CASE REPORT

EXTERNAL OBLIQUE INTERCOSTAL (EOI) PLANE BLOCK FOR POST-OPERATIVE ANALGESIA IN A PATIENT UNDERGOING ELECTIVE LAPAROSCOPIC CHOLECYSTECTOMY: A CASE REPORT

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ABSTRACT

This case report describes the use of an ultrasound-guided external oblique intercostal (EOI) plane block for postoperative analgesia in a patient undergoing elective laparoscopic cholecystectomy. A 45-year-old male (ASA I) with symptomatic gallstones underwent uneventful laparoscopic cholecystectomy under general anesthesia. In addition to standard analgesics (paracetamol), a right-sided EOI block was performed at the end of surgery using 20 mL of 0.25% bupivacaine (injected at the level of the 6th rib) to target the lateral and anterior cutaneous branches of T6/7–T10/11. Postoperatively, the patient reported only mild pain (NRS ≤2) at rest and with movement over 24 h, required minimal rescue analgesia (single dose of 100mg iv tramadol), and had stable vital signs. This favorable outcome aligns with recent evidence that EOI plane block reduce postoperative pain and opioid requirements. This case highlights that an ultrasound-guided EOI block can be a simple, safe, and effective component of multimodal analgesia for laparoscopic upper abdominal surgery.

Keywords: Laparoscopic cholecystectomy; External oblique intercostal block; Postoperative analgesia; Numeric rating scale(NRS).

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INTRODUCTION

Laparoscopic cholecystectomy is the standard surgical treatment for cholelithiasis, but it often causes significant postoperative pain despite being minimally invasive. Somatic pain from trocar sites dominates the visceral pain especially in the early postoperative period and can delay recovery and extend hospital stay [1]. Multimodal analgesia is therefore critical in reducing postoperative pain. Conventional opioid-based analgesics have well-known side effects such as nausea, sedation, respiratory depression, etc [2] and can impede recovery. For this reason, regional anesthesia techniques such as peripheral nerve and fascial plane blocks are increasingly used to improve pain control with fewer systemic effects. The sub-costal transverse abdominis plane (TAP) block, for example, is widely used, but it spares the lateral cutaneous branches and hence is not well suited for incisions involving lateral wall of abdomen.

The ultrasound-guided external oblique intercostal (EOI) plane block is a relatively new fascial plane block designed to anesthetize the lateral and anterior cutaneous branches of the intercostal nerves (typically T6–T10) along the costal margin. Introduced by Hamilton et al. in 2019, cadaver studies confirmed that injecting local anesthetic between the external oblique and internal oblique muscles (at the 6th - 7th rib level) can achieve spread to T6/7–T10/11 dermatomes[3].

In this context, we present a case report of a patient undergoing laparoscopic cholecystectomy who received an ultrasound-guided right-sided EOI block for analgesia.

Case Presentation

A 45-year-old male (weight 72 kg) with symptomatic cholelithiasis was scheduled for elective laparoscopic cholecystectomy. His medical history was unremarkable, with no chronic illnesses or previous surgeries. Preoperative evaluation and laboratory tests were normal. After informed consent, the patient was taken to the operating room. Standard monitoring was applied. General anesthesia was induced with propofol (2 mg/kg), fentanyl (2 µg/kg), and atracurium (0.5 mg/kg). An adequate sized endotracheal

tube was placed, and anesthesia was maintained with sevoflurane (1–1.5%) in oxygen/air and intermittent fentanyl as needed. Pneumoperitoneum was established, and three 5-mm trocars were inserted (at the umbilicus, epigastrium, and right subcostal area). The cholecystectomy was performed uneventfully over 60 minutes. Intraoperative parameters (heart rate, blood pressure, SpO_2) remained within 20% of baseline, and estimated blood loss was minimal.

At the end of the procedure (before emergence), a right-sided ultrasound-guided EOI block was performed to enhance postoperative analgesia. With the patient supine and the right arm adducted, a high-frequency linear ultrasound probe was placed in the mid-axillary line over the 6th–7th ribs. The external oblique muscle and intercostal muscles were identified. A 23 guage hypodermic needle was inserted in-plane, targeting the plane between the external oblique and intercostal muscles. After negative aspiration, 20 mL of 0.25% bupivacaine was injected incrementally in the fascial plane (with hydrodissection) [fig.1]. Spread of the local anesthetic lifting the external oblique muscle layer was confirmed under ultrasound. The entire procedure was atraumatic, and no complications occurred. Neuromuscular blockade was reversed, and the patient was extubated awake and transferred to the recovery unit.

Postoperatively, the patient received intravenous paracetamol 1g every 8hrly for baseline analgesia. His pain was assessed using the Numeric Rating Scale (NRS, 0–10) at regular intervals (2, 4, 6, 12, 18, and 24 hours post-operatively). He reported no pain at rest, NRS scores of 1/10 at 2, 4 and 6 h, and 2–3/10 at 12, 18 and 24 h. With movement (coughing or deep breathing), NRS was 1-2/10 at 2, 4hrs, 2-3/10 at 6,12hrs and 4/10 at 18hrs for which he received a dose of iv Tramadol 100mg. Vital signs remained stable (no tachycardia or hypertension suggestive of pain). He experienced no nausea or vomiting. The patient ambulated and tolerated oral intake by the next morning.

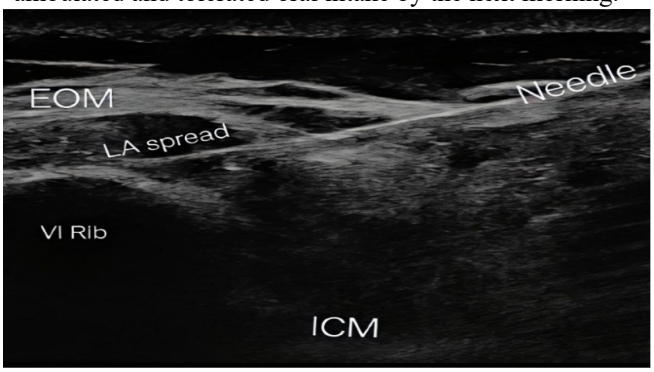

Fig.1: Ultrasound picture of EOI plane block showing spread of local anaesthetic between external oblique and intercostal muscle at the level of 6th rib

Discussion

This case demonstrates that an ultrasound-guided EOI plane block can provide effective analgesia after laparoscopic cholecystectomy. Our patient's pain was minimal and easily controlled despite having only a single unilateral block plus non-opioid analgesics. These findings are consistent with recent literature and studies done by Li et al.[4], Ma et al.[5] on Subcostal TAP block, found that it provides inadequate analgesia for incisions involving the lateral sides of the upper abdomen.. In our case, the patient's pain scores (≤3/10 at all times) were at the low end of typical post-laparoscopy values, and opioid analgesics were not needed at all.

While our patient had a unilateral block (right side only), this was sufficient because the trocars and gallbladder are typically right-sided. In bilateral cases, blocks on both sides could be considered.

Compared to other blocks (e.g. TAP or paravertebral), the EOI block is technically simple and performed under ultrasound guidance without the need for deep needle placement.

Conclusion

To conclude, the ultrasound-guided external oblique intercostal plane block was a simple, safe, and effective adjunct in this patient, providing excellent postoperative analgesia after laparoscopic cholecystectomy. The patient's low pain scores and minimal analgesic needs are consistent with recent findings that EOI blocks significantly reduce postoperative pain and opioid consumption. This case supports considering the EOI block as part of a multimodal analgesia regimen for laparoscopic upper abdominal surgery. Further comparative studies are warranted, but clinicians should be aware of the EOI block technique for targeted chest-wall analgesia.

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