

Julie Sim SRNA¹, Allison Gorlo CRNA¹, Robert Pluscec MD¹, David Maduram, MD PhD¹

¹Department of Anesthesiology, St. Vincent's Medical Center, Bridgeport CT, USA; St. Vincent's Medical Center, Bridgeport CT, USA

Figure 1: Caption 1

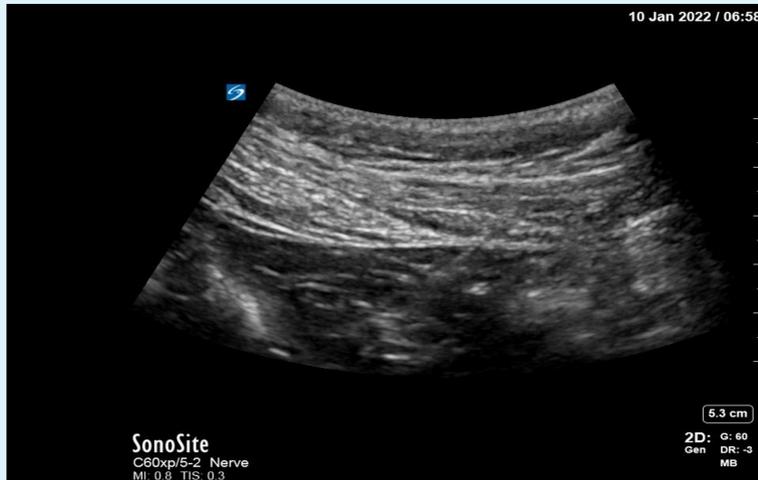


Fig 1 Ultrasound image illustrates anatomy during the QL block



Fig 1 Ultrasound image illustrates anatomy during the QL block (needle tip highlighted)

Introduction

Laparoscopic adrenalectomy has become the gold standard for the treatment of adrenal lesions. The posterior retroperitoneal approach is preferred and offers several advantages over the transperitoneal approach, including avoiding intra-abdominal organs and allowing direct access to the adrenal gland. Although minimally invasive, postoperative pain associated with surgical incisions, pneumoperitoneum, and surgical manipulation can increase the risk of postoperative complications, decrease patient satisfaction, and prolong recovery. Newer fascial plane blocks such as the erector spinae plane (ESP) blocks and quadratus lumborum (QL) blocks are gaining popularity due to providing both somatic and visceral analgesia. This case report describes a QL block using liposomal bupivacaine as a postoperative analgesic technique for a patient undergoing laparoscopic adrenalectomy. Written consent for publication of non-identifying medical information and Health Insurance Portability and Accountability Act authorization was obtained from the patient.

Case Description

A 62-year-old, 87.1 kg (30.99 kg/m² BMI) diagnosed with benign neoplasm of the right adrenal gland presented for a right posterior retroperitoneoscopic laparoscopic adrenalectomy. Past medical history was significant for hypertension, hepatitis C, peripheral vascular disease, diabetes mellitus, and chronic kidney disease. The patient underwent a left adrenalectomy procedure in December 2020. Risks, benefits, and alternatives were discussed, and the patient consented to general anesthesia with preoperative bilateral QL blocks.

In the preoperative area, the patient received intravenous midazolam 2 mg. Prior to the beginning of the QL blocks, the patient's left lower lateral abdominal wall was prepped with chlorhexidine 4%. A SonoSite X-Porte HFL50xp 15-6 Mhz linear ultrasound probe (SonoSite, Bothell WA) was placed in the transverse plane cranially to the iliac crest.

Case Description (continued)

The shamrock sign was visualized: The transverse process of L4 as the stem, the erector spinae posteriorly, QL laterally, and psoas major muscle. A 22 gauge, 4 in Stimulplex needle (B-Braun, Melsungen, Germany) was advanced between the QL and the deeper psoas major muscles. 10 mL 0.25% bupivacaine with 10 mL liposomal bupivacaine 1.3% was injected with negative aspiration in 5 mL aliquots. This process was then repeated on the right lower lateral abdominal wall to complete the bilateral regional block plan. There were no apparent complications and no ultrasound evidence of vascular puncture, peritoneal violation or intraneural injection.

General anesthesia was subsequently induced with 1% lidocaine 30 mg, propofol 200 mg, fentanyl 50 mcg, and rocuronium 50 mg. Following successful intubation, another large bore IV was placed. Maintenance of anesthesia was established with propofol 150 mcg/kg/min, supplemented by rocuronium 40 mg, fentanyl 100 mcg, dexmedetomidine 0.5 mcg/kg/hr, and ketamine 15 mcg/kg/min. A total of fentanyl 150 mcg was administered during the length of the procedure.

The laparoscopic adrenalectomy was performed using the posterior retroperitoneal technique. Three trocars were placed in the subcostal area. The patient remained hemodynamically stable throughout the procedure. At the completion of the surgery, the patient was extubated and transferred to the post-anesthesia care unit (PACU). Postoperatively, the pain was well controlled with scheduled oral acetaminophen and one dose of oxycodone 5 mg on postoperative day one. The table below summarizes the patient's postoperative pain scores and opioid consumption.

Postop Day	Pain Score	Opioid Consumption	MEQ	Cumulative MEQ
0	0	None	0	0
1	0	Oxycodone 5 mg	7.5	7.5
2	0	none	0	7.5

Discussion

In this case report, we report the successful use of single-injection QL block to provide postoperative analgesia for a patient undergoing laparoscopic adrenalectomy. Liposomal bupivacaine was utilized to provide prolonged postsurgical pain control. Additionally, preemptive administration of ketamine and dexmedetomidine was included in the anesthetic regimen, which may have decreased the patient's opioid requirements and facilitated recovery following the surgery. QL block produces a broad distribution of local anesthetic resulting in a large area of sensory inhibition (T7 through L1 in most cases). QL block is a safe procedure with no reported major complications. Compared to previously described truncal nerve blocks, QL block has several advantages, including greater visceral pain coverage and improved element of safety since the targets for injection are relatively distant from the peritoneal cavity, abdominal organs, and large blood vessels. To conclude, US-guided QL block can be considered an effective regional anesthesia technique as part of multimodal analgesia for abdominal surgery. Further research investigating the best approach tailored to specific surgery and safety against other modalities is recommended.

Acknowledgements & Discussion

Special thanks to Bill Lahiff for assistance with poster authorship and technical support.

- Mantha, S. S. P., Nair, A. S., Kodisharapu, P. K., & Rayani, B. K. (2021). Continuous trans-muscular quadratus lumborum block for patient with postscoliosis correction undergoing open adrenalectomy-A case report. *Saudi Journal of Anaesthesia*, 15(2), 225.
- Yuan, Q., Lu, S., Cui, X., Zhang, Y., Xie, Y., Zhang, Y., ... & Huang, Y. (2021). Transmuscular quadratus lumborum block for postoperative pain and recovery after laparoscopic adrenalectomy: a randomized controlled trial. *BMC anesthesiology*, 21(1), 1-8.
- Ueshima, H., Otake, H., & Lin, J. A. (2017). Ultrasound-guided quadratus lumborum block: an updated review of anatomy and techniques. *BioMed research international*, 2017.
- Jin, Z., Liu, J., Li, R., Gan, T. J., He, Y., & Lin, J. (2020). Single injection quadratus lumborum block for postoperative analgesia in adult surgical population: a systematic review and meta-analysis. *Journal of clinical anesthesia*, 62, 109715.
- Sprung, J., O'Hara Jr, J. F., Gill, I. S., Abdelmalak, B., Sarnaik, A., & Bravo, E. L. (2000). Anesthetic aspects of laparoscopic and open adrenalectomy for pheochromocytoma. *Urology*, 55(3), 339-343.