



Original Article

Peroneus Quartus Muscle: Its incidence and clinical importance

¹Dr.Umesh Rathod*, ²Dr. Shreyaskumar Kanuja, ³Dr.Gunwant Chaudhari.

^{1st* & 2nd} – Junior Resident Doctor, second year, Department. of Anatomy, Zydus Medical College & Hospital, Dahod, Gujarat,

^{3rd} – Professor and Head, Department. of Anatomy, Zydus Medical College & Hospital, Dahod, Gujarat,

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Corresponding Author:

Dr. Priyank Bhabhor*

Assistant Professor

Department of Anatomy

Zydus Medical College & Hospital,

Dahod, Gujarat

Priyank16985@gmail.com

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ABSTRACT

Introduction and objectives: Muscular variations in the lower limb are very common. They have been described by many authors when performing cadaveric dissections and when using the different imaging techniques. **Materials and Methods:** Twenty lowerlimbs of adult cadavers, were dissected. Lower limbs deformed by trauma, malformations and scars were excluded. The compartment was examined for the presence of an accessory muscle. If this is present, the dissection was extended and the site of its origin and insertion and passage in the reromalleolar groove was noted. **Result:** A peroneus quartus was present in 1(5%) of the 20 legs. Peroneus quartus are origin from the posterior intermuscular septum and inserted on to the retrotrochlear eminence of the calcaneus bone. **Conclusions:** This study will supplement our knowledge on the possible variations of the muscles in this region, which would be useful for lower limbs surgeons .

Keywords: Peroneus Quartus, Anomalous,

INTRODUCTION

Muscular variations in the lower limb are very common. They have been described by many authors when performing cadaveric dissections and when using the different imaging techniques. The presence of these muscle is frequently asymptomatic, but some times it can cause symptoms due to overcrowding and mechanical compression of adjacent structures. The lateral compartment of the leg contains the peroneus longus and peroneus brevis muscles. The peroneus quartus muscle is one of the accessory muscles present in the lateral compartment of the leg. It said to have been first depth in 1923 by Hecker(1) who estimated its incidence to be 13% in the general population. There are only few studies concerning this muscle.surgeons should be aware of the possible presence of peroneus quartus muscle, not only because of possible associated pathology, but also for use in surgical reconstruction. Various anatomists have described it and given it different names according to its various origins and insertions. Sobel, W Levy and Bohne(2) described the anatomical variations of the muscle in a cadaver study on 124 legs with particular reference to the origins and insertions of the defferent anomalous muscles in the lateral compartment and suggested that these should all be referred to as variants of the same muscle, the peroneus quartus. They showed that it was present in 21.7% of cadavers.

The peroneous quartus muscle, arises from the lower third of the fibula, peroneus brevis muscle,and/or peroneus longus muscle. However, its distal insertion has shown great variability, most often inserting onto the lateral surface of the calcaneus on the retrotrochlear eminence(3). Believed to be an evolutionary acquisition for bipedal gait, the peroneus quartus muscle is unique to humans, assisting with eversion of the lateral border of the foot, pronation of the foot against the walking surface, and lateral stabilization of the ankle(1-6). The peroneus quartus muscle was first described by Otto in 1861(3) and has since bbeen termed the peroneus sextus,peroneus calcaneus externus,peroneocuboidian,peroneus accessorius,peroneus medius(7), and paroneus muscle of the tarsus(1). Anatomist, surgeons, and radiologists have discovered slight variations in the distal insertion of the peroneus quartus, resulting in both increased and ambiguous nomenclature(8-11).

The reported points of insertion include (from proximally to distally):retrotrochlear eminence of the calcaneus, the fibular (peroneal) trochlea of the calcaneus,tendons of the fibularis longus and brevis muscle, the cuboid, and the fifth metatarsal

(10,12-14). In 1923, Hecker(1) classified the peroneus quartus variants into 3 categories according to the insertion onto the calcaneus(peroneocalcaneus externum)cuboid(peroneocuboideus), or tendon of peroneus longus(peroneoperoneolongus).However, the peroneoperoneolongus muscle is now referred to as the peroneus accessories(10,15,16).Other peroneus quartus variants include the peronea digiti minimi, which inserts onto the fifth metatarsal(10)and the peroneotalocalcaneus muscle(17). With so many variations of the peroneus quartus muscle, 2 studies attempted to resolve the nomenclature issues by suggesting that the peroneus quartus muscle inserts onto the lateral aspect of the calcaneus and variants of the muscle have other distal attachments(10,14,12,18).

This study aims at investigating the incidence, anatomical variations and possible pathology relating to the peroneus quartus muscle

MATERIALS AND METHODS

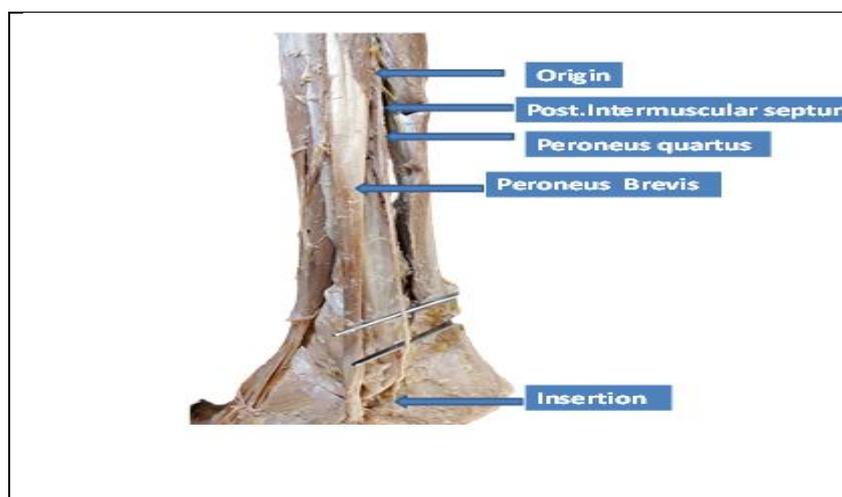
This study was conducted at the faculty of Department of anatomy, Zydus Medical College And Hospital, DAHOD, GUJARAT, JAN-2026.Twenty lower limbs of adult cadavers, were dissected to perform this study. Their ages range between 45 to 80 years old. Each limb was dissected by an incision which was start about 10cm proximal to the lateral malleolus and end 5 cm distal to it.The compartment was examined for the presence of an accessory muscle. If this is present, the dissection was extended and the site of its origin and insertion and passage in the retromalleolar groove was noted. All anatomical variations was registered, recorded and photographed.

Ethical Considerations:

All cadavers were source from pre-existing from Zydus Medical College and Hospital, Dahod, Gujarat, India, with institutional ethical approval ensuring respectful of human remains and adherence to ethical standards for anatomical research.

RESULTS

A peroneus quartus was present in 1(5%) of the 20 legs which were dissected (fig.1). The muscles which were identified different area of origins and insertions. This muscle was origin from the posterior intermuscular septum and inserted into the retrotrochlear eminence of the calcaneus bone (fig. 1),



(Figure. 1)

DISCUSSION

Knowledge of the anatomy of the peroneal muscles and its variations is important to surgeons dealing with pathologies in this region. There are no precise data on the incidence of the peroneus quartus muscle in the literature, and the studies are mainly based on the findings of many years ago(19).

In this study we found the incidence of peroneus quartus was 5%. In our specimens. Bhargava et al (20) gave the incidence of peroneus quartus as 15.5%. Reimen(21) reported the presence of peroneus quartus as 79.5%. Based on these data, Yammine(22) stated that there were differences regarding incidence of the muscle and declared that ethnicity was important in considering the incidence of peroneus quartus in each community.

In our specimen muscle was origin from the posterior intermuscular septum and inserted into the retrotrochlear eminence of the calcaneus bone, As previous reports, The most frequent origin was from the muscle fibres of peroneus brevis and its most frequent insertion was into the retrotrochlear eminence of the calcaneum.

CONCLUSION

Surgeon should be aware of the existence of this muscle, not only because of possible associated pathology, but also because of its potential use in reconstructive surgery. peroneal muscle which would be important for reconstructive foot surgeons attempting to repair this area. This study will supplement our knowledge on the possible variations of the muscles in this region, which would be useful for lower limbs surgeons.

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