Use of Intermittent Bolus Erector Spinae Plane (ESP) Block for Analgesia in Open Cholecystectomy: A Case Report

INTRODUCTION

Ultrasound-guided erector spinae plane (ESP) block has been first described by Forero as an analgesia technique for thoracic neuropathic pain.\([1]\) It offers good postoperative analgesia for thoracic/breast surgery with injection at the T5 level.\([2]\) Some authors suggested that ESP block has an analgesic effect not only on somatic but also on visceral pain. Local anesthesia probably spreads toward the paravertebral space affecting the ventral rami and rami communicantes that include sympathetic nerve fibers.\([1,3]\) Bilateral ESP blocks at the lower level (T8) have been found to be effective as thoracic epidural analgesia for major abdominal surgery in some case reports.\([3,4]\)

Multiple other case reports used T7 as an optimal point of injection for various, mostly laparoscopic, abdominal procedures.\([1-3]\)

We are not aware of any previous report of the successful use of continuous ESP block using intermittent boluses for postoperative analgesia after open cholecystectomy (OC).

CASE REPORT

Patient’s consent was obtained for this case report. REC approval for case report was not required by our institution.

A 67-year-old male patient (weight: 101 kg, height: 179 cm, body mass index: 31.7) with large gallstone was scheduled to undergo elective laparoscopic cholecystectomy. He had a history of gout, gastroesophageal reflux disease, and moderate obesity. He was considered as ASA-2 according to the American Society of Anesthesiologists. He consented for ESP block in case of OC.

Anesthesia induction was performed using fentanyl 100 μg, propofol 2 mg/kg, and rocuronium bromide 50 mg intravenous (iv). Following intubation, anesthesia was maintained with 1.0 MAC of sevoflurane in air–oxygen mixture with FiO\(_2\) 0.4. Perioperative bolus of lidocaine 1.5 mg/kg followed by infusion of lidocaine 1.5 mg/kg/h and bolus of ketamine 30 mg, paracetamol 1 g, and morphine 20 mg was given iv. After 3.5 h, it was decided to change surgical procedure due to technical difficulties to OC (Fig. 1).
Total surgical time was 320 min, and time under anesthesia was 400 min.

ESP block

At the end of surgery, the patient was placed on the left lateral decubitus position, and right-sided ultrasound-guided ESP block was performed under full aseptic conditions using high frequency linear probe (Sonosite EDGE-2, HFL Probe 6–13 MHz) using standard epidural kit (16 G Tuohy needle and 18 G epidural catheter; Smiths Medical). ESP was located at the T6 level, and after opening the space between the transverse process of T6 and erector spinae muscle using 5 mL of normal saline, the catheter was inserted from cranial to caudal direction, so the tip of the catheter was on top of the T7 transverse process. Further, bolus 20 mL of local anesthesia (0.5% levobupivacaine) was injected through the catheter under direct ultrasound control, and spread deep to erector spinae muscle was observed. Bacterial filter was attached. The catheter was then secured with tissue glue (Dermabond), covered by clear dressing (Tegaderm), and taped over his shoulder to the right chest (Fig. 2).

After extubation in the operating theatre, the patient was transferred to the recovery room. Patient’s numerical rating scale (NRS) was 1/10 at rest and when coughing. Morphine patient-controlled analgesia (PCA) pump was attached as rescue analgesia for the first 24 h. The patient was observed in the recovery room overnight and discharged to the surgical ward 24 h after surgery. During the first 24 h, he used 5 mg of morphine through his PCA pump mainly for buttock pain due to his prolonged stay in the bed and chair. Local anesthesia boluses (20 mL 0.25% levobupivacaine) were administered in 12-hour intervals for up to 4 days. The patient was prescribed short release oxycodone (Shortec) 5–10 mg on demand (maximum 4 hourly). After 96 h, the ESP catheter was removed. His NRS during his entire stay in the hospital was <3/10, and he has not used any oxycodone. The patient was discharged home with regular paracetamol 1 g four times a day (QDS) and, as required, codeine 30 mg QDS orally for further 3–5 days.

DISCUSSION

ESP was first described for the successful treatment of thoracic neuropathic pain.[1] Various other studies showed that ESP was an effective analgesic method in bariatric surgery, pneumothorax, and major abdominal surgery when performed at upper/mid thoracic vertebral levels (T4–T8).[2–6] The LA injected in ESP spreads in the paravertebral space, allowing the effective analgesia for somatic and visceral pain.[3] Bilateral ESP block has been found to have a similar effect as epidural analgesia for major abdominal surgery.[2,4]

Injection of 20 mL of fluid at the T7 level to ESP in cadavers spreads toward C7/T2 cranially and L2/3 caudally according to one cadaveric study.[7] ESP block can be performed at the T4–T5 level for breast and thoracic surgeries and T7–T8 levels for abdominal surgeries.[2,5,7]

We report our case in which ESP block was successfully performed in a patient undergoing unexpected OC. Pain after OC has somatic and visceral origin. Visceral pain is due to the trauma of gallbladder resection, and somatic pain is due to the subcostal large skin incision. Other effective analgesic methods have been described for use after OC. Oblique subcostal transversus abdominis plane

Figure 1. Surgical wound after open cholecystectomy.

Figure 2. Erector spinae catheter secured on right shoulder.
A chickens testkentoki cerrahisinde analjezi için aralıkli olarak bolus dozda erector spina plan bloğu: bir olgu sunumu


Anahtar Sözcükler: Açık kolesistektomi; erector spina plan bloğu aralıkli boluslar; kateter; laparotomi.