A RARE BILATERAL DUAL TENDINEOUS INSERTION OF THE PERONEUS TERTIUS - A CASE REPORT

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ABSTRACT

Peroneus Tertius is a uniquely human muscle. It often appears to be part of Extensor Digitorum Longus, and might be described as its ‘fifth tendon’. The muscle fibers operating on this tendon arise from the distal third or more of the medial surface of the fibula, the adjoining anterior surface of the interosseous membrane and the anterior crural intermuscular septum, and it is inserted in to the medial part of the dorsal surface of the base of the fifth metatarsal bone, and a thin expansion usually extends forwards along the medial border of the shaft of the bone.

During routine dissection of a 55 years old male cadaver in department of Rachana Shareera, Sri Sri College of Ayurvedic Science Research, Bangalore. When Peroneus Tertius muscle of both legs was dissected from its origin to the insertion, we observed that, the Peroneus Tertius muscle have normal origin but the insertion of the tendon splits into two separate tendons at its terminal part. The tendon was accompanying with the Extensor Digitorum Longus one part of the tendon inserted on to the fifth metatarsal bone and the another part of the tendon inserted on to the shaft of the fifth metatarsal bone.

The aim is to highlight a variation encountered in the insertion pattern of Peroneus Tertius muscle and correlating it with available research studies and also to analyze the anatomical basis of possible clinical entities related to this variation. Usually, the Peroneus Tertius is involved in dorsiflexion and eversion of the foot. The existence of Peroneus Tertius may help in the swing phase of bipedal walking.

The pull of the Peroneus Tertius may be responsible for causing stress on the fifth metatarsal and account for stress fracture in any individual. Knowledge of variation may have useful clinical applications in cases of leg or trauma requiring tendoplasty or tendon transfer operations.

KEY WORDS: Peroneus Tertius, variation, dual tendon, insertion, dissection.

INTRODUCTION:

Peroneus Tertius muscle originates from the distal third or more of the medial surface of the fibula, the adjoining anterior surface of the interosseous membrane and the anterior crural intermuscular septum, and it is inserted in to the medial part of the dorsal surface of the base of the fifth metatarsal bone. With the adaptation to erect posture, the foot had to not only bear the weight but also maintain the balance of body while walking and standing on uneven surfaces. The Peroneus are the corner stone muscles that have evolved to perform this function. This type of muscles variation is more frequent than supposed and their distal attachments are also not absolutely at a fixed position.

The function of the Peroneus Tertius is eversion and dorsiflexion of the foot. These two strength parameters have been identified as important parameters in the
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development of ankle ligament injuries. Peroneus Tertius muscle is helpful in the swing phase of the bipedal mode of locomotion. The pull of the Peroneus Tertius may be responsible for causing stress on the fifth metatarsal and account for all the stress fractures in any individual (Das et al 2009).

CASE REPORT

During routine dissection of a 55 years old male cadaver in department of Rachana Shareera, Sri Sri College of Ayurvedic Science Research, Bangalore. When Peroneus Tertius muscle of both legs was dissected from its origin to the insertion, we observed that, the Peroneus Tertius muscle have normal origin but the insertion of the tendon splits into two separate tendons at its terminal part. The tendon was accompanying with the Extensor Digitorum Longus one part of the tendon inserted on to the fifth metatarsal bone and the another part of the tendon inserted on to the shaft of the fifth metatarsal bone. Thus a rare bilateral dual tendineous insertion of the Peroneus Tertius was encountered (Fig -1, Fig -2, Fig -3 and Fig -4).

DISCUSSION:

Peroneus Tertius varies in size; it may be as large as the Extensor Digitorum Longus or it may be absent. This muscle is
peculiar to humans and represents the Extensor Digiti Minimi with its insertion displaced to the base of the fifth metatarsal bone. It often inserts on to the base of the fourth metatarsal as well. It is not so completely separated from the common extensor at its origin as is the corresponding muscle of the forearm. A slip occasionally joins the extensor tendons of the fourth and little toe or fourth interosseous, and represents the radial tendon of Extensor Digiti Minimi; its main tendon corresponds to the ulnar slip in the hand.

The other common variation of the Peroneus Tertius muscle is that the slips arise from fourth tendon of Extensor Digitorum Longus. This slip strengthens the muscle and helps in the action of Peroneus Tertius.

The variation of the Peroneus Tertius muscle and the fourth digitorum of the Extensor Digitorum Longus has a single belly where as their insertion are at their normal site.

Peroneus tertius is highly variable in its form and muscle bulk but is rarely completely absent. It may be attached to the fourth metatarsal rather than the fifth.

In this case the Peroneus Tertius muscle is normal in origin, but the insertion of the tendon splits in to two tendon slips at its terminal part, one slip inserted in to the shaft of the fifth metatarsal bone, and another tendon slip inserted in to the shaft of the fourth metatarsal bone. Such type of muscular variation is not noticed yet and such variation helps in prevention of Ankle ligament injury.

The slip generally arises after the tendon crosses the ankle joint, but in this case the slips separated at its terminal part.

The clinical importance of the Peroneus Tertius concerning prevention and treatment of ankle ligament injuries is low.

During the swing phase of gait electro-myographic studies show that Peroneus Tertius act with Extensor Digitorum Longus and Tibialis Anterior to produce dorsiflexion and eversion of the foot. This levels the foot and helps the toes to clear the ground, an action that improves the economy of bipedal walking. Peroneus Tertius is not active during stance phase, a finding that contradicts suggestions that it acts primarily to support the lateral longitudinal arch or to transfer the centre pressure of the foot to medially.

Peroneus Tertius may play a special proprioceptive role in sensing sudden inversion and then contracting reflexively to protect the anterior tibio-fibular ligament, the most commonly sprained ligament of the body.

CONCLUSION:

Our data indicate that during bipedalism, Peroneus Tertius functions along with Extensor Digitorum Longus and Tibialis anterior as a swing-phase muscle in order to level the foot and also help the toes to clear the ground. Presence of dual tendon of the Peroneus Tertius in both the legs, strengthen the support to the lateral longitudinal arch, as well as to the lateral ligament of the ankle.

The pull of the Peroneus Tertius may be responsible for causing stress on the fifth
metatarsal and accounts for all stress fractures in any individual.
In this case the pull of the Peroneus Tertius may be responsible for causing stress on the fifth and fourth metatarsal and accounts for all stress fractures in any individual.

Thus it can be stated that the knowledge of this variation of Peroneus Tertius muscle has scientific importance for the anatomist and the plastic surgeon and it is equally important for orthopedic surgeons in order to perform tendoplasty and other tendon transfer surgeries.

REFERENCES:

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