



**ANOMALOUS MUSCLE ARISING FROM THE TENDON OF PERONEUS BREVIS
(PERONEUS DIGITI MINIMI QUINTI / EXTENSOR DIGITI QUINTI BREVIS) AND ITS
CLINICAL IMPORTANCE - A CASE REPORT**

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ABSTRACT

Variations within the musculature of the lateral compartment of the leg are uncommon. However, clinicians and radiologists should be aware of anatomical alterations in this region when involved in diagnosis or imaging interpretation. Awareness of such anatomical variants is important to surgeons undertaking reconstructive procedures of superior peroneal retinaculum which can be done by using a portion of Peroneus brevis in anterolateral subluxation of peroneal tendons which occurs most frequently in skiers. The accessory tendons can be used in cases of tendon rupture, besides the repair of main tendon, to increase the power. The knowledge of the variations will also help the surgeons to avoid post-operative complications. During routine dissection of the lateral compartment of the left leg and the dorsum of the foot in a middle aged male cadaver, we found the presence of a rare muscle arising from the tendon of peroneus brevis just below and distal to the lateral malleolus. From this origin this muscular slip was found running forwards on the lateral aspect of the dorsum of the foot and got inserted to the dorsal aspect of the base of the proximal phalanx of the little toe. However, similar variation was not observed on the contra-lateral side. Knowledge of this variant muscle is important not only for anatomist but also for surgeons to diagnose lateral ankle and foot complaints. This muscle can also be used in grafting and reconstruction in foot and ankle surgery. Further studies should be performed to determine its incidence in different population with the help of cadaveric study.

KEYWORDS: Extensor digiti quinti brevis, peroneus digiti minimi quinti, peroneal muscle variations.

INTRODUCTION

Variations within the musculature of the lateral compartment of the leg are uncommon. A large number of accessory peroneal muscles have been described in literature. These are peroneus quartus, peroneus accessories. Peroneocalcaneus externum and peroneus digiti minimi quinti. The nomenclature applied to the variations of peroneal muscles is confusing and at times controversial because there are multiple overlapping classifications and variations in descriptive terminology. To solve confusion Sobel et al (1990), proposed that all such anomalous peroneal muscles are referred as "Peroneus quartus". Peroneus digiti minimi quinti is one of many accessory peroneal muscles, which arises as a small slip from the tendon of peroneus brevis to the extensor aponeurosis of the little toe. Presence of peroneus digiti minimi quinti is usually asymptomatic, but can be associated with pain or compressive neuropathy. Accessory muscles are typically asymptomatic and encountered as incidental findings. Occasionally they are potential source of clinical

symptoms which are due to mass effect of the supernumerary muscle, with the patient presenting with either a palpable swelling or secondary compression of adjacent structures such as nerves, vessels or tendons. Precise knowledge of peroneus digiti minimi quinti is important for clinicians, orthopedic surgeons and radiologist because they are involved in diagnosis, reconstructive surgery or imaging interpretation. The peroneal muscles represent the fibular marginal muscle developed from the extensor mass.^[1]

CASE REPORT

During routine dissection of cadavers for undergraduate medical students, we detected a very rare muscle originating from the tendon of peroneus brevis just below and distal to the lateral malleolus, on the left side of a middle aged male embalmed cadaver. From this origin this muscular slip was found running forwards on the lateral aspect of the dorsum of the foot and got inserted to the dorsal aspect of the base of the proximal phalanx of the little toe. Following the fine dissection,

this accessory muscular slip was photographed. However, similar variation was not observed on the contra-lateral side (Fig. 1). Patients with such variations may be asymptomatic. Our aim is to contribute to existing knowledge of the variations and explaining their morphological and clinical significance. The details of this variation and its clinical significance are discussed herein.

Figure 1

1. Tendon of peroneus longus
2. Tendon of peroneus brevis
3. Tendon of peroneus tertius
4. Peroneus digiti minimi quinti



Figure



DISCUSSION

The peroneus digiti minimi quinti is a rare anatomical variation. The prevalence of it is not precisely known. There are only a few studies concerning this muscle. Some researchers consider a tendinous slip which detaches from the tendon of the peroneus brevis without a clear muscular belly is considered as a split or double insertion of the peroneus brevis. But some authors report that the variation of peroneal musculature may be atavistic structure, as they are found in aneuploid neonates and monkeys.

Peroneal tendon disorders are rare, are frequently missed, and can be a source of lateral ankle pain. Magnetic resonance imaging is the standard method of radiographic evaluation of peroneal tendon disorders. It is important to recognise these variations especially during fasciotomies, creating fascio cutaneous flaps and in traumatic pain syndromes of leg. In our study, the common tendon of peroneus brevis bifurcated in two limbs and out of the two slips, one slip inserted on base of fifth metatarsal bone on its lateral side and the other on the medial side of same metatarsal bone.^[2]

Tendinous slip from peroneus longus may extend to the base of the third, fourth or fifth metatarsal bone, or to adductor hallucis. Fusion of peroneus longus and brevis can occur but is rare. Two other peroneal muscles are described arising from the fibula between peronei longus and brevis. These are peroneus accessorius, whose tendon joins that of peroneus longus in the sole, and peroneus quartus, which arises posteriorly and inserts into the calcaneus or into the cuboid.^[3]

Poirier considers all these varieties of a muscle that in its simplest form arises from the distal fourth of the fibula and is inserted by a tendon into the fifth toe as accessory peroneals. A corresponding muscle is normally found in many of the monkeys (peroneus digiti quinti). In man, in one form or another, it is a frequent anomaly. It may be so fused with the peroneus brevis that only its tendon of insertion is apparent. It may appear as a special muscle fasciculus of the peroneus longus or brevis. It may be merely a tendinous band, or it may be tendinous at its origin and insertion, with an intermediate belly. Instead of being attached to the fifth toe, it may be inserted into the fifth metatarsal, the cuboid, the tendon of the peroneus longus, the calcaneus, lateral malleolus or posterior talofibular ligament.^[4]

The tendon of peroneus brevis may deviate to insert on the dorsum of the fifth metatarsal or into the fourth dorsal interosseous muscle. Its tendon may bifurcate, with one part joining peroneus tertius. There are other slips that arise from the lower part of the fibula behind peroneus brevis and are attached to the lateral aspect of the calcaneus, to the cuboid, or into the dorsal digital expansion of the fifth toe. These are the vestiges of a muscle, the extensor digiti quinti brevis, which appears in complete form in very rare cases.^[5]

CONCLUSION

The presence of an accessory musculo-tendinous slip may prevent the wear and tear, and weakening of the tendon used for routine function of the foot and the ankle. It may act as an extra support and play an important role in the stability and protection of ankle joint against twisting. This variation may be considered as morphological evolution of the muscle followed in the mammalian series.

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