

## ORIGINAL RESEARCH

# Outcome of continuous wound infiltration of bupivacaine at two different anatomical planes for caesarean analgesia

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### ABSTRACT

**Background:** Continuous wound infiltration of bupivacaine for caesarean analgesia is a technique used to provide pain relief following cesarean section delivery. The present study was conducted to assess outcome of continuous wound infiltration of bupivacaine at two different anatomical planes for caesarean analgesia. **Materials & Methods:** 60 parturients who underwent elective lower segment caesarean section (LSCS) under spinal anaesthesia were divided into 2 groups. Group I was subcutaneous and group II was preperitoneal. Bupivacaine of 0.25% at 5 mL/h was infused for the next 48 hours. Pain was assessed using numerical rating scale at 1, 2, 6, 24, and 48 hours after surgery. **Results:** The mean age was 24.6 years in group I and 26.2 years in group II. BMI was 25.1 Kg/m<sup>2</sup> in group I and 25.8 Kg/m<sup>2</sup> in group II. The mean duration of surgery was 110.4 minutes in group I and 103.5 minutes. The difference was non-significant ( $P > 0.05$ ). In group I and group II, indication for LSCS was breech presentation seen in 10 and 21, contracted pelvis in 6 and 0 and previous caesarean section in 44 and 39 patients. Gravida I was present in 8 and 10 and gravida 2 in 52 and 50 respectively. NRS for pain at 1 hour was 3.4 and 3.5, at 2 hours was 2.6 and 2.1, at 6 hours was 2.1 and 1.7, at 24 hours was 1.9 and 1.3 and at 48 hours was 1.3 and 1.1 respectively. The difference was significant ( $P < 0.05$ ). **Conclusion:** After Caesarean birth, continuous infusion of bupivacaine via a wound infiltration catheter, either in the preperitoneal or subcutaneous layer, results in similar postoperative pain scores.

**Keywords:** Bupivacaine, Caesarean analgesia, Continuous wound infiltration

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### INTRODUCTION

Continuous wound infiltration of bupivacaine for caesarean analgesia is a technique used to provide pain relief following cesarean section delivery.<sup>1</sup> This method involves the continuous infusion of bupivacaine, a local anesthetic, into the surgical incision site to numb the area and alleviate pain during the postoperative period.<sup>2</sup>

Continuous wound infiltration of bupivacaine provides targeted and localized pain relief directly to the surgical incision site, effectively reducing postoperative pain.<sup>3</sup> By providing effective analgesia at the site of incision, this technique can help reduce the need for systemic opioids, which are associated with side effects such as sedation, nausea, and respiratory depression.<sup>4</sup> Pain control facilitates early mobilization and ambulation, which is beneficial for postoperative recovery and reducing the risk of complications such as thromboembolism. Enhanced

pain relief and reduced opioid use contribute to improved patient satisfaction and overall experience following cesarean section delivery.<sup>5,6</sup>

Local anesthetics infused continuously into wounds (CWI) have been demonstrated to lessen pain intensity and lessen the need for opioids, which in turn reduces the negative effects of such medications.<sup>7</sup> Common planes explored for CWI in Pfannenstiel incisions for lower abdominal procedures are the subcutaneous or preperitoneal planes.<sup>8</sup> An essential factor in determining the effectiveness of the analgesic is where the catheter is positioned inside the incision in respect to the abdominal anatomical layers.<sup>9,10</sup> The present study was conducted to assess outcome of continuous wound infiltration of bupivacaine at two different anatomical planes for caesarean analgesia.

**MATERIALS & METHODS**

The present study consisted of 60 parturients who underwent elective lower segment caesarean section (LSCS) under spinal anaesthesia. All gave their written consent to participate in the study.

Data such as name, age, etc. was recorded. Patients were divided into 2 groups. Group I was subcutaneous and group II was preperitoneal. Bupivacaine of 0.25%

at 5 mL/h was infused for the next 48 hours. Pain was assessed using numerical rating scale at 1, 2, 6, 24, and 48 hours after surgery. Cumulative postoperative consumption and adverse effects of morphine and complications of the procedure were recorded. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

**RESULTS**

**Table I Demographic data**

Parameters	Group I	Group II	P value
Age (years)	24.6	26.2	0.75
BMI (Kg/m <sup>2</sup> )	25.1	25.8	0.94
Duration of surgery (min)	110.4	103.5	0.07

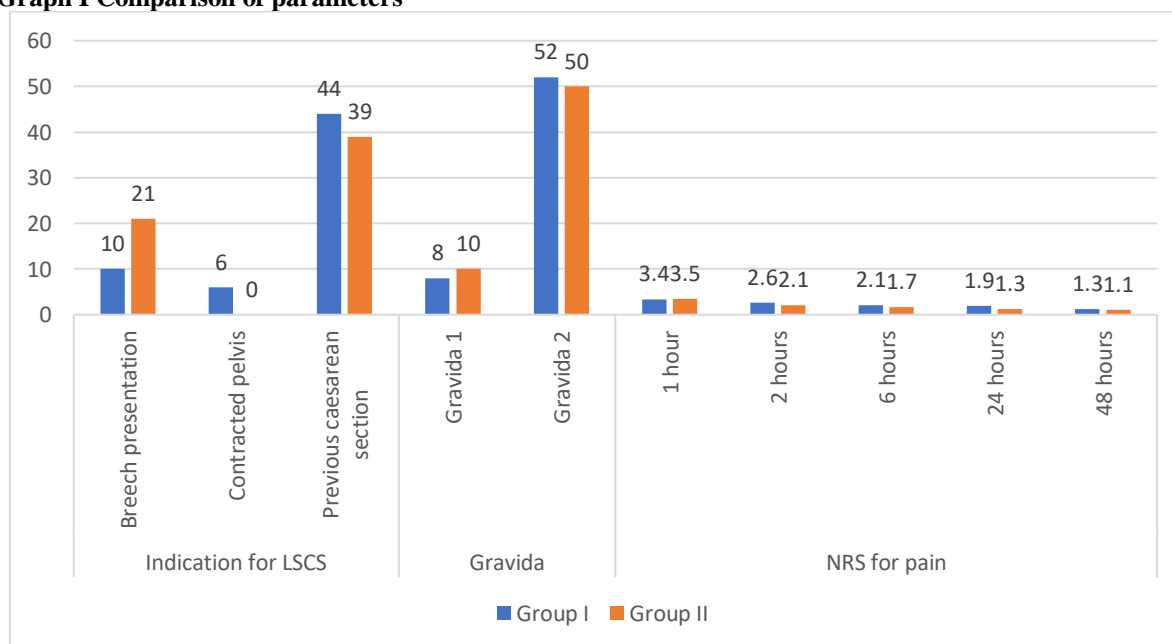
Table I shows that mean age was 24.6 years in group I and 26.2 years in group II. BMI was 25.1 Kg/m<sup>2</sup> in group I and 25.8 Kg/m<sup>2</sup> in group II. The mean duration of surgery was 110.4 minutes in group I and 103.5 minutes. The difference was non-significant (P > 0.05).

**Table II Comparison of parameters**

Parameters	Variables	Group I	Group II	P value
Indication for LSCS	Breech presentation	10	21	0.02
	Contracted pelvis	6	0	
	Previous caesarean section	44	39	
Gravida	Gravida 1	8	10	0.01
	Gravida 2	52	50	
NRS for pain	1 hour	3.4	3.5	0.18
	2 hours	2.6	2.1	
	6 hours	2.1	1.7	
	24 hours	1.9	1.3	
	48 hours	1.3	1.1	

Table II, graph I shows that in group I and group II, indication for LSCS was breech presentation seen in 10 and 21, contracted pelvis in 6 and 0 and previous caesarean section in 44 and 39 patients. Gravida 1 was present in 8 and 10 and gravida 2 in 52 and 50 respectively. NRS for pain at 1 hour was 3.4 and 3.5, at 2 hours was 2.6 and 2.1, at 6 hours was 2.1 and 1.7, at 24 hours was 1.9 and 1.3 and at 48 hours was 1.3 and 1.1 respectively. The difference was significant (P < 0.05).

**Graph I Comparison of parameters**



## DISCUSSION

The frequency of cesarean deliveries is rising, and they are a common surgical operation. According to a recent poll by Carvalho et al.<sup>11</sup>, postoperative pain is the top worry for women before, during, and after cesarean birth. It could be severe, endure for at least 48 to 72 hours, and hinder recovery and rehabilitation in the early stages following surgery. In many circumstances, pain alleviation and patient satisfaction are still insufficient. Thus, multimodal analgesia—with all of the negative side effects and dosage restrictions associated with them—is needed. This often entails combining acetaminophen, nonsteroidal anti-inflammatory medications (NSAID), and opioids.<sup>12,13</sup> The present study was conducted to assess outcome of continuous wound infiltration of bupivacaine at two different anatomical planes for cesarean analgesia.

We found that mean age was 24.6 years in group I and 26.2 years in group II. BMI was 25.1 Kg/m<sup>2</sup> in group I and 25.8 Kg/m<sup>2</sup> in group II. The mean duration of surgery was 110.4 minutes in group I and 103.5 minutes. Thomas et al<sup>14</sup> in their study fifty-two pregnant women who underwent lower segment cesarean section by Pfannenstiel incision, under spinal anaesthesia, were randomised to group 'subcutaneous' and group 'preperitoneal'. A wound infiltration catheter was placed in the subcutaneous or preperitoneal plane, depending on their randomisation at the end of the surgery. Cumulative 48-h morphine consumption showed no statistical significance between the preperitoneal group (15.96 ± 7.69 mg) and subcutaneous group (21.26 ± 11.03 mg); P = 0.058. Pain score was comparable.

We found that in group I and group II, indication for LSCS was breech presentation seen in 10 and 21, contracted pelvis in 6 and 0 and previous cesarean section in 44 and 39 patients. Gravida 1 was present in 8 and 10 and gravida 2 in 52 and 50 respectively. NRS for pain at 1 hour was 3.4 and 3.5, at 2 hours was 2.6 and 2.1, at 6 hours was 2.1 and 1.7, at 24 hours was 1.9 and 1.3 and at 48 hours was 1.3 and 1.1 respectively. Rackelboom et al<sup>15</sup> in their study using ropivacaine and ketoprofene through a multiholed wound catheter, fifty-six women following elective cesarean delivery under spinal anesthesia were randomly assigned to receive 48-hour continuous wound infusion either above the fascia or below the fascia. The only systemic analgesic administered was intravenous morphine under the supervision of the rescue patient. Visual analog scale ratings at rest and during movement, morphine intake, patient satisfaction, residual pain at one and six months, and unfavorable side events were all evaluated by a blinded investigator. When compared to wound administration above the fascia (26.4 mg, 95% confidence interval 18.1-34.7), continuous wound infusion below the fascia led to significantly less pain at rest and total postoperative morphine intake (15.7 mg, 95% confidence interval 9.7-20.7 mg). Analgesia

and satisfaction were excellent, and neither group reported any unfavorable side effects or discomfort that needed to be treated.

The limitation of the study is the small sample size.

## CONCLUSION

Authors found that after Cesarean birth, continuous infusion of bupivacaine via a wound infiltration catheter, either in the preperitoneal or subcutaneous layer, results in similar postoperative pain scores.

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