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Bilateral External Oblique Block with Catheter Insitu for Post Operative Pain Management of Exploratory Laparotomy

Dr. Yogeshwari[1], Dr. Archita Patil[2], Dr. Sandeep Kadam[3], Dr. Akshath Goklani[4]

[1]Junior Resident, D.Y. Patil Medical college and Research Institute, Kolhapur, Maharashtra, India
Email: *yogeshwari.am96[at]gmail.com*

[2]Associate Professor, D.Y. Patil Medical college and Research Institute, Kolhapur, Maharashtra, India
Email: *drarchita[at]yahoo.co.uk*

[3]Professor and HOD, D.Y. Patil Medical college and Research Institute, Kolhapur, Maharashtra, India
Email: *kadamsandeeps[at]gmail.com*

[4]Junior Resident, D.Y. Patil Medical college and Research Institute, Kolhapur, Maharashtra, India
Email: *akshatgoklani21[at]gmail.com*

Abstract: ***Materials and methods: Study design: Case report. We report a case of 62 year old male diagnosed with gastric carcinoma posted for gastrojejunostomy and jejunojejunostomy. Thorough preoperative evaluation was done prior to surgery. On examination MPC grade 3, upper and lower incisors absent. Case was managed by routine anaesthesia protocol with general anaesthesia and after induction bilateral 18 G epidural catheters were placed in external oblique fascial plane under USG guidance at 6th intercostal space. Patient was hemodynamically stable with adequate analgesia intraoperatively and no requirement of NSAIDs or opioids use postoperatively. Result: Patient had good pain relief post op with top ups given with Inj. Bupivacaine 0.125% 15cc on each side every 12th hourly. Patient received 2 doses of Inj. Paracetamol 1gm intravenously on post op day zero and 1 dose on post op day 1 and 2. Conclusion: Pain control following laparotomy can be difficult to manage. A feasible option for pain control may be bilateral external oblique catheter. Future studies are required to determine the effectiveness of external oblique nerve catheter.***

Keywords: Upper abdominal surgeries, external oblique catheter, postoperative pain management, ultrasound-guided analgesia, opioid-sparing technique

1. Introduction

Exploratory laparotomy is a painful procedure that necessitates a comprehensive multimodal approach for effective postoperative pain management. Epidural anaesthesia is recognized for its efficacy in providing pain relief during abdominal surgery. However, in cases where epidural anaesthesia is contraindicated, exploring alternative regional techniques becomes imperative. One such alternative is bilateral external oblique catheter placement, which can offer effective pain management for exploratory laparotomy in patients where epidural anaesthesia is not an option.

2. Case Presentation

A case of 62 year old male, came with chief complaint of pain abdomen since 3 months, associated with hematemesis and melena. Patient had history of blood transfusions in view of low haemoglobin. Patient was diagnosed with gastric carcinoma and posted for gastrojejunostomy and jejunojejunostomy. On examination patient was conscious, afebrile with pulse rate of 80bpm and blood pressure of 120/60mmHg. Airway examination findings were Mallampati score 3, Finger mouth opening 3, Thyromental distance 6cm, Teeth- upper and lower incisors absent. On head to toe examination pallor and icterus was present. Investigations were hemoglobin 9.3, total bilirubin of 1.5, direct bilirubin of 0.7, SGOT/SGPT were 44.0/40.0, albumin of 2.8, PT/INR of 22/1.6 and 2D Echocardiography findings were concentric LVH, LVEF 50%, mitral annular calcification with mild MR, aortic valve thickened with trivial AR, type 1 DDF.

Management- Patient was given general anaesthesia as follows, Patient was pre-medicated with Inj. Midazolam 0.05mg/kg, Inj. Glycopyrolate 4µg/kg and Inj. Fentanyl 2µg/kg and induced with Inj. Propofol 2 mg/kg and Inj. Succinylcholine 2mg/kg. Patient was intubated with 8 number cuffed endotracheal tube using macintosh laryngoscope , bilateral air entry checked and tube was fixed. Patient was maintained on oxygen and air with sevoflurane and muscle relaxant vecuronium(0.1mg/kg). Central line right (IJV) was secured.

Bilateral External Oblique Catheter
After induction of general anaesthesia area painted and draped. USG linear probe used of 3-15Hz. Under all aseptic precaution with ultrasound guidance at 6th intercostal space using 18G Tuohy's needle space identified and 18G catheter inserted under visualization and fixed at 4cm (Figure 1, 3).

Loading dose of Inj.Bupivacaine 0.25% 15cc on each side given. Patient was hemodynamically stable with adequate analgesia intraoperatively. Top ups given with Inj. Bupivacaine 0.125% 15cc on each side every 12th hourly postoperatively depending on the VAS score.

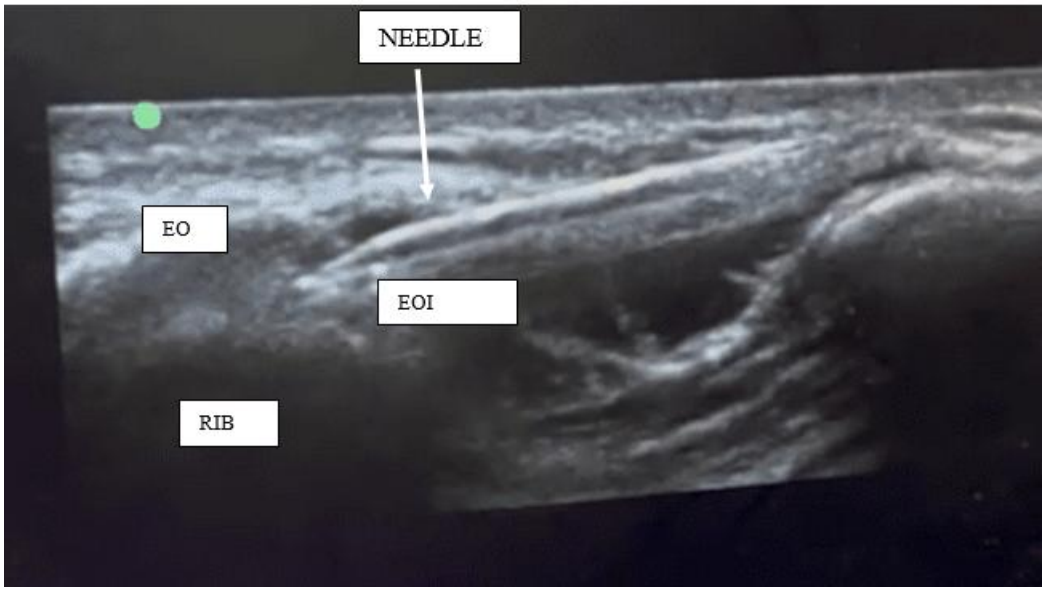

Figure 1: USG image of EOI plane with needle

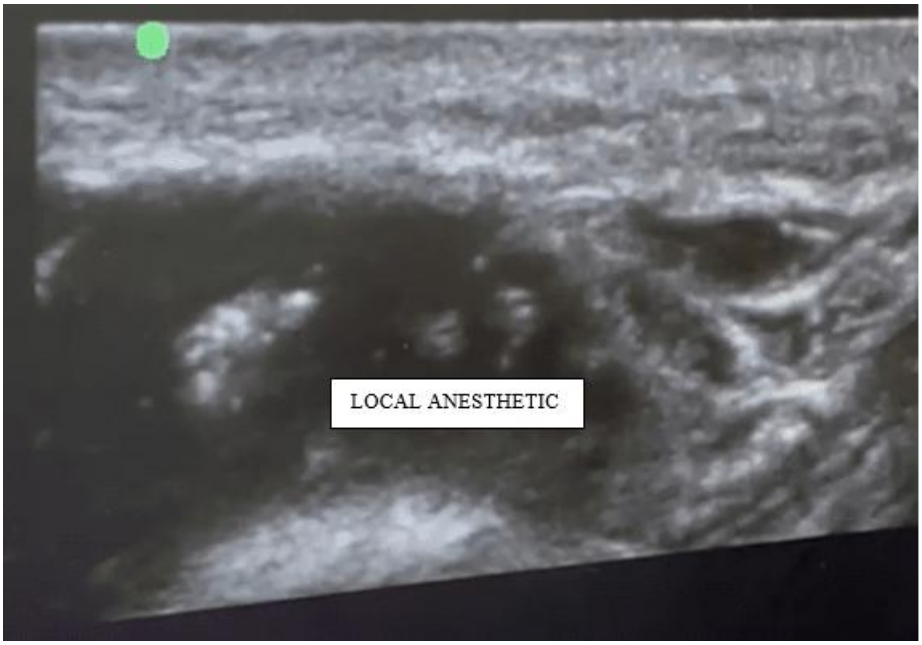

Figure 2: USG image showing spread of local anaesthetic in the EOI plane

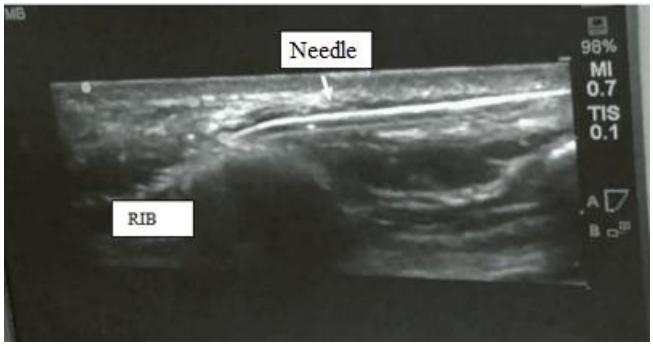

Figure 3: USG image showing needle with local anaesthetic spread

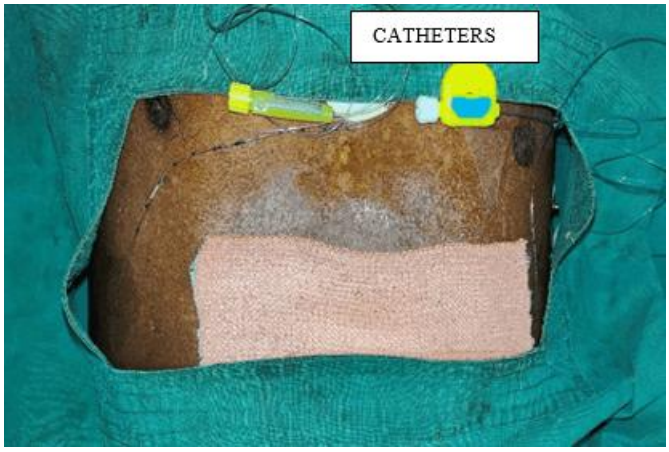

Figure 4: Catheter Placement

Midline incision was taken from xiphisternum to umbilicus. Patient was hemodynamically stable intraoperatively. After procedure patient was extubated and shifted to SICU.

3. Result

Patient had good pain relief post op (vas score 0) with top ups given with Inj. Bupivacaine 0.125% 15cc on each side every 12th hourly. Patient received 2 doses of Inj. Paracetamol 1gm intravenously on post op day zero and 1 dose on post op day 1 and 2. Under all aseptic precautions catheters were removed on post op day 3. Patient didn't receive any other analgesics in acute postoperative course.

4. Discussion

The intercostal nerves T6 to T12, and the ilioinguinal nerves (L1), all arise from the anterior rami of spinal nerves, providing innervation to the abdominal wall. At the midaxillary line, the lateral cutaneous branch of the intercostal nerve travels superficially, providing sensation to the lateral abdominal wall. It divides into anterior and posterior branches, extending anteriorly to the rectus abdominis margin and posteriorly supplying the skin over latissimus dorsi. The intercostal nerve extends into the transversus abdominis plane (TAP) until the rectus abdominis muscle, where it bifurcates giving rise to the anterior cutaneous branch, supplying the midline abdomen.

Traditionally, the lateral TAP block targets the midpoint between the subcostal margin and the iliac crest but this block may not adequately cover upper abdominal dermatomes as shown in the study by O'Donovan B, Martin B (1). Alternatively, the oblique subcostal TAP block performed parallel to the subcostal margin (2), which provides dermatomal coverage from T7 to T12, with partial coverage of T6 and L1 as shown by the Chen et all study for extent of analgesia after oblique subcostal TAP block (3). The oblique subcostal TAP block mainly anesthetizes the mid-abdomen, and leaving the lateral abdomen unblocked.
To address this limitation, a continuous bilateral external oblique block technique places a catheter above the external oblique muscle, anesthetizing the lateral cutaneous and anterior cutaneous branches of the thoracoabdominal nerves T6 to T9. This approach offers effective pain relief for upper abdominal surgeries where epidural anaesthesia is contraindicated.

5. Conclusion

Managing pain after laparotomy can be challenging. In cases where epidural anaesthesia is contraindicated, an effective option for pain management could be bilateral external oblique catheter placement. Studies suggest that transversus abdominis plane (TAP) block is effective for lower abdominal surgeries below the umbilicus, rather than upper abdominal surgeries. Ultrasound-guided external oblique (EO) block is superficial and relatively easy to perform. By the use of external oblique catheters, patients have achieved low pain scores with minimal use of NSAIDs and no opioids used postoperatively. Patient was ambulated early in the postoperative period.

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