



Bilateral accessory flexor digitorum muscle in the posterior compartment of the leg

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ABSTRACT

Deep muscles of the posterior compartment of the leg constitute of the flexor hallucis longus, flexor digitorum and tibialis posterior. During the routine dissection of a 53-year-old male cadaver of Indian origin, an accessory muscle was observed in the posterior compartment of the both the legs, deep to the soleus muscle. The muscle originated as a slender tendon from the medial border of the tibia, led to a small belly of the muscle fibers arranged bipinnately and converged into another slender tendon. The tendon got inserted at the second toe in the left foot, after joining both the slip of the flexor hallucis longus and the flexor digitorum longus muscle tendon in the sole. In the right leg, the accessory muscle tendon was inserted to the calcaneus with fibrous attachments to the quadratus plantae, flexor hallucis longus and the flexor digitorum longus. The present case will facilitate in interpretation of the medial side swelling of the leg, tarsal tunnel syndrome or pain due to muscle entrapment, by the radiologists surgeons and orthopedists. © IJAV. 2010; 3: 176–177.

Key words [flexor digitorum longus] [flexor hallucis longus] [quadratus plantae] [accessory muscle]

Introduction

The posterior compartment of the leg constitute of three deep muscles; flexor hallucis longus, flexor digitorum longus and tibialis posterior. Accessory muscle in the deep compartment of the leg is a rare entity. It has been observed in the posterior compartment as either a swelling in the medial aspect of the leg in children or as pain in the medial side of the leg during tarsal tunnel syndrome or muscle entrapment. Accessory flexor digitorum longus [1–3] as well as accessory flexor hallucis longus [4], has its origin from either tibia, fibula or the popliteus, or all the above structures. Most of the above authors had common findings that the accessory muscle tendon was attached to the quadratus plantae. But the present case, on the contrary, shows an alternate attachment of the accessory flexor digitorum.

Case Report

During the routine dissection of the lower limb of a 53-year-old male cadaver of Indian origin, “an accessory muscle” was observed on the medial side of the posterior compartment of the leg, bilaterally. In both the legs, it originated from the posterior aspect of the medial border of the tibia, just at its junction to the soleal line deep to the soleus muscle, as a long slender tendon, posterior to the medial intermuscular septum. The tendon, 7.5 cm in length gave way to a small bipennate muscle belly in the lower third of both the leg, which soon led to another slender tendon, a little above the flexor retinaculum (Figures 1, 2). The tendon crossed from the medial to

lateral side in the lower third of the leg. Under the flexor retinaculum it occupied a position posterior to the flexor hallucis longus tendon in a separate synovial sheath (Figure 2). In the sole, the tendon in the right and the left leg took different course. In the left leg, the accessory muscle tendon ran parallel to the flexor hallucis tendon and joined with a slip from the flexor hallucis tendon and the flexor digitorum longus to final insertion at the 2nd toe (Figure 3). On its way to join the flexor digitorum it also received muscle insertion of the quadratus plantae. In the right leg however, the tendon in the sole got inserted to the calcaneus and send fibrous insertions to the quadratus plantae, the tendon of the flexor digitorum longus as well as flexor hallucis longus (Figure 4).

Discussion

Pac and Malinovsky, have suggested that the accessory muscle of the flexor digitorum longus and its link to the flexor hallucis longus are evidence of regressive varieties [5].

Eberle et al. have described an accessory flexor digitorum longus which produced flexor hallucis syndrome [6]. Such a muscle can be easily detected by the non-invasive MRI techniques [6,7].

In the present case the accessory muscle joining both the flexor digitorum tendon and a slip of the flexor hallucis longus with its insertion at the 2nd toe indicates that the muscle is accessory flexor digitorum, which could be named as ‘flexor digitorum tertius’. Its origin from

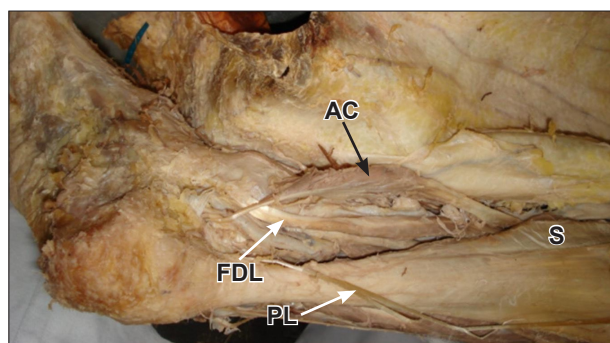


Figure 1. The *accessory muscle (AC)* under the *soleus muscle (S)* arising from medial border of the tibia medial to the *flexor digitorum longus (FDL)*. The *plantaris tendon (PL)* is seen over the calcaneal tendon.

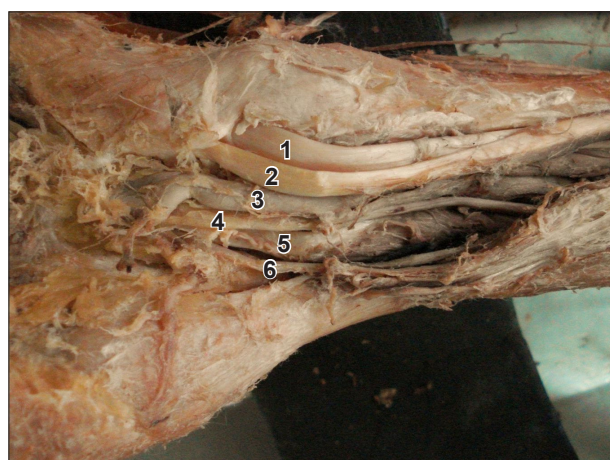


Figure 2. The arrangement of the flexor tendons under the flexor retinaculum, anteriormost *tibialis posterior (1)*, *flexor digitorum longus (2)*, posterior tibial vessels (3), tibial nerve (4), *flexor hallucis longus (5)* and the *accessory muscle (6)* most posterior.

the tibia, further suggest it to be accessory part of the flexor digitorum longus. The muscle in both legs show significant variations at its insertion and therefore, it has to be borne in mind both by the surgeons, orthopedicians as well the radiologists while operating and interpreting

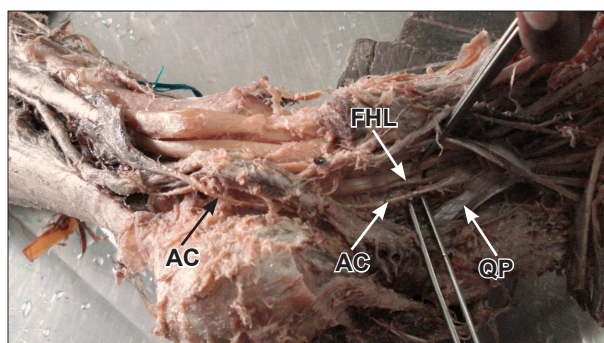


Figure 3. The *accessory muscle (AC)* tendon crosses over to the medial side in the left leg and occupies the posteriormost compartment under the flexor retinaculum. In the sole, the tendon joins the slip from the *flexor hallucis longus (FHL)* and *flexor digitorum longus* to reach the second toe (indicated by open forceps). Also seen is the *quadratus plantae muscle attachment (QP)* to the same muscle.



Figure 4. In the right leg, the *accessory muscle (AC)* crosses over to the medial side occupying the posterior compartment under the flexor retinaculum and gets inserted by fibrous slips to the calcaneus, the quadratus plantae and the flexor digitorum longus.

the swelling in the medial side of the leg or pain due to the entrapment of the tendon as in flexor hallucis syndrome. The accessory muscle tendon can also be useful during the tendon transfer of the muscle in the posterior compartment.

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