

A biceps plantaris in the popliteal region - case report

Sachin Soni, Alok Saxena, Tuhin Ghulyani and Amal Rani-Das

Department of Anatomy, Veer Chandra Singh Garhwali Government Medical Science & Research Institute, Srikot, Uttarakhand, India

SUMMARY

A double plantaris muscle was observed in the right popliteal fossa during undergraduate medical dissection which was performed on a male cadaver of about 40 years. Its proximal belly originated from the lower part of the lateral supracondylar ridge, and the distal belly from the posterior aspect of the lateral femoral condyle. Both bellies had a single long tendon inserted into the calcaneum. After careful dissection, the muscle was observed to be innervated by the tibial nerve.

Key words: Accessory knee muscle – Popliteal region – Tennis leg – Triceps Sural

INTRODUCTION

Plantaris, a small fusiform muscle may arise from (a) the inferior division of linea aspera; (b) the posterior ligament of the knee; (c) fascia covering the popliteus muscle; (d) the fibula, between the flexor hallucis longus and the fibularis longus; (e) the oblique line of tibia; or (f) the lateral femoral condyle above the origin of the lateral head of the gastrocnemius. Insertion of plantaris has been reported with considerable variations. Plantaris may be inserted on (a) the soft tissues between gastrocnemius and soleus; (b) the inner border of the tendo achillis; (c) the dorsomedial surface of the calcaneal tendon; (d) the bursa between tendocalcaneus and cal-

caneum; (e) the fibrous tissue present in front of the calcaneum tendon; or (f) plantar aponeurosis (Le Double, 1897). Following variations of plantaris have been reported: 1) biceps plantaris; 2) incomplete form, i.e muscle missing in part of their length; 3) absence of muscle; 4) fusion with neighbouring muscles (Testut, 1884). Long tendon of plantaris is referred as freshman's nerve. This muscle is considered as vestigial in humans, since it had its primitive attachment to the plantar aponeurosis, as is seen in some quadrupedal primates (Daseler and Anson, 1943). Injury of this muscle and tendon is known as "tennis leg", characterised by pain in the posterior part of the knee (Spina, 2007).

CASE REPORT

A rare dual plantaris with considerable thickness was observed in the right knee of a male cadaver during routine dissection. The dissected cadaver was an unclaimed male body, aged about 40 years, brought to the anatomy department as per law of our country. We did not find such variation in the left knee. We found the proximal belly of plantaris (P_P) arising from the lower lateral supracondylar ridge and the distal belly of plantaris (P_D) from the posterior aspect of the lateral condyle of the femur (Fig. 1). Both muscle bellies were merging with each other, forming a long tendon running posteromedially between the gastrocnemius and the soleus and, inserting on the calcaneum. This variation was found fusing with the lateral head of gastrocnemius. The gastrocnemius, soleus and plantaris tendon were dissected for clear visualisation. Morphometric measurement was taken

Corresponding author: Alok Saxena. Department of Anatomy, Veer Chandra Singh Garhwali Government Medical Science & Research Institute, Srikot, Uttarakhand, India.
Tel: +919897699599. E-mail: alok.sxna@gmail.com

Submitted: 1 January, 2013. Accepted: 20 June, 2013.

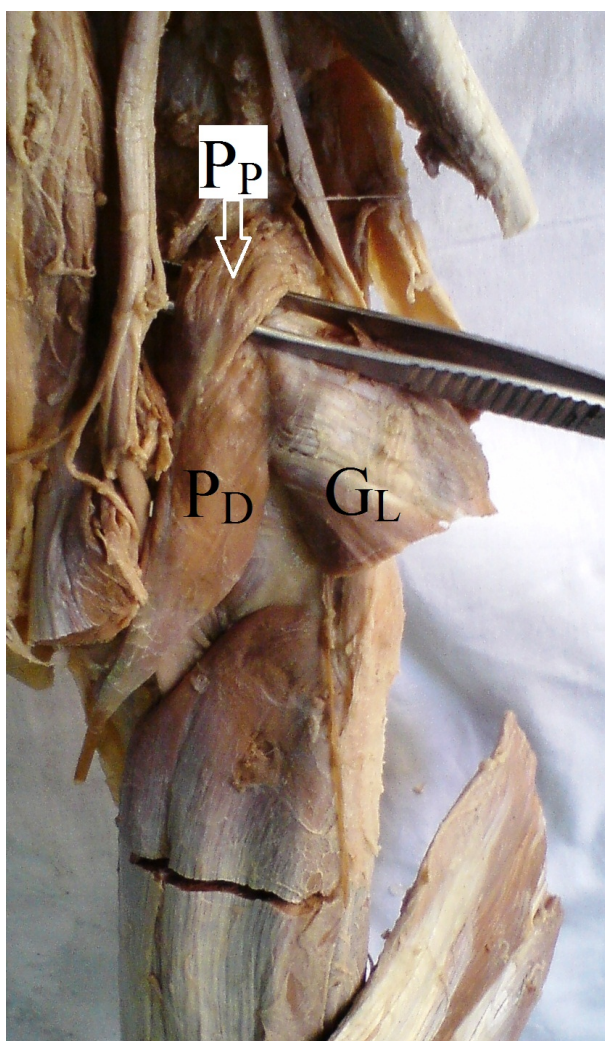


Fig. 1. Dissection showing both the proximal plantaris (P_p) and distal plantaris (P_d). Note the thick variant plantaris merging with the lateral head of the gastrocnemius (G_L).

and photographed. The proximal belly was 6 cm long, and P_d was 11cm long with 18.4 cm length of plantaris tendon. Plantaris was supplied by the tibial nerve.

DISCUSSION

Dual origin of plantaris is a rare case. Very few studies have described this variation. Unilateral double plantaris muscle was observed in a right knee with anomalous muscle belly of 1.44 cm and a usual belly of 1.27 cm with along tendon providing calcaneal attachment (Kwintner et al, 2010). Two bellies of plantaris with length of 9 cm and 7.5 cm were exposed in a female cadaver

(Upasna and Ashwani, 2011). Another cadaveric study revealed a dual plantaris bilaterally. Outer and inner bellies were measured 4 cm and 2 cm respectively in the right leg. Left plantaris was measured 5 cm and 2 cm in length with respect to outer and inner bellies (Rana et al, 2006). A MRI study conducted on 1,000 knees exposed 63 accessory plantaris. Origin of 62 additional plantaris was merged with origin of normal plantaris and one was fused with origin of lateral head of gastrocnemius. These muscles inserted into iliotibial band, lateral patellar retinaculum or iliotibial tract (Herzog, 2011). Plantaris tendon is used for reconstruction of hand tendons, lateral ankle ligaments and for atrioventricular valve repair (Aragao et al, 2010).

In the present finding, the accessory belly had considerable thickness and length if compared with previous literature. This variation may mimic neoplasm while palpation. Therefore, patients with undefined leg pain should be examined carefully.

REFERENCES

- ARAGAO JA, REIS FP, GUERRA DR, CABRAL RH (2010) The occurrence of Plantaris Muscle and its Muscle- Tendon Relationship in Adult Human Cadaver. *Int J Morphol*, 28: 255-258.
- DASELER EH, ANSON BJ (1943) The plantaris muscle: an anatomical study of 750 specimens. *J Bone Joint Surg Am*, 25: 822-827.
- HERZOG RJ (2011) Accessory plantaris muscle: anatomy and prevalence. *HSSJ*, 7: 52-56.
- KWINTER DM, LAGREW JP, KRETZER J, LAWRENCE C, MALIK D, MATER M, BRUECKNER JK (2010) Unilateral double plantaris muscle: a rare anatomical variation. *Int J Morphol*, 28: 1097-1099.
- LE DOUBLE AF (1897) *Traité des variations du système musculaire de l'homme et de leur signification au point de vue de l'anthropologie zoologique*, pp: 314-318. Librairie C. Reinwald, Schleicher Frères, Paris.
- RANA KK, DAS S, VERMA R (2006) Double plantaris muscle: a cadaveric study with clinical importance. *Int J Morphol*, 24: 495-498.
- SPINA AA (2007) The plantaris muscle: anatomy, injury, imaging and treatment. *J Can Chiropr Assoc*, 51: 158-165.
- TESTUT L (1884) *Les anomalies musculaires chez l'homme*. Masson, Paris, pp 659-669.
- UPASNA, KUMAR A (2011) Bicipital origin of plantaris - a case report. *Int J Anat Variations*, 4: 177-179.