



Original Research Article

ANATOMICAL VARIATIONS IN THE ORIGIN OF GENITO FEMORAL NERVE – A CADAVERIC STUDY

J. Jayarani¹, N. S. Sunitha², M. Sumithra³

¹Professor & Head of the Department, Department of Anatomy, Government Medical College, Dindigul, Tamil Nadu, India.

²Associate Professor, Department of Anatomy, Government Dindigul Medical College, Dindigul, Tamil Nadu, India.

³Assistant Professor, Department of Anatomy, Government Medical College, Dindigul, Tamil Nadu, India.

Received : 01/01/2026
Received in revised form : 10/01/2026
Accepted : 28/01/2026

Corresponding Author:

Dr. J. Jayarani,
Professor & Head of the Department,
Department of Anatomy, Government
Medical College, Dindigul, Tamil
Nadu, India.
Email: drjjanat2007@gmail.com

DOI:10.70034/ijmedph.2026.1.259

Source of Support: Nil,
Conflict of Interest: None declared

Int J Med Pub Health
2026; 16 (1); 1486-1488

ABSTRACT

Background: Aim: Genitofemoral neuralgia is neurological pain observed in both men and women, presented with lower abdominal pain, mostly unilateral, due to nerve entrapment at its origin or along their course in the abdomen or in the inguinal canal. Knowledge about genitofemoral nerve helps orthopaedic surgeons, laparoscopic surgeon, general surgeon and for urologist to avoid injury to the genitofemoral nerve and thereby preventing surgical applied aspects of genitofemoral nerve.

Materials and Methods: 25 embalmed cadavers preserved in formalin were utilized for present study. Transperitoneal approach method was applied to dissect the genitofemoral nerve on both sides of the cadaver and anatomical variations in its origin was tabulated.

Results: In four cadaveric specimens, the genitofemoral nerve arose from ventral rami of first and second lumbar spinal nerve, within the substance of psoas major muscle, shown the higher division and the nerve divides at origin level as genital and femoral nerve.

Conclusion: This study guide the clinicians to diagnose the genitofemoral neuralgia and helps the surgeons to preserve the genitofemoral nerve during any abdominal and pelvic surgical procedures.

Keywords: genitofemoral nerve, genitofemoral neuralgia, lumbar spinal nerve, psoas major muscle, higher division, anatomical variation.

INTRODUCTION

Genitofemoral nerve is one of the anterior branch of lumbar plexus, arises from the ventral rami of first and second lumbar spinal nerve. According to Gray's Anatomy, the genitofemoral nerve very often shows the higher division at origin level as genital and femoral nerve and descends along the anterior substances of psoas major to supply the cremaster muscle and skin on front of thigh. Anatomical variation of genitofemoral nerve guide the surgeons to avoid the genitofemoral neuralgia while doing laparoscopic or open hernia repair (NATIONAL LIBRARY OF MEDICINE - Genito femoral nerve Anatomy, Marco Gupton et al., 2022. Genitofemoral neuralgia is challenging diagnosis for clinicians, due to overlapping of inguinal nerve distribution, helps the clinicians for accurate diagnosis and better

patient's outcome (Clinical Anatomy 28: (2015) - Genitofemoral neuralgia., ALPER CESMEBASI et al.

Aim

Aimed to do embalmed cadaveric study on anatomical variations in the origin of genitofemoral nerve.

MATERIALS AND METHODS

50 Cadaveric specimen from government medical college, dindigul received during March 2022 to February 2023, were utilized for cadaveric study on variations in the origin of genitofemoral nerve. By using routine dissecting instruments, through transperitoneal approach, the genitofemoral nerve was traced bilaterally on the anterior aspects of substances of psoas major muscle and traced till the

inguinal canal and front of thigh along the branches as genital and femoral respectively. Higher division of variation in the formation genitofemoral nerve was noted in four cadaveric specimens and tabulated (Table-1) for further reference.

RESULTS

The most common variations in the origin of genitofemoral nerve is higher division of genital and

femoral nerve branch at origin level (Anloague and P. Huijbregts et al.; 2009) (26.5%) In our study it was seen in 8% of cadaveric specimens. It also coincides with Gray's Anatomy – 42 edition. Two rami division (genital and femoral) at origin level was present in 19.75% - Gindha et al. 2015. 20% variation in origin was found in Bergman et al. ;(2006).

Table 1: Observation of Variation in the Origin of Genitofemoral nerve

S.no	Variations in the formation of Genitofemoral nerve	Frequency in %
1.	Higher division as genital and femoral nerve branch	8%
2.	From L1 and L2	100%
3.	From L1 and L2 loop	Not found
4.	From L2 and L3	Not found
5.	Within anterior substances of psoas major muscle	100%

Table 2: Comparative Study with Present Study

S.no	Variations	Present Study	Anloague and P. Huijbregts et al.	Gindha et al. 2015	Bergman et al.
1.	Higher division as Genital and femoral nerve branch	8%	20.6%	19.75%	20%
2.	From L1 and L2	100%	75%	68.33%	75%
3.	From L2 and L3	Not found	1.67%	3.33%	0.25%

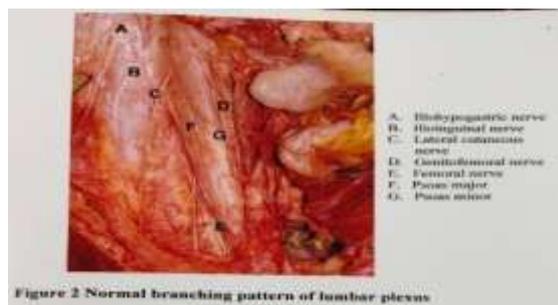


Figure 1: Normal branching pattern of lumbar plexus

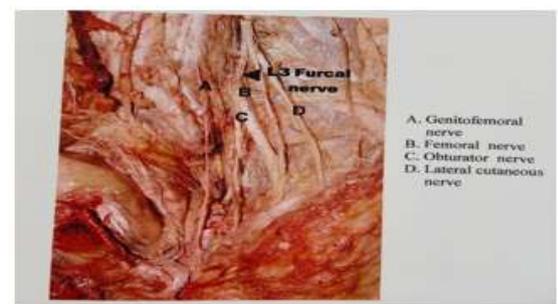


Figure 2: Origin of Genitofemoral nerve



Figure 3: GFN within the psoas muscle



**Figure 4: Higher division of GFN
GFN- Genitofemoral nerve**

DISCUSSION

Present study showed that, the higher division in the formation of genitofemoral as genital and femoral branch at origin level was observed in 4 cadaveric specimens (8%) coincided with Gray's Anatomy - 42 edition, the genitofemoral nerve originates from first and second lumbar spinal nerve as anterior branch of lumbar plexus in the substance of psoas major muscle at the opposite level of third and fourth lumbar vertebrae with higher division of genital and femoral nerve branch. 20% variation in the upper rami was found in Bergman et al. ;(2006)

Last Anatomy 1994 said that genitofemoral nerve arises as union of first and second lumbar spinal nerve. W. Henry Hollinshead 1976, 3rd edition, variations of genitofemoral at its origin level was found that from first lumbar spinal nerve or second lumbar spinal nerve or L1-L3 OR L2, L3, not coincided with our study. E. A. Schafer and J. Symington in Quains Elements of Anatomy– genitofemoral nerve originates chiefly from second

lumbar spinal nerve or from connecting loop formed between first and second lumbar spinal, not correlated to our present study.

CONCLUSION

In our study, 50 cadaveric specimens shown that all genitofemoral nerve was arose from the first and second lumbar spinal nerve within the substances of psoas major muscle. Only 8 % of cadaveric specimens showed that the higher division of genitofemoral nerve as genital and femoral branch at origin level. Anatomical knowledge about genitofemoral nerve is useful for all surgeons like laparoscopic surgeon, orthopaedic surgeon, plastic surgeon, urologist to prevent the damage to the genitofemoral nerve while doing laparoscopic

hernioplasty, abdominal plastic surgery, renal surgeries, lumbar disc surgeries as respectively and thereby preventing clinical conditions.

REFERENCES

1. Anloague P, Huijbregts P. et al. ; 2009).Anatomical Variations of the Lumbar plexus:A Descriptive Anatomy Study with Proposed Clinical Implications. *J Man Manip Ther* 2009;17(4):107-114
2. Bergman et al. 20% variation in the upper rami was found in Bergman et al. ;(2006)
3. Cesmebasi et al. ; *Clinical Anatomy* 28: 128-135 (2015) Genitofemoral nerve neuralgia.
4. E.A.Schafer and J.Symington in *Quains Elements of Anatomy* 5. Gray's Anatomy - 42 edition
5. Gindha et al. 2015 – Variations in origin of the genitofemoral nerve from the lumbar plexuses in north Indian population (a cadaveric study)
6. *Last Anatomy* 1994.