

A CASE REPORT STUDY ON ANOMALOUS DEVELOPMENT OF SCIATIC NERVE

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Abstract: The study was aimed to determine the anomalous development of Sciatic nerve and the bilateral bifurcation of Sciatic nerve into tibial nerve and the common peroneal nerve. A total of 60 Cadavers dissected and involved in the study group. In our study we observed mostly the bifurcation level is at the lower one third of the back of thigh with 48 % and bifurcation of sciatic nerve in the popliteal fossa is noted as 40 % in our regular routine human body dissection. But we observed the unique bifurcation of Sciatic nerve in the gluteal region. In proceeding with the dissection we found that the sciatic nerve is not bifurcated but they originated from the sacral plexus as two different individual nerves as Tibial nerve and the common peroneal nerve. All through the course the both nerves appears as individual course but the mode of supply is common anatomically to the respective muscles of the lower limb.

Keywords: Sciatic Nerve, Piriformis muscle, Tibial nerve ,Common Peroneal nerve.

Introduction: Sciatic nerve in latin named as Nervus ischiadicus. It begins in the lower back and runs through the buttock and down the lower limb. It is the longest and widest single nerve in the human body which supplies to the lower limb. The sciatic nerve supplies the whole of the skin of the leg, muscles of the back of the thigh, leg and the foot. Sciatic nerve a collection of nerve fibres that emerge from the sacral part of the spinal cord. The fibres unite to form a single nerve in front of the piriformis muscle. The nerve passes beneath the piriformis and through the greater sciatic foramen, exiting the pelvis, it passes down the posterior

compartment of thigh into the popliteal fossa. The nerve passes in the posterior compartment of the thigh behind the adductor magnus muscle, and is itself in front of the one head of the biceps femoris muscle. At the level of popliteal surface of femur between the pelvis and popliteal fossa, the nerve divides into its two branches as Tibial nerve and the common peroneal nerve.

Aim & Objectives : To determine the bifurcation of Sciatic nerve with a sample size of 60 Individuals cadavers (both male & females).

Materials : Healthy Cadavers, Blade Scalpel, Forceps, Scissors, Cotton and other stationeries.

Methods: Cadavers were dissected on the posterior aspect of Back or gluteal region and the Back of thigh and the Popliteal fossa. We observed the anomalous course of the sciatic nerve from the regular course of anatomical pathway.

GLUTEUS MAXIMUS



After Skin removal display of Normal Gluteus maximus with upper one-third of thigh.

PYRIFORMIS WITH SCIATIC NERVE



Scalpel pointing the Piriformis muscle and lower down emergence of sciatic nerve as a single nerve below the pyriformisw muscle.

ANOMALOUS SCIATIC NERVE



Gluteus maximus is reflected & shown with Gluteus medius. Lower down emergence of sciatic nerve as two nerves as TN & CPN.

SCIATIC NERVE BIFURCATION



TIBIAL & COMMON PERONEAL NERVE BETWEEN THE SUBSTANCE OF PYRIFORMIS



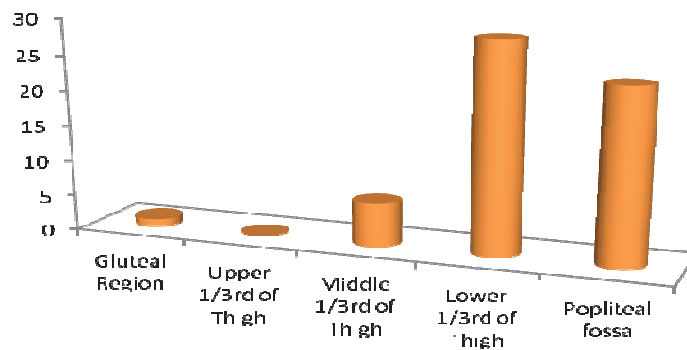
Sciatic nerve bifurcation as Tibial nerve and common peroneal nerve emerging above and below the Piriformis as Individual separate nerve but

not as a single unit of Sciatic nerve.

Observations :

Sciatic Nerve Bifurcation Analysis

Level	Cadavers	%
Gluteal Region	1	1 %
Upper 1/3 rd of Thigh	0	0 %
Middle 1/3 rd of Thigh	6	10 %
Lower 1/3 rd of Thigh	29	48 %
Popliteal fossa	24	40 %
TOTAL	60	100 %



Discussion: Sciatic nerve originated from the spinal cord at the level of lumbar level. Sciatic nerve divides into Tibial nerve and Common Peroneal nerve, hence the root values termed as Tibial part of sciatic nerve root value is L₄,L₅,S₁,S₂,S₃ and Common Peroneal part of sciatic nerve root value is L₄,L₅,S₁,S₂. The commonest site is at the junction of the middle and lower thirds of the thigh, near the apex of the popliteal fossa. The division may occur at any level above this, through rarely below it.

The sciatic nerve passes deep to the piriformis muscle and passes through the greater sciatic foramen, enters the gluteal region. In the gluteal region, it descends posterior to Superior & Inferior gemelli muscles, tendon of obturator internus and quadratus femoris muscles into the back of the thigh. Passes between Biceps femoris laterally and Medially

Semimembranosus & Semitendinosus. It ends by dividing into tibial nerve and common peroneal nerve at the superior angle of the popliteal fossa or lower one third of the back of thigh.

Numerous variations of sciatic nerve have been reported. Higher level of division of the sciatic nerve into tibial and common peroneal nerve is the most commonly encountered variation.

In our study we observed mostly the bifurcation level is at the lower one third of the back of thigh with 48 % and bifurcation of sciatic nerve in the popliteal fossa is noted 40 % in our regular routine human body dissection. But we observed the unique bifurcation of Sciatic nerve in the gluteal region.

Anatomically, the sciatic nerve has to emerge & pass into the gluteal region into the back of thigh below the Piriformis muscle.

An unique observation, the sciatic nerve divided into two branches as Tibial nerve & common peroneal nerve above the level of Piriformis muscle. In the pictures we can see that the one branch of sciatic nerve is emerging above the level of piriformis and the other branch of sciatic nerve passing below the piriformis muscle with a bit intact piriformis muscle.

Later in our proceeding dissection we found that the sciatic nerve is not bifurcated but they originated from the sacral plexus as two different individual nerves as Tibial nerve and the common peroneal nerve. All the course the both nerves appears as individual course but the mode of supply is common anatomically to the respective muscles of the lower limb.

Conclusion: This high division results in sciatica, nerve injury during deep intramuscular injections in gluteal region, piriformis syndrome, failed Sciatic nerve block in anesthesia and injury during posterior hip operations. Anatomical variations in gluteal region such as above are very important for surgeons, as this is the area of frequent surgical manipulation. This also motivates radiologist to repeat MRI on other side, as there can be differences on two sides.

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