

FOUR SITES ORIGIN OF THE PLANTARIS MUSCLE AND ITS SURGICAL IMPORTANCE- A CASE REPORT

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ABSTRACT

The plantaris is an important muscle for the proprioceptive sense carrying to the central nervous system, also an important tendon for different types of reconstructive and other related plastic surgeries. A very less percentage but clinically very important variation was observed in the present study i.e. the muscle originated from four sites those are; From Supracondylar ridge, posterior surface of lateral condyle of femur, posterior part of the capsule of the knee joint and few slips of muscle fibers from the lateral patellar ligament, an incidence of 4.16%. This particular variation is observed bilaterally in one adult male cadaver. Further it is suggested that the study can be carried out in the living by using advance methods of investigations like MRI, scanning and electromyography techniques in various movements of the knee and ankle joints in collaboration with the Departments of Physiology, Orthopedics, Radiology, and the Sports medicine persons, to understand the function and also to take more advantage of this slender muscle in surgical grafting and other plastic surgeries.

Key Words: *Plantaris Muscle, Supracondylar Ridge, Femur, Knee Joint*

INTRODUCTION

The small fusiform Plantaris muscle, with its long slender tendon, is of great importance both from the anatomical and from the surgical aspect (Daseler et al., 1943). Isolated rupture of the Plantaris tendon is also one of the causes of pain in the calf. (Delgado GJ 2002). Many small, short muscles have been found to act across joints in parallel with much larger muscles, just like the Plantaris and triceps surae. They are named as parallel muscle combination (PMC), there believed to be nearly three dozen such PMC's in the extremities of man (Nitz et al., 1986). The Plantaris muscle has got highly variable anatomy like fibrous extensions to the patella, which may influence over knee function, stability, injury and rehabilitation. Here we are reporting a case of four headed origin of the Plantaris muscle which was encountered during a study.

CASES

Normal anatomy described in the standard text books, the Plantaris muscle originates from the lateral supracondylar line of the popliteal surface of femur just superior and medial to the lateral head of the gastrocnemius muscle as well as from the oblique popliteal ligament in the posterior aspect of the knee (Susan, 2008). In a 20 year old male cadaver the muscle arose from four sites of origin, i.e. Supracondylar ridge, posterior surface of lateral condyle, posterior part of the capsule of the knee joint and few slips of muscle fibers originated from the lateral patellar ligament. In this case the muscle presented was bilateral in a male adult cadaver. The figure 01 and figure 02 shows the left and right limb of the case respectively.

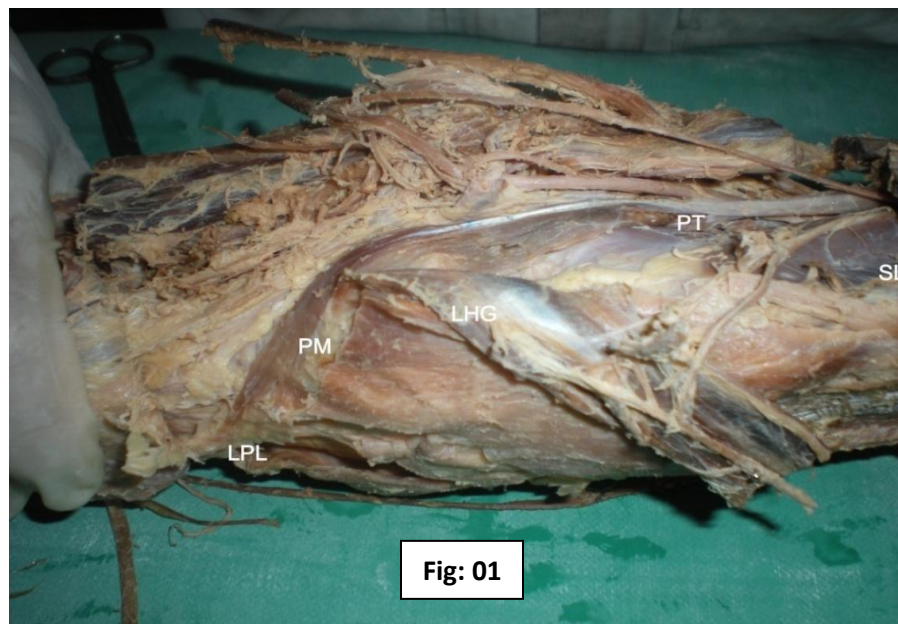


Figure 1: Key words: PM; Plantaris Muscle, LPL; Lateral Patellar Ligament, LHG; Lateral Head of Gastrocnemius, SL; Soleus, PT; Plantaris Tendon.

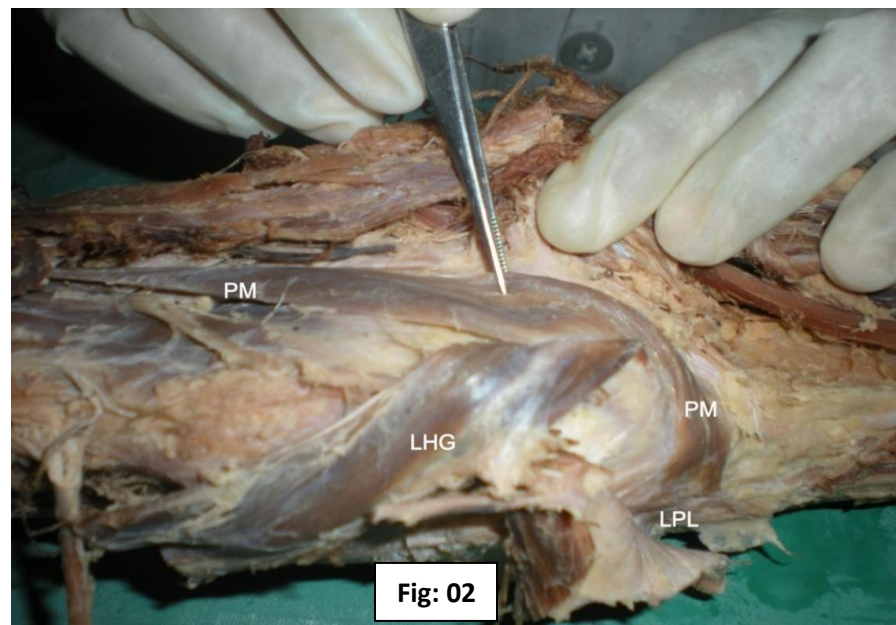


Figure 2: Key Words; PM; Plantaris Muscle, LPL; Lateral Patellar Ligament, LHG; Lateral Head of Gastrocnemius.

DISCUSSION

A very rare but clinically very important variation was observed in the present case i.e. the muscle originated from four sites those are; From Supracondylar ridge, posterior surface of lateral condyle of femur, posterior part of the capsule of the knee joint and few slips of muscle fibers from the lateral patellar ligament. This particular variation is observed bilaterally in one adult male cadaver. This type of origin is also reported only by Freeman *et al.*, (2008) in 5 of 46 cadaveric knees, an incidence of 10.87%

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and also 9 cases of interdigitations with the lateral head of gastrocnemius, an incidence of 19.6% (Freeman *et al.*, 2008).

This type of variation may influence the knee function and stability, consequently allowing the Plantaris muscle to have varying roles in knee dynamics, injury and rehabilitation. The muscles contributing to PFPS (Patellofemoral pain syndrome) include quadriceps, hamstrings, triceps surae, and tensor fascia lata muscles. Common causes of PFPS are asymmetrical balance of the muscles and tendons attaching to the patella that result in medial or lateral displacement, (Callaghan *et al.*, 2004). hence the Plantaris originating from LPL(Lateral patellar ligament) which is the extension of tendon of vastus Lateralis, will affect the knee dynamics.

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