

Bilateral Eventration of Sciatic Nerve - A Case Report

NEELAM BALA, JAGDEV SINGH KULLAR, RAJAN KUMAR SINGLA, RAVI KANT SHARMA

ABSTRACT

The sciatic nerve is the thickest nerve in the body and it forms a band in its upper part about 2cm wide. It is the largest nerve of the body with a long course. It begins in pelvis and terminates at the superior angle of popliteal fossa. It controls hamstrings and all muscles of the lower limb below the knee. We are reporting an anomalous bilateral division of the sciatic nerve in a 45 years old male cadaver, sciatic nerve divide into tibial and common peroneal nerves was found to be in the pelvic region

instead of its normal level of division which is considered to be the upper angle of popliteal fossa, this condition is referred to as eventration of sciatic nerve. The variation in division of sciatic nerve in general population needs to be kept in mind so as to create awareness among surgeons, anesthetists and anatomist about the degree and extent of variation in sciatic nerve division. This type of variation may lead to failed sciatic nerve block during pain management or any other lower limb surgeries.

Keywords: Common peroneal nerve, Human cadaver, Pelvic cavity, Piriformis muscle, Tibial nerve

CASE REPORT

During the routine dissection classes for the undergraduate students in the Department of Anatomy, Government Medical College, Amritsar, bilateral eventration of sciatic nerve within the pelvis was observed in a male cadaver. In our case sciatic nerve divides in the pelvis by giving two branches i.e. Tibial and common peroneal nerve. In gluteal region, the tibial nerve passed below the piriformis muscle and common peroneal nerve passed between the fibres of piriformis muscle. On tracing the nerves back into the pelvis, it was observed that they were originating from lumbosacral trunk on both sides. On right pelvic region, tibial nerve had the root value L4-S2, and common peroneal nerve, had root value L4-S1 and on left pelvic region, tibial nerve had root value L4-S3 and common peroneal nerve, had root value L4-S1. So sciatic nerve divide at its abnormal level of division into its terminal branches in the pelvic region instead of upper angle of popliteal fossa which was the normal level of division [Table/Fig-1-4].

DISCUSSION

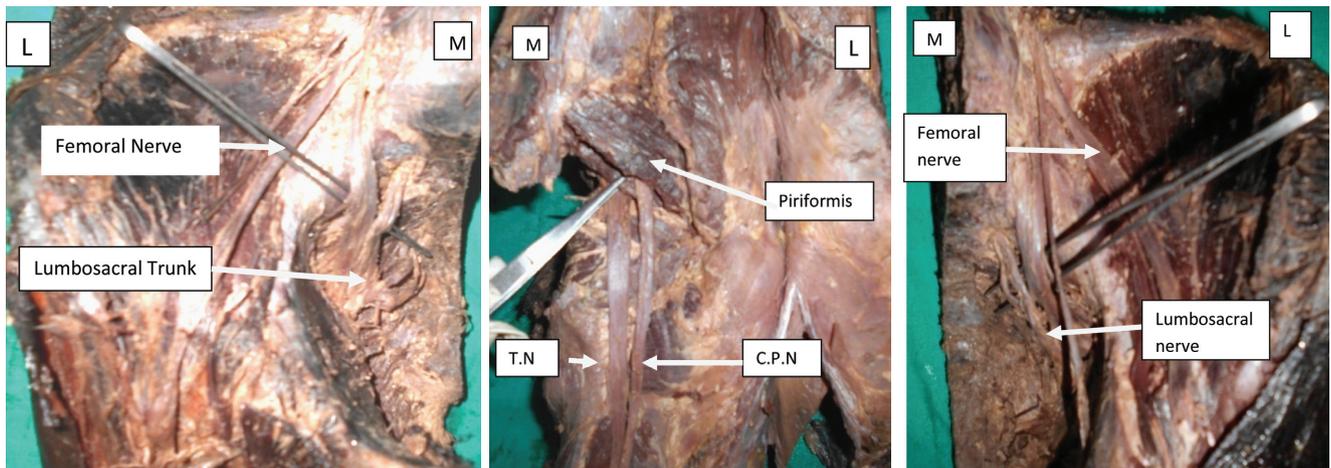
Sciatic nerve is the largest branch of the sacral plexus. The sciatic nerve normally divides into tibial and common peroneal nerves at the level of the upper angle of popliteal fossa. Tibial nerve is derived from the anterior divisions of the lumbosacral plexus (L4, L5, S1-S3) and common peroneal nerve also called

common fibular nerve is derived from the posterior divisions of the lumbosacral plexus (L4, L5, S1, S2) [1].

In pelvis sciatic nerve lies in front of piriformis and it enter in gluteal region through greater sciatic foramen below the piriformis muscle. It runs downward between ischial tuberosity and greater trochanter as single epineural sheath. Sciatic nerve may divide in its terminal branches from its origin in the pelvic region. Many variations have been reported for its course and distribution. The point of division of the sciatic nerve into its major components (tibial and common fibular nerve) is very variable. The common site is at the junction of the middle and lower thirds of the thigh, near the apex of the popliteal fossa, but the division may occur at any level above this point, and rarely may occur below it [2].

According to Shrivastava et al., this type of variation is most likely to be resulted from stochastic process of separation. It may divided into dorsal and ventral component in early embryonic stage and maintain their identity, although joined together to form a single trunk by a common connective tissue sheath [3].

There are enough references in the literature for the embryological developmental formation of sciatic nerve, it is possible that the common peroneal and the tibial nerve division of the sciatic nerve separate from each other at different levels from their origins within pelvis, in the gluteal region, in



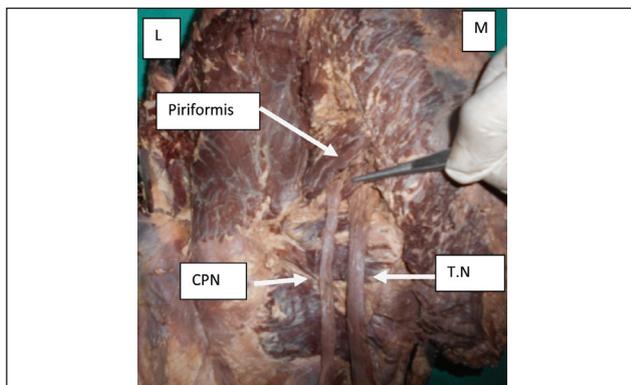
[Table/Fig-1]: Front view of right pelvis in a male cadaver, showing right femoral nerve and right lumbosacral trunk.

[Table/Fig-2]: Right gluteal region, showing the branches of sciatic nerve in the same cadaver and also showing tibial nerve passing inferior to the piriformis muscle and common peroneal nerve passing through the fibres of piriformis muscle.

[Table/Fig-3]: Front view of left pelvic region in a male cadaver, showing left femoral nerve and left lumbosacral trunk.

*TN - Tibial nerve (L4-S2)

CPN - Common peroneal nerve (L4-S1)



[Table/Fig-4]: Left Gluteal region, showing branches of sciatic nerve in the same cadaver and also showing in tibial nerve passing inferior to the piriformis muscle and common peroneal nerve passing through the fibres of piriformis

*TN-tibial nerve (L4-S3) and CPN-common peroneal nerve (L4-S1)

the posterior compartment of the thigh and at the apex of popliteal fossa. Various studies have been reported on the level of sciatic nerve division into tibial and common peroneal nerve [3]. Patil et al., reported a case unique formation of sciatic nerve below the piriformis muscle [4].

Compression of sciatic nerve anywhere during its course may contribute to clinical conditions like "sciatica" and "Piriformis syndrome", it results in numbness of lower limb (sleeping foot) Entrapment of the nerve within the piriformis muscle is one of the reasons of its compression, the condition being called "Piriformis syndrome". Sciatic pain patterns, compression of the L4 nerve can result in pain radiating from lower back down to the knee and compression of S1 nerve can result in pain radiating down to the foot. Treatment of sciatica is

targeted at the spine while in Piriformis syndrome muscle may be thinned, divided or excised and obturator internus, gemelli and quadratus femoris muscle can compensate for the loss of piriformis function because of same point of insertion [5].

High division of sciatic nerve may lead to failed sciatic nerve block or incomplete block even after multiple punctures and attempts. During the sciatic nerve block, the local anesthesia is infiltrated into the connective sheath around the nerve and if the sciatic nerve is present as separately sheathed bundles up to the lower gluteal level [6].

CONCLUSION

Bilateral eventration of sciatic nerve is not a very common condition but, it must always be kept in mind as this is important clinically for surgeons dealing with compressive neuropathy, orthopedicians operating on fracture of femur, anesthetist performing pain management, physiotherapist doing electromyography for evaluation and recording electrical activity produced by skeletal muscle and in sports medicine. Lack of knowledge of such type of variation might complicate surgical repair.

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