Original Article

Peroneus Tertius: Variations and Clinical Applications in Gujarati Population

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ABSTRACT

Introduction: Peroneus tertius (PT) is a muscle of the anterior compartment of the leg. The PT muscle originates from the anterior surface of the fibula and the interosseous membrane and inserts into the medial side of the dorsal region of the fifth metatarsal bone. The aim of the study is to study the different variations of the peroneus tertius in south Gujarat population and clinical implication of the study.

Results: The peroneus tertius is absent in 5% to 17% of the human white population. The function of the peroneus tertius is eversion and dorsiflexion of the foot. These 2 strength parameters have been identified as important parameters in the development of ankle ligament injuries.

Conclusion: Variations observed in the peroneus tertius is not uncommon finding during anatomical dissection or autopsies. Variant origin and absence of PT has functional importance in athletes as it has aprotective role against injuries to talocrural joint in subjects with high functional demand. It is also important for orthopedic surgeons for performing graft operations and transplant surgeries in foot. Variant course of TA is also important for tendon transfer surgeries in Orthopedics.

Key words: Peroneus tertius, variations

INTRODUCTION

The tendons on the dorsum of foot from lateral to medial are Peroneus tertius (PT), Extensor digitorum longus (EDL), Extensor hallucis longus (EHL) and Tibialis anterior (TA). The muscular bellies originating from the proximal parts of bones of leg become tendons in the distal part and pass deep to the extensor retinacula at the ankle to get inserted in to the bones of foot. Peroneus tertius (PT) is a muscle of the anterior compartment of the leg. The PT muscle originates from the anterior surface of the fibula and the interosseous membrane and inserts into the medial side of the dorsal region of the fifth metatarsal bone. It is absent in other primates and its presence in man is an evidence of evolution and supports its function of terrestrial bipedalism. It is occasionally found in apes and gorillas.[1] With evolution, the frequency of presence of PT has increased and is found in 95% of the human population. Peroneus tertius is also called fibularis tertius (FT).[2] The muscle arises from lower one - fourth of medial surface of shaft of fibula, adjacent anterior surface of interosseous membrane and anterior crural intermuscular septum. After passing beneath superior extensor retinaculum, it is inserted into dorsal surface of base of 5th metatarsal bone and may have a thin expansion usually extending forwards along the medial border of shaft of 5th metatarsal bone or shaft of 4th metatarsal bone or base of 4th metatarsal. In this study we are studying different variations of peroneus tertius muscle in the South Gujarat population. The aim of the study is to study the different variations of the peroneus tertius in south Gujarat population and clinical implication of the study.

METHODS

We have observed 46 cadaveric lower limbs which are given to the undergraduate students to dissect in the government medical college, Surat and from the municipal medical college, Surat for last 2 years. The dissection was done by the students under guidance of the teachers and according to the Cunningham manual of dissection of anatomy.

OBSERVATIONS

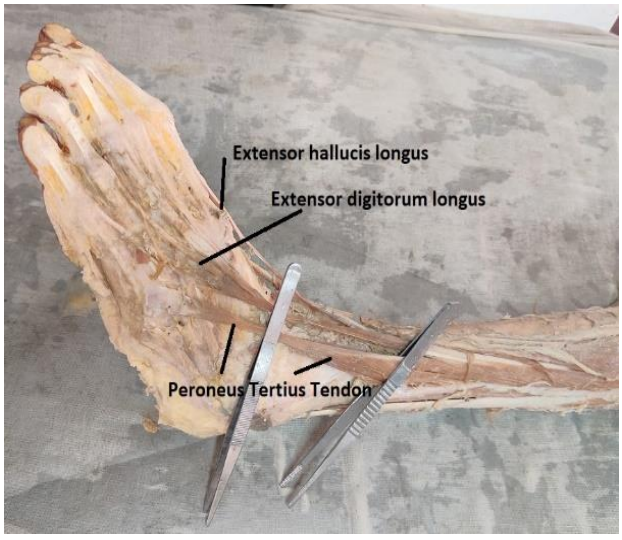

Figure 1: Normal peroneus tertius muscle with other extensor muscles

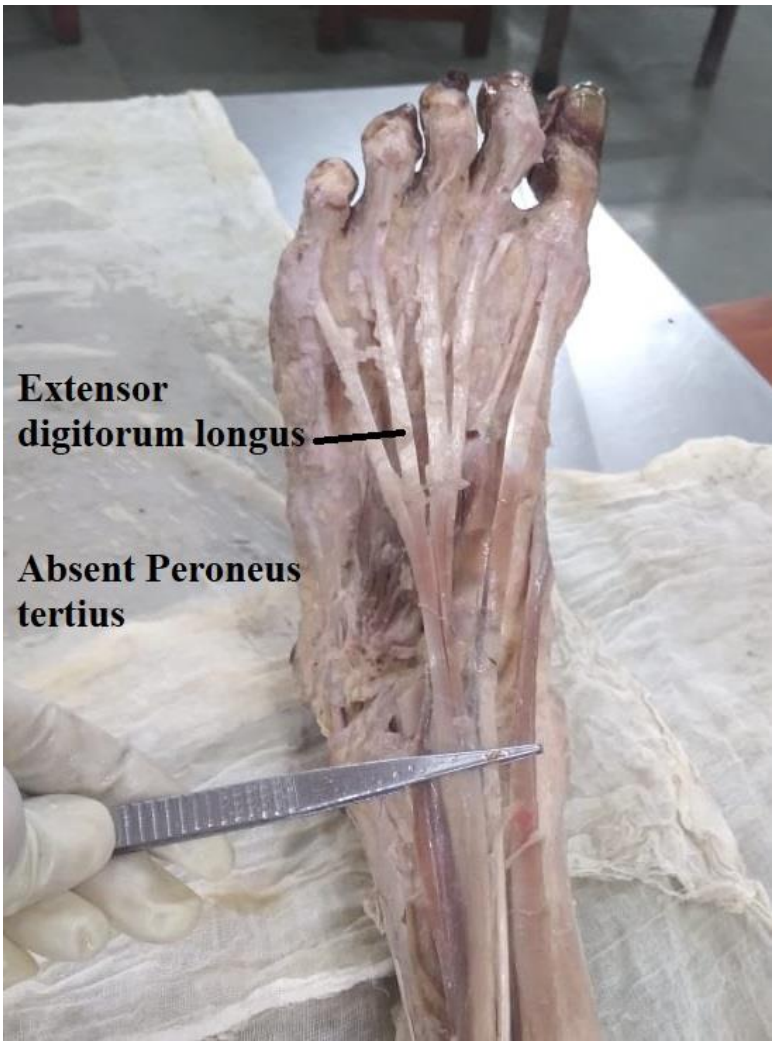

Figure 2: Absent Peroneus tertius muscle

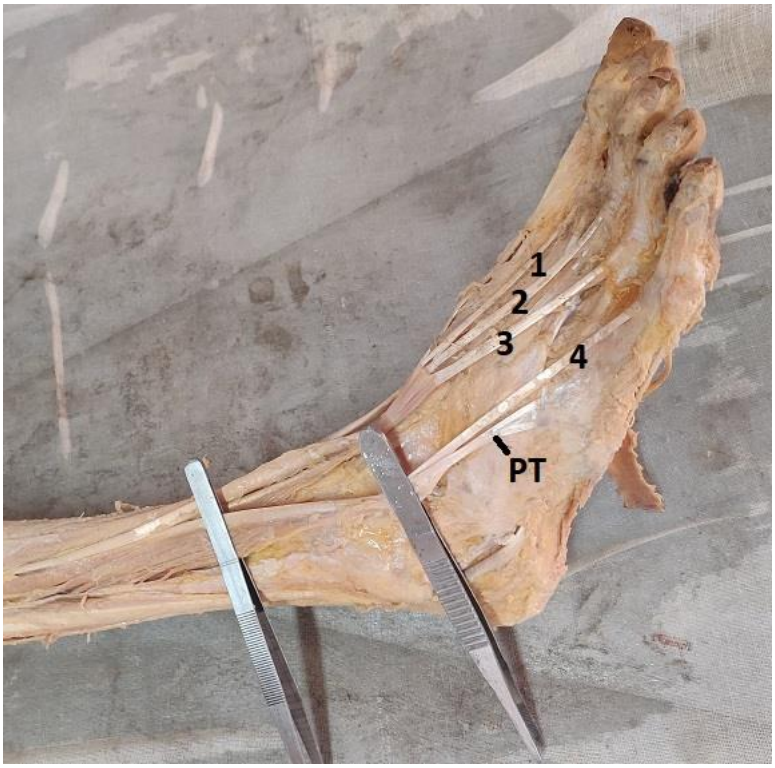

Figure 3: Slips arises from the 4th tendon of extensor digitorium longus

We have found that in 5 cases Peroneus tertius muscle is absent. As we can see in the **figure2** that the Peroneus tertius muscle is absent in this case.

The other common variation of the Peroneus tertius muscle that slips arises from the 4th tendon of extensor digitorium longus. This slip strengthens the muscle and helps in the action of PT. Such types of 2 cases have been found. (figure 3)

DISCUSSION

The Peroneus tertius is usually considered to be a differentiated portion of the Extensor Digitorum Longus and its variations are commonly interpreted as mere variations in the degree of differentiation of this muscle[3].

The peroneus tertius is absent in 5% to 17% of the human white population. The function of the peroneus tertius is eversion and dorsiflexion of the foot. These 2 strength parameters have been identified as important parameters in the development of ankle ligament injuries. The study by Das SS shows that absent of Peroneus tertius muscle is around 10.5% of Cases.[4]We found 10 cases of absence Peroneus tertius muscle. This figure is almost similar with other authors such as J Bertelli & Z Khoury(9.1%).[2]

Absence of PT is considered as an advantage as those who are not having it would be less vulnerable to stress fractures of 5th metatarsal and Jones fracture [5]. Absence of PT may not cause a significant decrease in its function as evertor and dorsiflexor of foot [6]. Support to lateral aspect of foot might be compromised by its absence but it may not increase risk to ankle injuries [7].

The pull of the PT may be responsible for causing stress on the fifth metacarpal and account for all stress fractures in any individual. The presence of an anomalous m. Peroneus tertius tendon has also been described to be associated with a m. peroneus brevis tear. [8,9]Peroneus brevis tear is one of the important cause of the chronic ankle pain.

CONCLUSION

Variations observed in the peroneus tertius is not uncommon finding during anatomical dissection or autopsies. Variant origin and absence of PT has functional importance in athletes as it has a protective role against injuries to talocrural joint in subjects with high functional demand. It is also important for orthopedic surgeons for performing graft operations and transplant surgeries in foot. Variant course of TA is also important for tendon transfer surgeries in Orthopedics.

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