Case Report

BILATERAL PRESENTATION OF TENSOR FASCIA SURALIS MUSCLE IN A MALE CADAVER

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ABSTRACT

Tensor fascia suralis muscle is an anomalous muscle located in popliteal fossa. The muscle may arise from any of the hamstring muscles and is inserted into the crural fascia or tendocalcaneus. We found tensor fascia suralis muscle in a male cadaver taking origin from medial side of tendon of biceps femoris muscle. The tendinous origin was then transformed into a well defined fusiform belly in the roof of popliteal fossa. After traversing downwards and medially the muscle again became tendinous to get inserted into deep fascia of leg. Bilateral presentation of the anomalous muscle is not yet documented in literature.

The anatomical relation of the muscle explains its great clinical importance. The tendinous origin was anteriorly related to sciatic nerve and the muscle belly to the tibial nerve. Sural nerve and short saphenous vein were in lateral relation to the muscle. Contraction of muscle in the roof of popliteal fossa may lead to sciatic, tibial or sural nerve neuropathy. The muscle can confuse the physician of a soft tissue mass or an aberrant vessel. Hence, the bilateral presence of tensor fascia suralis muscle is documented for further references.

Clinical Significance: The precise knowledge of anatomy of popliteal region is mandatory for the surgeons to perform safe and uncomplicated surgery in and around popliteal fossa and also for radiologist for correct radiographic interpretations.

KEYWORDS: Tensor Fascia Suralis Muscle, Anomalous Muscle, Neuropathy, Aberrant Vessel.

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INTRODUCTION

Tensor fascia suralis muscle (TFSM) is a rare anomalous muscle located in the popliteal fossa. It is an anatomical variant with anomalous origin and insertion [1]. TFSM may arise from the distal aspect of any of the hamstring muscles; majority of reported cases states the origin from distal part of semitendinosus muscle. It may insert into the posterior fascia of the leg, into the medial head of gastrocnemius or through a thin long tendon into the superficial part of the tendo calcaneus [2-5].

We found tensor fascia suralis muscle bilaterally during routine undergraduate dissection in

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our department. The case was discussed to enhance the knowledge of the morphology of the popliteal region. Such morphological variations may lead to error in both diagnosis and treatment. Hence, this report will guide the radiologists and surgeons during diagnosis and treatment of muscular diseases in and around popliteal fossa.

CASE REPORT

During routine educational dissection of the lower limb by medical students in our department, a variant muscle was found in the popliteal region. The anomalous muscle was located bilaterally immediately under the popliteal fascia in a 54 year old male cadaver bilaterally. After careful dissection and cleaning the superficial fascia and fat, the muscle was traced throughout to locate its attachments, course and relations (Fig.1).

On left side, TFSM was taking origin from the ischial tuberosity along with long head of biceps femoris and semitendinosus muscle in the form of a common tendon instead of arising from a hamstring as mentioned above. The length of this tendinous origin was 27.5 cm. In the roof of popliteal fossa, the tendon was transformed into a well defined fusiform muscle belly having the dimensions (L-12.5 cm, width 1.7cm and thickness 1.6 cm). After running distally and medially the muscle belly transformed again into a long tendon (L- 5.5 cm) which fanned out to be inserted into the deeper part of the deep fascia of crural region. The total length of the muscle was 45.5 cm. The sciatic nerve was in anterior relation to the tendinous origin and tibial nerve was anteriorly placed to the fusiform muscle belly.

Fig. 2: Tensor Fascia Suralis Muscle (red star) is taking origin from medial aspect of biceps femoris muscle and is inserted into the deeper part of sural fascia (blue arrow). Sciatic nerve and common peroneal nerve are in anterior relation of the anomalous muscle and the small saphenous vein (blue star) and sural nerve (yellow star) lies laterally.

The TFSM, on right side was arising from the tendon of biceps femoris muscle in upper part of popliteal fossa with a length of 4.6 cm. The fusiform muscular belly was smaller in comparison to its left counterpart with dimensions of (muscle belly L-11.5 cm, width-1 cm and thickness 1.3 cm). After running downwards and medially for about 5cms, the tendon became aponeurotic that spread out slightly to insert into the deep surface of the sural fascia halfway down the leg. The muscle was 21.1 cm in full length. The right muscle was shorter in length in comparison to left which was 45.5 cm. Nerve supply to the TFSM was through the tibial nerve in both limbs.
The anatomical relations of tendon of 5.5 and 5 cm are of great clinical importance. Superior part of the muscle was situated between the biceps femoris and semitendinosus; the lower part, its tendon was posterior to the gastrocnemius; the popliteal vessels and tibial nerve were lying anterior to the muscle. The sural nerve and short saphenous vein were in immediate lateral relation to the tensor fascia suralis muscle on both right and left sides.

**DISCUSSION**

The present findings are similar to the first case reported by KELCH (1813). He discovered a muscle which originated from the medial aspect of the long head of the biceps femoris and inserted into the tendo calcaneus and termed it tensor fasciae suralis [2-6]. According to statements of previous authors, a muscle which originates from semitendinosus, long head of the biceps femoris or from both of the above-mentioned muscle and inserts into the sural fascia or the tendo calcaneus can be termed the tensor fasciae suralis [2-4]. Consequently, the muscle found in this case report shall be regarded as tensor fasciae suralis. The TFSM have been reported unilaterally in literature summarized in Table 1. To the best of our knowledge, bilateral presentation of TFSM is not documented in literature till date.

**Table 1:** Details of origin and insertion of TFSM described by Previous Authors.

<table>
<thead>
<tr>
<th>S No</th>
<th>Author</th>
<th>Year</th>
<th>Origin</th>
<th>Insertion</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kelch [4]</td>
<td>1813</td>
<td>Biceps femoris</td>
<td>Tendocalcaneus</td>
</tr>
<tr>
<td>2</td>
<td>Halliburton [4]</td>
<td>1881</td>
<td>Biceps femoris</td>
<td>Tendocalcaneus</td>
</tr>
<tr>
<td>3</td>
<td>Turner [4]</td>
<td>1884-5</td>
<td>Biceps femoris and linea aspara</td>
<td>Tendocalcaneus</td>
</tr>
<tr>
<td>4</td>
<td>Gruber [4]</td>
<td>1897</td>
<td>Biceps femoris</td>
<td>Sural fascia</td>
</tr>
<tr>
<td>7</td>
<td>Mogi [4]</td>
<td>1940</td>
<td>Semitendinosus</td>
<td>Sural fascia</td>
</tr>
<tr>
<td>8</td>
<td>Nonoka [4]</td>
<td>1954</td>
<td>Two heads-lateral from biceps femoris and medial head from semitendinosus</td>
<td>Sural fascia</td>
</tr>
<tr>
<td>9</td>
<td>Miyauchi R [4]</td>
<td>1985</td>
<td>Two heads-medial from semitendinosus lateral from long head of the biceps femoris.</td>
<td>Sural fascia</td>
</tr>
<tr>
<td>10</td>
<td>Gupta RK et al [3]</td>
<td>2006</td>
<td>Two heads Biceps Femoris and Semitendinosus</td>
<td>Between the two heads of Gastrocnemius</td>
</tr>
<tr>
<td>11</td>
<td>Present study</td>
<td>2015</td>
<td>Tendon of long head of Biceps femoris</td>
<td>Deeper part of Sural fascia.</td>
</tr>
</tbody>
</table>
CONCLUSION
The present case will add to the existing knowledge of anatomy of the popliteal region and will guide the surgeon during various operative procedures in and around the knee. It will also be helpful to radiologist in interpretation of the ultrasonographic and MRI images correctly. Hence, proper knowledge of muscular variations is essential not only for anatomists and surgeons, but also for radiologist.

Conflicts of Interests: None

REFERENCES

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