International Journal of Science and Research (IJSR)
ISSN: 2319-7064
ResearchGate Impact Factor (2018): 0.28 | SJIF (2018): 7.426

Morphological Variation of Lateral Femoral Cutaneous Nerve of the Thigh

Dr. Aparna Veda Priya.K.[1], Dr. Mohd Imtesal Ali Zishaan[2], Dr. Heena Fathima[3], Dr. Tuniki Meena[4]

[1]Incharge Professor and HOD, Department of Anatomy, Osmania Medical College, Hyderabad, Telangana, india

[2, 3, 4]Post Graduate, Department of Anatomy, Osmania Medical College, Hyderabad, Telangana, India

Abstract: ***Introduction: The lumbar plexus is one of the potential anatomical fields in showing anatomical variations .The lateral femoral cutaneous nerve study and its variations are important as meralgia paraesthetica is commonly over looked by surgeons and physicians. Aims and objectives: This study aims to record variations in lateral femoral cutaneous nerve and to analyze the clinical aspect related to variations. Methodology: The study was performed on 22 formalin embalmed human cadavers used for undergraduate dissection in the department of anatomy, Osmania medical college. The muscles of the posterior abdominal wall were exposed. The fibers of psoas major muscle were dissected and lumbar plexus were exposed. Results: Out of 22 human cadavers, in one it was found that the lateral femoral cutaneous on right side was piercing the inguinal ligament which has higher chancesof nerve entrapment leading tomeralgiaparaesthetica. Conclusion: Meralgia Paraesthetica (MP) is very commonly overlooked or confused with femoral or sciatic pain or other nerve root impingements. The knowledge of its anatomical variations is essential to the surgeons to avoid iatrogenic injury to the nerve and to the clinicians while treating the cases of meralgiaparesthetica.***

Keywords: Lateral femoral cutaneous nerve(LFCN), Inguinal Ligament, Anterior Superior Iliac Spine(ASIS), Meralgia Paraesthetica (MP)

1. Introduction

The lumbar plexus is one of the potential anatomical fields to show variations in a number of ways. The lumbar plexus is formed within the substance of psoas major muscle by the union of ventral rami of upper three lumbar nerves and the larger upper part of ventral ramus of the fourth lumbar nerve. The lower smaller part of the ventral ramus of fourth lumbar nerve joins with the fifth lumbar nerve to form lumbosacral trunk and enters in formation of the sacral plexus. The ventral ramus of the first lumbar nerve supplemented by a twig from the twelfth thoracic nerve divides into larger upper branch and smaller lower branch. The upper branch forms the iliohypogastric and ilioinguinal nerve, the lower branch joins with a twig from second lumbar nerve and forms the genitofemoral nerve, the rest of second lumbar, third and fourth lumbar nerves divides into dorsal and ventral branches .The dorsal branches of the second and third lumbar nerves forms the lateral femoral cutaneous nerve [posterior divisions], the dorsal branches of the second, third and fourth lumbar nerves unite to form the femoral nerve . The ventral branches of the second, third and fourth lumbar nerves assemble to form the obturator nerve[1](fig-1)

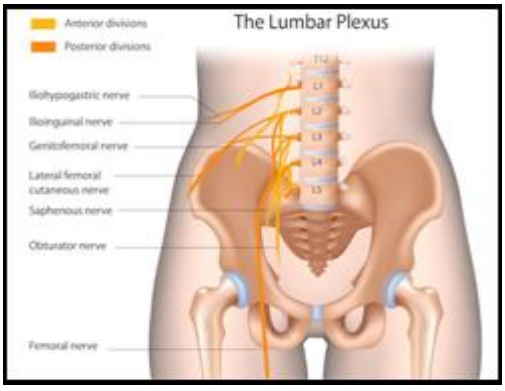

Figure 1

2. Lateral Femoral Cutaneuos Nerve

The lateral femoral cutaneous nerve is derived from the dorsal branches of ventral rami of second and third lumbar nerves [L_2, L_3] and passes downwards and laterally across the iliac fossa in front of the ilicas muscle and lie under cover of fasiailiaca. The nerve enters the thigh beneath the inguinal ligament, sometimes it passes through the inguinal ligament. In the thigh the lateral cutaneous nerve passes downwards in front or through the Sartorius muscle and divides into anterior and posterior branches[1].

Hager first described Meralgia paresthetica in 1885. It was reported in more details by Bernhardt in 1895, and later Roth (1895) published a paper in which he named it meralgia paraesthetica. The term is derived from the Greek words meros which means thigh and algos which means pain.[2]Meralgiaparesthetica (MP) is a mononeuropathy of the lateral femoral cutaneous nerve (LFCN), with symptoms consisting of pain, numbness, paraesthesia, or a burning sensation in the anterolateral part of the thigh[3, 4]The incidence of MP hasbeen reported to be between 6.7% and 35.0%.Numerous studies related to variability in the anatomy of the LFCN have been reported, most ofwhich are associated with either acute or chronicmechanical irritation of this nerve[5-7] The purpose of this study is to describe the anatomical variations in the lateral femoral cutaneous nerve of thigh.

3. Material and Methods

Lateral femoral cutaneous nerve was studied during routine educational dissection of 22 formalin embalmed human cadavers in the department of anatomy, Osmania medical college. There were no signs of trauma, surgery or wound scars in the abdominal regions of any of the cadavers. The muscles of the posterior abdominal wall were exposed by removing their fascial coverings. While doing so, injury to

the vessels and nerves related to the muscles was avoided. The fibres of psoas major muscle were then meticulously detached. The nerves and their branches were exposed.

4. Results

In all the specimens, it was found that the lateral femoral cutaneous nerve showed its origin from L2 and L3. Out of 22 human cadavers, in one of them the lateral femoral cutaneous nerve on the right side was piercing the inguinal ligament which is has got higher chances of nerve entrapment leading to meralgiaparaesthetica [Fig 2].

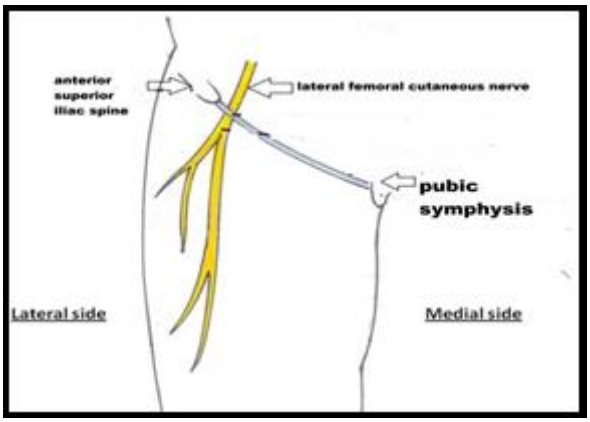

Figure 2

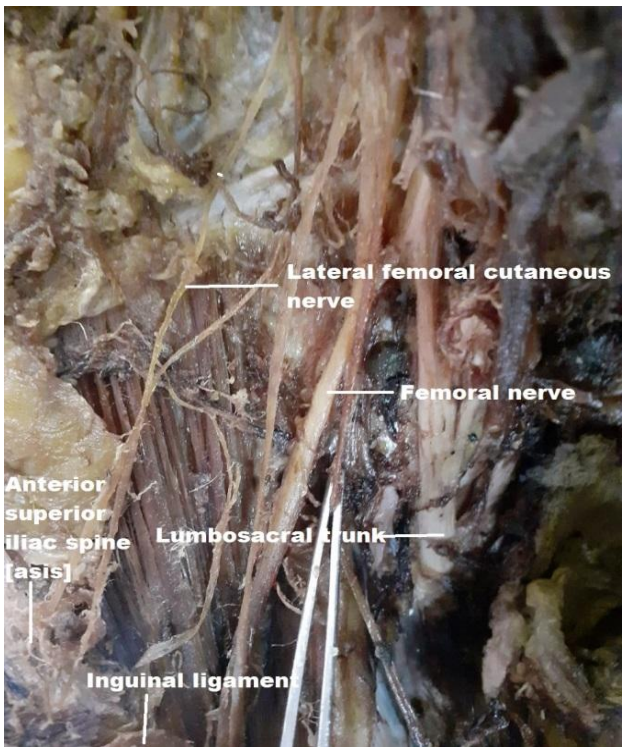

Figure 3: Table depicting lumbar plexus

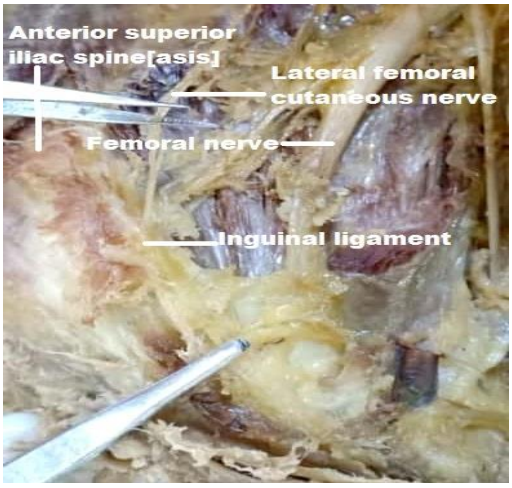

Figure 4: The lateral femoral cutaneous nerve is piercing the inguinal ligament

5. Discussion

The LFCN is a pure sensory nerve formed fromL2-3 lumbar spinal segments. MP caused by compression of the LFCN at the inguinal ligament, is common because the LFCN bends at an angle of about 90 degrees to pass from the pelvis through the inguinal ligament to the thigh [8, 9]

In 21 human cadvers, lateral femoral cutaneous nerve was emerging at the lateral edge of psoas major crossing the iliacus on the right, piercing the abdominal wall near anterior superior iliac spine running through the muscular lacuna over Sartorius to lateral region of thigh, penetrating the fasialata, innervating the skin of lateral region of thigh[Fig 3].

In one human cadaver, the lateral femoral cutaneous nerve on the right side was piercing the inguinal ligament which has maximum chances of nerve entrapment leading to meralgiaparesthetica [Fig 4]..

6. Conclusion

Meralgia Paresthetica (MP) is very commonly overlooked or confused with femoral or sciatic pain or other nerve root impingements. The knowledge of anatomical variations of the lateral femoral cutaneous nerve of thigh is essential to the surgeons to avoid iatrogenic injury to the nerve and to the clinicians while treating the cases of meralgiaparesthetica

References

[1] A.K.DATTA-abdomen and its walls-Essentials of human anatomy[thorax and abdomen]-9th edition-chap 1: pg:162-164.
[2] Williams PH, Trzil KP. Management of meralgia paresthetica. J. Neurosurg. 1991;74:76-80.
[3] Cheatham SW, Kolber MJ, Salamh PA. Meralgia paresthetica: a reviewof the literature. Int J Sports Phys Ther 2013;8:883–893
[4] de Ruiter GC, Kloet A. Comparison of effectiveness of different surgi-cal treatments for meralgia paresthetica:

results of a prospectiveobservational study and protocol for a randomized controlled trial.Clin Neurol Neurosurg 2015;134:7–11

[5] €Uzel M, Akkin SM, Tanyeli E, Koebke J. Relationships of the lateralfemoral cutaneous nerve to bony landmarks. Clin Orthop Relat Res2011;469:2605–2611

[6] Aszmann OC, Dellon ES, Dellon AL. Anatomical course of the lateralfemoral cutaneous nerve and its susceptibility to compression andinjury. Plast Resconstr Surg 1997;100:600–604

[7] Berini SE, Spinner RJ, Jentoft ME, Engelstad JK, Staff NP, Suanprasert N, et al. Chronic meralgia paresthetica and neurectomy:a clinical pathologic study. Neurology 2014;82:1551–1555.

[8] Grossman MG, Ducey SA, Nadler SS, Levy AS:Meralgia paresthetica: diagnosis and treatment. J AmAcad Orthop Surg 9(5): 336-344, 2001

[9] de Ridder VA, de Lange S, Popta JV: Anatomicalvariations of the lateral femoral cutaneous nerve andthe consequences for surgery. J Orthop Trauma 13(3):207-211, 1999.