



DEXAMETHASONE ADDED TO LEVOBUPIVACAINE IN TRANSVERSUS ABDOMINIS PLAIN BLOCK INCREASED THE DURATION OF POSTOPERATIVE ANALGESIA AFTER CAESAREAN SECTION DELIVERIES

Anaesthesiology

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ABSTRACT

Introduction: When Dexamethasone added to local anaesthetics, it can prolong the duration of peripheral blocks. Dexamethasone has a long and efficient glucocorticoid structure and having anti-inflammatory properties. The aim of this study is to determine the effect of Dexamethasone on the block duration when added to Levobupivacaine used for transversus abdominis block (TAP) applied to patients who underwent caesarean section. **Methods:** 28 patients with spinal anaesthesia in an American Society of Anesthesiologists (ASA) I and II Risk group were included in the study and divided into two groups. Bilateral 30ml 0.25% Levobupivacaine and 2 ml 0.9% NaCl for the Levobupivacaine group and bilateral 30 ml 0.25% Levobupivacaine and 2 ml Dexamethasone (8mg) for the Dexamethasone group were administered in a TAP block performed. The time need for the first analgesic in the postoperative period was recorded. **Result:** The time before the administration of the first additional analgesic dose was prolonged significantly in the Dexamethasone group in compared to Levobupivacaine group. **Conclusion:** The utilization of Dexamethasone, which has a prolonging effect on the TAP block, may be alternative to epidural opioid analgesia in caesarean section.

KEYWORDS

Levobupivacaine, Dexamethasone, TAP block, postoperative analgesia

INTRODUCTION

Post-caesarean pain control is crucial particularly during the first 24 hours to facilitate early ambulation and establishment of breast feeding. Pain management after caesarean section is usually multimodal, incorporating regional nerve blocks as part of opioid sparing analgesic technique^[1]. Transversus abdominis plane (TAP) block inhibits the neural afferents from T7-L1 lying between the internal oblique and transverse abdominis muscle with the help of local anaesthetics^[2]. Various adjuvants to local anaesthetics like ketamine, opioids, Dexamethasone and alpha-2 agonists like dexmedetomidine have been utilised successfully in peripheral nerve blocks and field blocks to enhance the duration of post-operative analgesia. When Dexamethasone added to local anaesthetics, it prolongs the duration of peripheral blocks. Dexamethasone has a long and efficient glucocorticoid structure and presents anti-inflammatory properties.

AIMS AND OBJECTIVES

Compare duration and efficacy of Levobupivacaine alone with Levobupivacaine and Dexamethasone in transverse abdominis pain block in cesarean section patient.

1. Compare time to first rescue analgesia
2. Compare the total amount of analgesia required in first 24 h postoperatively

METHODOLOGY

After getting approval from Institutional Ethical Committee, written informed consent will be obtained from all the patients.

Inclusion Criteria:

- ASA grade I and II
- Age 20 to 40 years

Exclusion Criteria:

- Patients with morbid obesity, respiratory, hepatic and renal insufficiency.
- Addition or hypersensitivity to opioids
- Patients on chronic analgesic use
- Patients not consenting for study

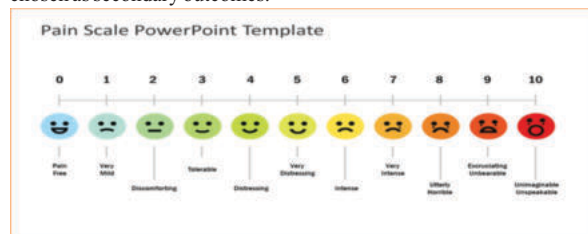
Study Groups:

- **Group A (n=14):** Patients will receive Levobupivacaine plain (0.25%).
- **Group B (n=14):** Patients will receive Dexamethasone with Levobupivacaine plain (0.25%).

Premedication:

- Inj. Glycopyrrolate: 0.005-0.01 mg/kg IV
- Inj. Ondansetron: 0.1 – 0.2 mg/kg IV

In the operation theatre, subarachnoid block was carried out with 12mg bupivacaine heavy through 25G spinal needle. Duration of the surgery was 60-90 minutes. 28 patients were included in our study. The patients were randomized and divided into two groups. Information about the numeric rating scale (NRS10) used for the evaluation of pain intensity and diversity (visceral/somatic) was given to each participant at the preoperative visit. After the surgery, the TAP block needle entry site was identified between the iliac crest and the costal margin. The TAP blocks were performed using 23-G block needles, 30 ml of 0.25% Levobupivacaine + 2 ml normal saline (NS) by 32 ml for each side bilaterally for the Levobupivacaine group (Group 1), and 30 ml of 0.25% Levobupivacaine + 2 ml 8 mg Dexamethasone phosphate by 32 ml for each side bilaterally in the Dexamethasone group (Group 2) were administered between the two muscles. At the 1st, 2nd, 4th, 8th, 16th, and 24th post operative hours, mean arterial pressure (MAP), SpO2 values, the time elapsed before the first analgesic request, NRS10 scale (NRS 0 = no pain, 10 = intolerable pain), and the total analgesic drug requirements were compared between the two groups. All measurements in this study were done by the same assistant who was blinded to the groups and the drugs. The levels of motor block of the patients were evaluated using the Bromage scale. When the NRS10-I and/or NRS10- II reached > 4 by patient demand, 50 mg intravenous tramadol hydrochloride were administered as needed in both groups. The patients were closely monitored, and any side effects of the anaesthetics as well as any surgical complications were recorded. The primary outcome of the study was to evaluate the effect of Dexamethasone on the time to the first request for additional analgesics. The pain scores and total analgesic consumption were chosen as secondary outcomes.



OBSERVATION & RESULT:

Table 1: Demographic Data:

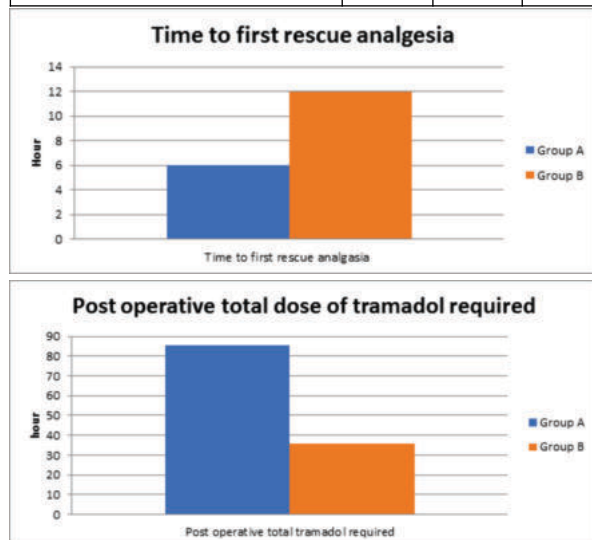
Demographic Data	Group A	Group B
ASA Grading	I & II	I & II
Age	26.2±2.6	26.7±3.3
Height	154.2±3.2	158.6±4.9
weight	73±2.9	74.8±3.2

Present study we observed the effect of Dexamethasone added to Levobupivacaine in transversus abdominis plane block increased the duration of postoperative analgesia after caesarean section. All patients were of ASA grade I & II. Age, height, weight, BMI, length of operation, and baseline vitals were comparable and no significant difference between the two groups [Table 1].

In comparison to group B (12 ± 1.2 h), time to first rescue analgesia was substantially shorter in group A (6.0 ± 0.8 h) (P value 0.001). In comparison to group B (35.7 ± 6.7), group A (85.5 ± 3.2) required considerably more tramadol overall during the postoperative period (P value 0.001) [Table 2].

Table:2 Distribution According To Clinical Features:

	Group A	Group B	P value
Time to first rescue analgesia (hours)	6.0 ± 0.8	12 ± 1.2	0.00174
Post operative total dose of tramadol required(mg)	85.5 ± 3.2	35.7 ± 6.7	0.001



DISCUSSION

Present study we compare the effect of Dexamethasone added to Levobupivacaine in transversus abdominis plane block increased the duration of postoperative analgesia after caesarean section. In present study, all patients were of ASA grade I & II. Age, height, weight, BMI, length of operation, and baseline vitals were comparable and no significant difference between the two groups [Table 1]. In comparison to group B (12 ± 1.2 h), time to first rescue analgesia was substantially shorter in group A (6.0 ± 0.8 h) (P value 0.001). [Table 2]. In comparison to group B (35.7 ± 6.7), group A (85.5 ± 3.2) required considerably more tramadol overall during the postoperative period (P value 0.001) [Table 2]. There is significant difference between two group which signifies that when Dexamethasone added to Levobupivacaine increase duration of post operative analgesia after caesarean section.

In 2012, A. Akkaya⁽¹⁾, studied effect of Dexamethasone added to Levobupivacaine in ultrasound-guided transversus abdominis plane block increased the duration of postoperative analgesia after caesarean section. In this study they observed the time required for the administration of the first additional analgesic dose was prolonged significantly in the Dexamethasone group compared to the Levobupivacaine group ($p=0.004$). For superficial pain score was lower in Dexamethasone group and for deep pain there was significant difference for Dexamethasone group. The total consumption of tramadol was significantly lower in Dexamethasone group.

In 2019, Abdel-Wahab et al⁽²⁾, studied comparison of postoperative analgesic effects of two doses of Dexamethasone in ultrasound guided transversus abdominis plane block for inguinal hernia repair. In this study, they studied the postoperative analgesic effect of two doses of Dexamethasone (4mg and 8mg added to bupivacaine in unilateral TAP block for inguinal hernia repair), and they noted that VAS scores, time to rescue analgesia, and total postoperative analgesic consumption were lower in Dexamethasone groups than the control group with no difference between the two doses of Dexamethasone.

In 2016, Gupta A, Gupta A, Yadav N⁽³⁾, studied the effect of

Dexamethasone as an adjuvant to ropivacaine on duration and quality of analgesia in ultrasound guided transversus abdominis plane block in patient undergoing LSCS. In this study they observed that time to rescue analgesia was significantly less in group R(ropivacaine) (11.62 ± 3.80 h) compared to group D (Ropivacaine with Dexamethasone) (19.04 ± 4.13 h) ($p < 0.001$). The amount of tramadol consumed in total over the course of 24 hours was noticeably higher in group R (86.67 ± 30.55 mg) than in group D (35.56 ± 39.54 mg) (P 0.001). At 8 hours, 12 hours, and 24 hours following surgery, group R had significantly higher somatic, visceral pain and VAS values than group D.

Currently, the most efficient analgesia option after caesarean section is the epidural administration of opioids. However, this method requires close monitoring for respiratory depression; many negative side effects, such as a decrease in motility, lumbago, complications associated with the utilization of a catheter, itching, nausea/vomiting.

The utilization of Dexamethasone, which has a prolonging effect on the transversus abdominis area block, may be an alternative to opioid analgesia that can also aid in the recovery process.

CONCLUSION

In Our research, we determined that the addition of Dexamethasone to Levobupivacaine in a transversus abdominis region block enhanced the analgesia time needed for additional analgesia, decreased deep and superficial pain scores, and reduced the total amount of extra analgesic substances needed.

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