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RESEARCH ARTICLE

ANATOMICAL VARIATION IN LATERAL CUTANEOUS NERVE OF THIGH - A CADAVERIC STUDY

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ABSTRACT

Introduction: Variation in origin and branching pattern of lateral femoral cutaneous nerve of thigh are common. These anatomical variations important for anatomists, clinicians, and surgeons for prevention of post-operative complication. **Material and method:** 25 cadavers dissected in last 3 year. **Result:** In this study 16% cadavers show lateral femoral cutaneous nerve receive the communicating branch from the femoral nerve bilaterally and in 4% cadaver lateral femoral cutaneous nerve derived from the root L2 bilaterally while in 8% cadavers were found two lateral femoral cutaneous nerve bilaterally. **Conclusion:** in this study we found significant variation in Lateral femoral cutaneous nerve in origin and branching pattern which is important for anatomists for study purpose during dissection, for surgeon to prevent iatrogenic nerve Injury and for the clinicians while treating the cases of meralgia paresthetica.

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INTRODUCTION

The main aim of this study is to explore variation in formation & branching pattern of Lateral cutaneous nerve of thigh and compare with reported by other authors. Knowledge of variation in Lateral femoral cutaneous nerve is important for anatomists for academic purpose and also practical importance for surgical intervention to prevent iatrogenic nerve injury. The lateral cutaneous nerve of thigh emerges at the lateral border of the psoas major muscle runs downwards and laterally across the right iliac fossa, over the iliacus muscle and reaches the anterior superior iliac spine. Here it enters the thigh by passing behind the lateral end of the inguinal ligament.^{1,2} The LFCN is a sensory nerve and arising from the 2nd and 3rd lumbar nerve roots. Some cases it derived from single nerve root value, L2 alone and L3 alone., may have different combination of nerve roots like L2 and L3 or L1 and L2.³ meralgia paresthetica is a common pathology associated with the LFCN, in this condition entailing pain, a lack of sensation or dysesthesia of the skin supplied by the LFCN.⁴ Meralgia paresthetica may have numerous etiologies including pelvic inflammatory

disease, pregnancy, various toxicities, tight clothing and iatrogenic injuries from surgical procedures.⁵ knowledge of variations in the pelvic exits and branching pattern of LFCN is very important for clinician for diagnosis of inmeralgia paresthetica, as well as for surgeon to avoid injuries during surgical procedures, especially inguinal hernia repair.⁶

MATERIAL AND METHODS

25 cadavers (50 lumbar plexus) out of 17 male and 8 were female dissected during academic work in smt NHL municipal medical college, Ahmedabad, Gujarat, India. In which branches of lumbar plexus was observed. After removing all content of abdomen and the fascia covering the muscle of posterior abdominal wall expose and clean the root of lumbar plexus of both sides and identify the branches. Formation and branching pattern of Lateral cutaneous nerve of thigh from the lumbar plexus will be traced and noted. Variation in formation and branching pattern of the recorded and photographed and compared with other literature and studies done by other authors.

OBSERVATION AND RESULTS

This study was carried out on 25 human cadavers out of that 17 male cadavers and 8 Female cadavers.

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Variation in branching pattern of LFCN – In 21 cadavers (84%) in which 14 male & 7 female lateral femoral cutaneous nerve were found normal branching pattern bilaterally. While in 4 cadavers (16%), 3 male & 1 female lateral femoral cutaneous nerve receive the communicating branch from the femoral nerve bilaterally (Figure 1). Variation in root value of LFCN –In 24 cadavers (96%) lateral femoral cutaneous nerve derived from L2-L3 bilaterally. While in 1 male cadaver (4%) lateral femoral cutaneous nerve derived from the root L2 bilaterally (Figure 2).



Fig. 1. Lateral femoral cutaneous nerve receive the communicating branch from the femoral nerve (SC-subcostal, IH-iliohypogastric, II- ilioinguinal, GF- genitofemoral, LFCN- lateral femoral cutaneous nerve, F- femoral, O- obturator, com LFCN- communicating branch of lateral femoral cutaneous nerve)

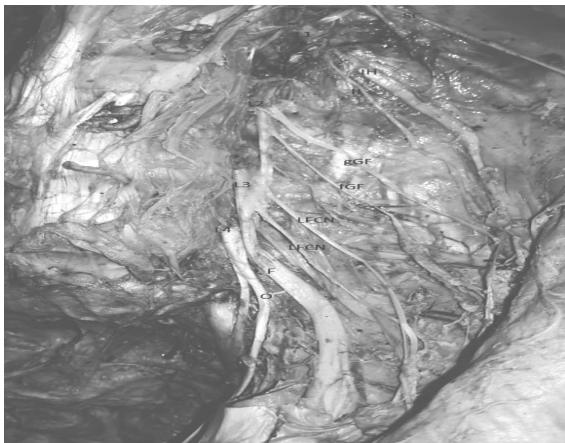


Fig. 2. Lateral femoral cutaneous nerve derived from the root L2

Variation in number of LFCN – In 23 cadavers (92%) lateral femoral cutaneous nerve was single bilaterally. While in 2 cadavers (8%), 1 male & 1 female there were found two lateral femoral cutaneous nerve bilaterally (Figure-3).

DISCUSSION

P. Nontasaen et al.⁷ Observed L2–L3–L4 roots formed another type of LFCN branches in 41.2% (54 plexus) these nerves variation have two type one type receiving the communicating branches from femoral nerve in 17 plexuses from 54, in another one variation 27 plexuses from 54 divided itself into two branches before traversing inferior to the inguinal ligament.

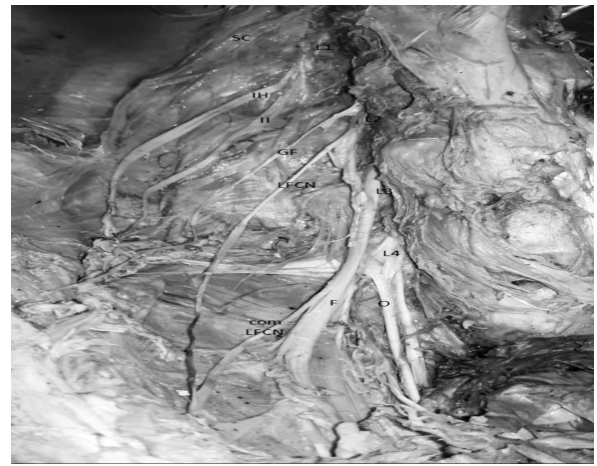


Fig. 3. Double lateral femoral cutaneous nerve

In 84% plexuses LFCN derived from L2-L3. In present study in 4 cadavers (16%), 3 male & 1 female lateral femoral cutaneous nerve receive the communicating branch from the femoral nerve bilaterally. Fasila P et al.⁸ conducted study on 60 plexus out of 57 plexus have root value L2 and L3. LFCN shows varied origin, from L2 alone in 3 plexus, from L1 and L2 in 1 plexus and from L3 in 1 plexus and was found absent in 1 specimen unilaterally. While Double LFCN was observed in 2 plexus. LFCN was taking its origin from femoral nerve in 3 plexus, LFCN joins femoral nerve after its formation in one lumbar plexus. Astik RB et al.⁹ found the origin of lateral cutaneous nerve of thigh from the femoral nerve in four lumbar plexuses. In present study 2 cadavers (8%), 1 male & 1 female there were found double femoral cutaneous nerve bilaterally. & no cases of LFCN derived from femoral nerve. Arora D et al.¹⁰ Found root value of the LFCN was L1 & L2 in 8(13.33%) and L3 alone in 1(1.66%) lumbar plexuses LFCN arose from femoral nerve in 8.3% of plexuses, the nerve derived its segmental innervations from segments other than L2 and L3 in 53.3% of plexes, the nerve was found absent in 10 (16.6%) lumbar plexuses. Analogue P et al.¹¹ observed six of the 34 plexuses (17.6%) demonstrated variation in the lateral femoral cutaneous nerve. Whereas the lateral femoral cutaneous nerve normally arises from the posterior divisions of the L2 and L3 roots, in 4 lumbar plexes, the lateral femoral cutaneous nerve arose from the L1 and L2 nerve roots and in one plexus it had its origin solely from the L2 nerve. Another variation included a bifurcation of the lateral femoral nerve within the pelvic cavity prior to its exit near the anterior superior iliac spine; such bifurcations normally occur after the nerve exits the pelvis. Anandhiet al.¹² found that LFCN as a branch arising from the femoral nerve in 5 plexuses (10%). Uzmansel et al.¹³ found LFCN joins femoral nerve after its formation 2 specimens. In present study 24 cadavers (96%) lateral femoral cutaneous nerve derived from L2-L3 bilaterally. While in 1 male cadaver (4%) lateral femoral cutaneous nerve derived from the root L2 bilaterally. There were no cases of absent LFCN.

Conclusion

The above different variations might lead to an inappropriate femoral nerve block, increasing the chance of nerve compression as well an ineffective treatment for patients suffering from meralgia paresthetica. Lumbar plexus and its branches important for every anatomist for study and also for surgeon who need to operate lower abdomen region and surgery for repair of the inguinal hernia.

In present study variation found in lateral femoral cutaneous nerve help the clinician to treat patient and surgeon to prevent iatrogenic injuries so they prevent postoperative complication like meralgia paresthetica.

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