

Erector spinae plane block for postoperative analgesia in surgeries with lumbotomy approach: Case series

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Abstract

Ultrasound-guided Erector spinae plane (ESP) block is gaining more importance day by day due to its easy applicability, effective results and safety. ESP block is an interfascial plane block technique that is preferred for postoperative analgesia in hip surgery in addition to thoracic and abdominal surgeries. After the standard anesthesia induction, ESP block was performed in the lateral decubitus position by using in-plane technique from the level of T8 vertebra spinous process. A total of 20 ml local anesthetics consisting of 10 ml 0.5% bupivacain and 10 ml 2% lidocaine were given to the interfascial area. Hemodynamic parameters of the patients were quite stable in the intraoperative period. Additional analgesic requirement of the patients was prolonged until 12-36 hours. Consequently ESP block may contribute to multimodal analgesia in surgery with lumbotomy approach.

Keywords: Erector spinae plane block; analgesia; lumbotomy.

INTRODUCTION

It is not uncommon that postoperative analgesia is insufficient in nephrectomy operations. For this reason, comfort of patients deteriorates and their discharge period is prolonged. Urological surgical procedures such as simple nephrectomy, partial nephrectomy, pyeloplasty, pyelolithotomy, nephrolithotomy can be performed with lumbotomy surgical incision. In these patients, peripheral blocks are effectively used as part of multimodal analgesia in order to reduce intraoperative and postoperative opioid consumption and provide effective postoperative analgesia.

Erector spinae plane block (ESP) which recently described by Forero (1) is used especially in abdominal and thoracic surgeries. This block is performed by injecting a local anesthetic between the erector spinae muscle and the transverse process of vertebrae under ultrasound guidance. Thus, dorsal and ventral roots of the thoracic and abdominal spinal nerves are blocked. The importance of ESP block is increasing thanks to effectiveness, easy applicability and safety.

In this case report, we aimed to demonstrate the analgesic effect of the ESP block in five patients who have operated with lumbotomy surgical incision.

CASE REPORT

Written consent was obtained from the patients to publish. Before surgery, an intravenous line was implemented at antecubital region or dorsum of hand by using 20 G cannula. Then, midazolam (0.03 mg/kg; IV) was given for premedication. After establishing standard monitorization, anesthesia was induced by propofol (2-3 mg/kg, IV), remifentanil (1 mcg/kg, IV) and rocuronium bromide (0.6 mg/kg). Anesthesia was maintained by 2-2.5% sevoflurane: oxygen mixture (50%/50%;3 L/min). Intra-operative remifentanil infusion was initiated at a dose of 0.15 mcg/kg/min.

After anesthesia induction, ESP block targeting plane between fascia of erector spinae muscle and transverse process of T9 vertebrae was performed via 22 G, 50 mm peripheral block needle (Stimuplex®, Braun, Melsungen, Germany) inserted through 2-3 cm lateral to spinous process of T8 vertebrae in the patient at 90° lateral decubitus position by using in-plane technique with linear ultrasound probe. The needle was advanced in cranio-caudal direction to access plane targeted. Then, 0.5% bupivacaine (10 ml) and 2% lidocaine (10 ml) were given in controlled manner by negative aspiration after injection of 5 cc local anesthetic in each time. The split up of fascia plane was observed after anesthetic injection (Figure 1).

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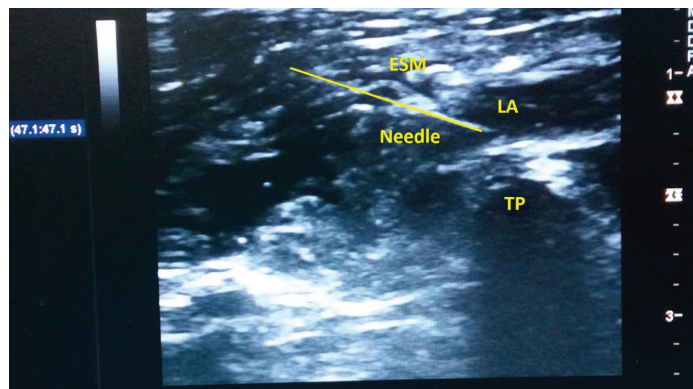


Figure 1 Distribution of local anesthetics during erector spinae plane block. ESM; Erector spinae muscle TP; Transverse process, LA; Local anesthetic.

The surgical intervention was initiated 15 minutes after ESP block.

In all patients, paracetamol (1 g, IV) and tramadol hydrochloride (1 mg/kg, IV) were given 30 minutes before completion of surgery. Patients were extubated at the end of surgery. In the postoperative period, morphine was administered in patient controlled analgesia (PCA). All patients were monitored for 48 hours regarding analgesic effect of ESP block, need for additional analgesic, adverse effects and complication (Table 1). The level of sensory block in postoperative period assessed by pinprick test

Table 1. Evaluation of cases underwent erector spinae block

	Case 1	Case 2	Case 3	Case 4	Case 5
Demographic Data	45 yrs, 55 kg, 170 cm, Female, ASA 2	75 yrs, 80 kg, 160 cm, Female, ASA 3	47 yrs, 80 kg, 172 cm, Female, ASA 2	42 yrs, 82 kg, 162 cm, Female, ASA 1	73 yrs, 100 kg, 158 cm, Female, ASA 3
Preoperative diagnose	Non-cancerous (benign) tumor	Nephrolithiasis	Non-cancerous (benign) tumor	Non-cancerous (benign) tumor	Non-cancerous (benign) tumor
Surgery type	Nephrectomy	Open stone surgery	Nephrectomy	Nephrectomy	Nephrectomy
*Duration of surgery (min)	85	90	75	60	75
Mean intra-operative remifentanyl consumption (mcg/kg/min) (Total 550 mcg)	0.11	0.05	0.05	0.14	0.05
Time to post-operative analgesic need (hrs)	32	16 and 32	32 and 40	16 and 40	12 and 20
Postoperative total mor-phine (mg/ 48 saat)	5	10	5	10	15
Postoperative total parace-tamole (gr)	1	2	2	2	2

* ESP block operation time not included to surgery tim

DISCUSSION

MS is a chronic neurological disease characterized by periods of relapse and remission. In the later stages of pregnancy, sustained rises in estrogens and progesterone likely promote Th1 to Th2 shift that result in downstream inhibition of Th1-mediated proinflammatory cytokines. Yet, after the end of pregnancy there is a sharp and persistent decrease in hormonal levels, including follicle stimulating hormone, luteinizing hormone and consequently lower estrogen and progesterone levels. This abrupt state of hormone withdrawal could result in increased synthesis of proinflammatory cytokines, as seen postpartum after completed pregnancies. Therefore just as in all autoimmune diseases, MS may remain in remission during pregnancy, but in the first 3 months postpartum, the incidence has been reported to be 3-fold higher than that of non-pregnant females (4,5).

The disease generally first manifests at an average age of 32 years, and therefore pregnancy in females with MS

is of great importance (6). It is difficult for anesthetist to select the appropriate anesthesia method for this patient population. General anesthesia is often selected for this patient group and is considered to be accepted as a safe method (1). In the past, regional anesthesia techniques were contra-indicated for these patients because of local anesthetic agent toxicity, mechanical trauma, and neuronal ischemia effects, and were avoided as these patients could deteriorate neurologically. However, in recent years, data have been presented showing that regional anesthesia can safely be used in this patient group (7). In a study by Pasto et al (8), it was reported that epidural anesthesia could be applied to MS patients for CS operations and there was no correlation with relapses. In a case series reported by Confavreux et al (9), epidural anesthesia was not determined to increase the risk of progressive neurological deficit.

Perioperative and postoperative stress in patients with MS can result in an unpredictable and varying level of symptom severity. Pain in these patients is a postoperative serious

stressor. Therefore, providing suitable pain control may be helpful in preventing complications which could develop postoperatively in MS. In 2 cases reported in literature, neurological deficits that had been present before surgery were seen to have improved after epidural anesthesia (1).

Some studies have recommended that epidural anesthesia could be selected rather than spinal anesthesia in MS patients (1,2). For spinal anesthesia, there are only case-based results showing that neurological complications have not increased. Due to the potential neurotoxic effects of local anesthetics applied to demyelinated areas of the spinal cord, this may be high-risk in this patient group. The application of intrathecal local anesthetic at high concentrations and injury to the blood-brain barrier are reasons for the avoidance of this technique. In addition, ischemia seen more often as a result of hypotension in spinal anesthesia could also cause greater damage (5,10).

As the current patient wished to experience the moment of birth, general anesthesia was not considered. It was decided to administer epidural anesthesia because of the advantages of causing less hemodynamic change, the use of local anesthetic at a low concentration, a slow onset of the block and a lesser requirement for postoperative analgesia. It was explained to the patient that with the anesthesia method to be applied, she would certainly feel no pain throughout the surgery, she would be awake and would be able to see the newborn infant.

As the patient described feeling pain intraoperatively, the epidural drug was repeated to relieve the immediate pain and to provide postoperative analgesia. No neurological complications were observed in the patient during surgery or throughout the 4-month postoperative follow-up period.

The decision for the appropriate anesthesia method in this patient group must be made from an analysis of the risks and benefits for each patient according to the preoperative neurological examination, the patient's own preference, the knowledge and the skill of the anesthetist.

Active inclusion of the patient and their family in the decision-making process and obtaining informed consent only after answering all the questions they may have is extremely important for the success of the procedure. Behaving appropriately to the sociocultural level of the patient and their family increases compliance with this process and is another important factor reducing stress on the patient.

According to currently available data, the application of epidural anesthesia to MS pregnant patients has shown

similar clinical results to those of pregnant patients without MS. Moreover, there has not been seen any increased risk of developing neurological complications in the postpartum period after the application of epidural anesthesia to MS pregnant patients. General anesthesia and the use of volatile anesthetics have been reported to be safe for patients with MS pregnant patient (10). Nevertheless epidural anesthesia is preferable method because it obtains the mother to see the newborn immediately after the CS operation and to control the postoperative pain easily.

CONCLUSION

In conclusion, epidural anesthesia can be considered as a safe anesthesia method for CS operations in pregnant patients who have MS. However, we believe that longer series are required to establish the safety of this technique.

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