



STUDY OF POSTOPERATIVE ANALGESIA AFTER CAESAREAN SECTION WITH SURGICAL TRANSVERSUS ABDOMINIS PLANE BLOCK

Obstetrics & Gynaecology

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ABSTRACT

Background: Transversus abdominis plane block has become an established modality of providing postoperative analgesia with added benefits of improved analgesia and decreased opioid consumption. One of the possible alternatives in postoperative pain treatment after abdominal surgery is the landmark-approach transversus abdominis plane block (TAP block). **Method:** A hundred patients who fulfilled inclusion criteria are included in study after obtaining informed written consent. Surgical TSP block is administered by transperitoneal route before closure of peritoneum with 0.25% bupivacain (dose adjusted according to weight of patient). No postoperative analgesia given for both groups. Postoperative pain is assessed by blind observer and visual analogue score (VAS) observed every hour till 24 hour of post-operative period. Rescue analgesia time monitored if analgesia given. **Results:** We observed that in case group majority of the patients belongs to 25-29 years age group (24; 48%) whereas in control group majority of the patients belonged to 19-24 years age group (23; 46%). The mean gestational age in case group was 38.33 ± 1.15 weeks while in control group it was 38.26 ± 1.32 weeks. We observed no significant difference in the gestational age of both the groups. We observed that postoperative VAS score significantly less in the case group than control group. We found that case group require significantly less rescue analgesia as compared to control group. We found no significant difference in the ambulation time of both the group.

KEYWORDS

Postcesarean analgesia, Tap, Transversus abdominis plane block.

INTRODUCTION

Caesarean delivery (C-section) delivers a baby through surgery through a laceration in the mother's abdomen and uterus. It is a globally accepted life-saving surgical technique to deal with pregnancy complications and reduce maternal and neonatal mortality and morbidity, an excessive use of cesarean deliveries is becoming a new normal in many developing countries.¹ Based on data from 169 countries, recent global estimates suggest prevalence of CS deliveries of 21.1% which is in excess of the WHO limit of 10–15% of all births.² Evidence suggests that institutional deliveries in India increased from 39% in 2005–06 to 89% in 2019–21, C- section deliveries too increased significantly from 8.5% to 21.5% during this period.^{3,4}

Caesarean section is associated with moderate to severe postoperative pain in a significant proportion of women, which may delay recovery and return to activities of daily living; impair mother-child bonding; impact maternal psychological well-being; and may complicate breastfeeding.⁵ Furthermore, inadequate postoperative pain relief may lead to hyperalgesia and persistent postoperative pain.⁶ Thus, an important goal following cesarean delivery is to improve analgesia while reducing opioid consumption.

Based on a systematic review performed in 2014,⁷ the Procedure Specific Post-operative Pain Management (PROSPECT) Working Group,^{8,9} which is a collaboration of surgeons and anaesthetists, previously provided recommendations for pain management in women undergoing caesarean section. Multimodal pain management approaches are recommended to improve analgesia, reduce opioid use, and decrease opioid-related adverse events (AEs) following caesarean delivery.^{10,11}

Protocols include long-acting neuraxial opioids together with scheduled acetaminophen and nonsteroidal anti-inflammatory drugs (NSAIDs). However, most women still request opioids after caesarean delivery.¹² Local anesthetic techniques including wound infiltration and truncal blocks, such as transversus abdominis plane (TAP) block, may benefit women not receiving intrathecal morphine.¹³

Pain experienced by the patients after C-section, is from the abdominal wall incision. The cutaneous nerves supplying the anterior abdominal

wall (T6 to L1) pass in the neurofascial plane between the internal oblique muscle and the transversus abdominis muscle. These cutaneous nerves could be blocked by injecting an anesthetic into this plane.¹⁴

Transversus abdominis plane block has become an established modality of providing postoperative analgesia with added benefits of improved analgesia and decreased opioid consumption.¹³ Rafi first described the TAP block in 2001, since then it has been practiced by the anesthesiologists as a blind technique based on body landmarks to identify "triangle of Petit".¹⁵

With the advent of ultrasound, this technique has become safer when it is performed under ultrasound guidance. In 2011, Owen et al. described their novel surgical TAP block technique, in patients undergoing CD.¹⁶

Herein, the surgeon gives the TAP block under direct vision before closing the abdomen. However, this technique has not been practiced frequently by obstetricians. This work was done to study the efficacy of the surgical TAP block after CD. We also looked at the ease of performance of the surgical TAP block and the overall patient satisfaction score with the postoperative analgesia provided.^{15,16}

Inadequate postoperative facilities, equipment and staff shortages limit the introduction of the more advanced options in the developing countries like India. At the same time, single-injection local anesthetic blocks, which have a low incidence of adverse effects, are underutilised.¹⁷ One of the possible alternatives in postoperative pain treatment after abdominal surgery is the landmark-approach transversus abdominis plane block (TAP block).

This technique is relatively simple and can be done in facilities with limited resources using locally available equipment, drugs and human resource.^{13,17,18}

The aim of this study was to establish if a TAP block provides sufficient pain relief in a rural area setting wherein the resources are limited. Objective was to study effect of TAP block as postoperative analgesia and to compare the rescue analgesia time between case and control group

MATERIAL AND METHODS**Type – Randomized study****Sample size – 100**

Duration – 2 years from 2020 to 2022.

A hundred patients who fulfilled inclusion criteria are included in study after obtaining informed written consent.

Inclusion Criteria

- Patient undergoing elective and emergency lower segment caesarean section.

Exclusion Criteria

- Patients having – American society of Anaesthesiology (ASA) status III and above
- Known allergy to drug used Thrombocytopenia Requiring general anesthesia
- Local infection at the site of injection
- Vertical abdominal incision
- High risk cases in which operative time cannot be extended. They are randomized in two groups.

Group A with surgical TAP block as case.

Group B without TAP block as control.

Methodology

Surgical TSP block is administered by transperitoneal route before closure of peritoneum with 0.25% bupivacain (dose adjusted according to weight of patient). No postoperative analgesia given for both groups. Postoperative pain is assessed by blind observer and visual analogue score (VAS) (0=no pain and 10=worst pain) observed every hour till 24 hour of post-operative period. Rescue analgesia time monitored if analgesia given.

OBSERVATION AND RESULTS

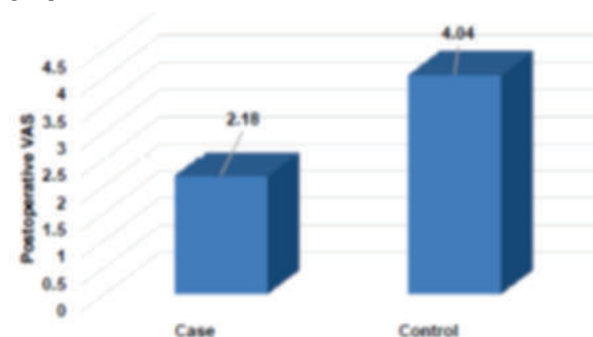
In present study, we observed that in case group majority of the patients belongs to 25-29 years age group (24;48%) whereas in control group majority of the patients belonged to 19-24 years age group (23;46%). There exists no significant difference amongst the age in both the groups. We observed that in case group majority of the patients had G2P1L1 parity (19;38%) whereas in control group majority of the patients had G2P1L1 parity (17;34%). The mean gestational age in case group was 38.33 ± 1.15 weeks while in control group it was 38.26 ± 1.32 weeks. We observed no significant difference in the gestational age of both the groups.

In case group the major reason for section was previous LSCS observed in 19 patients (38%) whereas in control group the major reason was foetal distress, observed in 17 patients (34%).

The mean weight of the patient in case group was 59.54 ± 3.4 kgs while in control group it was 58.50 ± 3.8 kgs. We observed no significant difference in the weight of both the groups.

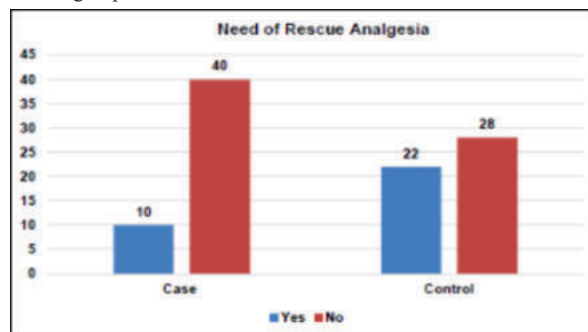
The mean drug dosage for the patients in case group was 14.86 ± 0.83 ml. The maximum being 17 ml and minimum being 13 ml.

The mean Intraoperative Time of the patient in case group was 42.10 ± 5.98 mins while in control group it was 44.2 ± 5.74 mins. We observed no significant difference in the intraoperative time of both the groups.



The mean Intraoperative Time of the patient in case group was 2.18 ± 1.90 while in control group it was 4.04 ± 1.67 . We observed that

postoperative VAS score significantly less in the case group than control group.



We observed that rescue analgesia was required in 10 patients from case group (20%) and 22 patients in control group (44%). We found that case group require significantly less rescue analgesia as compared to control group.

We observed that ambulation time in case group was 5.98 ± 0.74 hrs while in control group it was 6.4 ± 0.80 hrs. We found no significant difference in the ambulation time of both the group.

We observed that in both the groups self-void was present in all the Patients. We observed that NBM out time in case group was 5.08 ± 0.63 hrs while in control group it was 6.1 ± 1.01 hrs. We found no significant difference in the NBM out time of both the group.

We observed that breastfeeding initiated time in case group was 3.0 ± 0.96 hrs while in control group it was 3.58 ± 0.85 hrs. We found no significant difference in the breast-feeding initiated time of both the group. We observed no postoperative complications in both the groups.

DISCUSSION

Pain after caesarean section is often severe. Effective analgesia has shown to reduce postoperative stress response and accelerate recovery, early ambulation, infant care (including breast feeding, maternal-infant bonding) and prevention of postoperative morbidity from caesarean section. It is well recognized that local anaesthetic techniques can improve the quality of postoperative recovery by reducing pain and analgesic requirements.

We conducted a randomized, double-blind, case-control study to evaluate the postoperative analgesic efficacy of TAP block which was based on McDonnell et al.⁴ management of postoperative pain secondary to caesarean section by the use of a single-shot TAP block.

Caesarean section under regional anesthesia provides an excellent opportunity to perform TAP block. Injection in the postoperative period avoids operating room time delays, and by that time the neonate has already been delivered and is not placed at risk. So we performed TAP block at the end of surgery.

In our Study, Surgical TSP block is administered by transperitoneal route before closure of peritoneum with 0.25% bupivacain (dose adjusted according to weight of patient). No postoperative analgesia given for both groups.

We observed that in case group majority of the patients belongs to 25-29 years age group (24;48%) and mean age was 29 ± 4.5 , whereas in control group majority of the patients belonged to 19-24 years age group (23;46%) and mean age was 30.75 ± 6.2 . There was no significant difference amongst the age in both the groups. Similar Results were observed in other studies.¹⁹⁻²¹

We observed that rescue analgesia was required in 10 patients from case group (20%) and 22 patients in control group (44%). We found that case group require significantly less rescue analgesia as compared to control group. Similar Results were observed in other studies.^{22,23}

The mean Intraoperative Time of the patient in case group was 2.18 ± 1.90 while in control group it was 4.04 ± 1.67 . We observed that postoperative VAS score significantly less in the case group than control group.

McDonnell et al, compared TAP block with either ropivacaine or placebo at the end of caesarean section under spinal anesthesia and demonstrated significant reduction in 48 hours postoperative morphine consumption, pain scores, and side effects was observed in TAP group.⁸ Other placebo-controlled studies also clearly demonstrated the analgesic benefit of TAP block in patients of cesarean delivery under spinal anesthesia.^{15,16} Our study showed similar results with previous studies.²⁴

CONCLUSION

Present Study Conclude that multimodal pain management incorporating TAP block with bupivacaine is an effective approach to reducing rescue analgesic dependence and improving analgesia after cesarean delivery with no unexpected safety signals. These results are important in light of the need for rescue analgesic sparing pain management strategies.

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