor digitorum superficialis and profundus. In some of the variations, the origin

of the tendons was the flexor digitorum superficialis as follows: a slip from the deep part of the muscle sometimes formed the chief part of the ring finger division or there was a slip from the deep part of the middle finger tendon. He demonstrated that a slip frequently connected the flexor digitorum superficialis with flexor pollicis longus. Chowdhary [3] suggested that some of the variations that do occur in the flexor digitorum superficialis represent retrogressive remnants of the connections between two sheets of muscle. Furthermore, the embryonic origin of the muscles of the forearm may probably explain the extent, the attachments and the variety of aberrant slips that are occasionally seen [4].

Literature on these variations is limited to Caucasians and other races [4] and is lacking in black Africans. In the course of our regular cadaver dissections, we found a bilateral anatomic

variation in the forearm not previously described in either Africans or Caucasians, and we thought it was worthwhile reporting

CASE REPORT

We report on the dissection carried out on a black African male aged 26 years in our Department of Anatomy. Both upper limbs were dissected as outlined by Grant's Dissector and we found the accessory muscle, which was photographed with its immediate relations.

The accessory muscle was found in each forearm and was between the flexor digitorum superficialis muscle (Figs 1 & 2) and the flexor digitorum profundus muscle. Each accessory muscle had two fleshy bellies that arose from the aponeurotic tendon of the flexor digitorum superficialis muscle. The two fleshy bellies gave rise to two slender tendons, which were inserted separately, the lateral one into the tendon of flexor pollicis longus muscle and the medial one into the ring finger tendon of flexor digitorum profundus muscle (Figs 1 & 2D). The muscle was innervated by the anterior interosseous nerve, which lay deep to the flexor digitorum superficialis muscle (Figs 1 & 2F). The radial nerve (Figs 1, 2B) lay immediately lateral to the accessory muscle and provided an indirect branch that innervated it (Fig. 2). A pull on the tendons produced flexion of the thumb and ring fingers. Because of its location and action, we have suggested naming it *an accessory flexor muscle of the forearm*.

DISCUSSION

Probably for the first time in an African subject we have demonstrated a muscle in the flexor compartment connected to both flexor digitorum profundus and flexor pollicis longus creating an intermediate layer of muscle in the flexor compartment. Muscle variations previously reported by Bergman et al., [14]

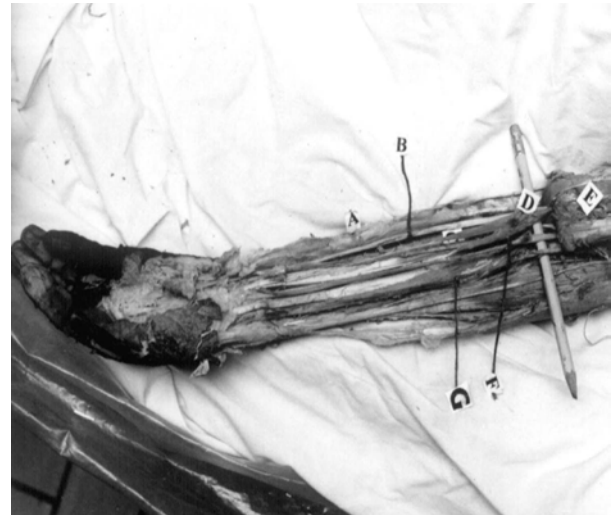


Fig. 1. Right forearm to illustrate the accessory flexor muscle with its immediate relations.
 A = Skin, superficial and fasciae
 B = Radial nerve
 C = Flexor digitorum profundus muscle
 D = Accessory flexor muscle
 E = Flexor digitorum superficialis muscle
 F = Anterior interosseous nerve
 G = Ulnar artery

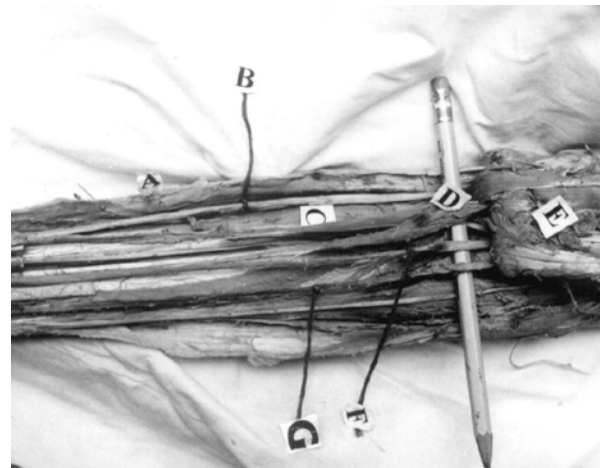


Fig. 2. Right forearm to illustrate the magnified accessory flexor muscle and its immediate relations.
 A = Skin, superficial and deep fasciae
 B = Radial nerve
 C = Flexor digitorum profundus muscle
 D = Accessory flexor muscle
 E = Flexor digitorum superficialis muscle
 F = Anterior interosseous nerve
 G = Ulnar artery

were connected with either flexor pollicis longus muscle or flexor digitorum profundus muscle, muscle, but not with both since the muscle was connected with flexor pollicis longus by a remnant of the connection between two sheets of muscle. The muscle may have developed from the common mesenchymal tissue for flexors as a result of excessive division or splitting of the embryonic tissue [6]. In this case, the muscle must have completely separated distally hence its separate tendinous insertions, but proximally the separation may have been incomplete.

Pulling the tendons of the anomalous muscle produced flexion of both the thumb and ring fingers. They would presumably have assisted in life in power grip, which is the main function of the flexor muscles of the forearm. The accessory muscles were innervated by the anterior interosseous nerve, which innervates most of the muscles of the flexors of the forearm.

Since dissections started in this Medical School, over one hundred and forty-four limbs have been examined. Apart from the present case, no other accessory muscle has been observed.

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