

Erector spinae plane block in various abdominal surgeries: A case series

ABSTRACT

Erector spinae plane (ESP) block is a regional anesthesia technique, which provides visceral and somatic analgesia for abdominal surgery; during surgery and in the postoperative period. The local anesthetic is injected between the erector spinae muscle and the transverse process and it spreads cranially and caudally into the paravertebral space, affecting the ventral and dorsal branches of the thoracic spinal nerves and the rami communicants that contain sympathetic nerve fibers. ESP block can replace thoracic epidural anesthesia and has a better analgesic effect compared to other plane blocks that are used in abdominal surgery. We described six case series of successfully performed ESP block for postoperative analgesia in various abdominal surgeries such as unilateral open inguinal hernia repair with a supraumbilical hernia, ileostomy reversal surgery, open diaphragmatic hernia repair, laparoscopic cholecystectomy, and abdominal abscess evacuation.

Key words: Abdominal surgery; analgesia; erector spinae plane block; postoperative pain

Introduction

The erector spinae plane (ESP) block is the inter-fascial plane block, where local anesthetic is injected between the erector spinae muscle and the transverse process. The local anesthetic is spreading cranially and caudally into the paravertebral space, affecting the ventral and dorsal branches of the thoracic spinal nerves and the rami communicants that contain sympathetic nerve fibers.^[1] ESP block provides visceral and somatic analgesia for abdominal surgery^[2] and can be a useful alternative to the epidural anesthesia in major abdominal surgery.^[3] We report six patients undergoing different abdominal procedures in which ESP block was successfully performed for intra- and postoperative analgesia.

Case Series


Case 1

A 56-year-old male patient (weight 100 kg, height 192 cm) was scheduled for open surgery of supraumbilical and inguinal hernia repair from the right side. Bilateral ESP block was performed before the induction to general anesthesia, at Th10 level with 20 mL 0.25% bupivacaine from both sides. Anesthesia was induced with midazolam 0.04 mg/kg, lidocaine 1 mg/kg, fentanyl 2 µg/kg, propofol 2 mg/kg, and rocuronium bromide 0.6 mg/kg and were same in all patients. It was maintained with sevoflurane (MAC 0.7–1) and additional bolus doses of fentanyl. The total amount of fentanyl was 350 µg. Visual analog scale (VAS) score 2 h after

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surgery was 2 at rest and 3 on coughing. After surgery, at 6, 12, and 24 h, the pain was 3 at rest and 4 on coughing, thus, 1 g paracetamol was given. 19 h after surgery pain was 10/10 and 100 mg tramadol was given. After 36 and 48 h, the pain was 3 at rest and on coughing, and after 72 h was 2 at rest and on coughing.

Case 2

A 48-year-old male patient (weight 84 kg, height 186 cm) was scheduled for an ileostomy reversal surgery. ESP block was performed from the left side at the Th8 level with 20 mL 0.25% bupivacaine. The total amount of given fentanyl was 400 µg. After the operation, the patient complained of having pain 5/10 and 1 g metamizole was given. 2 h after operation, the pain was 6 at rest and on coughing, thus, 1 g paracetamol was given. After 6 h, the pain was 3/10 at rest and on coughing, but after 12 h he received 100 mg tramadol (the pain was 6 at rest and 8 on coughing). After 24 h, the pain was 5/10 at rest and 6/10 on coughing, thus, 1 g paracetamol was given, and after 36 h, the pain was 2/10 at rest and on coughing. Pain scores 4/10 at rest and 5/10 on coughing were reported after 48 and 72 h, respectively and 1 g paracetamol was given.

Case 3

A 67-year-old male patient (weight 70 kg, height 165 cm) was scheduled for open diaphragmatic hernia repair. A bilateral ESP block was performed at the Th8 level. The total amount of fentanyl was 450 µg. 2 h after surgery, patient-reported pain 5/10 at rest and 6/10 on coughing, thus, 1 g paracetamol was given. Pain scores 6, 24, 48, and 72 h after the surgery were the same, 4/10 at rest and on coughing, thus, 1 g paracetamol was given. 12 and 36 h after surgery, patient-reported pain 5/10 at rest and 6/10 on coughing and, thus, 1 g paracetamol was given.

Case 4 and 5

A 65-year-old male (weight 110 kg, height 186 cm) and 54-year-old female (weight 68 kg, height 165 cm) patients were scheduled for laparoscopic cholecystectomy. The total amount of fentanyl given in the male patient was 350 µg and 150 µg in the female patient. 2 h after surgery, the male patient-reported pain 5/10 at rest and 6/10 on coughing, and thus, 1 g paracetamol was given. After 4, 8, and 12 h, the pain was 4/10 at rest and on coughing and 1 g metamizole and 1 g paracetamol were given alternately. 24 h after surgery, the pain was 2/10 at rest and 3/10 on coughing and no analgesic was given. In the female patient, after 1 h of the surgery pain was 5/10 at rest and 6/10 on coughing, and thus, 1 g paracetamol was given. After 4, 8, and 12 h, the pain was 2/10 at rest and 5/10 on coughing and was treated alternately with paracetamol and metamizole. 24 h after

surgery pain was 4/10 at rest and 5/10 on coughing, therefore, 1 g paracetamol was given.

Case 6

A 31-year-old male patient (weight 90 kg, height 187 cm) was scheduled for emergency surgery of acute diverticulitis with abscess. Bilateral ESP block was performed at the Th10 level with 30 mL 0.25% bupivacaine on each side before surgery. The total amount of fentanyl given during surgery was 250 µg. In the postoperative period, at 2, 6, 12, 24, 36, 48, and 72 h, the patient didn't report having pain, pain scores were 0/10 at rest and on coughing, and thus, no analgesic was given.

Discussion

ESP block provides effective analgesia in the intra- and the postoperative period after abdominal surgeries. Pain during abdominal surgery consists of somatic and visceral pain.^[4] Somatic pain contains 70–75% of the pain, lasts 72 h after open surgery and is arising from the anterior abdominal wall. Visceral pain lasts for 24–36 h, it is intense but short-term. Opioids are very effective in the treatment of visceral pain but not so effective for somatic pain and are related to side effects in the postoperative period.^[5] In patient 1, the most often pain score was 3, which shows the opioid-sparing effect of ESP block. In patient 2, the most reported pain score in the first 72 h was 5–6/10. In patient 3, with diaphragmatic hernia repair, the most reported pain score was 4. In patient 4, the most reported pain score was 4, and patient 5 had mostly reported 5 as pain score. Patient 6 reported no pain (0/10) during postoperative 72 h. Complications from ESP block are pneumothorax,^[6] motor weakness,^[7] local anesthetic systemic toxicity (LAST),^[8] and priapism.^[9] Only in patient 1, priapism was noticed as a complication of the block.

In conclusion, ESP block showed significant analgesic effect during various abdominal surgeries in the postoperative period, with lower opioid consumption during surgery and fewer pain scores in postoperative 72 h.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published, and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

All authors disclose all conflicts of interest they may have with the publication of the manuscript or an institution or product that is mentioned in the manuscript and/or is important to the outcome of the study presented. Authors also disclose conflict of interest with products that compete with those mentioned in this manuscript.

References

1. Forero M, Adhikary SD, Lopez H, Tsui C, Chin KJ. The erector spinae block: A novel analgesic technique in thoracic neuropathic pain. *Reg Anesth Pain Med* 2016;41:621-7.
2. Chin KJ, Adhikary S, Sarwani N, Forero M. The analgesic efficacy of pre-operative bilateral erector spinae plane (ESP) blocks in patients having ventral hernia repair. *Anesthesia* 2017;72:452-60.
3. Luis-Navaro JC, Seda-Guzmán M, Luis-Moreno C, Chin KJ. Erector spinae plane block in abdominal surgery: Case series. *Indian J Anaesth* 2018;62:549-54.
4. Niraj G, Tariq Z. Continuous erector spinae plane (ESP) analgesia in different open abdominal surgical procedures: A case series. *J Anesth Surg* 2018;5:57-60.
5. Swegle JM, Logemann C. Management of common opioid-induced adverse effects. *Am Fam Physician* 2006;74:1347-54.
6. Hamilton DL. Pneumothorax following erector spinae plane block. *J Clin Anesth* 2018;25:17.
7. Selvi O, Tulgar S. Ultrasound guided erector spinae plane block as a cause of unintended motor block. *Rev Esp Anesthesiol Reanim* 2018;65:589-92.
8. Tulgar S, Selvi O, Senturk O, Serifsoy TE, Thomas DT. Ultrasound-guided erector spinae plane block: Indications, complications, and effects on acute and chronic pain based on a single-center experience. *Cureus* 2019;11:e3815.
9. Elcoundi A, Eloukkal Z, Bensghir M, Belyamani L. Priapism following erector spinae plane block for the treatment of a complex regional pain syndrome. *Am J Emerg Med* 2019;37:796.e3-4.