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Research Article

**COMPARATIVE ANALYSIS OF MEAN POST-OPERATIVE  
PAIN LEVEL AMONG PATIENTS ADMINISTERED  
BUPIVACAINE INFILTRATION DURING CAESAREAN  
SECTION VERSUS CONTROLS****Fakharunissa Waheed<sup>1</sup>, Roshan Ara Kazi<sup>2</sup> and Qamarunissa Muhabat<sup>3</sup>**Dept. of Obstetrics & Gynecology – Indus Medical College, T.M.K<sup>1,2</sup>, Dept. of Obstetrics & Gynecology – Aga Khan University Hospital, Karachi<sup>3</sup>**Article Received:** July 2019**Accepted:** July 2019**Published:** August 2019**Abstract:**

**Background:** Treatment of postoperative pain continues to be an ongoing concern. The injection of local anesthesia into the wound has been shown to reduce postoperative incisional pain in several studies. Bupivacaine is one such local anesthetic and its use merits to be explored.

**Objective:** To compare the effect of bupivacaine versus placebo control on mean post-operative pain level after caesarean section.

**Methodology:** This prospective cohort was conducted upon a sample of 100 women with term pregnancies scheduled to undergo elective caesarean section deliveries from January 2018 to June 2019 at a tertiary care hospital. Patients were randomized to receive an infusion of either 0.5% bupivacaine (n = 50) or normal saline solution (n = 50) into the wound for 48 hours. Postoperative pain (determined with a visual analog scale) and postoperative rescue analgesic (morphine) use were assessed at 12, 24, and 48 hours. The data obtained was recorded onto a structured questionnaire and analyzed using SPSS v.21 to apply student t-test. P value of less than 0.05 was taken to be significant.

**Results:** The mean age of the women mothers stood at 29 (SD ± 8). The two treatment groups were treated by the same physicians and all had elective lower segment caesarean sections. There was a decrease in opioid consumption and pain on visual analog scale in the Group A that received bupivacaine, as compared with the placebo group.

**Conclusion:** After careful consideration, it can be concluded that local administration of pre-emptive bupivacaine infiltration before closure of the skin decreased postoperative pain and need for rescue analgesia.

**Keywords:** Caesarean Section, Post-Operative Pain, Local Analgesic, Local Anesthetic, & Bupivacaine.

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**INTRODUCTION:**

The advent of various multimodal analgesia techniques has greatly facilitated the management of postoperative pain. Opioids like pethidine and morphine, are the most widely used and cost-effective agents. Augmentation of intravenous analgesia has been achieved with regional nerve blockade, particularly for patients undergoing hysterectomy or caesarean delivery. [1, 2]

Opioids cause sedation and its secretion to breast milk leads to sedation of the newborn. Improvements in pain relief that makes the post-anesthetic period less uncomfortable are important after caesarean section because childbirth involves bonding with the newborn and starting breast feeding. [3]

The rationale behind the use of pre-emptive analgesia is to stop pain from starting by blocking the usual response of nervous system to pain. The local anesthesia is used to protect the central nervous system from the deleterious effects of noxious stimuli. According to some neural pain pathway theories, the stimulation of superficial pain receptors may further sensitize the nervous system to painful sensation. [4]

Elimination of some of the superficial components of the pain after caesarean delivery could modulate the perception of deeper visceral pain. The data from previous studies suggest that the infiltration of local anesthesia into the wound during caesarean delivery

appears to be effective in reducing postoperative narcotic requirements. It is known that local infiltration of the wound at the time of surgery with bupivacaine, an amino-amide local anesthetic agent, enhances post-operative analgesia after minor peripheral or lower abdominal surgery. [5]

This study is particularly important in light of the growing number of women giving birth by caesarean section all around the world. Preventing or reducing the postoperative pain and narcotic use allows good well-being of the mother, enhance bonding and breast feeding. This study hopes to directly compare the effect of local administration of bupivacaine against placebo controls to battle post-operative pain following caesarean section.

**METHODOLOGY:**

This prospective cohort was conducted upon a sample of 100 women with term pregnancies scheduled to undergo elective caesarean section deliveries. Patients were randomized to receive an infusion of either 0.5% bupivacaine (n = 50) or normal saline solution (n = 50) into the wound for 48 hours. Postoperative pain (determined with a visual analog scale) and postoperative rescue analgesic (morphine) use were assessed at 12, 24, and 48 hours. The data obtained was recorded onto a structured questionnaire and analyzed using SPSS v.21 to apply student t-test. P value of less than 0.05 was taken to be significant.

**RESULTS:**

The mean age of the women mothers stood at 29 (SD ± 8).

Maternal Age Group	Frequency
Up to 20 years	11
21 to 25 years	12
25 to 30 years	38
31 to 35 years	23
36 years and above	16

The two treatment groups were treated by the same physicians and all had elective lower segment caesarean sections. There was a decrease in opioid consumption and pain on visual analog scale in the Group A that received bupivacaine, as compared with the placebo group.

GROUP	POST-OPERATIVE TIME (HOURS)		
	12	24	48
INTERVENTION	3.8 ± 2.5	4.1 ± 2.7	1.8 ± 1.7
PLACEBO CONTROL	4.0 ± 2.9	4.1 ± 2.5	2.3 ± 3.1

GROUP	NEED FOR RESUCE ANALGESIC		
	12	24	48
INTERVENTION	11%	08%	03%
PLACEBO CONTROL	18%	13%	05%

**DISCUSSION:**

In this study, the effect of local anesthetic administration to the incision site before closure of the skin on postoperative pain was investigated. Post-caesarean section pain is an important issue in obstetrics. Several studies have shown the importance of adequate postoperative analgesia on mobilization, rehabilitation, and decreasing the length of hospital stay. Further, it enhances bonding between the mother and the newborn. [9]

We have found that infiltration of the wound with local anaesthesia with concomitant non-steroidal anti-inflammatory agents significantly decreased postoperative pain and narcotic use (morphine) in the postpartum period. Our aim was to decrease narcotic use because they are associated with sedation, slow return of bowel function, and its secretion into breast milk can lead to sedation of the baby. The injection of local anesthesia before or after incision has been shown in some studies to provide short-term pain relief after the operation. [7]

Many studies have evaluated the use of local anesthesia after abdominal hysterectomy or caesarean delivery. These studies have shown conflicting results. The conflicting evidence may be due to the short duration of action of the local anesthetics like lidocaine and bupivacaine as preemptive analgesic to block postoperative pain. [8, 9]

This study was performed in a randomized, blinded manner that would be expected to minimize most confounding variables. The use of local anesthesia after caesarean delivery would not be expected to have an effect on uterine pain. However, it is uncertain what proportion of pain after a caesarean delivery is produced by superficial structures and what proportion is produced by deeper visceral structures. Furthermore, according to some neural pain pathway theories, the stimulation of superficial pain receptors may further sensitize the nervous system to painful sensation. Thus, elimination of some of the superficial components of the pain after caesarean delivery could modulate the perception of deeper visceral pain. The significant reduction in narcotic use that was associated with the use of local anesthesia in this study, suggests that a substantial amount of this pain is superficial in origin. [10]

According to Cochrane Researchers local anesthetics are part of integrated pain management strategies for caesarean section operations, provided that consideration is given to the cost. Local anesthetics can be given, in addition to general or regional

anesthetics, to manage pain during and after operations. The local anesthesia is either injected to block nerves in the abdominal wall or applied directly to the wound. The researchers reviewed data from 20 studies that together involved 1,150 women who gave birth by caesarean section in both developing and developed countries. They found that women treated with local anesthetic did not require as much morphine or other opioid drugs for pain relief after their operations. [11]

The commonly used local anesthetic agents do have side effects but these are very rare, ranging from allergy to cardiovascular and central nervous system effects. Furthermore, there is no report of side effects in infants following local anesthetic infiltration. A meta-analysis of 19 trials of pre-incisional versus post-incisional administration of local anesthetics did not support the pre-incisional infiltrations. [12]

**CONCLUSION:**

After careful consideration, it can be concluded that local administration of pre-emptive bupivacaine infiltration before closure of the skin decreased postoperative pain and need for rescue analgesia.

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