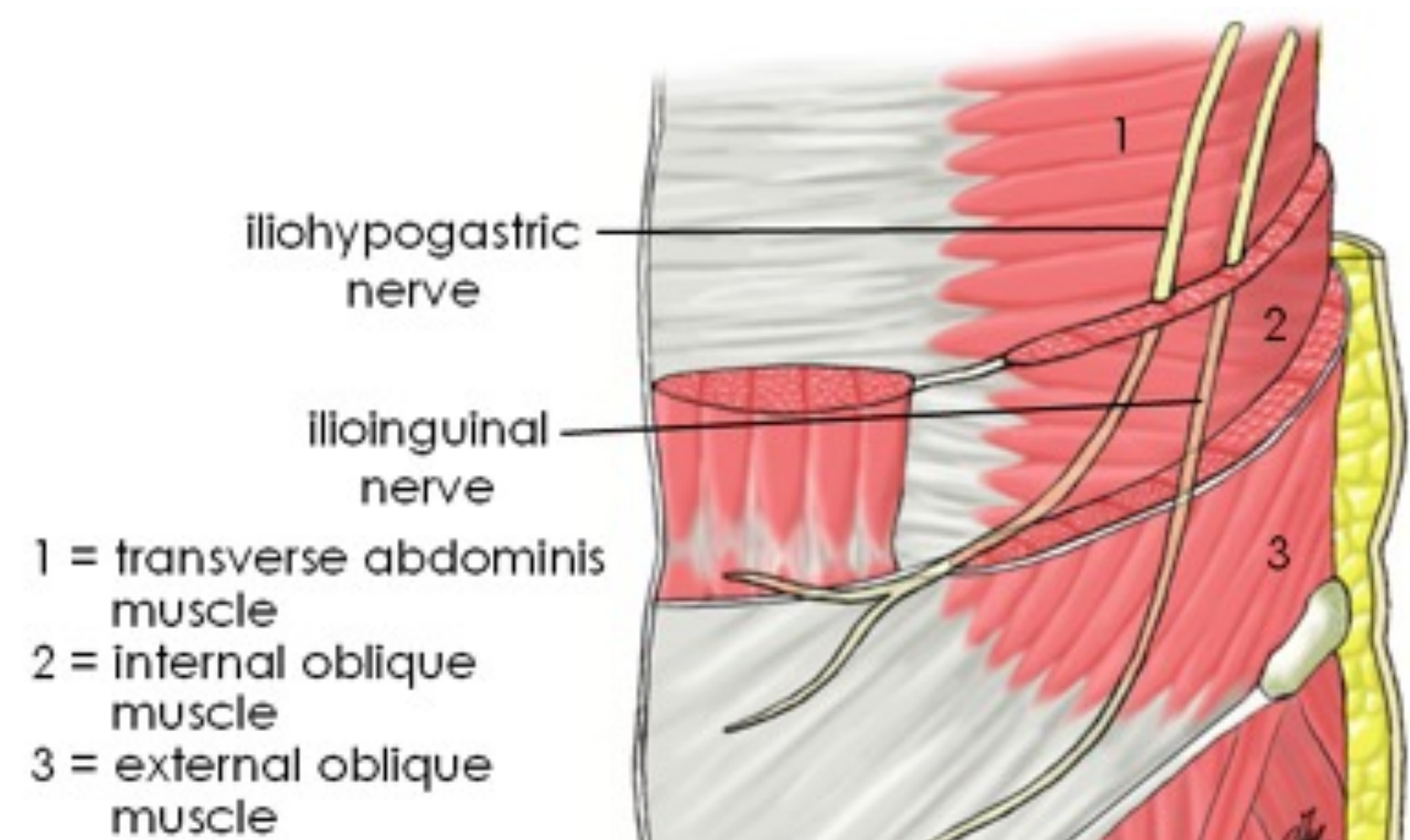


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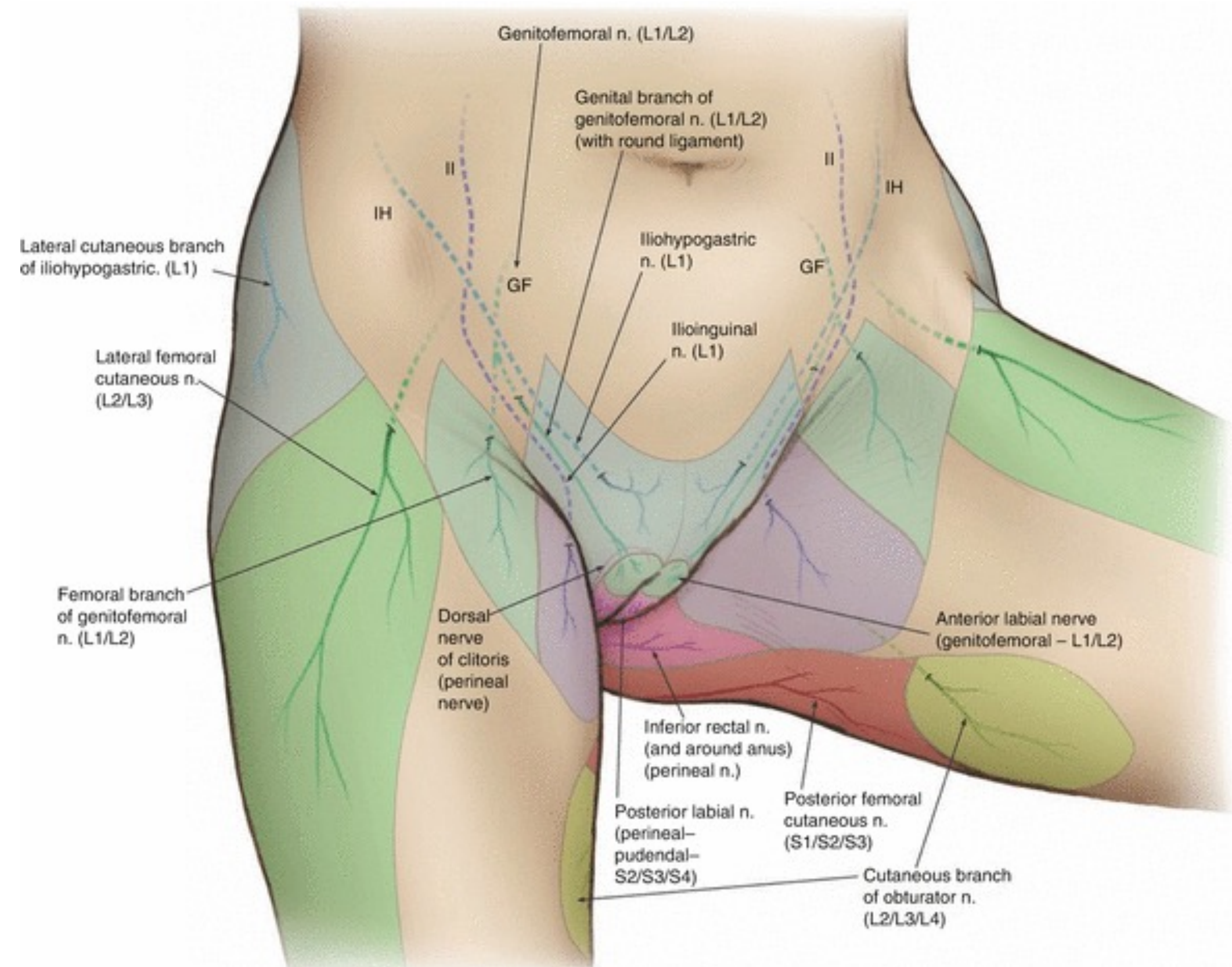
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Introduction

The ilioinguinal and iliohypogastric nerves originate from the first lumbar nerve root along with contributions from the twelfth thoracic nerve root via the subcostal nerve. The nerves wrap around the abdominal wall anterior to the quadratus lumborum muscle before traveling through the transversus abdominis muscle and ultimately piercing into the fascial plane between the transversus abdominis and the internal oblique muscle and even the external oblique as well, ultimately providing cutaneous analgesia to the suprapubic area. Our expertise as perioperative regional anesthesiologists can be applied to diagnosis and treatment of certain clinical conundrums. We obtained written Health Insurance Portability and Accountability Act authorization from the patient to write and publish this case.



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Case Report

Past Medical History: Our patient is a 62-year-old female with a medical history of headaches, gastroesophageal reflux disease, and anxiety as well as a past surgical history of a cholecystectomy who was diagnosed with a complex cyst of the right ovary.

Surgical Course: The patient underwent a diagnostic laparoscopy with bilateral salpingo-oophorectomy, dilation and curettage, endometrial and endocervical polypectomies, excision of a left pelvic sidewall cyst, and lysis of adhesions at an ambulatory surgery center. The procedure was performed with a 5 mm periumbilical port, 10 mm port in the left lower quadrant (LLQ), and a 5 mm port in the right lower quadrant. An adhesion on the left side wall was lysed during the procedure to prevent a future intraperitoneal hernia from forming. A size 0 braided, synthetic, absorbable suture was used to close the 10 mm LLQ port.

Post Operative Course: In recovery, the patient experienced pain in the LLQ near the port site. This was expected given the recent surgery and the patient was discharged home. The pain continued, interfering with activities of daily living. On post-operative day three, the patient presented to the emergency department and was admitted to the gynecology service for unrelenting LLQ pain. A computerized tomography scan was obtained and did not show an acute process. Laboratory tests and vital signs were also unremarkable. The Acute Pain and Regional Anesthesia service was consulted for post-surgical pain out of proportion for this particular procedure.

Acute Pain Evaluation: When seen in consultation, the patient described 10/10 burning and tearing pain in the distribution of T11 to L1 radiating from the anterior axillary line into the groin. On examination, the patient was exquisitely tender in the above distribution. The port sites had only mild erythema. There were no overlying skin changes in the affected area. The pain was worsened by any movements and was not relieved with acetaminophen, nonsteroidal anti-inflammatory drugs, gabapentin or ketamine infusion at 0.1 mg/kg/hr. The patient declined opioid analgesia and up-titration of the ketamine infusion for concerns of side effects and fear of masking a more serious injury.

Diagnosis and Treatment: With the above history and constellation of symptoms, the probable diagnosis of iliohypogastric nerve entrapment syndrome from a fascial closure stitch was hypothesized. To confirm the diagnosis, we performed a unilateral ultrasound-guided ilioinguinal/iliohypogastric nerve block. Vitals signs were monitored. Fentanyl was used for procedural sedation. Procedure was performed with the patient supine. A linear 15-6 ultrasound probe was placed on the lower abdomen immediately medial to the anterior superior iliac spine and rotated slightly towards the umbilicus to obtain an optimal view of the transversus abdominis plane. There were no abnormal ultrasound findings during the procedure, but as this is a plane block, the nerve fibers themselves are not visualized. Topical lidocaine was infiltrated subcutaneously and a 22 g 8 cm Tuohy needle was advanced under ultrasound guidance to the targeted plane. After negative aspiration, 5 ml of normal saline was injected with excellent separation of the transversus abdominis and internal oblique muscles. A total of 20 ml of 0.5% ropivacaine was administered with complete relief of the patient's symptoms within 30 minutes of the procedure, supporting the diagnosis of nerve entrapment. The patient was taken to the operating room the following day and the fascial suture was removed under general anesthesia. The patient was discharged home from the hospital the following day with ongoing improvement in their symptoms despite resolution of the local anesthetic effect of the regional block.

Discussion

Nerve injury resulting in postoperative neuropathy after major gynecologic surgery, including both laparoscopy and laparotomy, is approximately 1.9%. Of those with neuropathy, 21.7% were due to injury to the ilioinguinal and iliohypogastric nerves.² Another retrospective study found the risk of injury of the ilioinguinal and iliohypogastric nerves with fascial closure during laparoscopic surgery for benign gynecologic indications is 4.9%.³ In that study, the majority of individuals underwent surgical intervention and had resolution of pain with removal of the fascial suture. Those who underwent similar gynecologic surgeries without fascial closure did not have postoperative neuropathy, suggesting the mechanism of injury is entrapment of the nerve fibers. Given that the typical course of the ilioinguinal and iliohypogastric nerves is inferior to the anterior superior iliac spine,¹ trocars are routinely placed superior to this landmark. Injury can also be prevented by using small trocars that do not require fascial closure.⁴ If injury does occur, conservative management or a nerve block can be used. However, surgical intervention is the most effective modality.⁵ Depending on the clinical circumstance, release of a fascial stitch or a more invasive procedure, such as neurectomy, may be appropriate.

In summary, anesthesiologists should be skilled in performing an ilioinguinal/iliohypogastric nerve block. We showed how this block can have both diagnostic and therapeutic benefits. Had the block not been effective in relieving the patient's pain, alternative diagnoses explaining their pain would have been explored and could have led to a more invasive and costly evaluation.

References

- Whiteside JL, Barber MD, Walters MD, Falcone T. Anatomy of ilioinguinal and iliohypogastric nerves in relation to trocar placement and low transverse incisions. *Am J Obstet Gynecol.* 2003;189(6):1574-1578; discussion 1578.
- Cardosi RJ, Cox CS, Hoffman MS. Postoperative neuropathies after major pelvic surgery. *Obstet Gynecol.* 2002;100(2):240-244.
- Shin JH, Howard FM. Abdominal wall nerve injury during laparoscopic gynecologic surgery: incidence, risk factors, and treatment outcomes. *J Minim Invasive Gynecol.* 2012;19(4):448-453.
- Abdalmageed OS, Bedaiwy MA, Falcone T. Nerve Injuries in Gynecologic Laparoscopy. *J Minim Invasive Gynecol.* 2017;24(1):16-27.
- Stulz P, Pfeiffer KM. Peripheral nerve injuries resulting from common surgical procedures in the lower portion of the abdomen. *Arch Surg.* 1982;117(3):324-327.