ORIGINAL ARTICLE

Comparison of posterior transversus abdominis plane block and erector spinae plane block for postoperative analgesia after caesarean section performed under spinal anesthesia: a prospective randomized trial

Onur Sarban,[1] Özal Adiyeke,[2*] Engin Ihsan Turan,[3] Ergün Mendes,[2**] Taner Abdullah,[2] Hürü Ceren Gokduman,[2] Funda Gumus Ozcan[2]

[1]Department of Anesthesiology, University Hospitals Sussex NHS Foundation Trust, Brighton-*United Kingdom*

[2]Department of Anesthesiology, TC Ministry of Health, Basaksehir Cam ve Sakura City Hospital, Basaksehir-*Türkiye*

[3]Istanbul Kanuni Sultan Suleyman Training and Research Hospital, Istanbul-*Türkiye*

*Current affiliation:[*]Department of Anesthesiology, Acıbadem Maslak Hospital, Sarıyer, İstanbul-*Türkiye*; [**]Department of Anesthesiology, Koç University Hospital, School of Medicine, İstanbul-Türkiye

ABSTRACT

BACKGROUND: This study aimed to compare the analgesic efficacy of the transversus abdominis plane block (TAPB) and the erector spinae plane block (ESPB) following cesarean delivery under spinal anesthesia. The primary endpoint was the proportion of patients requiring rescue analgesia within the first 24 hours postoperatively. Secondary outcomes included time to first rescue analgesia, Numerical Rating Scale (NRS) scores at predefined time points (30 minutes, 4, 8, 12, 16, and 24 hours), and the incidence of persistent postsurgical pain at two months.

METHODS: This single-center, prospective, randomized controlled study included patients undergoing cesarean section under spinal anesthesia. Participants were randomly allocated into two groups: TAPB and ESPB. Postoperative pain and vital signs were assessed 30 minutes after block application and at 4, 8, 12, 16, and 24 hours postoperatively. Pain intensity was measured using the NRS (0=no pain, 10=worst imaginable pain). Rescue analgesia was administered when the NRS score was ≥4. Diclofenac sodium 75 mg intramuscularly (IM) was given for NRS scores of 4–5, while intravenous (IV) morphine sulfate 0.05 mg/kg was administered for NRS scores ≥6.

RESULTS: A total of 94 patients were analyzed: 48 received ESPB and 46 received TAPB postoperatively. The TAPB group had a significantly higher proportion of patients requiring rescue nonsteroidal anti-inflammatory drug (NSAID) analgesics compared to the ESPB group (58.70% vs. 27.08%, p=0.002). NRS scores at 30 minutes, 12 hours, and 16 hours postoperatively were significantly lower in the ESPB group (p=0.03, p=0.003, and p=0.023, respectively).

CONCLUSION: For postoperative analgesia following cesarean section under spinal anesthesia, ESPB resulted in a significantly lower proportion of patients requiring rescue analgesia within the first 24 hours compared to TAPB. In addition, ESPB demonstrated a faster onset and longer duration of effective analgesia, suggesting it may be a more favorable option for postoperative pain management in this clinical setting.

Keywords: Erector spinae plane block; transversus abdominis plane block; cesarean section; regional anesthesia; postoperative pain management.

Cite this article as: Sarban O, Adiyeke Ö, Turan EI, Mendes E, Abdullah T, Gokduman HC, et al. Comparison of posterior transversus abdominis plane block and erector spinae plane block for postoperative analgesia after caesarean section performed under spinal anesthesia: A prospective randomized trial. Ulus Travma Acil Cerrahi Derg 2026;32:420-427.

Address for correspondence: Engin Ihsan Turan

Istanbul Kanuni Sultan Suleyman Training and Research Hospital, Istanbul, Türkiye

E-mail: enginihsan@hotmail.com

Ulus Travma Acil Cerrahi Derg 2026;32(4):420-427 DOI: 10.14744/tjtes.2025.31767

Submitted: 27.05.2025 Revised: 30.09.2025 Accepted: 09.11.2025 Published: 13.04.2026

INTRODUCTION

Pain control following cesarean delivery is challenging, as it must provide adequate pain relief for the mother while ensuring no adverse effects on the newborn. Spinal anesthesia is widely used for cesarean delivery because of its simplicity and rapid onset; however, it offers limited postoperative pain relief.[1,2] Intrathecal opioids, such as preservative-free morphine or hydromorphone, are highly effective for postoperative pain management in neuraxial anesthesia and provide prolonged analgesia, but they may be associated with side effects including pruritus, nausea, vomiting, and, rarely, respiratory depression.

The transversus abdominis plane block (TAPB) is an alternative modality for postoperative pain control following cesarean section. It involves the injection of a local anesthetic between the internal oblique and transversus abdominis muscles.[3-5] TAPB can be performed using subcostal, lateral, or posterior approaches, each targeting different dermatomes to achieve pain relief. However, TAPB has limited efficacy in controlling visceral pain.[5]

The erector spinae plane block (ESPB) involves the injection of a local anesthetic into the anatomical space between the erector spinae muscle and the transverse process of the vertebra. This technique may provide both somatic and visceral analgesia by allowing spread toward the paravertebral space.[6-8] Initially described for the management of thoracic chronic pain, ESPB has demonstrated effectiveness in pain control following cesarean delivery.[9-11] Nevertheless, some studies have questioned whether local anesthetics reliably reach the paravertebral space, suggesting that the clinical effects of ESPB may instead be related to increased blood concentrations.[12] Despite being classified as a "Plan A" block by Regional Anesthesia UK, the clinical efficacy of ESPB is considered unpredictable.[13]

This study aimed to compare the analgesic effects of TAPB and ESPB following cesarean delivery under spinal anesthesia. Although ESPB has demonstrated both somatic and visceral analgesia in abdominal surgeries, as reported in the systematic review by Mansour et al.,[14] we investigated whether ESPB offers a clinical advantage over TAPB in patients undergoing cesarean section under spinal anesthesia. The primary endpoint was the proportion of patients requiring rescue analgesia within the first 24 hours postoperatively. Secondary outcomes included the time to first rescue analgesia, Numerical Rating Scale (NRS) scores at predefined time points (30 minutes, 4, 8, 12, 16, and 24 hours), and the incidence of persistent postsurgical pain at two months.

MATERIALS AND METHODS

Patient Selection

This prospective, randomized, controlled study was conducted after obtaining approval from the Başakşehir Çam Ve Sakura City Hospital Clinical Research Ethics Committee (IRB No. 2021.10.27), in accordance with the principles of the Declaration of Helsinki. The study was registered as a clinical trial under the number NCT05625009. Written informed consent was obtained from all participants.

Patients aged 18–45 years who were scheduled to undergo elective cesarean delivery under spinal anesthesia were included in the study. A total of 138 patients met these criteria between November 15, 2022 and January 15, 2023. The exclusion criteria were: an American Society of Anesthesiologists (ASA) score >2; major intraoperative bleeding requiring surgical intervention (e.g., bilateral uterine artery ligation, B-Lynch procedure, Cho's procedure, or change in incision type); need for intubation for any reason during surgery; local infection at the block site; reoperation within the first 48 postoperative hours for any reason; and refusal to participate in the study or to undergo any of the study interventions.

Randomization and Blinding

Patients were randomly assigned in equal numbers to either the ESPB or TAPB group using computer-generated random numbers placed in separate opaque envelopes, which were opened by the study investigator immediately before block administration. All blocks were performed by the same anesthesiologist. The investigators performing the blocks and those conducting the NRS assessments were different individuals. The investigators responsible for NRS assessments were blinded to group allocation. Additionally, the care providers monitoring the patients during hospitalization were blinded to group assignment, as was the statistician analyzing the data.

Perioperative Management

Preoperative assessment was conducted according to routine institutional practice. Isotonic saline infusion was initiated after an 18-G intravenous line was secured. All patients were monitored for blood pressure, heart rate, and blood oxygen saturation and received spinal anesthesia using a standardized technique, consisting of 10–12 mg of 0.5% hyperbaric bupivacaine administered between the L3–L4 vertebrae. After confirmation of an adequate sensory block (loss of sensation at the T5 level) using a pinprick test with a Neurotip®, surgical incision was permitted. No patient required intraoperative conversion to general anesthesia. All surgeries were performed using a Pfannenstiel incision. If the mean arterial pressure decreased by more than 20% from baseline or if systolic blood pressure fell below 90 mmHg, 5 mg of ephedrine was administered. Additionally, if the heart rate decreased to 50 bpm or less, an appropriate dose of atropine was administered. After delivery, 15 U of oxytocin were administered as an intravenous (IV) infusion.

At the end of surgery, patients were transferred to the post-anesthesia care unit for follow-up.

Postoperative Management

In the recovery unit, patients randomized to the ESPB group received bilateral ESPB at the T9 vertebral level in the sitting position. The patient beds were positioned at a 45-degree head-up angle. Because lower-extremity motor block persisted, patients were assisted into the sitting position by post-anesthesia care unit staff. After skin sterilization, the spinous process was identified using a high-frequency (12–15 Mhz) linear ultrasound (US) probe (Hitachi Arietta 65 ultrasound device). The ultrasound probe was then moved laterally to visualize the transverse process. Subsequently, 20 mL of 0.25% bupivacaine was injected bilaterally into the plane between the erector spinae muscle and the transverse process of the vertebra, resulting in a total volume of 40 mL.

Patients randomized to the TAPB group received bilateral posterior transversus abdominis plane blocks in the recovery unit. After skin sterilization, the US probe was placed posterior to the midaxillary line between the costal margin and the iliac crest. Posteriorly, the transversus abdominis muscle transitions into its aponeurosis, with the quadratus lumborum muscle visualized posteromedial to the aponeurosis. The needle was inserted using an in-plane approach, and the injection site was located between the internal oblique and transversus abdominis muscles, posterior to the midaxillary line and near the aponeurosis. US-guided TAP block was performed by bilateral injection of 20 mL of 0.25% bupivacaine solution (total volume: 40 mL).

After postoperative recovery unit follow-up for at least 30 minutes, the levels of analgesia provided by the blocks was assessed using a pinprick test. Subsequently, patients with an Aldrete score of 9 or higher were transferred to the ward. Upon admission to the ward, patients received 1 g IV paracetamol and 75 mg intramuscular (IM) diclofenac sodium as part of the standard multimodal analgesia protocol, regardless of pain score. This initial dose of diclofenac sodium was not considered rescue analgesia in the outcome analyses. During postoperative follow-up, paracetamol (1 g) was administered intravenously at 8-hour intervals.

To ensure patient safety, the total daily dose of diclofenac sodium was limited to a maximum of 150 mg. If a patient had already received two 75 mg doses of diclofenac sodium and continued to experience pain, intravenous morphine was administered instead of additional nonsteroidal anti-inflammatory drugs (NSAIDs). To prevent gastrointestinal adverse effects related to NSAID use, all patients routinely received proton pump inhibitor (PPI) therapy during the postoperative period.

Protocol

Postoperative pain status and vital signs were evaluated 30 minutes after block administration, before transfer to the ward, and subsequently at 4, 8, 12, 16, and 24 hours postoperatively. Pain intensity at rest was assessed using the NRS (range 0–10, where 0 indicates no pain and 10 indicates the worst imaginable pain). Rescue analgesia was administered to patients with an NRS score of 4 or higher at any assessment time. Diclofenac sodium (75 mg IM) was administered to patients with NRS scores of 4 and 5. If adequate pain relief was not achieved within 30 minutes following diclofenac administration, IV morphine sulfate (0.05 mg/kg) was administered to patients with an NRS score of 6 or higher.

Two months after surgery, patients were contacted by telephone and asked about the presence of low back pain or incision-site pain to determine the incidence of persistent postsurgical pain.

The primary endpoint was the proportion of patients requiring rescue analgesia within the first 24 hours postoperatively. Secondary outcomes included time to first rescue analgesia, NRS scores at specific time points (30 minutes, 4, 8, 12, 16, and 24 hours), and the incidence of persistent postsurgical pain at two months.

Statistical Analysis

The primary outcome of the study was the frequency of rescue analgesic requirement during the first 24 postoperative hours. A 50% difference in the proportion of patients requiring rescue analgesia between groups was anticipated. Based on this assumption, a sample size of 84 patients was calculated to detect this difference assuming a two-tailed α of 5% and a β of 20%. To account for potential data loss, enrollment of 100 patients was planned.

Data distribution was assessed using the Shapiro-Wilk test. Normally distributed data were expressed as mean ± standard deviation and compared using the Student's t-test. Non-normally distributed data were presented as median (25th–75th percentile) unless otherwise stated. Categorical variables were expressed as frequency (percentage) and compared using the chi-square test. NRS scores were compared between groups using the Mann–Whitney U test and within groups using the Friedman and Wilcoxon tests. All analyses were performed using NCSS 2007 Statistical Software (Utah, USA) and MedCalc Statistical Software (Ostend, Belgium).

RESULTS

This study evaluated the clinical efficacy of two regional analgesia techniques (erector spinae plane block and transversus abdominis plane block). A total of 139 patients were initially assessed for eligibility; however, 27 patients were excluded based on predefined criteria. The reasons for exclusion were an ASA score of 3 (n=15) and refusal to participate (n=12).

The flow of patient enrollment, randomization, exclusions, and final analysis for both groups is presented in Figure 1. Patient demographic characteristics are summarized in Table 1.

As shown in Table 2, the proportion of patients requiring rescue NSAIDs within the first 24 postoperative hours (primary outcome) was significantly higher in the TAPB group (58.7%) than in the ESPB group (27.1%) (p=0.002). There was no significant difference in total opioid consumption between the groups. Of the two patients in the TAPB group who required

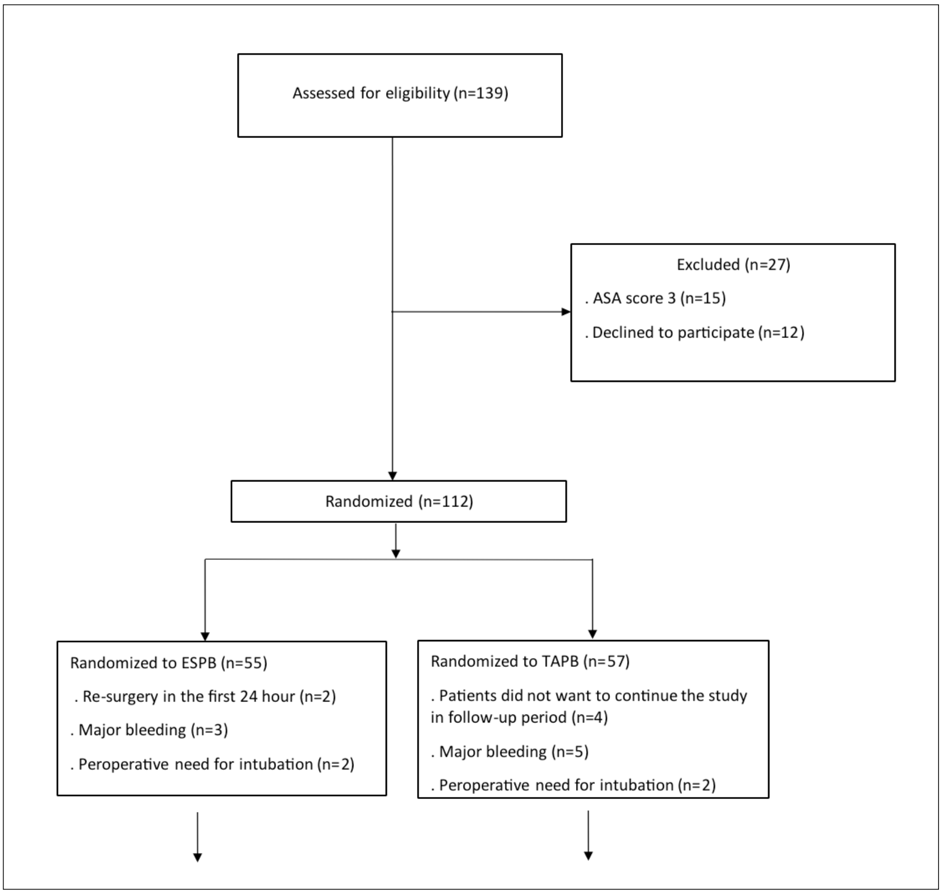

Figure 1. Flow diagram of patient enrollment and allocation.

Table 1. Demographic characteristics

	TAPB (n=46)	ESPB (n=48)	p
Age	28.97±5.53	29.85±5.83	0.457
Height (cm)	161.87±5.21	160.94±3.8	0.322
Weight (kg)	67.52±6.51	66.5±6.83	0.460
BMI (kg/m^2)	25.77±2.31	25.66±2.43	0.834

Values are expressed as mean±standard deviation (SD). TAPB: Transversus abdominis plane block; ESP: Erector spinae plane block; BMI: Body mass index.

Table 2. Rescue analgesic consumption

	TAPB (n=46)	ESPB (n=48)	p
Rescue NSAI analgesic	27 (58%)	13 (27%)	0.002
Time to first rescue analgesic (min)	720 (720-960)	960 (720-1200)	0.149
Rescue opioid analgesic	2 (4%)	0 (0%)	0.144

Values are expressed as mean±standard deviation (SD) or median (25th–75th percentile). TAPB: Transversus abdominis plane block; ESP: Erector spinae plane block; NSAI: Nonsteroidal anti-inflammatory.

Table 3. Postoperative Numeric Rating Scale scores

	TAPB (n=46)	ESPB (n=48)	p
30 minutes	2 (2-3)	2 (2-2)	0.003
4 hours	2 (2-3)	2 (2-3)	0.116
8 hours	3 (2-3)	2.5 (2-3)	0.166
12 hours	3 (3-4)	3 (2-3)	0.003
16 hours	3 (2.5-4.5)	3 (3-4)	0.023
24 hours	3 (3-4)	3 (3-4)	0.366

Values are expressed as median (25th–75th percentile). NRS: Numeric Rating Scale; TAPB: Transversus abdominis plane block; ESP: Erector spinae plane block.

opioid rescue analgesia, each received a single dose.

Regarding postoperative NRS scores during the first 24 hours, no statistically significant differences were observed between the groups at 4, 8, and 24 hours. However, NRS scores at 30 minutes, 12 hours, and 16 hours postoperatively were significantly lower in the ESPB group (p=0.03, p=0.003, and p=0.023, respectively) (Table 3). Trends in NRS scores over the first 24 hours are illustrated in Figure 2.

At the two-month postoperative follow-up, none of the patients reported cesarean incision pain. All reported pain complaints were related to low back pain. Pain was reported by six patients (12.5%) in the ESPB group and 10 patients (21.74%) in the TAPB group; however, this difference was not statistically significant (p=0.233). A total of four patients (4.2%), all in the TAPB group, were referred to the outpatient pain clinic for low back pain with an NRS score of 4. No other complications were observed.

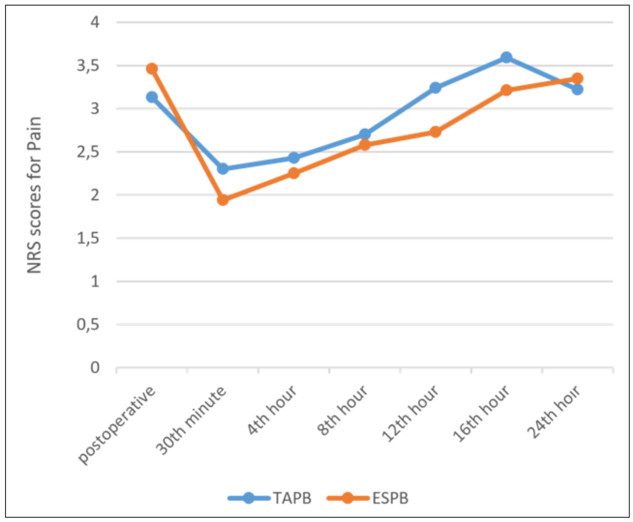

Figure 2. Trend of patients' pain scores assessed using the Numeric Rating Scale (NRS).

DISCUSSION

In this study, the primary endpoint was the requirement for rescue intravenous analgesia within the first 24 postoperative hours, which was used to assess the efficacy of the pain management strategies employed. Our findings demonstrated that although there was no significant difference in opioid consumption between the groups, a significant difference was observed in the use of rescue nonsteroidal anti-inflammatory analgesics.

These results suggest that while both blocks were similarly effective in limiting opioid consumption, the greater need for supplementary NSAID analgesia in the TAPB group may indicate less effective overall pain control compared to ESPB.

Our findings highlight the complexity of postoperative pain management and reinforce the importance of a multimodal analgesic approach. The higher consumption of rescue NSAI analgesics in the TAPB group may reflect the relatively limited analgesic efficacy of peripheral plane blocks such as TAPB compared to deeper or more extensive blocks like ESPB. Further research is warranted to investigate additional or alternative pain management strategies that may optimize analgesia and reduce reliance on rescue medications in patients receiving TAPB.

Previous studies have demonstrated that the use of TAPB for postoperative pain control following cesarean delivery under spinal anesthesia significantly reduces opioid consumption within the first 24 hours.[4] In another study evaluating ESPB for the same outcome, the authors similarly reported a reduction in postoperative opioid consumption11. In the present study, only two patients (2.08%) required opioid analgesia. Considering that all patients received a plane block, our study confirms the findings of previous studies regarding the efficacy of both TAPB and ESPB. However, the lower requirement for additional NSAID analgesics in the ESPB group suggests a more favorable analgesic profile for this technique.

In the literature, several studies have compared ESPB and TAPB in patients undergoing cesarean section under spinal anesthesia; however, only one incorporated NSAI analgesics into the postoperative analgesia protocol. In that study, ESPB was found to be significantly superior to TABP in terms of

NSAI analgesic requirements.[15] The findings of the present study are consistent with those results, demonstrating a lower need for NSAID administration in the ESPB group compared to the TAPB group within the first 24 postoperative hours. This finding is important given the potential adverse effects of NSAI analgesics, including peptic ulcer bleeding even with short-term use, as well as nephrotoxicity and other end-organ damage associated with long-term use.[16-17]

The reduced need for rescue NSAID analgesia in the ESPB group may be explained by the distinct anatomical and pharmacological characteristics of the two blocks. TAPB primarily targets the thoracolumbar nerves within the fascial plane between the internal oblique and transversus abdominis muscles and is therefore largely limited to somatic analgesia of the anterior abdominal wall. In contrast, ESPB involves deposition of local anesthetic between the erector spinae muscle and the transverse process, allowing potential spread to the paravertebral and epidural spaces. This spread may provide both somatic and visceral analgesia, which is particularly advantageous in cesarean delivery, where visceral pain contributes substantially to postoperative discomfort.[18] Furthermore, the deeper injection site and broader surface area of contact in ESPB may prolong drug absorption and extend block duration, thereby explaining the longer-lasting analgesic effect observed. Taken together, these anatomical and pharmacokinetic differences likely account for the lower NSAID consumption and the more favorable analgesic profile of ESPB compared with TAPB in obstetric patients.

In the present study, we observed a statistically significant difference in NRS scores favoring ESPB at 30 minutes postoperatively. Although this difference was no longer significant at 4 hours, the lower requirement for rescue analgesics in the ESPB group suggests a more sustained and effective analgesic profile compared to TAPB.

NRS pain scores at 12 and 16 hours postoperatively were significantly lower in the ESPB group. These findings are consistent with previous studies demonstrating a longer duration of effective analgesia with ESPB compared to TAPB. One comparative study reported the duration of analgesic efficacy to be 8 hours for TAPB and 12 hours for ESPB ($p<0.001$).[19] In another study, the difference was even more pronounced, with the mean time to first rescue analgesia reported as 43.5 hours for ESPB and 12.1 hours for TAPB ($p<0.001$).[20]

Although time to first rescue analgesic administration was longer and fewer patients required NSAID rescue analgesia in the ESPB group, only the reduction in NSAID rescue analgesic requirement reached statistical significance. These findings suggest a potential clinical advantage of ESPB over TAPB, particularly in reducing the need for additional analgesics; however, further studies with larger sample sizes are warranted to confirm these observations.

Chronic postsurgical pain is an important concern, with an incidence of 15.4% in patients undergoing cesarean section.[20] Effective postoperative pain control has been shown to play a crucial role in reducing the development of chronic pain following cesarean section.[21,22] Several studies in the literature suggest that effective analgesia provided by ESPB reduces the incidence of chronic pain after cardiothoracic procedures.[23,24] However, we were unable to identify data regarding abdominal surgeries. Although no statistically significant difference in pain at two months was observed between the ESPB and TAPB groups in this study (21.7% vs. 12.5%, $p=0.23$), the observed effect size supports the need for further studies with appropriate power analyses aimed at identifying differences in long-term pain incidence.

In our study, the ESPB was performed in the sitting position while spinal anesthesia was still active. Although no hemodynamic instability was observed, this approach may carry a theoretical risk of orthostatic hypotension, and performing the block in the lateral decubitus position may represent a safer alternative in future applications.

In obstetric postoperative analgesia, one of the key advantages of regional techniques over systemic analgesics is their ability to provide effective pain relief while minimizing systemic opioid exposure. This is particularly important in the early postpartum period, as it facilitates early mobilization.

Limitations

This study has several limitations. First, although the primary focus was on nonsteroidal anti-inflammatory drug (NSAI) analgesic consumption, adverse effects related to NSAID use were not evaluated. Second, differentiation between somatic and visceral pain, one of the potential differences in analgesic mechanisms between ESPB and TAPB, was not assessed. Additionally, pain at rest and pain during movement were not evaluated separately. Due to the nature of the interventions, neither participants nor the anesthesiologists performing the blocks could be blinded, resulting in an open-label study design.

Furthermore, pain scores at the time of block administration were not recorded, which may have affected early postoperative pain comparisons due to potential variability in spinal anesthesia regression. Additionally, because all patients routinely received paracetamol and diclofenac upon ward admission, the exact time to first analgesic request could not be accurately determined. The study also did not assess pain beyond the first 24 postoperative hours or evaluate postoperative mobilization outcomes, both of which are important in obstetric care. These factors should be addressed in future studies with longer follow-up and functional outcome measures.

CONCLUSION

In conclusion, this study demonstrated that a significantly lower proportion of patients in the ESPB group required rescue analgesia within the first 24 postoperative hours compared to the TAPB group. Beyond this primary outcome, ESPB was also associated with a faster onset and longer duration of effective analgesia, as well as lower pain scores at selected postoperative time points. Taken together, these findings suggest that ESPB may offer a more favorable analgesic profile than TAPB for postoperative pain management following cesarean delivery.

Ethics Committee Approval: This study was approved by the Başakşehir Çam Ve Sakura City Hospital Clinical Research Ethics Committee (Date: 27.10.2021, Decision no: NCT05625009). The study was registered as a clinical trial under the number NCT05625009

Informed Consent: Written informed consent was obtained.

Peer-review: Externally peer-reviewed.

Authorship Contributions: Concept: O.S., Ö.A., E.I.T., E.M., T.A., H.C.G., F.G.O.; Design: O.S., Ö.A., E.I.T., E.M., T.A., H.C.G., F.G.O.; Supervision: F.G.O.; Resource: O.S., Ö.A., E.I.T., E.M., T.A., H.C.G., F.G.O.; Materials: O.S., Ö.A., E.I.T., E.M., T.A., H.C.G., F.G.O.; Data collection and/or processing: O.S., Ö.A., E.M., T.A.; Analysis and/or interpretation: O.S., Ö.A., E.I.T., E.M., T.A., H.C.G., F.G.O.; Literature review: O.S., Ö.A., E.I.T., E.M., T.A., H.C.G., F.G.O.; Writing: O.S., E.I.T., H.C.G.; Critical review: O.S., E.I.T., H.C.G.

Conflict of Interest: None declared.

Financial Disclosure: The author declared that this study has received no financial support.

REFERENCES

1. Patel SD, Sharawi N, Sultan P. Local anaesthetic techniques for post-caesarean delivery analgesia. Int J Obstet Anesth 2019;40:62–77. [CrossRef]
2. Frolich MA. Obstetric anesthesia. Morgan and Mikhails Clinical Anesthesiology New York: McGraw-Hill Education; 2013; p. 843-876.
3. Tsai HC, Yoshida T, Chuang TY, Yang SF, Chang CC, Yao HY, et al. Transversus Abdominis Plane Block: An Updated Review of Anatomy and Techniques. Biomed Res Int 2017;2017:8284363. [CrossRef]
4. Abdallah FW, Halpern SH, Margarido CB. Transversus abdominis plane block for postoperative analgesia after Caesarean delivery performed under spinal anaesthesia? A systematic review and meta-analysis. Br J Anaesth 2012;109(5):679–87. [CrossRef]
5. Covotta M, Claroni C, Costantini M, Torregiani G, Pelagalli L, Zinilli A, et al. The Effects of Ultrasound-Guided Transversus Abdominis Plane Block on Acute and Chronic Postsurgical Pain After Robotic Partial Nephrectomy: A Prospective Randomized Clinical Trial. Pain Med 2020;21(2):378–86. [CrossRef]
6. Kwon HM, Kim DH, Jeong SM, Choi KT, Park S, Kwon HJ, et al. Does Erector Spinae Plane Block Have a Visceral Analgesic Effect?: A Randomized Controlled Trial. Sci Rep 2020;10(1):8389. [CrossRef]
7. Yang HM, Choi YJ, Kwon HJ, O J, Cho TH, Kim SH. Comparison of injectate spread and nerve involvement between retrolaminar and erector spinae plane blocks in the thoracic region: a cadaveric study. Anaesthesia 2018;73(10):1244–50. [CrossRef]
8. Costache I, Sinclair J, Farrash FA, Nguyen TB, McCartney CJ, Ramnanan CJ, et al. Does paravertebral block require access to the paravertebral space? Anaesthesia 2016;71(7):858–9. [CrossRef]
9. Santonastaso DP, de Chiara A, Addis A, Mastronardi C, Pini R, Agnoletti V. Ultrasound guided erector spinae plane block for post-operative pain control after caesarean section. J Clin Anesth 2019;58:45–6. [CrossRef]
10. Ribeiro Junior IDV, Carvalho VH, Brito LGO. Erector spinae plane block for analgesia after cesarean delivery: a systematic review with meta-analysis. Braz J Anesthesiol 2022;72(4):506–15. [CrossRef]
11. Dostbil A, Ince I, Altinpulluk EY, Perez MF, Peksoz U, Cimilli G, et al. Analgesic effect of erector spinae plane block after cesarean section: A randomized controlled trial. Niger J Clin Pract 2023;26(2):153–61. [CrossRef]
12. Morimoto Y. Current status of the erector spinae plane block. Anaesth Pain Intensive Care 2021;25(1):83–7. [CrossRef]
13. Pawa A, King C, Thang C, White L. Erector spinae plane block: the ultimate 'plan A' block?. Br J Anaesth 2023;130(5):497–502. [CrossRef]
14. Mansour MA, Baradwan S, Shama AA, Mahmoud MA, Abouelnour AS, Mohamed AMA, et al. Erector spinae plane block versus transversus abdominis plane block for analgesia after cesarean section: a systematic review and meta-analysis. Braz J Anesthesiol 2025;75(4):844606. [CrossRef]
15. Malawat A, Verma K, Jethava D, Jethava DD. Erector spinae plane block and transversus abdominis plane block for postoperative analgesia in cesarean section: A prospective randomized comparative study. J Anaesthesiol Clin Pharmacol 2020;36(2):201–6. [CrossRef]
16. Bindu S, Mazumder S, Bandyopadhyay U. Non-steroidal anti-inflammatory drugs (NSAIDs) and organ damage: A current perspective. Biochem Pharmacol 2020;180:114147. [CrossRef]
17. Wichmann MA, Cruickshanks KJ, Carlsson CM, Chappell R, Fischer ME, Klein BE, et al. NSAID Use and Incident Cognitive Impairment in a Population-based Cohort. Alzheimer Dis Assoc Disord 2016;30(2):105–12. [CrossRef]
18. Aygun H, Ozturk NK, Ugur M, Aydin Y, Celik GI, Thomas DT, et al. Evaluation of ultrasound-guided bilateral low thoracic erector spinae plane block for postoperative analgesia in cesarean delivery patients: a prospective, randomized, controlled clinical trial. Braz J Anesthesiol 2022;72(4):444–9. [CrossRef]
19. Boules ML, Goda AS, Abdelhady MA, Abu El-Nour Abd El-Azeem SA, Hamed MA. Comparison of analgesic effect between erector spinae plane block and transversus abdominis plane block after elective cesarean section: a prospective randomized single-blind controlled study. J Pain Res 2020;13:1073–80. [CrossRef]
20. Weibel S, Neubert K, Jelting Y, Meissner W, Wöckel A, Roewer N, et al. Incidence and severity of chronic pain after caesarean section: A systematic review with meta-analysis. Eur J Anaesthesiol 2016;33(11):853–65. [CrossRef]
21. Komatsu R, Ando K, Flood PD. Factors associated with persistent pain after childbirth: a narrative review. Br J Anaesth 2020;124(3):e117–30. [CrossRef]
22. Borges NC, de Deus JM, Guimarães RA, Conde DM, Bachion MM, de Moura LA, et al. The incidence of chronic pain following Cesarean section and associated risk factors: A cohort of women followed up for three months. PLoS One 2020;15(9):e0238634. [CrossRef]
23. Wiech M, Żurek S, Kurowicki A, Horeczy B, Czuczwar M, Piwowarczyk P, et al. Erector Spinae Plane Block Decreases Chronic Postoperative Pain Severity in Patients Undergoing Coronary Artery Bypass Grafting. J Clin Med 2022;11(19):5949. [CrossRef]
24. Sait Yüce M, Sarkılar G, Kılıçarslan A, Dereli Y, Özyürek Ş, Tavlan A. Evaluation of erector spinae plane block in cardiac surgery patients in terms of acute and chronic pain scores. Eur Rev Med Pharmacol Sci 2023;27(9):4019–27.

ORİJİNAL ÇALIŞMA - *ÖZ*

Spinal anestezi altında gerçekleştirilen sezaryen operasyonlarında postoperatif analjezi yönetimi için posterior transversus abdominis plan blok ile erector spinae plan bloğunun karşılaştırılması: Prospektif randomize çalışma

AMAÇ: Bu çalışma, spinal anestezi altında gerçekleştirilen sezaryen doğumu sonrasında transversus abdominis plan bloğu (TAPB) ile erector spinae plan bloğu (ESPB) uygulamalarının analjezik etkilerini karşılaştırmayı amaçlamaktadır. Birincil sonlanım noktası, postoperatif ilk 24 saatte kurtarma analjezisi gereksinimi duyan hasta oranıdır. İkincil sonlanım noktaları arasında ilk kurtarma analjezisine kadar geçen süre, belirli zaman noktalarındaki NRS skorları (30. dakika, 4., 8., 12., 16. ve 24. saatler) ve 2. ayda persistan cerrahi sonrası ağrı insidansı yer almaktadır.

GEREÇ VE YÖNTEM: Bu tek merkezli, prospektif randomize kontrollü çalışma, spinal anestezi altında sezaryen operasyonu geçiren ve rastgele iki gruba (TAPB ve ESPB) ayrılan hastaları içermektedir. Postoperatif ağrı ve vital bulgular, blok sonrası 30. dakikada ve postoperatif 4., 8., 12., 16. ve 24. saatlerde değerlendirilmiştir. Ağrı, sayısal derecelendirme skoru (NRS; 0: ağrı yok, 10: en şiddetli ağrı) ile ölçülmüştür. NRS skoru 4 veya daha yüksek olan hastalara kurtarma analjezisi uygulanmıştır. NRS skoru 4 veya 5 olan hastalara 75 mg IM diklofenak sodyum, 6 ve üzeri olanlara ise 0.05 mg/kg IV morfin sülfat verilmiştir.

BULGULAR: Çalışmada toplam 94 hasta analiz edilmiştir: 48 hastaya postoperatif ESPB, 46 hastaya TAPB uygulanmıştır. İlk 24 saatte kurtarma NSAİ analjezik ihtiyacı TAPB grubunda anlamlı derecede daha yüksek bulunmuştur (%58.70'e karşı %27.08, p=0.002). ESPB grubunda 30. dakika, 12. saat ve 16. saatteki NRS skorları anlamlı olarak daha düşük bulunmuştur (sırasıyla, p=0.03, p=0.003 ve p=0.023).

SONUÇ: Spinal anestezi altında gerçekleştirilen sezaryen operasyonlarında postoperatif analjezi için uygulanan ESPB, TAPB'ye kıyasla ilk 24 saatte kurtarma analjezisi gereksinimi duyan hasta oranını anlamlı derecede azaltmıştır. Ayrıca ESPB, daha hızlı başlayan ve daha uzun süren etkili analjezi sağlamış ve bu yönüyle postoperatif ağrı yönetiminde daha avantajlı bir seçenek olduğunu desteklemiştir.

Anahtar sözcükler: Erector spinae plan blokajı; transversus abdominis plan blokajı; sezaryen ağrı kontrolü; sezaryen sonrası kronik ağrı; rejyonal anestezi; postoperatif ağrı yönetimi.

Ulus Travma Acil Cerrahi Derg 2026;32(4):420-427 DOI: 10.14744/tjtes.2025.31767