

Ultrasound guided External Oblique Intercostal (EOI) block for unplanned open cholecystectomy.

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Introduction

- ❖ Upper abdominal incisions such as oblique subcostal laparotomy are associated with significant pain and respiratory compromise and are often managed with either epidural or peripheral nerve blocks. These procedures can be technically difficult to place due to several factors including patient's body habitus, obesity and proximity to the surgical site as well as skill of the regional provider. External oblique intercostal (EOI) block is a novel regional procedure that is simple and easier to perform and has been associated with excellent pain control. Our case highlights the use of continuous EOI blocks for postoperative pain management in a robotic assisted laparoscopic converted to open common bile exploration.

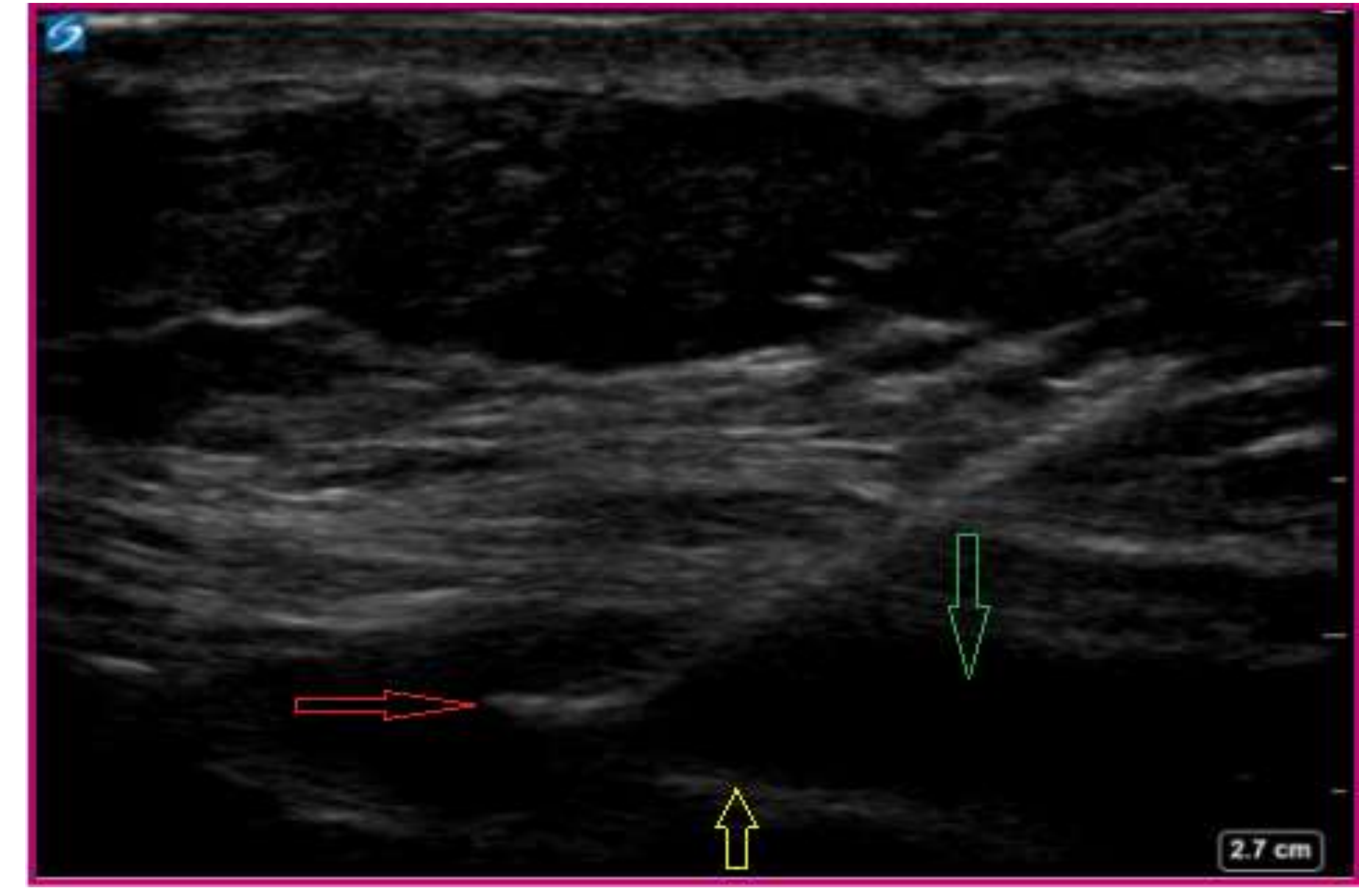
Case Presentation

- ❖ 56-year-old female, BMI 33.25 (93.4 kg) with a past medical history significant for cholelithiasis and recurrent choledocholithiasis s/p elective cholecystectomy with residual obstructing gallstone in the common bile duct that led to a series of interventions, including ERCP and stent placement, which were unsuccessful.
- ❖ The patient was later scheduled for robotic-assisted laparoscopic common bile duct exploration. Due to significant adhesions, the procedure was converted to open with a large right upper quadrant subcostal incision. Placement of an epidural was no longer possible, so decision was made proceed with placement of EOI catheters at the end of the surgery prior to extubation.
- ❖ These blocks were performed in the supine position using both anatomical landmarks and ultrasound imaging for confirmation. A high frequency linear 13-6 MHz Sonosite probe was placed on the chest wall medial to the mid-axillary line over the 6th rib parasagittal in orientation.

- ❖ An 18G echogenic needle was then advanced from cephalad to caudad deep to external oblique intercostal muscle using hydro-dissection with saline. The needle was then advanced 1-2 cm and the catheter was subsequently placed an additional 4 cm beyond the needle tip under ultrasound guidance and secured.
- ❖ A total of 30 ml of 0.5% bupivacaine was administered. Confirmation of the catheter's correct placement was achieved through ultrasound visualization of the dispersion of the local anesthetic in the targeted area.

Postoperative course

- ❖ Patient was placed on a multimodal regimen including hydromorphone PCA, Acetaminophen 1 gram every 6 hours and was later transitioned to Oxycodone 5-10 mg PO every 4 hours on POD#2. Patient reported having pain score of 0/10 at rest and 2/10 with ambulation. EOI catheters were trialed off and removed on POD#4 with minimal increase in overall pain score and the patient was subsequently discharged.



External oblique block guided ultrasound image. Green arrow: injection. Red arrow: tip of the needle. Yellow arrow: 6th rib.

Discussion

- ❖ Epidural analgesia remains the gold standard for management of postoperative pain following open abdominal procedures. However, this block is usual done prior to induction of general anesthesia with the patient in either the sitting or lateral position and is very difficult to place as a postoperative procedure due to poor positioning secondary to pain with movement. Fascial plane blocks such as transversus abdominal pain (TAP) and more recently quadratus lumborum (QL) blocks are increasingly being used in this patient population, as they can be performed in the supine position.
- ❖ However, standard TAP blocks have been shown to provide analgesia for T10-L1, which is excellent for lower abdominal incisions.
- ❖ Subcostal TAP blocks provide vertical dermatomal coverage similar to rectus sheath blocks and are ineffective for oblique upper quadrant incision, as the lateral cutaneous branches of the upper abdominal intercostal nerves are not blocked. Anterior QLB provides T7-L1 dermatomal coverage.
- ❖ EOI is a novel fascial plane block described by Elsharkaway in 2021 that provides analgesia to both anterior and lateral abdominal wall (T7-11). Another advantage to this block is that it is easy to learn and execute due to the superficial nature of the block, which is advantages for placement in obese patients.

Conclusion

- ❖ The use of ultrasonography has resulted in the creation of novel fascial plane blocks that have helped to improve patient's postoperative pain and overall recovery. This case highlights the efficacy and safety of ultrasound-guided continuous EOI nerve blocks for post-operative pain management as a rescue block for procedures with oblique incision.

References: Petiz C, Barbosa R, Ribeiro Boneco T, Pacheco J, Resende A. External Oblique Intercostal Block for Living Kidney Donor Open Nephrectomy: A Case Series. Elsharkawy H, Kolli S, Soliman LM, Seif J, Drake RL, Mariano ER, El-Boghdadly K. The External Oblique Intercostal Block: Anatomic Evaluation and Case Series. Korkusuz M, Basaran B, Et T, Bilge A, Yarimoglu R, Yildirim H. Bilateral external oblique intercostal plane block (EOIPB) in patients undergoing laparoscopic cholecystectomy: A randomized controlled trial.