# TARSAL TUNNEL SYNDROME CAUSED BY ANOMALOUS MUSCLE: CASE REPORT

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## ABSTRACT

**Accessory muscles within the tarsal tunnel have been reported as a rare cause of tarsal tunnel syndrome. The most common variation provoking this pathologic condition is the flexor digitorum accessorius longus muscle. Herein, we present a rare case of a patient with tarsal tunnel syndrome due to this muscular variation. The discussion of this case report can prompt foot and ankle surgeons to be more aware of this infrequent finding.**

**Key words:** *flexor digitorum accessorius longus muscle, tarsal tunnel syndrome*

## INTRODUCTION

In 1962 Keck and Lam independently described the tarsal tunnel syndrome (TTS) as entrapment neuropathy of the tibial nerve or one of its branches within the tarsal tunnel (3,5). The patients' complaints include pain and paresthesia corresponding to the sensory distribution of the tibial nerve distal to the ankle joint (2,7,8). Different etiologies have been described including trauma, space-occupying lesions, or skeletal deformities of the foot (7,8). The presence of a variant muscle could be a predisposing factor that may contribute to TTS (2,4,7,8).

We report a case of TTS caused by an accessory muscle arising from the flexor digitorum longus.

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## CASE REPORT

Herein, we present a rare case of tarsal tunnel syndrome due to an accessory muscle of the right foot in a 41-year-old woman that was successfully treated by excision of the aberrant muscle. The woman was brought to our department with a 6-months history of pain and paresthesia within the sensory distribution of the tibial nerve distal to the ankle. Physical examination revealed pain on palpation over the tibial nerve directly beneath the flexor retinaculum. The electromyographic analysis presented compression of the tibial nerve within the tarsal tunnel. During surgery, after division of the flexor retinaculum, an aberrant muscle was discovered within the tarsal tunnel. It originated from the medial aspect of the belly of the flexor digitorum longus muscle and was situated medially and posteriorly to the tibial nerve. The aberrant muscle belly was excised. Due to its morphological characteristics, the described variant muscle could be termed "flexor digitorum accessorius longus muscle" (FDAL).

Postoperative course was uneventful. One year after the operation the mild symptoms persisted and this prompted a new electromyographic study that

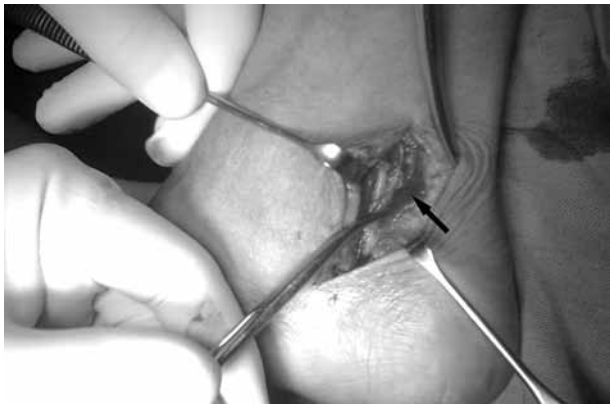

*Fig. 1. Intraoperative photograph presenting the anomalous muscle (arrow) originating from the medial aspect of the belly of the flexor digitorum longus muscle situated medially and posteriorly to the tibial nerve.*

revealed slightly decreased nerve conduction velocity within the tarsal tunnel.

## DISCUSSION

Accessory muscles are recognized as a cause of pressure on the median and ulnar nerves in the carpal tunnel and in Guyon's canal (2,7,8). However, less common TTS due to muscle variations is also reported (6,7,8). Sammarco and Stephens in 1990 were the first to report a case of TTS provoked by the presence of an accessory muscle (7).

Four accessory muscles have been found in the region of the tarsal tunnel: the peroneocalcaneus internus, the tibiocalcaneus internus, the accessory soleus, and the FDAL (7). The fourth variant, the FDAL, is described as the most common muscular variation in the tarsal tunnel provoking TTS, as in our case (7,8). Its incidence varies between 1-13% in different populations (1,2,9). This muscle has a variable origin: it may arise from the fibula, the tibia, the soleus, the flexor hallucis longus, the flexor digitorum longus, and the peroneus brevis and inserts into the flexor digitorum longus or the quadratus plantae. It courses through the tarsal tunnel beneath the flexor retinaculum, usually remaining deep to the neurovascular bundle but occasionally crossing it superficially (2,7,8).

The accessory muscular variations in the tarsal tunnel could also impede arthroscopy, confound radiographic interpretation and may increase the risk of vascular pathologies developing in the ankle region (2).

In conclusion, although rare, the variant muscles within the tarsal tunnel as a cause of tarsal tunnel syndrome should be always borne in mind by clinicians. As accessory muscles are congenital aberrations, they might produce occult compression of the nerve that could eventually become symptomatic later in life. We assume that the mild persisting symptoms in our patient one year after surgery are due to permanent changes within the nerve.

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