Original Article

Analgesic Effect of Erector Spinae Plane Block after Cesarean Section: A Randomized Controlled Trial

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Abstract

Background: Ultrasound-guided bilateral erector spinae plane block is also a technique for providing analgesia after a cesarean section. **Aim:** We hypothesized that bilateral erector spinae plane block applied from the transverse process of T9 who underwent elective cesarean section could provide effective postoperative analgesia. **Patients and Methods:** Fifty parturients who were scheduled to undergo elective cesarean section under spinal anesthesia were included in the study. Group SA (n = 25) was categorized as the group in which spinal anesthesia alone (SA) was performed, and Group SA+ESP (n = 25) was categorized as the group in which SA + ESP block was performed. All patients were given a solution containing 7 mg isobaric bupivacaine + 15 μg fentanyl intrathecally through spinal anesthesia. In the SA + ESP group, the bilateral ESPB was performed at level T9 with 20 ml 0.25% bupivacaine + 2 mg dexamethasone immediately after the operation. Total fentanyl consumption in 24 h, the visual analogue scale for pain, and time to the first analgesic request were evaluated postoperatively. **Results:** The total fentanyl consumption in 24 h was statistically significantly lower in the SA + ESP group than the SA group (279 ± 242.99 μg vs. 423.08 ± 212.55 μg, respectively, P = 0.003). The first analgesic requirement time was statistically significantly shorter in the SA group than the SA + ESP group (150.20 ± 51.83 min vs. 197.60 ± 84.49 min, respectively, P = 0.022). Postoperative VAS scores at 4th, 8th, and 12th h at rest were statistically significantly lower in group SA + ESP than in group SA (P = 0.004, P = 0.046, P = 0.044, respectively). VAS scores during the postoperative 4th, 8th, and 12th h cough were statistically significantly lower in group SA + ESP than in group SA (P = 0.002, P = 0.008, P = 0.028, respectively). **Conclusion:** Ultrasound-guided bilateral ESP provided adequate postoperative analgesia and significantly decreased postoperative fentanyl consumption in patients having cesarean section. Also, it has a longer analgesia time than the control group, and it has been shown to delay the first analgesic requirement.

Keywords: *Cesarean section, erector spinae plane block, postoperative pain, spinal anesthesia*

Introduction

Postoperative pain after the cesarean section is the primary concern of parturients because most parturients suffer from moderate-to-severe pain after cesarean section. [1]Poor management of postoperative analgesia affects life quality and leads to low parturients satisfaction following the cesarean section. Adequate postoperative analgesia provides well-being infant care and early mobilization of the mother, increases patient

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satisfaction, prevents postoperative morbidity, and decreases hospital stay duration.[1]

Truncal blocks with parenteral analgesics are the multimodal analgesia techniques and become widespread for pain management after cesarean section. Ultrasound (US)-guided bilateral erector spinae plane block (ESPB) is also a technique for providing analgesia after cesarean section. ESPB was first described as a novel technique for thoracic pain by Forero *et al*.[2] at T5 transverse process. It provided effective analgesia by blocking ventral and dorsal rami of spinal nerves by providing diffusion of anesthetics into paravertebral spaces. Erector spinae plane (ESP) block is a para-spinal regional anesthesia technique that provides a paravertebral spread of three and four vertebral levels cranially and caudally by allowing local anesthetic dispersion into the interfascial plane between the transverse process and the erector spinal muscles, the anesthetic then blocks the dorsal and ventral rami of the spinal nerves.[2,3] The latest publications have reported that the ESP block is the component of multimodal analgesia techniques for pain management after different surgical procedures, including cesarean delivery, and it provides effective analgesia by blocking both the ventral and dorsal rami of the spinal nerves.

We hypothesized that bilateral ESPB applied from the transverse process of T9 who underwent elective cesarean section could provide effective postoperative analgesia. The primary outcome of this study was total opioid consumption for 24 h.

Materials and Methods

The study was conducted after approval of the Ethical Committee of the XXX Medical Faculty Research Hospital (reference number XXX), and written informed consent was acquired from all participants. The study was registered on ClinicalTrials.gov (Registration Number: NCT04599842), and enrollment and allocation of patients were shown in the CONSORT diagram. [Figure 1] Recruitment was performed between March 15, 2020 and June 25, 2020. Fifty parturients who were in 38–42 gestational weeks with American Society of Anesthesiologists (ASA) physical status classes I and II who were scheduled to undergo elective cesarean section via Pfannenstiel incision under spinal anesthesia were included in the study. The parturients whose ages were ≤18 or ≥45 years old, who had emergency obstetric surgery, pregnancy-induced hypertension, significantly systematic disease, fetal or placental abnormality, hypersensitivity or allergy history to medicine to be used in the study, BMI ≥35, autonomic neuropathy, diabetes, contraindication to apply neuraxial anesthesia, who was transferred to general anesthesia, who refused participation in the study, who had severe respiratory and cardiac disease, had infection, spine or chest wall deformity in the operation area, had opioid dependence, chronic analgesic usage, inability to use patient-controlled analgesia (PCA) device, inability to cooperation and express their pain with visual analog scale score (VAS) were excluded.

Coauthors evaluated eligibility, obtained informed consent, and enrolled the participants. Randomization was performed by computer-generated random number allocation, and the allocations were sealed in an opaque envelope. Opaque envelopes were opened by the investigator who did the block. Group SA (n = 25) was categorized as the group in which spinal anesthesia alone (SA) was performed, Group SA+ESP (n = 25) was categorized as the group in which SA + ESP block was performed. Recovery room and ward follow-ups were performed by medical staff who were blinded to which group the patient was in. The postoperative data were recorded by a blinded investigator. The patients and physicians were also blinded to the study group. Also, how to use the patient-controlled intravenous analgesia (PCA) device for pain management and the visual analog scale at rest/coughing were explained to patients.

When patients arrived at the surgery room, intravenous (IV) access was provided (one peripheral cannula-20G), and the routine monitoring procedures (ECG, noninvasive blood pressure monitoring, and pulse oximetry) were placed. Spinal anesthesia was performed through the gap of L3–L4 or L4–L5 spinal interspaces at the midline. All patients were given a solution containing 7 mg isobaric bupivacaine + 15 μg fentanyl within 30 s after confirming the cerebrospinal fluid's free flow through the needle. The patients were placed in the supine position with a 15° left tilt and put the face oxygen mask for 4 l/min. After confirming an adequate anesthesia level for the surgery (T4 or T6), the cesarean section was started and continued with continuous hemodynamic monitoring. If there is a reduction of systolic blood pressure to 20% below the baseline or less than 90 mmHg, 5 mg ephedrine was given intravenously. If the heart rate 50 beats/min or less, 1 mg atropine was applied intravenously. After the delivery of the baby, 15 units of oxytocin were administered by IV infusion. Paracetamol 1 g and dexketoprofen 50 mg were administered through IV 30 min before the operation ended.

Cesarean section performed in all pregnant women by two same doctors

After the surgical procedure, the bilateral ESPB was performed at level T9 using a linear prob. Parturients

were placed in a lateral position, and the probe was longitudinally placed 3 cm away from the middle line to visualize erector the spinae muscle and the transverse process. When the needle contacted with the transverse process, 1 ml 0.9% saline was injected, and the spreading of fluid in linear into depths of erector spinae muscle was monitored and the accuracy of the position of the needle tip was determined. After the accurate placement of the needle was determined, 20 ml 0.25% bupivacaine + 2 mg dexamethasone was injected as a bolus below the erector spinae muscle. The block procedure was repeated on the opposite side of the back. Local anesthetic toxicity symptoms, such as tongue, or circumoral numbness, dizziness, or tinnitus, visual or auditory disturbance, were evaluated.

For all patients, fifteen mg/kg paracetamol IV were administered four times, and 50 mg dexketoprofen two times a day for 24 h. If nausea and vomiting were determined, 4 mg IV ondansetron was administered and, if need, be repeated once in 8 h. The itching was treated with a 10 mg cetirizine tablet.

Then, patients were transferred to post-anesthesia care unit (PACU), and routine monitoring procedures were followed. Also, intravenous fentanyl through a patient-controlled analgesia (PCA) system was started as a bolus in the dose of 25 μg with 15 min lockout time. The patients were transferred to the ward when the modified Aldrete score ≥9. The sensorial block level was evaluated after the motor block of the patients had been resolved with cold loss of sense, and the visual analog score (VAS) score was assessed at various predetermined time intervals (2, 4, 8, 12, 16, 20, and 24 h postoperatively) with VAS (0 = no pain and ten = the worst pain to be imagined) at rest and coughing. We explained that the patients would use PCA if their pain score VAS at rest, and coughing were ≥3. The primary outcome of our study was the fentanyl consumption for 24 h measured by using the electronic memory of the PCA device. Secondary outcomes were the VAS during the rest and coughing at the PACU and postoperatively 2, 4, 8, 12, 16, 20, and 24 h, first analgesic requirement time (time from spinal injection to time to first fentanyl requirement), total number of bolus attempts and bolus deliveries for 24 h and postoperative nausea, vomiting, itching.

All demographic data of the patients, and intraoperative ephedrine requirement, atropine/adrenalin usage, motor block resolution time, complications based on nerve block (pneumothorax, hematoma) were recorded for the patients.

Simple size calculation (PAS program) showed that a total of 50 patients, 25 in each group, were required at the strength of 80% and the confidence level of 95%, for a 5-unit difference between 18.4 ± 5.0 mg of the ESP group and 23.4 ± 7.0 mg of the control group to be significant.[4]

Statistical analysis was done using SPSS, version 20 for Windows statistical software package (SPSS Inc., Chicago, IL, USA). The data were presented as mean, standard deviation, median, minimum, maximum, percentage, and number. The normal distribution of continuous variables was examined with Shapiro–Wilk W test and Kolmogorov–Smirnov. In the comparisons between the two independent groups, the independent samples t test was used when the normal distribution condition was met, and the Mann–Whitney U test was used when the normal distribution condition was not met. Pearson Chi-square test (if the expected count >5), Chi-square yates test (if the expected count is between 3 and 5), and Fisher's Exact test (if the expected count <3) were used for 2 × 2 comparisons between categorical variables and for comparisons between categorical variables greater than 2 × 2, the Pearson Chi-square test was used if the expected value is (>5) and the Fisher–Freeman–Halton test was used if the expected value (<5). Probability of less than 0.05 was considered to be significant.

Results

Fifty pregnant women scheduled for elective cesarean section (25 parturients per group) were enrolled, and no one was excluded from the final analysis [Figure 1]. A statistically significant difference in demographic and operative data between groups was not found ($P > 0.05$) [Table 1]. There was

Table 1: Demographic and operative data

	Group SA (*n*=25)	Group SA + ESP (*n*=25)	*Z*	*P*
Age (yr)	31.40±6.53; 30 (23-45)	30.92±5,20; 31 (21-41)	−0.078	0.938
Weight (kg)	80.84±10.94; 76 (67-110)	80.68±6,85; 82 (70-95)	−0.476	0.634
Height (cm)	162.68±5.44; 163 (153-180	163.24±5,56; 162 (150-172)	−0.708	0.479
BMI	30,54±3.68; 30.10 (25,00-37,90)	30.18±2,41; 29.60 (25,70-35,60)	−0.223	0.823
Gestational week	38.28±1.10; 38 (35-40)	38.32±1,07; 38 (36-40)	−0.091	0.927
Operation duration (min)	45.80±10.28; 45 (30-60)	47.60±9,48; 45 (30-65)	−0.609	0.542
Parity % (*n*/*N*)				
Nulliparous	20%;5/25	8%;2/25	0.417	
Multiparous	80%;20/25	92%;23/25		

Data are presented as mean±SD, median (minimum–maximum) or number and percent. BMI=body mass index

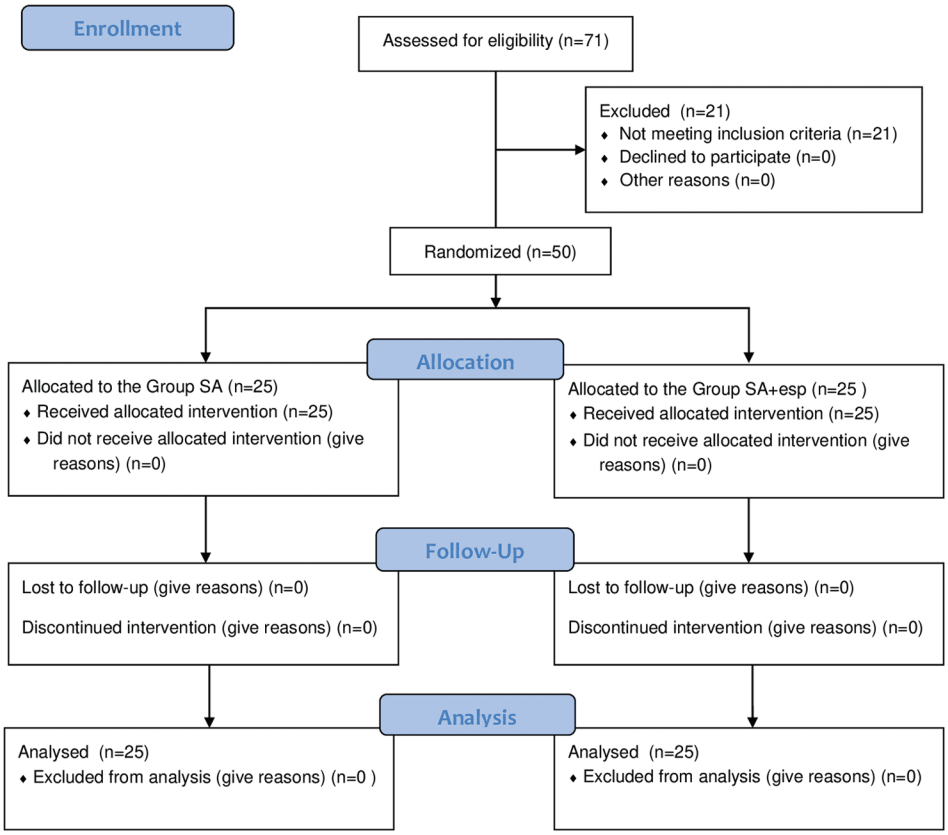
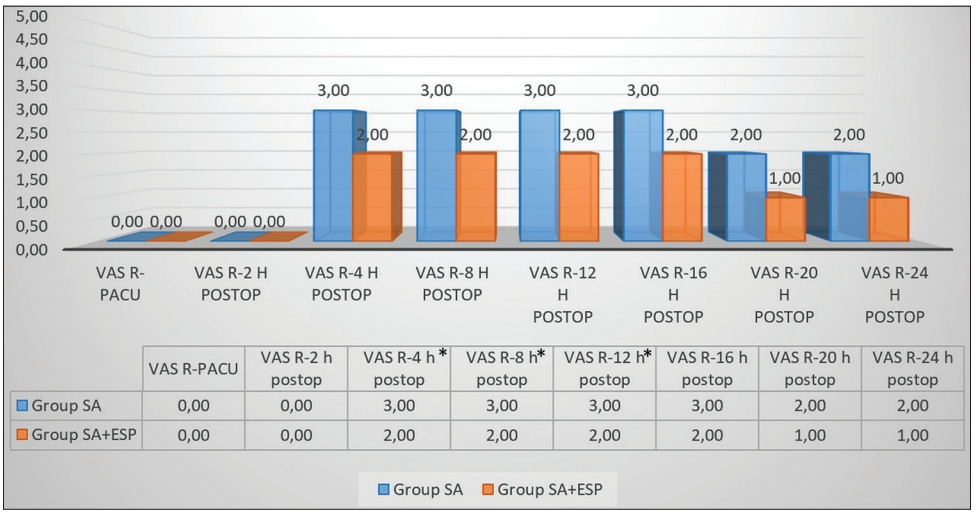


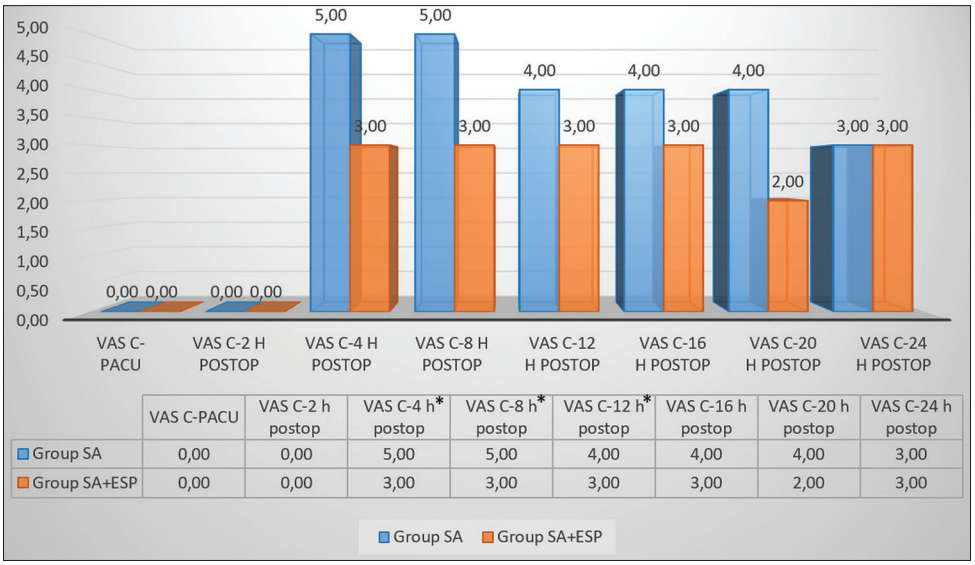
Figure 1 : CONSORT flow diagram



	VAS R-PACU	VAS R-2 h postop	VAS R-4 h* postop	VAS R-8 h* postop	VAS R-12 h* postop	VAS R-16 h postop	VAS R-20 h postop	VAS R-24 h postop
Group SA	0,00	0,00	3,00	3,00	3,00	3,00	2,00	2,00
Group SA+ESP	0,00	0,00	2,00	2,00	2,00	2,00	1,00	1,00

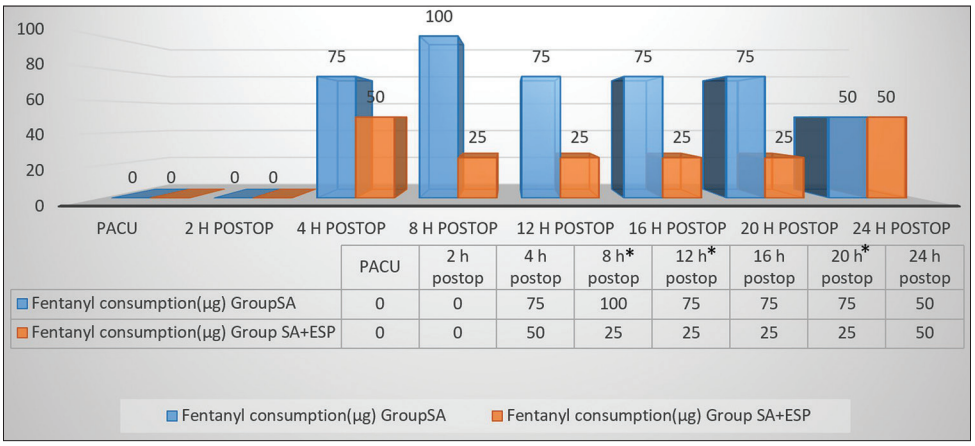
Figure 2: At rest VAS. Data are presented as median. *$P < 0.05$; Statistically significant. VAS R, the visual analog scale at rest; PACU, post-anesthetic care unit

no statistically significant difference between the groups in terms of intraoperative and postoperative complications (hypotension, bradycardia, ephedrine requirement, atropine/adrenaline requirement, nausea, vomiting, and itching) ($P > 0.05$) [Table 2]. Motor block dissolution time, total fentanyl consumption in 24 h, first analgesic requirement time, first ambulation time, and sensory block level are shown in Table 3. The total fentanyl consumption in 24 h was statistically significantly lower in the SA + ESP group than the SA group (279 ± 242.99 µg vs. 423.08 ± 212.55 µg, respectively, $P = 0.003$) [Table 3]. The first analgesic requirement time was statistically significantly shorter in the SA group than the SA + ESP group (150.20 ± 51.83 min vs. 197.60 ± 84.49 min, respectively, $P = 0.022$) [Table 3].



	VAS C-PACU	VAS C-2 h postop	VAS C-4 h* postop	VAS C-8 h* postop	VAS C-12 h* postop	VAS C-16 h postop	VAS C-20 h postop	VAS C-24 h postop
Group SA	0,00	0,00	5,00	5,00	4,00	4,00	4,00	3,00
Group SA+ESP	0,00	0,00	3,00	3,00	3,00	3,00	2,00	3,00

Figure 3: With cough VAS. Data are presented as median. *$P < 0.05$; Statistically significant. VAS C, visual analog scale with cough; PACU, post-anesthetic care unit



	PACU	2 h postop	4 h postop	8 h* postop	12 h* postop	16 h postop	20 h* postop	24 h postop
Fentanyl consumption(µg) GroupSA	0	0	75	100	75	75	75	50
Fentanyl consumption(µg) Group SA+ESP	0	0	50	25	25	25	25	50

Figure 4: Fentanyl consumption over time. Data are presented as median. *$P < 0.05$; Statistically significant

Table 2: Intraoperative and postoperative complications

	Group SA (n=25)	Group SA + ESP (n=25)	Chi-square	P
Hypotension % (n/N)	52.0%;13/25	48,0%;12/25	0.080	0.777
Bradycardia % (n/N)	24%;6/25	36%;9/25	0.857	0.355
Ephedrine requirement % (n/N)	52% ;13/25	48%; 12/25	0.080	0.777
Atropine/adrenalin usage % (n/N)	0.2%;5/25	32%;8/25	0.936	0.333
Nausea % (n/N)	0.04%;1/25	8%;2/25		1
Vomiting % (n/N)	0%;0/25	4%;1/25		1
Pruritus % (n/N)	0.12%;3/25	4%;1/25		0.609

Data are presented as numbers and percent

VAS scores (during rest and cough) between the groups in a period of time (0–24 h) are shown in Figures 2 and 3 postoperatively. Postoperative VAS scores at 4th, 8th, and 12th h at rest were statistically significantly lower in group SA + ESP than group SA ($P = 0.004$, $P = 0.046$, $P = 0.044$, respectively) [Figure 2]. VAS scores during the postoperative 4th, 8th, and 12th h cough were statistically significantly lower in group SA + ESP than group SA ($P = 0.002$, $P = 0.008$, $P = 0.028$, respectively) [Figure 3].

Figure 4 shows the changes in fentanyl consumption between the groups in the postoperative period (0–24 h) over time. The fentanyl consumption was statistically significantly lower in the postoperative 8, 12, and 20 h group SA + ESP compared to the group SA ($P = 0.019$, $P = 0.002$, $P = 0.037$, respectively).

Figure 5 shows the total number of bolus attempts and bolus deliveries for 24 h between groups. The analgesic request button was pressed 21 times in group SA and 11 times in group SA + ESP, and this was found to be statistically significant ($P = 0.003$). Again, during 24 h, 17 times in group SA and nine times in group SA + ESP

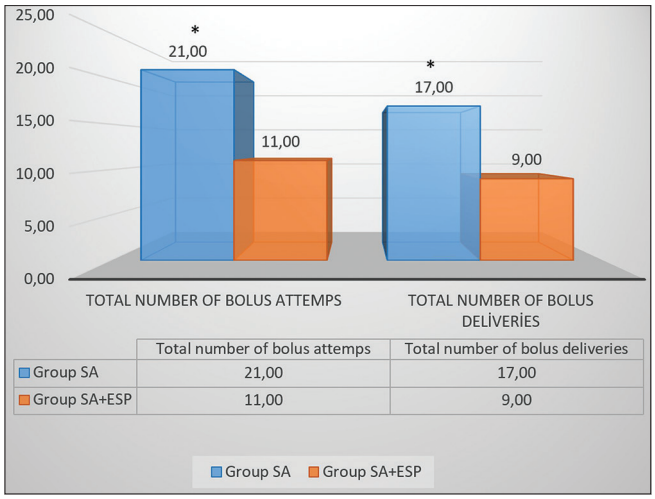


Figure 5: Total number of bolus attempts and bolus deliveries. Data are presented as median. *$P < 0.05$; Statistically significant

Table 3: Motor blockade resolving duration, sensorial blockade level, time of the first analgesic need, and the total fentanyl consumption

	Group SA (n=25)	Group SA + ESP (n=25)	Z	P
Motor blockade resolving time (min)	99.40±43.98; 90 (50-235)	106.4±48.79; 90 (45-230)	−0.497	0.619
24-h fentanyl consumption (µg)	423.08±212.55; 425 (75-1000)	279±242.99; 225 (0-1175)	−2.925	0.003*
The time of the first analgesic need (min)	150.20±51.83; 150 (45-245)	197.60±84.49; 195 (90-420)	−2.391	0.022*
The first ambulation time (min)	427±79.58; 420 (285-585)	426.40± 63.22;420 (300-585)	0.030	0.977
Sensorial blockade level after the motor blockade ended				
T8	4%;1	8%;2		
T9	40%;10	48%;12		0.825
T10	44%;11	36%;9		
T11	12%;3	8%;2		

Data are presented as mean ± SD, median (minimum-maximum) or number and percent. *P <0.05; Statistically significant

IV analgesia were given, and a statistically significant difference was found between the groups in this respect (P = 0.002).

No complications related to nerve block occurred in any patient. Ondansetron was used in one patient, and cetirizine was used in two patients.

Discussion

Cesarean section is generally along with moderate-to-severe pain,[5] and pain after the cesarean section affects postoperative recovery. Therefore, adequate pain management is crucial for preventing persistent pain, pain-related depression, and well-being state for the mother and baby. The consummate technique for postoperative pain management after the cesarean section under spinal anesthesia is unknown and difficult. However, the applied technique should provide maternal satisfaction without causing any side effects on the baby.[6] In recent years, multimodal opioid-sparing analgesia has been successfully applied in postoperative pain treatment.[7] However, there are some side effects of opioids, such as pruritus, urine retention, nausea and vomiting, and the risk of maternal respiratory depression.[8,9]

Many studies showed that ESPB is an effective component of multimodal analgesia for different types of surgical procedures. The block is performed by giving local anesthetic to the plane between the erector spinae muscle and the transverse process. The local anesthetic spreads to the paravertebral space and acts by blocking the ventral, dorsal rami, and ramus communicants of the thoracic and abdominal spinal nerves.[2,10] The ESP block promises to provide prolonged craniocaudal spread attaining a paravertebral spread of three and four vertebral levels cranially and caudally, respectively, facilitating extensive somatic and visceral analgesia, thus having an effect profile comparable to that of retrolaminar and paravertebral blocks.[10] ESPB also provides both somatic and visceral abdominal analgesia when administered at the level of T7-9 TP.[3,7] Therefore, ESPB at the level of T9 can provide effective analgesia after a cesarean section and reduce the consumption of opioids. This indicates that ESPB can successfully be used for analgesia after a cesarean delivery.

The main outcome of the current study was to evaluate fentanyl consumption in the ESP block group compared to without the ESP block group. We showed a significant reduction of fentanyl consumption at the postoperative 8th, 12th, and 20th hours significantly lowered total fentanyl consumed in the first 24 h postoperatively, and significantly delayed the time to the first analgesic requirement when compared to the control group. In this study, we also observed that VAS scores (rest/coughing) were significantly lower at the 4th, 8th, 12th hours in the ESP block group. In this study, there was no significant difference between the two groups regarding intraoperative and postoperative complications and side effects such as nausea, vomiting, and itching. To our knowledge, this was the first randomized-controlled study comparing the analgesic efficacy of ESP block with the control group using 0.25% bupivacaine + 2 mg dexamethasone after cesarean section under spinal anesthesia.

We performed the block from the transverse process level of T9. However, Chin *et al.*[7] block in the

cadaveric model investigated the distribution of the injectate with a computed tomography scan by performing the block at the level of the transverse process of T7 and reported that the injected substance was spread cranially to the upper thoracic levels and caudally to the L2–L3 transverse processes. Although the ideal level is still not determined, some randomized studies at the T9 erector spinae vertebral level have also reported analgesic benefits in patients after cesarean sections.[11,12]

In the study by Malawat *et al*.,[11] 0.2% ropivacaine (0.2 ml/kg on either side) was used when performing a block after a cesarean section and provided up to 48 h of analgesia. They stated that in the ESP block group, the first request for rescue analgesia extended up to 43 h. In our study, bupivacaine at a concentration of 20 ml of 0.25% each side was used, and prolonged first analgesia request time was found significant in the SA + ESP group. It is also noteworthy that although the total fentanyl consumption was low, the pain score was lower in SA + ESP group than in the other group. Recently, Boules *et al*.[13] compared the analgesic efficacy of ESP and TAP block with 20 ml of 0.25% bupivacaine in elective cesarean sections. They reported that the median tramadol consumption in the first 24 h postoperatively was significantly higher in the TAP group compared to the ESPB group, duration of the block was higher in ESPB group and both at rest, and after cough, VAS scores were lower in the ESP group at the first 8 and 12 h postoperatively compared to the TAP group.[13] Similarly, in the present study, lower pain scores and fentanyl consumption in the SA + ESP group were observed. Also, in the literature, Liu J *et al*.[14] applied supraclavicular nerve block to patients who underwent shoulder arthroscopy and added three different doses of dexamethasone (1, 2, and 4 mg) as an adjuvant to 0.25% bupivacaine to extend the analgesic duration. They showed that low-dose dexamethasone (1–2 mg) prolonged analgesia duration similarly to 4 mg dexamethasone.[13] Ammar *et al*.[15] evaluated the effect of adding dexamethasone to bupivacaine on transversus abdominis plane block for abdominal hysterectomy. It was reported that the analgesic duration was longer in the group with dexamethasone. (459.8 vs. 325.4 min, $P = 0.002$) In the present study, we used 0.25% bupivacaine as recommended by the literature and added 2 mg of dexamethasone to add the potential clinical benefit to prolong the analgesic effect of the SA + ESP group. Altiparmak B and *et al*.[16] reported that two doses of ultrasound-guided ESP block, performed using two different bupivacaine doses (0.25% and 0.375%), provided effective analgesia in women undergoing radical mastectomy. Although ESPB performed with both bupivacaine concentrations provided adequate postoperative analgesia for 24 h, the higher concentration of bupivacaine significantly decreased postoperative tramadol consumption after radical mastectomy surgery. Although the clear benefit of adding dexamethasone to the ESPB has not yet been studied, we decided to add it to the local anesthetic to reduce local anesthetic mass and potential risks associated with higher local anesthetic concentrations, especially in low BMI patients.[16,17] and found significantly better clinical analgesia in the SA + ESP group when compared to SA group. During the first 24 h, the VAS during rest and cough in the SA + ESP group was ≤3, and at 4, 8, and 12 h VAS score was significantly lower in the SA + ESP block group than in the control group. Also, the total number of bolus attempts and bolus deliveries was significantly less in the SA + ESP group compared to the control group. While the total amount of fentanyl consumed at the 24th hour in our study was 423 μg, it was 279 μg in the control group, and similar to the previous studies in the literature, we found a 65% reduction.[18,19] Meta-analyses support that ESPB significantly reduces pain scores and opioids consumption for postoperative pain control when compared to placebo or PCA + regular analgesia at 24-h interval.[20-22] Similarly, our study shows that ESP block provides significantly better clinical analgesia for post-pain control after cesarean section when compared to opioids administration + regular analgesia in the first 24 h. Another meta-analysis evaluating the ESPB for postoperative analgesia after cesarean delivery reported the erector spinae plane block decrease of opioid consumption, showing an analgesic effect despite not reducing the postoperative pain scores.[23] Although this study showed that ESP provided adequate analgesia by reducing postoperative pain scores and fentanyl consumption, it had some limitations. There were limited data on the efficacy of the blockade for postoperative analgesia after cesarean sections, which limited our comparison with data in other reports. Another limitation of this study is that we did not evaluate the sensory block to determine the success rate and, more importantly, the extent of the sensory block. An additional limitation was the placebo was not used in the SA group; thus, patients were not blinded to the intervention. Hamed *et al*.[12] reported that ESPB provided efficient analgesia with 20 ml 0.5% bupivacaine in comparison with intrathecal morphine (ITM) after elective cesarean section under spinal anesthesia. They reported higher pain score and tramadol consumption in the ITM group than ESPB group. (101.71 ± 25.67 mg vs 44 ± 16.71 mg) Also, a lower first analgesic request time at 24-h interval in ITM group was found than ESPB group (4.93 ± 0.82 vs 12 ± 2.81 hours). The analgesic effect of ESPB extended

for almost 12 h in this study. In the present study, our aims were to evaluate opioid consumption, pain score, analgesia duration pain score, and opioid consumption at 24-hr interval. The clear evidence of adding dexamethasone to the ESPB has not yet been studied, but we decided to use 0.25%. bupivacaine + 2 mg dexamethasone for extending analgesia time. Although the analgesic effect of ESPB has not extended for 12 h like the previous study, we showed that potential benefit of ESPB with 20 ml of 0.25% bupivacaine + 2 mg dexamethasone. First analgesic requirement time was statistically significantly shorter in the SA group than the SA + ESP group (150.20 ± 51.83 min vs. 197.60 ± 84.49 min, respectively P = 0.022). VAS scores (rest/coughing) were significantly lower at 24-hr intervals in the SA + ESP group than SA like the previous study. Therefore, we could not get lower opioid consumption equivalent like the previous study. In the present study, we found statistically significantly lower fentanyl consumption in the SA + ESP group than in the SA group (279 ± 242.99 μg vs. 423.08 ± 212.55 μg, respectively, P = 0.003). In both studies, there were no differences in nausea and vomiting between the two compared groups. ESPB is a simple and safe block, because the transverse process can be easily seen by ultrasound guidance and the injection point is far away from the pleura and large vascular structures. In this study, we observed no complications related to the block; reported complications associated with ESPB were pneumothorax[24] and motor weakness in the lower extremities after bilateral ESPB in a woman who underwent a cesarean section.[25]

As a result, ultrasound-guided bilateral ESP provided adequate postoperative analgesia and significantly decreased postoperative fentanyl consumption in patients having cesarean section. Also, it has a longer analgesia time than the control group, and it has been shown to delay the first analgesic requirement.

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Conflicts of interest

There are no conflicts of interest.

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