

Hamstring Nerve: A Case Report

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Abstract: Hamstring muscles which arise from ischial tuberosity are supplied by muscular branches from tibial part of sciatic nerve, while short head of biceps femoris is supplied by common peroneal part of sciatic nerve. During Bilateral lower limb dissection of formalin preserved 45 year old male cadaver in the Post-graduate Department of Anatomy Government Medical College Srinagar we came across a case where the hamstring muscles arising from ischial tuberosity including the ischial part of adductor magnus were supplied by a common nerve arising below piriformis medial to the main sciatic nerve.

Keywords: Gluteal region, Piriformis, Sciatic nerve, Common peroneal nerve

INTRODUCTION

Sciatic nerve is the thickest nerve in the body about 2cm wide at its origin [1, 2]. It arises from the sacral plexus. It is composed of two parts; the tibial part and the common peroneal part [1, 3]. Tibial part arises from the anterior division of the sacral plexus (L4 L5 S1 S2 S3) while as common peroneal part arises from the posterior division of the plexus (L4 L5 S1 S2) [1, 4]. The two parts of the sciatic nerve are contained in common epineural sheath till they separate. The sciatic nerve after leaving the pelvis passes through the greater sciatic foramen below piriformis [1, 5]. The nerve passes along the back of the thigh and divides into tibial and common peroneal parts at the upper part of the popliteal fossa [1]. However the level of bifurcation is variable from pelvis to the upper part of the popliteal fossa [6]. In the thigh tibial part supplies hamstring muscles all the branches arising from the medial side of sciatic nerve. The common peroneal part supplies the short head of biceps femoris in the thigh. The branch to the short head of biceps femoris arises from the lateral side of the sciatic nerve [4, 7]. Since sciatic nerve supplies all knee flexors and all muscles of lower limb below knee, so injury to sciatic nerve may affect the knee as well as foot [8]. The most common cause of sciatic nerve injury is iatrogenic mostly due to inadvertent intramuscular injections in the gluteal region [9]. The safest site for intramuscular injections in the gluteal region is the upper outer quadrant [10]. Sciatic nerve can also be damaged during posterior

dislocation of hip joint. Hamstring muscles can be affected when there is injury to sciatic nerve in the gluteal region or in the pelvis in this case the flexion of the knee will be affected.

Variations in the divisions of sciatic nerve into the tibial and common peroneal nerve from the pelvis to the popliteal fossa have been reported [11]. Various clinical syndromes are associated with these anatomical variations [12]. These clinical syndromes include sciatica, piriformis syndrome, and coccygodynia [13].

Clinical variations should be kept in mind while performing various procedures in the gluteal region and the thigh [13]. Although higher level of division of sciatic nerve is frequent but the nerve supply to hamstring muscles arise separately from the medial side of sciatic nerve or in case of higher division of sciatic nerve, these nerves arise from the tibial nerve directly.

CASE REPORT

Ethics: The procedures followed were in accordance with ethical standards of handling of cadaver for learning and teaching.

During routine dissection, in the Post-graduate Department of Anatomy, Govt. Medical College, Srinagar, the variation was noticed. A formalin-fixed male cadaver aged 45 years whose case history and

cause of death is not known was dissected. Exposure of the gluteal region was done following classical incision and dissection procedures. While dissecting the gluteal region and the back of thigh, it was found that a separate nerve passed below piriformis between inferior gluteal nerves and the sciatic nerve (Fig. 1). On tracing down, it was observed that the nerve gave branches to semitendinosus, semimembranosus, long head of biceps femoris and ischial part of adductor magnus. The main sciatic nerve gave branch to short head of biceps femoris from its lateral aspect (Fig. 2). The bifurcation of the sciatic nerve into its two divisions occurred at the upper part of popliteal fossa.



Fig. 1: Arrow showing Hamstring nerve between main sciatic nerve (right) and inferior gluteal nerve (left)



Fig. 2: Arrow to the left showing main sciatic nerve and arrow to the right showing nerve to short head of Biceps femoris

DISCUSSION

Hamstring muscles which arise from the ischial tuberosity are supplied by tibial part of sciatic nerve. The muscular branches arise separately from the medial aspect of sciatic nerve at different levels. Sciatic nerve bifurcation into tibial and common peroneal

nerves is variable [14]. The bifurcation can occur anywhere from pelvis to popliteal fossa [15]. Moore reported that in higher division of sciatic nerve, common peroneal nerve passed through the piriformis and the tibial nerve passed below piriformis in 12.2% of the specimens dissected while in 0.5% cases common peroneal nerve passed above piriformis and tibial nerve passed below piriformis [1]. Invariably branches to the hamstring muscles arising from ischial tuberosity are given from medial side of sciatic nerve at different levels while branch to common peroneal nerve is given from the lateral side of sciatic nerve.

In our present case report we came across a case where a separate nerve arised from sciatic nerve below piriformis. This nerve supplied the hamstring muscles arising from ischial tuberosity. Since such a case is not reported earlier, we assigned this nerve the name as hamstring nerve. Knowledge of muscular branches of sciatic nerve to hamstring muscles is important while dealing with various clinical syndromes associated with sciatic nerve. It is also important while doing certain procedures like intramuscular injections in the gluteal region and in posterior approach to the hip joint. Since in the present case a separate branch arising below piriformis medial to sciatic nerve supplied the hamstring muscles except the short head of bicep femoris so there are chances of this nerve involvement in various procedures in the gluteal region.

CONCLUSION

Sciatic nerve is at risk of injury while giving intramuscular injections at gluteal region. It is also at risk during posterior approach for hip joint. Since we came across with a case of separate nerve for hamstring muscles which if present is at risk of injury during certain procedures in the gluteal region. Moreover while anesthetizing sciatic nerve for certain surgical procedures in the lower limb, this nerve can escape anesthesia, thus it is concluded that care must be taken while performing procedures in gluteal region owing to presence of this nerve, though, a very rare anomaly.

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