

Case report

## RARE VARIATION OF THE PERONEUS TERTIUS MUSCLE

**Georgi P. Georgiev,  
Lazar Jelev,  
Desislava M. Paleva<sup>1</sup>,  
Nikolai K. Vidinov**

*Department of Anatomy,  
Histology and Embryology  
Medical University-Sofia  
<sup>1</sup>Department of Anatomy,  
Histology and Cytology  
Medical University-Pleven  
Bulgaria*

**Corresponding Author:**

Georgi P. Georgiev  
Department of Anatomy, Histology and  
Embryology  
Medical University Sofia  
1, Sv. Georgi Sofiiski blvd.  
Sofia, 1431  
Bulgaria  
e-mail: [georgievgp@yahoo.com](mailto:georgievgp@yahoo.com)

### Summary

In this report we present a rare case of a duplicated peroneus tertius muscle. The variant muscle was composed of two parts - proximal and distal. Both parts originated **consecutively** from the distal third of the fibula and prolonged in flat tendons that passed beneath the extensor retinaculum. Distally, the tendon of the proximal part crossed over that of the distal part and inserted into the base of the fifth metatarsal bone. The tendon of the distal part reached the dorsal surface of the base of the fourth metatarsal bone. We review the current literature concerning the variations of the peroneus tertius and emphasize on its significance for various reconstructive procedures of the lower limb.

**Key words:** duplication, peroneus tertius muscle, reconstructive surgery, lower limb

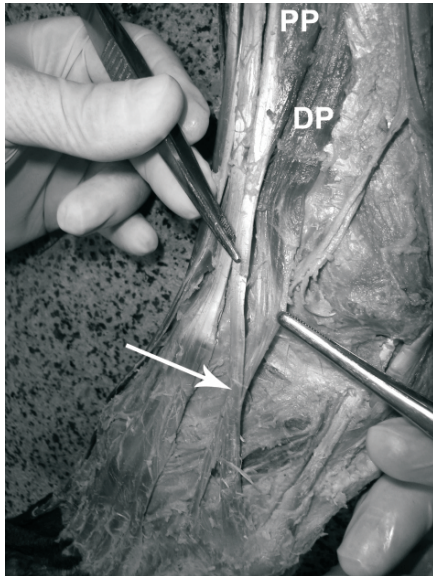
### Introduction

The peroneus (fibularis) tertius muscle is a part of the extensor digitorum longus muscle and might be described as its fifth tendon [1]. The peroneus tertius arises from the anterior distal third of the fibula, from the distal third of the interosseus membrane, and from the intermuscular septum and inserts with a flat tendon into the dorsal surface of the base of the fifth metatarsal bone. Functionally, this muscle extends the ankle and everts the subtalar joints [1].

In this report we presented a case of rare variation of the peroneus tertius and discussed its clinical significance for orthopedic practice.

### Case report

An interesting anatomic variation of peroneus tertius was observed during routine anatomical dissection of the left lower limb of a 60-year old Caucasian male cadaver (Fig. 1). The muscle was composed of two well-defined parts – proximal and distal. They originated **consecutively** from the distal third of the anterior surface of the fibula. The flat tendons of both parts passed beneath the superior and inferior extensor retinacula in company with the extensor digitorum longus. Distally, the tendon of the proximal part of the peroneus tertius crossed that of the distal part and inserted into the dorsal surface of the base of the metatarsal bone of the fifth toe. The tendon of the distal part reached the dorsal surface of the base of the fourth metatarsal bone.



**Figure 1.** Photograph of the peroneus tertius muscle variation. DP – distal part of the peroneus tertius; PP – proximal part of the peroneus tertius; arrow – cross slips of the DP and PP.

## Discussion

Different variations of the peroneus tertius could be found in the literature – absence; duplication; additional slip to the fourth metatarsal bone, to the extensor aponeurosis of the little toe, to the lateral tendon of the long extensor, to the corresponding tendon of the short extensor, to the fascia over the fourth interosseous muscle. These variations of the peroneus tertius have been reported to be present in 1.2 - 10.45% of the cases [1, 2, 3].

Due to the fact that the peroneus tertius action is not crucial for the eversion and dorsoflexion strength of the foot, this muscle is a useful tool in reconstructive foot surgery. The peroneus tertius could be used as a local muscle flap to fill lower limb soft tissue defects in treatment of osteomyelitis [4]. The orthopedics could fill the dead space with this kind of flap and thus improve the delivery of oxygen and nutrients [5, 6]. This muscle also has been used to correct ankle joint ligamentous laxity [5, 6, 7]. In addition, a free peroneus tendon graft has been used to reconstruct a ruptured tibialis anterior tendon [8].

## Conclusions

The reported here rare muscular variation is not only an interesting anatomical finding, but also could have definite clinical significance in various reconstructive procedures in lower limb surgery.

## References

1. Rourke K, Dafydd H, Parkin IG. Fibularis tertius: revisiting the anatomy. *Clin Anat.* 2007;20(8):946-9.
2. Joshi SD, Joshi SS, Athavale SA. Morphology of peroneus tertius muscle. *Clin Anat.* 2006;19(7):611-4.
3. Sokolowska-Pituchowa J, Miąskiewicz C, Skawina A, Makoś K. Morphology and some measurements of the peroneus tertius muscle in man. *Folia Morphol (Warsz).* 1974;33(2):91-103.
4. Arnold PG, Yugueros P, Hanssen AD. Muscle flaps in osteomyelitis of the lower extremity: a 20-year account. *Plast Reconstr Surg.* 1999;104(1):107-10.
5. Dockery GL, Toothaker J, Suppan RJ. A lateral ankle stabilization procedure utilizing the peroneus brevis and peroneus tertius tendons. *J Am Podiatry Assoc.* 1977;67(12):891-4.
6. Sammarco GJ, Carrasquillo HA. Surgical revision after failed lateral ankle reconstruction. *Foot Ankle Int.* 1995;16(12):748-53.
7. Witvrouw E, Borre KV, Willems TM, Huysmans J, Broos E, De Clercq D. The significance of peroneus tertius muscle in ankle injuries: a prospective study. *Am J Sports Med.* 2006;34(7):1159-63.
8. Gaulrapp H, Heimkes B. Peroneus tertius tendon repair following old traumatic rupture of the anterior tibial tendon (casuistry). *Unfallchirurg.* 1997;100(12):979-83.