



A variation in the intra-abdominal course of the ilioinguinal nerve and its clinical implications

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Abstract

Introduction

The current case will endow with knowledge on the variation in the intra-abdominal course of ilioinguinal nerve which will assist surgeons in avoiding injury to this structure in various abdominal surgeries.

Case report

The present report describes an unfamiliar variation in the intra-abdominal course of right side ilioinguinal nerve found during dissection of a 50 year old male cadaver in the Department of Anatomy, Maulana Azad Medical College, New Delhi, India. We noticed an abnormal course of right ilioinguinal nerve in the abdomen by emerging anteriorly from the right psoas major muscle and lying medial to the right genitofemoral nerve throughout its abdominal course. During its course, it was closely related to the right ureter and the right common iliac vessels.

Conclusions

Variations in the intra-abdominal course of ilioinguinal nerve should be known to surgeons during various lower quadrant surgeries. It could be a prospective cause of ilioinguinal nerve entrapment syndrome.

Introduction

The ilioinguinal nerve originates from L1 ventral ramus and emerges from the lateral aspect of upper part of psoas major muscle just below the iliohypogastric nerve, passes obliquely across quadratus lumborum and the upper part of iliacus and enters transversus abdominis muscle near the anterior end of the iliac crest. It pierces the internal oblique muscle and supplies it and then traverses the inguinal canal below the spermatic cord. It emerges with the spermatic cord from the superficial inguinal ring to supply the proximal medial skin of the thigh and the skin over the root of the penis and upper part of the scrotum in males, or the skin covering the mons pubis and the adjoining labium majus in females¹. The nerve may be injured predominantly during inguinal hernia surgery, appendectomy and Pfannensteil incision which produces paraesthesia over the skin of the genitalia^{2,3,4}. Entrapment of the nerve during surgery may cause troublesome recurrent pain in its cutaneous distribution area.

Case Report

During a routine dissection of the posterior abdominal wall in a 50 year old male cadaver of Indian origin for undergraduate MBBS students in the Department of Anatomy, Maulana Azad Medical College, New Delhi, India, a variation in the intra-abdominal course of right ilioinguinal nerve was observed.

The ilioinguinal nerve on the right side was found to emerge from the superficial aspect of right psoas major muscle after piercing the muscle medial to the genitofemoral nerve in the posterior abdominal wall. It descended in front of the right psoas major muscle medial to the genitofemoral nerve throughout its abdominal course. During its course in the abdomen, it was crossed anteriorly by the right ureter and was medial to the right common iliac vessels. It entered the right inguinal canal by piercing transversus abdominis muscle and internal oblique muscle medial and below the level of anterior superior iliac spine. Its length before entering the inguinal canal from anterior surface of psoas major muscle was 4 cm. It traversed the inguinal canal below the spermatic cord and emerged with the cord from the superficial inguinal ring. Iliohypogastric nerve was found in normal anatomical position emerging from the lateral border of psoas major. Genitofemoral nerve emerged from anterior surface of psoas major lateral to ilioinguinal nerve and divided into genital and femoral branch just before the former entered the deep inguinal ring (Figure 1).

This work conforms to the values laid down in the Declaration of Helsinki (1964). The protocol of this study has been approved by the relevant ethical committee related to our institution in which it was performed. All subjects gave full informed consent to participate in this study.

Discussion

Although there have been extensive reports on the variations of the lumbar plexus^{5,6}, the variation in the course of the ilioinguinal nerve is a rare entity. In this also, its variable inguinal course has been studied to a great extent^{7,8} but its intra-abdominal course still remains constant. Knowledge of the anatomical location of ilioinguinal nerve is important for proper anaesthesia during groin hernia repair, other surgical procedures and to prevent postoperative neuralgias^{9,10}.

Our case report is in contrary to the classic description of its emergence from the lateral aspect of psoas major muscle. Since the ilioinguinal nerve emerged from the superficial aspect of right psoas major muscle, it can get compressed between the fibres of psoas major muscle.

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Figure 1: Photograph showing right ilioinguinal nerve emerging anteriorly through the psoas major muscle in a 50 year old male cadaver. II ilioinguinal nerve, IH iliohypogastric nerve, FN femoral nerve, LCT lateral cutaneous nerve of thigh, GF genitofemoral nerve, AA abdominal aorta, IVC inferior vena cava, RI right common iliac artery, GV gonadal vessels, RA Right renal artery, RV Right renal vein, RK right kidney, LK left Kidney, RU right ureter, VD right side vas deferens, SC right side spermatic cord, PM poas major muscle, QL quadratus lumborum.

Normally, the ureter and the right iliac vessels are not related to the ilioinguinal nerve, but in our case, it is crossed anteriorly by the right ureter and related medially with the right iliac vessels. This variation will help surgeons to avoid injury to this structure in various abdominal surgeries like ureteric transplantation. The above mentioned structures can also compress the nerve which can cause the classical triad of symptoms of ilioinguinal nerve entrapment syndrome¹¹. Mainly, the ilioinguinal nerve entrapment syndrome is due its variable inguinal course. But our report, has found a potential cause of this troublesome syndrome due to its variable intra-abdominal course also.

Thus, this report suggest us the possibilities of variation in the intra-abdominal course of ilioinguinal nerve which should be taken into consideration to identify it when surgical procedures are performed in the lower portion of the abdomen.

Conclusion

As various surgical repercussions are associated with the ilioinguinal nerve, there should be an emphasis on the

importance of the development of a clear topographical course which will be used in its identification. For this, variations in its course like the one that we had reported here should also be included.

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