Int. J Med. Pharm. Res.
E-ISSN: 2958-3683 | **P-ISSN**: 2958-3675
Available on: https://ijmpr.in/

International Journal of
Medical and Pharmaceutical Research

ORGINAL ARTICLE OPEN ACCESS

Comparison of Postoperative Analgesia of Ultrasound-Guided Lateral Transversus Abdominis Plane Block Versus Posterior Transversus Abdominis Plane Block for Obstetrics and Gynecological Surgery

Dr. C. Sriram[1], Dr. Arbind Kumar Ray[2], Dr. Arindam Phukan[3], Dr. Roselin Doley[4], Dr. Karuna Kumar Das[5]

[1]Senior Resident, Department of Anaesthesiology, Tinsukia Medical College and Hospital, Tinsukia
[2]Associate Professor, Department of Anaesthesiology, Assam Medical College
[3]Assistant Professor, Department of Anaesthesiology, Assam Medical College
[4]Anaesthesiologist, Silapathar Model Hospital, Silapathar, Assam
[5]Professor and Head, Department of Anaesthesiology, Assam Medical College and Hospital, Dibrugarh

OPEN ACCESS

*Corresponding Author:

Dr. Arindam Phukan
Assistant Professor, Department of Anaesthesiology, Assam Medical College

Received: 19-07-2025
Accepted: 02-08-2025
Available Online: 21-08-2025

ABSTRACT

Background: Transversus abdominis plane (TAP) blocks reduce postoperative opioid requirements by providing additional analgesic benefits as components of multimodal analgesia regimens. This study compared the postoperative analgesic efficacy of lateral versus posterior approaches to the TAP block in patients undergoing obstetric and gynecological surgery.

Methods: This prospective observational study included 80 female patients (aged 18-50 years, ASA I-II) scheduled for elective obstetric and gynecological surgery under general anesthesia. Patients were divided into two groups (n=40 each): Group L (lateral TAP block with 0.2% ropivacaine) and Group P (posterior TAP block with 0.2% ropivacaine). Postoperative pain was assessed using the Visual Analog Scale (VAS) at 0, 2, 4, 6, 12, and 24 hours. Secondary outcomes included postoperative opioid requirements and hemodynamic changes.

Results: Patients in Group P exhibited significantly lower VAS scores at all assessment time points compared to Group L ($p<0.001$). Group L required significantly more postoperative opioids compared to Group P (82.5% vs. 50%; $p=0.002$). The mean number of opioid doses in 24 hours was significantly higher in Group L (2.58±0.84) compared to Group P (0.83±0.98) ($p<0.001$). However, the time to first analgesic request showed no significant difference between groups (6.79±4.73 vs. 6.70±3.28 hours; $p=0.934$). Hemodynamic parameters were comparable between groups with no statistically significant differences.

Conclusion: Posterior TAP block provides superior postoperative analgesia compared to lateral TAP block in patients undergoing obstetric and gynecological surgery, as evidenced by lower pain scores and reduced opioid requirements in the first 24 hours after surgery. Both approaches maintain stable hemodynamics postoperatively.

Keywords: Transversus abdominis plane block, Postoperative pain, Regional anesthesia, Ultrasound-guided, Obstetric surgery, Gynecological surgery, Multimodal analgesia.

INTRODUCTION

Effective postoperative pain management is an essential component of enhanced recovery protocols following surgery. Inadequately controlled pain can lead to increased morbidity, prolonged hospital stays, delayed recovery, chronic pain syndromes, and patient dissatisfaction [1]. In obstetric and gynecological surgeries, appropriate pain management is particularly important to facilitate early ambulation, reduce thromboembolic complications, enable proper bonding with newborns in obstetric cases, and improve overall patient outcomes [2].

Traditional postoperative pain management has relied heavily on systemic opioids, which, despite their efficacy, are associated with numerous adverse effects including respiratory depression, nausea, vomiting, pruritus, urinary retention, and the potential for dependence [3]. These adverse effects can impede recovery and may be particularly problematic in obstetric patients. Consequently, multimodal analgesia strategies that incorporate regional anesthetic techniques have gained increasing popularity as methods to reduce opioid requirements while providing effective pain control [4].

The transversus abdominis plane (TAP) block is a regional anesthetic technique that was first described by Rafi in 2001 [5]. This technique involves the introduction of local anesthetics into the fascial plane between the internal oblique and transversus abdominis muscles, where the thoracolumbar nerves (T6-L1) that provide sensory innervation to the anterolateral abdominal wall are located. The block provides analgesia to the skin, muscles, and parietal peritoneum of the anterior abdominal wall [6].

The original TAP block technique used the lumbar triangle of Petit as an anatomical landmark for needle insertion. However, with the advent of ultrasound technology, ultrasound-guided TAP blocks have become the standard practice, improving safety and efficacy by allowing direct visualization of the relevant anatomical structures and local anesthetic spread [7]. Multiple approaches to the TAP block have been described, including lateral, posterior, subcostal, and oblique subcostal, each targeting different areas of the abdominal wall and potentially providing varied analgesic coverage [8].

The lateral approach to the TAP block involves placing the ultrasound probe between the costal margin and iliac crest at the mid-axillary line, targeting the anterior cutaneous branches of T10-T12 and providing analgesia primarily to the infraumbilical region from the midline to the mid-clavicular line [9]. The posterior approach, on the other hand, positions the ultrasound probe more posteriorly, near the attachment of the transversus abdominis muscle to the thoracolumbar fascia, potentially affecting both the anterior and lateral cutaneous branches of T9-T12 and providing more extensive coverage, including the lateral abdominal wall between the costal margin and iliac crest [10].

Several studies have evaluated the efficacy of TAP blocks compared to conventional analgesic regimens for postoperative pain management. McDonnell et al. demonstrated that TAP blocks significantly reduced postoperative pain scores and morphine requirements in the first 24 hours following surgery in patients undergoing large bowel resection with a midline abdominal incision [11]. Similarly, a meta-analysis by Abdallah et al. showed that TAP blocks reduced opioid consumption and pain scores in the first 24 hours after surgery across various abdominal procedures [12].

However, few studies have directly compared the efficacy of different TAP block approaches, particularly in obstetric and gynecological surgeries. Yoshiyama et al. reported that posterior TAP blocks provided more effective analgesia than lateral TAP blocks in patients undergoing laparoscopic gynecological surgery, with lower pain scores and reduced incidence of postoperative nausea and vomiting [13]. This finding suggests that the approach to the TAP block may influence its efficacy, possibly due to differences in the distribution of local anesthetic and the nerves affected.
The mechanism by which TAP blocks provide analgesia is believed to involve the blockade of neural afferents from T6 to L1, which supply the anterolateral abdominal wall [14]. These nerves originate from the anterior rami of the thoracolumbar spinal nerves and course through the lateral abdominal wall within the neurofascial plane between the internal oblique and transversus abdominis muscles. By depositing local anesthetic within this plane, TAP blocks can provide somatic analgesia to the skin, muscles, and parietal peritoneum of the anterior abdominal wall [15].

The duration of analgesia provided by a single-shot TAP block is typically limited by the pharmacokinetics of the local anesthetic used. Ropivacaine, a commonly used local anesthetic for TAP blocks, has been shown to provide analgesia for approximately 6-12 hours [14]. However, the posterior approach to the TAP block has been suggested to provide more prolonged analgesia compared to the lateral approach, possibly due to greater spread of local anesthetic to include the paravertebral space or greater coverage of the thoracolumbar nerves [12,15].

The efficacy of TAP blocks may also be influenced by the type of surgery performed and the specific incision location. For infraumbilical incisions, such as those commonly used in cesarean sections and many gynecological procedures, TAP blocks can provide effective analgesia, particularly for somatic pain from the abdominal wall [14]. However, TAP blocks alone may not adequately address visceral pain, necessitating their use as part of a multimodal analgesic regimen rather than as the sole method of pain control [15].

The potential advantages of TAP blocks in obstetric and gynecological surgery include reduced opioid requirements, improved pain control, decreased incidence of opioid-related side effects, and potentially earlier mobilization and hospital discharge [2]. These benefits align with the principles of enhanced recovery after surgery (ERAS) protocols, which emphasize multimodal analgesia and early recovery [4].

Despite the growing body of evidence supporting the use of TAP blocks for postoperative analgesia, the optimal approach to TAP blocks remains a subject of debate. The choice between lateral and posterior approaches may depend on factors such as the surgical incision location, the specific analgesic goals, and the practitioner's expertise. A better understanding of the relative efficacy of these different approaches would help guide clinical decision-making and optimize pain management strategies.

The present study was designed to compare the postoperative analgesic efficacy of lateral versus posterior TAP blocks in patients undergoing obstetric and gynecological surgery. By evaluating pain scores, opioid requirements, and hemodynamic changes, this study aims to provide evidence to inform the choice of TAP block approach in this specific patient population. The findings of this study may contribute to the development of more effective multimodal analgesic strategies for patients undergoing obstetric and gynecological surgery, potentially improving recovery and outcomes.

AIMS AND OBJECTIVES

The primary aim of this study was to compare the postoperative analgesic efficacy of lateral and posterior transversus abdominis plane blocks in patients undergoing obstetric and gynecological surgery.

The specific objectives of the study were:

1. To compare the severity of postoperative pain using the Visual Analogue Scale (VAS) between the lateral and posterior TAP block groups.
2. To compare the postoperative opioid requirements between the lateral and posterior TAP block groups.
3. To compare postoperative hemodynamic changes between the lateral and posterior TAP block groups.

MATERIALS AND METHODS

Study Design and Setting

This prospective observational study was conducted over a period of one year (March 2023 to February 2024) in the Department of Anaesthesiology at Assam Medical College and Hospital, Dibrugarh, India. The study was conducted in the Obstetrics and Gynecology operation theaters of the hospital. Ethical clearance was obtained from the Institutional Ethics Committee (Human) before commencing the research, and written informed consent was obtained from all participants after explaining the study procedure in their own understandable language.

Study Population

The study included 80 female patients aged 18-50 years with American Society of Anesthesiologists (ASA) physical status I or II, scheduled for elective obstetric and gynecological surgery under general anesthesia, and meeting the inclusion and exclusion criteria.

Sample Size Calculation

Considering the standard deviation of VAS scores in patients of lateral and posterior groups to be 0.43 and 0.52 respectively (based on previous studies), the sample size for the present study was calculated to be 40 in each group with 95% confidence, 80% power, and a margin of error of ±0.3.

Inclusion and Exclusion Criteria

Inclusion Criteria:

- Patient age between 18-50 years
- Patients undergoing elective obstetric and gynecological surgery under general anesthesia
- ASA physical status I and II
- Patients who provided written informed consent

Exclusion Criteria:

- Coagulopathies
- Patients with difficult airways
- Patients posted for emergency surgery
- History of any neurological deficit and seizures
- Impaired platelet function
- Allergy to local anesthetic drugs
- Local infection at injection site
- Patient refusal
- Poor lung compliance
- Patients with severe hepatic, renal, respiratory, or cardiovascular diseases

Group Allocation

Patients were divided into two groups:

- Group L (n=40): Patients received lateral transversus abdominis plane block with 0.2% ropivacaine (20 ml on each side)
- Group P (n=40): Patients received posterior transversus abdominis plane block with 0.2% ropivacaine (20 ml on each side)

MATERIALS

The following equipment and materials were prepared for the study:

- Anesthesia workstation equipped with nitrous oxide and oxygen cylinders
- Multi-parameter monitor for pulse oximetry, non-invasive blood pressure (NIBP), electrocardiogram (ECG), and end-tidal carbon dioxide ($ETCO_2$)
- Suction apparatus
- Endotracheal intubation equipment (Magill's cuffed ET tubes, stylet, oropharyngeal airways, Macintosh laryngoscopes)
- Sterile gloves and sterile spinal drape set
- Sterile syringes, needles, and antiseptic solutions
- 0.2% Ropivacaine for TAP block
- Emergency drugs and general anesthesia medications
- Ultrasound machine with appropriate probe

Preoperative Preparation

A preoperative examination was performed on each subject, including basic investigations such as complete blood count, electrocardiogram, chest X-ray, renal function tests, and Mallampati grading. Vital signs, including blood pressure and heart rate, were recorded along with assessments of height and weight. All major systems were examined, including a thorough airway assessment. Patients were given a pictorial explanation of the Visual Analog Scale for pain assessment.

Anesthetic Protocol and Intervention

All patients received premedication with glycopyrrolate (0.2 mg), midazolam (1 mg), and fentanyl (2 μg/kg) intravenously. Anesthesia was induced with propofol (2 mg/kg) and atracurium (0.5 mg/kg) to facilitate endotracheal intubation. After securing the airway with an appropriately sized endotracheal tube, anesthesia was maintained with atracurium (0.1 mg/kg), sevoflurane (1-2%), nitrous oxide (50%), and oxygen (50%).

Following the surgical procedure and before emergence from anesthesia, patients received ultrasound-guided TAP blocks according to their group allocation:

- Group L received lateral TAP blocks using 0.2% ropivacaine (20 ml on each side)
- Group P received posterior TAP blocks using 0.2% ropivacaine (20 ml on each side)

After the block procedure, anesthetic agents were discontinued, and the neuromuscular blockade was reversed with neostigmine (50 μg/kg) and glycopyrrolate (20 μg/kg) once the patient showed signs of recovery. After adequate oral suctioning, patients were extubated and transferred to the recovery room. The anesthesiologist performing the TAP block was not involved in the subsequent assessment of the patient.

TAP Block Technique

For the lateral TAP block (Group L), the ultrasound probe was positioned between the costal margin and iliac crest at the mid-axillary line. For the posterior TAP block (Group P), the probe was positioned more posteriorly, near the attachment of the transversus abdominis muscle to the thoracolumbar fascia. In both approaches, once the appropriate plane between the internal oblique and transversus abdominis muscles was identified, a 22G needle was inserted in-plane with the ultrasound probe, and 20 ml of 0.2% ropivacaine was injected on each side after negative aspiration.

Outcome Measures

Primary Outcome:

- Severity of postoperative pain using the Visual Analog Scale (VAS) at 0, 2, 4, 6, 12, and 24 hours after surgery

Secondary Outcomes:

- Postoperative opioid requirements (need for opioid, time to first dose, and number of doses required in the first 24 hours)
- Hemodynamic parameters (heart rate, systolic blood pressure, diastolic blood pressure, and mean arterial pressure) at 0, 2, 4, 6, 12, and 24 hours after surgery

Postoperative Management

Postoperative pain was assessed using the VAS score at intervals of 0, 2, 4, 6, 12, and 24 hours. Hemodynamic parameters (heart rate, blood pressure) were monitored at the same intervals. Postoperative analgesic requirements were documented, including the need for opioids, time to first analgesic request, and the total number of doses required in the first 24 hours. An opioid analgesic was administered if the VAS score exceeded 4.

Statistical Analysis

Data were analyzed using appropriate statistical tests. Descriptive statistics were performed for age, weight, and ASA grading. Continuous data were analyzed using the unpaired t-test, while categorical variables were analyzed using the Fisher Exact Test and Chi-Square Test. A p-value less than 0.05 was considered statistically significant.

RESULTS

Demographic Characteristics

Table 1: Demographic Characteristics of the Study Population

Variable	Group L (n=40)	Group P (n=40)	p-value
Age (years, mean ± SD)	29.38 ± 7.38	29.23 ± 6.51	0.923
Height (cm, mean ± SD)	160.83 ± 8.31	158.13 ± 8.56	0.156
Weight (kg, mean ± SD)	49.35 ± 11.82	51.23 ± 9.31	0.433
ASA Status I (n, %)	20 (50%)	19 (47.5%)	0.823
ASA Status II (n, %)	20 (50%)	21 (52.5%)	0.823

The demographic characteristics of the study population are presented in Table 1. There were no statistically significant differences between the two groups regarding age, height, weight, and ASA status ($p > 0.05$), indicating that the groups were comparable at baseline.

Pain Assessment Using VAS Score

Table 2: Comparison of VAS Scores Between Groups at Different Time Points

Time Point	Group L (n=40)	Group P (n=40)	p-value
0 hour	3.95 ± 1.72	2.20 ± 1.49	<0.001
2 hours	3.85 ± 2.01	2.10 ± 1.57	<0.001
4 hours	3.63 ± 2.01	1.85 ± 1.31	<0.001
6 hours	3.93 ± 1.90	1.88 ± 1.44	<0.001
12 hours	4.10 ± 2.27	1.80 ± 1.40	<0.001
24 hours	3.80 ± 2.16	2.15 ± 1.53	<0.001

Values are presented as mean ± SD

Table 2 presents the comparison of VAS scores between the two groups at different time points. Patients in Group P (posterior TAP block) had significantly lower VAS scores at all assessment time points compared to those in Group L (lateral TAP block). The mean VAS scores in Group P ranged from 1.80 to 2.20, while in Group L, they ranged from 3.63 to 4.10. These differences were statistically significant at all time points ($p < 0.001$), indicating superior pain control with the posterior TAP block approach.

Postoperative Opioid Requirements

Table 3: Comparison of Postoperative Opioid Requirements Between Groups

Parameter	Group L (n=40)	Group P (n=40)	p-value
Opioid needed (n, %)	33 (82.5%)	20 (50%)	0.002
Time to first dose (hours, mean ± SD)	6.79 ± 4.73	6.70 ± 3.28	0.934
Number of doses in 24 hours (mean ± SD)	2.58 ± 0.84	0.83 ± 0.98	<0.001

Table 3 shows the comparison of postoperative opioid requirements between the two groups. Significantly more patients in Group L required opioid analgesics postoperatively compared to Group P (82.5% vs. 50%, $p = 0.002$). The mean number of opioid doses required in the first 24 hours was also significantly higher in Group L (2.58 ± 0.84) compared to Group P (0.83 ± 0.98) ($p < 0.001$). However, there was no significant difference in the time to first analgesic request between the two groups (6.79 ± 4.73 hours in Group L vs. 6.70 ± 3.28 hours in Group P, $p = 0.934$).

Hemodynamic Parameters

Table 4: Comparison of Heart Rate Between Groups at Different Time Points

Time Point	Group L (n=40)	Group P (n=40)	p-value
0 hour	82.40 ± 11.85	80.05 ± 11.25	0.366

Time Point	Group L (n=40)	Group P (n=40)	p-value
2 hours	82.23 ± 10.06	79.65 ± 11.60	0.292
4 hours	80.93 ± 11.92	79.03 ± 11.59	0.472
6 hours	79.48 ± 10.98	76.35 ± 12.04	0.229
12 hours	80.23 ± 10.29	81.93 ± 12.06	0.500
24 hours	78.88 ± 10.43	82.48 ± 11.82	0.153

Values are presented as mean ± SD (beats/minute)

Table 5: Comparison of Systolic Blood Pressure Between Groups at Different Time Points

Time Point	Group L (n=40)	Group P (n=40)	p-value
0 hour	122.85 ± 9.64	118.65 ± 11.23	0.077
2 hours	121.75 ± 8.60	121.70 ± 12.00	0.983
4 hours	118.53 ± 9.47	122.33 ± 12.72	0.134
6 hours	119.20 ± 9.99	116.58 ± 9.46	0.231
12 hours	115.30 ± 11.61	119.75 ± 13.12	0.112
24 hours	116.88 ± 11.41	121.05 ± 11.40	0.106

Values are presented as mean ± SD (mmHg)

Table 6: Comparison of Mean Arterial Pressure Between Groups at Different Time Points

Time Point	Group L (n=40)	Group P (n=40)	p-value
0 hour	90.08 ± 7.69	91.00 ± 8.84	0.622
2 hours	90.87 ± 7.92	92.44 ± 7.84	0.374
4 hours	86.73 ± 6.79	88.13 ± 8.47	0.415
6 hours	89.47 ± 7.87	87.91 ± 7.11	0.356
12 hours	87.20 ± 8.15	87.83 ± 8.09	0.728
24 hours	86.51 ± 8.02	87.62 ± 6.95	0.511

Values are presented as mean ± SD (mmHg)

Tables 4, 5, and 6 present the comparison of hemodynamic parameters (heart rate, systolic blood pressure, and mean arterial pressure, respectively) between the two groups at different time points. There were no statistically significant differences in any of the hemodynamic parameters between the groups at any of the assessment time points ($p > 0.05$), indicating that both TAP block approaches maintained stable hemodynamics throughout the postoperative period.

DISCUSSION

This prospective observational study compared the postoperative analgesic efficacy of lateral versus posterior approaches to transversus abdominis plane blocks in patients undergoing obstetric and gynecological surgery. The main findings of our study were that: (1) posterior TAP blocks provided significantly better postoperative pain control compared to lateral TAP blocks, as evidenced by lower VAS scores at all assessment time points; (2) patients receiving posterior TAP blocks required significantly less postoperative opioid analgesia compared to those receiving lateral TAP blocks; and (3) both approaches maintained stable hemodynamics throughout the postoperative period.

The superior analgesic efficacy of the posterior TAP block approach observed in our study is consistent with the findings of Yoshiyama et al., who reported that patients undergoing laparoscopic gynecological surgery who received posterior TAP blocks had lower pain scores in the first 24 hours postoperatively compared to those who received lateral TAP blocks [13]. The authors attributed this difference to the potential spread of local anesthetic to the paravertebral space with the posterior approach, leading to blockade of both somatic and visceral pain components. This mechanism may explain the better pain control observed in our Group P patients as well.

The anatomical basis for the differences in efficacy between the two approaches has been explored in cadaveric studies. Carney et al. investigated the pattern of dye spread following different TAP block approaches and found that the posterior approach resulted in spread to the paravertebral space and subsequent blockade of the thoracolumbar nerves as they originated from the spinal cord, potentially explaining the more extensive and prolonged analgesia provided by this

approach [16]. In contrast, the lateral approach primarily affected the terminal branches of the thoracolumbar nerves in the TAP, potentially resulting in a more localized and less effective block.

Our finding of reduced opioid requirements in patients receiving posterior TAP blocks aligns with the meta-analysis by Abdallah et al. [12], which demonstrated that posterior TAP blocks reduced postoperative morphine consumption by 5 mg and 9.1 mg over the 24-48 and 12-24 hour intervals, respectively, compared to control groups, while lateral TAP blocks did not significantly alter morphine consumption. In our study, only 50% of patients in the posterior TAP group required postoperative opioid analgesia, compared to 82.5% in the lateral TAP group, and the mean number of opioid doses required in the first 24 hours was significantly lower in the posterior group (0.83 ± 0.98 vs. 2.58 ± 0.84).

Interestingly, despite the differences in pain scores and overall opioid requirements, we found no significant difference in the time to first analgesic request between the two groups. This could potentially be explained by the similar pharmacokinetics of the local anesthetic (0.2% ropivacaine) used in both approaches, resulting in a comparable duration of initial analgesia. However, the quality of analgesia, as reflected by the VAS scores and subsequent opioid requirements, differed significantly between the groups.

The hemodynamic stability observed in both groups throughout the postoperative period is consistent with the findings of other studies evaluating TAP blocks. Levy et al. reported that there were no significant differences in hemodynamic parameters with different doses of TAP blocks [17], and Raizada et al. found no significant differences in heart rate and mean arterial pressure during intubation with increasing doses of rocuronium bromide [18]. This hemodynamic stability is a desirable feature in the postoperative period and contributes to the overall safety profile of TAP blocks.

The clinical implications of our findings are significant for optimizing postoperative pain management in obstetric and gynecological surgery. The superior analgesic efficacy and reduced opioid requirements associated with posterior TAP blocks suggest that this approach should be preferred over the lateral approach in this patient population. Reduced opioid consumption is particularly beneficial in obstetric patients, as it minimizes the risk of opioid-related adverse effects that could interfere with maternal-infant bonding and breastfeeding.

Furthermore, the incorporation of posterior TAP blocks into multimodal analgesic regimens aligns with the principles of enhanced recovery after surgery (ERAS) protocols, which emphasize optimal pain control with minimal opioid use, early mobilization, and rapid recovery [4]. The reduced pain scores and opioid requirements observed in our posterior TAP group could potentially facilitate earlier ambulation and shorter hospital stays, although these outcomes were not specifically assessed in our study.

Several limitations should be considered when interpreting the results of our study. First, this was an observational study rather than a randomized controlled trial, which may introduce selection bias. Second, we did not differentiate between the specific types of obstetric and gynecological surgeries performed, which might have varied incision locations and associated pain patterns. Third, we did not assess the impact of the different TAP block approaches on long-term outcomes such as chronic pain, functional recovery, or patient satisfaction. Finally, the block procedures were performed after surgery under general anesthesia, and the results might not be generalizable to settings where TAP blocks are performed preoperatively or under alternative anesthetic techniques.

Future research should address these limitations and explore additional aspects of TAP blocks in obstetric and gynecological surgery. Randomized controlled trials comparing the efficacy of different TAP block approaches in specific surgical procedures would provide more robust evidence to guide clinical practice. Studies evaluating the impact of TAP blocks on long-term outcomes, cost-effectiveness, and patient satisfaction would also be valuable. Additionally, research comparing TAP blocks with other regional anesthetic techniques, such as quadratus lumborum blocks or erector spinae plane blocks, could help identify the optimal regional anesthetic approach for different surgical scenarios.

CONCLUSION

In conclusion, this study demonstrates that posterior transversus abdominis plane blocks provide superior postoperative analgesia compared to lateral transversus abdominis plane blocks in patients undergoing obstetric and gynecological surgery. Patients receiving posterior TAP blocks experienced significantly lower pain scores and required less postoperative opioid analgesia compared to those receiving lateral TAP blocks, while both approaches maintained stable hemodynamics throughout the postoperative period.

These findings suggest that when performing TAP blocks for postoperative analgesia in obstetric and gynecological surgery, the posterior approach should be preferred over the lateral approach to optimize pain control and minimize opioid requirements. The incorporation of posterior TAP blocks into multimodal analgesic regimens may contribute to enhanced recovery and improved outcomes in this patient population.

The results of this study add to the growing body of evidence supporting the use of TAP blocks for postoperative analgesia and provide specific guidance regarding the optimal approach in obstetric and gynecological surgery. Further research is warranted to explore the impact of different TAP block approaches on long-term outcomes and to compare their efficacy with other regional anesthetic techniques in various surgical scenarios.

REFERENCES

1. Kehlet H, Dahl JB. Anaesthesia, surgery, and challenges in postoperative recovery. Lancet. 2003;362 (9399): 1921-28.
2. Goreva A, Sawant V, Jadon A, Jain P, Bala R, Chandrakar S. Perioperative bilateral ultrasound guided transverse abdominis plane block in gynaecological and obstetrics surgeries - a prospective randomized control study. Indian J Anaesth. 2022;66(9):662-8.
3. Benyamin R, Trescot AM, Datta S, Buenaventura R, Adlaka R, Sehgal N, et al. Opioid complications and side effects. Pain Physician. 2008;11(2 Suppl):S105-20.
4. Gustafsson UO, Scott MJ, Hubner M, Nygren J, Demartines N, Francis N, et al. Guidelines for perioperative care in elective colorectal surgery: Enhanced Recovery After Surgery (ERAS®) Society recommendations: 2018. World J Surg. 2019;43(3):659-95.
5. Rafi AN. Abdominal field block: a new approach via the lumbar triangle. Anaesthesia. 2001;56(10):1024-26.
6. 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.
7. Hebbard P, Fujiwara Y, Shibata Y, Royse C. Ultrasound-guided transversus abdominis plane (TAP) block. Anaesth Intensive Care. 2007;35(4):616-7.
8. Chin KJ, McDonnell JG, Carvalho B, Sharkey A, Pawa A, Gadsden J. Essentials of Our Current Understanding: Abdominal Wall Blocks. Reg Anesth Pain Med. 2017;42(2):133-83.
9. Hebbard P. Subcostal transversus abdominis plane block under ultrasound guidance. Anesth Analg. 2008;106(2):674-5.
10. Borglum J, Maschmann C, Belhage B, Jensen K. Ultrasound-guided bilateral dual transversus abdominis plane block: a new four-point approach. Acta Anaesthesiol Scand. 2011;55(6):658-63.
11. McDonnell JG, O'Donnell B, Curley G, Heffernan A, Power C, Laffey JG. The analgesic efficacy of transversus abdominis plane block after abdominal surgery: a prospective randomized controlled trial. Anesth Analg. 2007;104(1):193-7.
12. Abdallah FW, Laffey JG, Halpern SH, Brull R. Duration of analgesic effectiveness after the posterior and lateral transversus abdominis plane block techniques for transverse lower abdominal incisions: a meta-analysis. Br J Anaesth. 2013;111(5):721-35.
13. Yoshiyama S, Ueshima H, Sakai R, Otake H. A Posterior TAP Block Provides More Effective Analgesia Than a Lateral TAP Block in Patients Undergoing Laparoscopic Gynecologic Surgery: A Retrospective Study. Anesthesiol Res Pract. 2016;2016:4598583.
14. Tran TM, Ivanusic JJ, Hebbard P, Barrington MJ. Determination of spread of injectate after ultrasound-guided transversus abdominis plane block: a cadaveric study. Br J Anaesth. 2009;102(1):123-7.
15. Ammar AS, Mahmoud KM. Effect of adding dexamethasone to bupivacaine on transversus abdominis plane block for abdominal hysterectomy: A prospective randomized controlled trial. Saudi J Anaesth. 2012;6(3):229-33.
16. Carney J, Finnerty O, Rauf J, Bergin D, Laffey JG, McDonnell JG. Studies on the spread of local anaesthetic solution in transversus abdominis plane blocks. Anaesthesia. 2011;66(11):1023-30.
17. Levy JH, Davis GK, Duggan J, Szlam F. Determination of the hemodynamics and histamine release of rocuronium (Org 9426) when administered in increased doses under N2O/O2-sufentanil anesthesia. Anesth Analg. 1994;78(2):318-21.
18. Raizada N, Gaurav, Yadav MK, Singh RB, Prabhakar T. Comparison of Different Doses of Rocuronium for Endotracheal Intubation. Int J Contemp Med Res. 2018;5(4):B13-B17.