

**ANATOMICAL VARIATIONS IN DIVISION OF SCIATIC NERVE- A
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ABSTRACT

Lower extremity consists of many important nerves. One of them is the sciatic nerve. The sciatic nerve originates from the sacral plexus and comes in the gluteal region below the piriformis muscle. Usually descends downwards from the posterior aspect of the thigh through hamstring muscles. At the superior angle of the popliteal fossa, it usually gets divided into common peroneal nerve and tibial nerve. This bifurcation point or region of the sciatic nerve may vary. It may present in the gluteal region itself below the piriformis muscle or in the pelvis region or tibial nerve comes below the piriformis muscle and the common peroneal nerve pierces the piriformis muscle and enters the gluteal region and also at the superior angle of the popliteal fossa. In this cadaveric case study, the sciatic nerve was found divided into the tibial and the common peroneal nerves below the piriformis muscle in

the gluteal region. The same arrangement of sciatic nerve was present in right and left extremities. So, this information can be useful for the clinicians, surgeons. These facts can be useful in intramuscular injections, sciatic nerve block, hip region surgeries etc.

KEY WORDS: Sciatic nerve, division of sciatic nerve, Piriformis muscle.

INTRODUCTION

The sciatic nerve is the thickest nerve in the human body. In its upper part, it forms a band about 2cm wide. It begins in the pelvis and terminates at the superior angle of the popliteal fossa by dividing into tibial and common peroneal nerves.

Origin and root value

This is the largest branch of the sacral plexus. Its root value is L4, L5, S1, S2 and S3. It is made up of two parts, the tibial and the common peroneal part. The tibial part is formed by the ventral divisions of the anterior primary rami of L4, L5, S1, S2 and S3. The common peroneal part is formed by the dorsal divisions of the anterior primary rami of L4, L5, S1 and S2.

Course and relations**In the pelvis**

The nerve lies in front of the piriformis, under cover of its fascia.

In the gluteal region

The sciatic nerve enters the gluteal region through the greater sciatic foramen below the piriformis. It runs downwards with slight lateral convexity, passing between the ischial tuberosity and the greater trochanter. It has the relations in the gluteal regions as, superficial or posteriorly, gluteus maximus and sometimes posterior cutaneous nerve of the thigh. Deep or anteriorly, body of the ischium, nerve to quadratus femoris, tendon of obturator internus with gemelli, quadratus femoris, obturator externus and ascending branch of the medial circumflex femoral artery. Medially, inferior gluteal nerve and vessels and sometimes posterior cutaneous nerve of the thigh.

In the Thigh

The sciatic nerve enters the back of the thigh at the lower border of the gluteus maximus muscle and runs vertically downwards up to the superior angle of the popliteal fossa, at the junction of upper two third and lower one third of the thigh, where it terminates by dividing into the tibial and the common peroneal nerves. Posteriorly, sciatic nerve is crossed by the long head of the biceps femoris. Anteriorly, the nerve lies on the adductor magnus muscle. Medially, posterior cutaneous nerve of the thigh and the semitendinosus and laterally, biceps femoris.

The sciatic nerve is accompanied by a small companion artery which is the branch of the inferior gluteal artery.

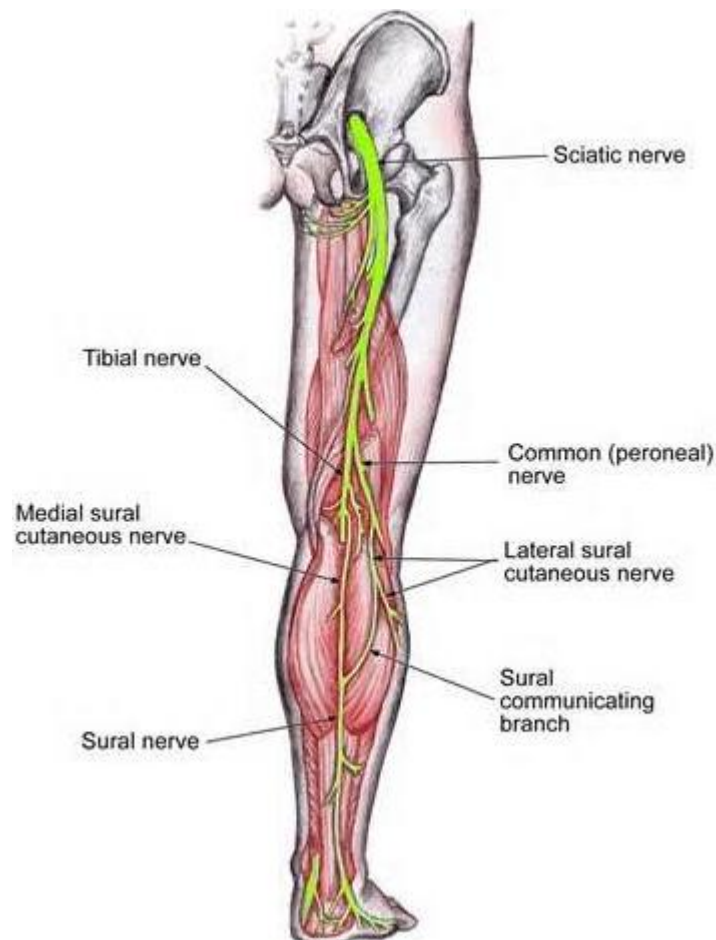


Photo 1 – Branching of Sciatic Nerve above the Popliteal fossa.

VARIATIONS OF SCIATIC NERVE

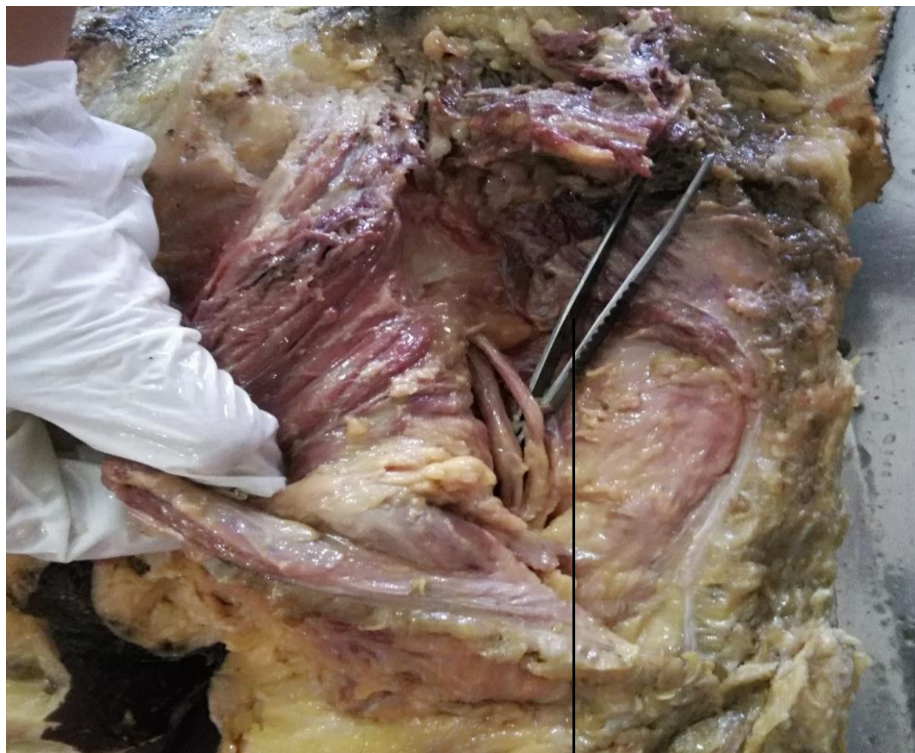
The sciatic nerve may divide into its terminal branches anywhere above the usual level. When the division occurs in the pelvis, the tibial nerve passes through greater sciatic foramen inferior to the piriformis, but the common peroneal nerve pierces the piriformis to enter the gluteal region.^[1, 2 & 3]

CADAVERIC CASE STUDY

During the routine dissection of the first year undergraduate students at the dissection hall of Dr. J.J.Magdum Ayurved Medical College, Jaysingpur, Maharashtra, India, a variation was found in the right and left side gluteal region related to the sciatic nerve. This variation was found in the 50 year old male cadaver. The sciatic nerve was found divided into the tibial and the common peroneal nerves below the piriformis muscle in the gluteal region bilaterally. Posterior cutaneous nerve of the thigh was having usual course.



Photo 2 – Division of Sciatic Nerve in the Gluteal Region.



Piriformis Muscle

Photo 3- Division of Sciatic Nerve in the Gluteal Region below the Piriformis.

DISCUSSION

Sciatic is a Greek word derived from Ischiadicus. It is also known as the ischiadic nerve or ischiatic nerve.^[4] Sciatic nerve is the largest nerve in the human body. It begins in the pelvis

and terminates at the superior angle of the popliteal fossa by dividing into tibial and common peroneal nerves. The sciatic nerve enters the gluteal region through the greater sciatic foramen below the piriformis and usually terminates at the superior angle of the popliteal fossa into the tibial nerve and the common peroneal nerves. Variations have been reported related to the termination of the sciatic nerve. In this cadaveric case study, the division of the sciatic nerve was found below the piriformis muscle in the gluteal region in both the extremities. These two divisions separate from each other at different levels from their origin as within pelvis, in the gluteal region, in the posterior compartment of the thigh or at the superior angle of the popliteal fossa.

CONCLUSION

The sciatic nerve is the major nerve of the lower extremity. The various terminations of the sciatic nerve can be observed at different levels as, within pelvis, in the gluteal region, in the posterior compartment of the thigh or at the superior angle of the popliteal fossa. In this cadaveric case study, the division of the sciatic nerve was found below the piriformis muscle in the gluteal region bilaterally. This information regarding different bifurcation levels of sciatic nerve can be useful in intramuscular injections, sciatic nerve block, hip surgery. The awareness about the variations of sciatic nerve is important for surgeons, clinicians, anesthetists during diagnosis and treatment of the various clinical conditions.

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REFERENCES

1. Dr. B. D. Chourasia, Vol. 2, Chapter no. 7, 4th edition Reprint 2007, CBS Publishers and distributors, Page no. 90-92.
2. Cunningham's Manual of Practical Anatomy, G.J.Romanes, Vol.1, 15th edition, Oxford University press, Page no. 156-157.
3. Henry Gray. Gray's Anatomy. 38th edition, Edited by Williams PL, Warwick R et al. Churchill Livingstone, New York, 1995, Section 8- Nervous System.
4. Saritha et al. anatomical variations in the bifurcation of sciatic nerve. A cadaveric case study and its clinical implications, anatomy and physiology 2012; 2(5): 1-4.