VOLUME - 13, ISSUE - 11, NOVEMBER - 2024 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper | Anaesthesiology

EFFICACY OF BILATERAL ILIOINGUINAL AND ILIOHYPOGASTRIC NERVE BLOCK FOR POSTOPERATIVE ANALGESIA IN CAESAREAN SECTION

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ABSTRACT **Objective:** To evaluate the efficacy of bilateral ilioinguinal and iliohypogastric nerve blocks (IINB and IHN) in providing postoperative analgesia following a cesarean section. **Methods:** In this Observational type study, 60 women selected by computer generated randomized no.s undergoing elective cesarean section under spinal anesthesia were assigned to two groups. The experimental group (Group A) received bilateral ilioinguinal and iliohypogastric nerve blocks at the end of surgery, while the control group (Group B) received no nerve block. Postoperative pain was assessed using the Verbal numeric rating scale(VNRS) at 0,1,2,4 6, 8, 12, and 24 hours after surgery. The requirement for supplemental analgesics, incidence of postoperative nausea and vomiting (PONV), and any complications related to the nerve block were also recorded. **Results:** Data were analyzed using the Statistical Package for Social Sciences (SPSS) version 21.0. Observations were described in terms of proportions, and statistical analysis was performed using chi-square tests and Student's t-tests where applicable Group A demonstrated significantly lower VNRS scores compared to Group B at all time points (pvalue 0.002). The total consumption of rescue analgesics was also significantly reduced in Group A. The incidence of PONV was lower in the nerve block group, although the difference was not statistically significant. No major complications or adverse effects related to the nerve block were observed. **Conclusion:** Bilateral ilioinguinal and iliohypogastric nerve blocks provide effective postoperative analgesia following cesarean section, with reduced opioid consumption and improved pain control compared to the control group. This technique may be a valuable addition to the multimodal analgesia regimen in cesarean section patients, offering enhanced pain relief and fewer opioid-related side effects.

KEYWORDS : nerve block, abdominal blocks, IL-IH block, C-section, Post op pain, Spinal anesthesia,VNRS, opioids, local anesthesia

INTRODUCTION

In the year 1979, the international association for pain study has defined that any unpleasant sense and emotional experience those associated with either actual or potential damage to tissue is termed as pain.

Major causes of pain could be due any of the following conditions:

- Direct trauma to any operated tissues
- Reflex spasm of muscle and visceral distension.
- Anxiety of patient.
- Previous painful experience.

Although post-operative pain typically peaks within the first day after surgery and then gradually diminishes over the next twenty-four hours, it can be effectively managed with various therapies and is distinct from chronic pain.(1)

Relieving postoperative pain aims the following:

- Alleviating the discomfort and distress of the patient
- Reducing the neuro-endocrine stress response
- Reducing the oxygen demand
- Humanitarian aspects

The three major components of postoperative pain are:(2)

- **Emotional** - Vary according to the psychological emotion of the patient.
- **Rational** - Varies with the previous experience, insight and motivation of the patient.
- **Physical** - The extent of direct tissue injury is the main component for physical.

Management of pain rendered through analgesia in the early and also in the late recovery periods could be possible by means of using specific nerve blocks and wound infiltration by itself or in combination with either general or spinal anesthesia is amenable. It is a ideal relief modality of pain, which is a very simple technique that could eliminate or nullify the need of any opioids or any other additional medication to minimize the potential for undesirable drug interactions and its adverse effects.

Despite the need of appropriate needle sizes and anesthetic drugs, the use of regional anesthesia could render advantage over the general anesthesia and thereby decreasing the episodes of nausea and vomiting and further providing prolonged post-operative analgesia.(3) Considering the safety of spinal anesthesia than the general anesthesia, it is mostly preferable to use spinal anesthesia for patients undergoing caesarean.

It is well known that the Pfannenstiel incision and the ensuing procedures related to Cesarean section (CS) delivery cause a considerable amount of post-procedural pain. Neuraxial and systemic opioid treatment can successfully relieve this pain.(4) But a high rate of pruritis, nausea, vomiting, drowsiness, and even respiratory depression may happen-just like with any post-operative opioid use. These opioid-related side effects can be crippling in and of themselves, and they can cause mothers to experience further issues like delayed breastfeeding initiation and impaired mother-infant attachment.

Following a CS with the pfannenstiel incision, postoperative discomfort might have, both a somatic and a visceral component. The iliohypogastric and ilioinguinal nerves (IHII), which innervate the L1-2 dermatome distribution, are responsible for the somatic discomfort experienced at the site of the incision.(5) Although there may be some relief in post-CS delivery pain with generalized wound infiltration using local anesthetics, this method of drug administration may not always be effective. We thought that there would be a chance to significantly reduce post-CS pain with anesthetic injection along this nerve pathway due to the involvement of the IHII nerve.

Visceral pain is widespread and unrelated to peripheral nerves, in contrast to the somatic component of post-operative pain6. Our hypothesis was that by targeting the somatic and visceral pain pathways, an improved IHII nerve block technique would reduce postoperative patient-controlled analgesia (opioids~NSAIDs).

Methodology

This was a Observational type of study that was conducted in the Dept. of Anaesthesia, Santosh medical college and hospital, Ghaziabad, U.P over a period of one year from July 2022 to August 2023

After Ethics Committee approval from our institution ethics committee , 60 adult female patients belonging to ASA class II were admitted to Santosh Medical College, Ghaziabad and planned for caesarean section requiring spinal anesthesia, were included in an observational type of study. After obtaining written consent from the patients, all 60 patients were divided into 2 groups according to the random number generated by the computer.Group 1 (n=30) received bilateral IL and IH nerve block with 10 ml of 0.25% bupivacaine on each side. While no block were performed in Group 2 (n=30).

Inclusion Criteria

- Full term pregnant females prepared for elective lower segment CS under spinal anaesthesia, belonging to American society of anaesthesiologists class II
- Those who have given written informed consent.

Exclusion Criteria:

- Emergency cases with immediate risk to the baby or mother
- Infection at the nerve block site.
- Patient with pregnancy induced hypertension, gestational diabetes mellitus, cardiac or renal disease, Preeclampsia, Eclampsia.
- Obesity (BMI>30kg/m ^ 2)
- Allergy to study medications
- Coagulopathy
- Uncontrolled systemic comorbidities
- ASA of more than II
- Patients who didn't gave consent

Anesthesia management protocol and clinical outcome measurement

Preanaesthetic checkup: All patients went through pre-anesthetic checkup. All patients underwent a physical examination. Hematological, biochemical and radiological examinations necessary for surgery were performed. VNRS, ranging from 0 to 10, will be explained to each patient to determine the severity of pain.

Procedure : All patients were fasted for 8 hours for solid food and 2 hours for clear fluid and were pre-medicated with 50 mg of ranitidine intravenously and 4 mg of ondasetron 30 minutes before the spinal anaesthesia. Non-invasive monitors such as ECG, blood pressure (BP), and pulse oximetry were connected. Before spinal anaesthetic, 10-15 ml/kg crystalloid was co-loaded to parturient using a standard fluid infuser. Following that, maintaining strict aseptic technique, before placing a standard spinal needle, local infiltration of the entry point using 2 ml (40 mg) of 2% plain lidocaine was used. Subarachnoid block was performed using a 25G spinal needle while the patient was in a sitting position, through the midline approach using 2 ml (10 mg) 0.5% heavy bupivacaine. . Immediately after spinal anesthesia, the patient was placed in a supine position and a pillow was placed under the right hip or the bed is tilted 15 degrees to the left to prevent aortocaval compression. The level of block was checked (alcohol drips for autonomic, pin prick for sensory & Bromage scale for motor) and incision was allowed when the T6 sensory level was reached. Only patients who got successful spinal block (T7 sensory blockade) were included in this study. Parameters like SpO2, HR, ECG and BP were measured. If the patients mean arterial pressure dropped below 65 mmHg and was unresponsive to fluids, 6 mg bolus of mephentermine was administered and repeated as necessary up to a maximum of 30 mg. Nasal prongs were used to deliver oxygen at a flow rate of 2–3 L/min during surgery and recovery. After the skin was closed, the relevant area was anesthetized with II-IH nerve block in group "1" patients.

The patient was under spinal anesthesia and will not be aware of the sensation of the area, a screen was used over the umbilicus to prevent the patient from seeing the area of the block. With the patient in supine, the skin was disinfected and the transducer was placed medial to the ASIS, oriented with a line joining the ASIS and the Umbilicus, all the 3 muscle layers were identified and the nerves appeared as hypoechoic ovals in between the internal oblique muscle and transversus abdominis muscles, ocassionally the transducer was moved cephalad or caudad to trace the nerves. A needle of 5-8 cm 22 G parallel to and inline with the transducer and the ultrasound beam was inserted from the medial aspect of the transducer, and (in-plane)in a medial to lateral orientation, through the subcutaneous tissue, EOM, and IOM, and was advanced toward the ilioinguinal and iliohypogastric nerves, a pop was felt as the needle tip enters the plane between the muscles. After gentle aspiration, 1 to 2 mL of local anesthetic was injected to confirm the needle tip position Needle placement in the correct plane was indicated by fluid expansion in a space bounded by the hyperechoic fascial sheath of the internal oblique and transverse abdominis muscle layers.

A total of 10 ml of 0.25 % Bupivacaine was injected and the same procedure was repeated on the other side of the abdomen. For avoiding intravascular injection aspiration of the syringe for blood were performed every 3 ml injection of the local anesthetic agent or by following change in the direction of needle. Tramadol consumption was recorded every 12-hour interval. A total of 48 hours were recorded. Tramadol consumption was the primary end-point. Secondary outcomes include; post-operative pain score both at purposeful movement and rest, first analgesic request time and side effects. Pain scores were recorded for 24 hours at rest and during movement (light compression of dressing of wound and purposeful flexion of the thigh at the hip) using an internationally validated tool called the Numerical Pain Rating Scale (NRS). During the visit, patient were asked about any nausea, & vomiting. Patients were instructed to record pain intensity at any time and request for analgesics. The pain score was marked as 0 if there was no pain, and 10 was considered the most severe pain. corresponding to scores of 1, 2, and 3, respectively. Administration of 50 mg tramadol intravenously was done according to patients needs as a rescue analgesia. Antiemetics were routinely used during surgery, but 0.1 mg/kg of ondansetron were indicated if needed.

Statistical Analysis

It was done by using Statistical Package for Social Sciences (SPSS) version 21.0. The observations were described in terms of proportions. Data was compiled and statistically analyzed using chi square test, students T test where applicable and p<0.05 was considered statistically significant.

OBSERVATIONS AND RESULTS

Table 1 : Vnrs Scores At Different Time Intervals

Time	NRS		p value
	Group 1 (Mean±SD)	Group 2 (Mean±SD)	
0h	0.33±1.06	1.07±1.6	0.079
1h	0.3±1.15	1.6±1.75	0.003
2hrs	0.6±1.38	2.7±2.1	0.0004

4hrs	1.8±1.54	3.3±1.84	0.003
6hrs	2.93±1.89	5.17±1.26	<0.0001
8hrs	3.1±1.52	4.63±1.56	0.0002
12hrs	2.63±1.94	4.63±1.71	0.0002
24hrs	3.13±1.55	4.87±1.7	0.0002

Mann Whitney U test

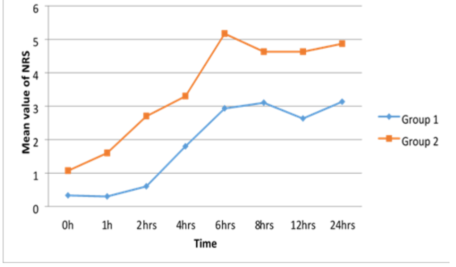
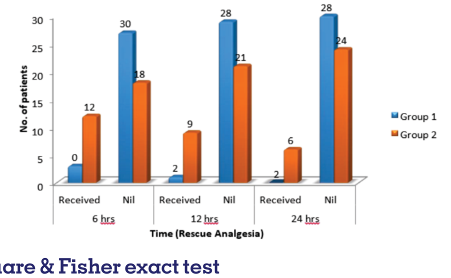


Table 1 shows the distribution according to NRS score for abdominal pain and for data analysis mann whitney u test is used. Both the two groups experienced a gradual reduction in pain after C- section, as evidenced by NRS scores and the need of analgesics. This difference was reported from 0 hour till 24 hours post-operatively. At 0 post-operative hour, the mean NRS score for abdominal pain of group 1 and 2 was 0.33±1.06 and 1.07±1.6 respectively, there was no statistical significance as p value was 0.079. NRS at 1 hour, the mean NRS score for abdominal pain of group 1 and 2 was0.3 ±1.15 and 1.6±1.75 respectively. At 2hrs the mean NRS score was 0.6±1.358 and 2.7±2.1 for group 1 and group 2 respectively. At 4hrs the mean NRS score was 1.8±1.54 and 3.3±1.84 for group 1 and group 2 respectively. At 6 hrs mean NRS score was 2.93±1.89 and 5.17±1.26 respectively for group 1 and group 2. At 12hrs mean NRS score was 2.63±1.94 and 4.63±1.71 for group 1 and group 2 respectively. And at 24hrs the mean NRS score was 3.13±1.55 and 4.87±1.7 respectively for group 1 and group 2. Though NRS score was lower in group 1 than group 2 from 1 hours to 24 hours and it was statistically significant as p values are 0.003,0.0004,0.003, <0.0001,0.0002,0.0002 and 0.0002 at 1, 2, 4,6,8,12 and 24hrs.

Table 2: Rescue Analgesia

Time		Rescue Analgesia				P value
		Group 1		Group 2		
		N	%	N	%	
6 hrs	Received	0	10.00	12	40.00	0.007
	Nil	30	90.00	18	60.00	
12 hrs	Received	2	3.33	9	30.00	0.012
	Nil	28	96.67	21	70.00	
24 hrs	Received	2	0.00	6	20.00	0.023
	Nil	28	100.00	24	80.00	



Chi square & Fisher exact test

Table 2 demonstrate rescue analgesia received by patients of both the groups at 6, 12 and 24 hours. In group 1 0 patients received and 30(100%) not received rescue analgesia at 6hrs. in group 2, 12(40%) patients received and 18(60%) not received analgesia at 6hrs In group 1, 2(6.66%) received and 28 (93.33) patients not received analgesia at 12 hrs. In group 2, 9(30%) received and 21(70%) not received analgesia at 12hrs. In group 1 2(6.66%) patient received and 28(93.33%) patients not received analgesia at 24hrs. In group 2, 6 (20.00) patients received and 24(80.00%) not received analgesia at 24hrs. The data is statistically significant as p value at 6hrs is 0.007, at 12hrs 0.012 and at 24hrs is 0.023.

Table 3: Requirement of Post- Operative Analgesia among the test and control groups

GROUP	Time for first rescue analgesia (in hours)	Cumulative analgesia required in 24 hours.(in mg)	P value
Group 1	18(6.93)	200	0.33
Group 2	9(4.57)	1250	0.0002

Table 3 shows the requirement of post-operative analgesia of both the groups, test and control groups, (pvalue 0.33) for group1 and (p value= 0.0002) group 2, showing statistically significant data in group 2

DISCUSSION

For the doctors overseeing the post-operative wards, one of their main responsibilities is post-operative pain treatment. As previously noted, there are a number of factors that affect how well post-operative pain is managed. The aim of the research was to evaluate the efficacy of bilateral ilioinguinal and hypogastric nerve blocks in conjunction with wound infiltration for the purpose of reducing post-operative discomfort following cesarean sections.

Following therapies like hernia repair and groin surgery, it has been found that ilioinguinal and hypogastric nerve block and wound infiltration provide effective post-operative pain control in adults and children. They have also been tested for their ability to lessen pain after cesarean sections, though less successfully than with the other operations.Its efficacy is undoubtedly attributed to the diffuse character of pain following cesarean section.[29,15,30,31]

Doctors have employed local anesthetics for post-operative pain management in order to avoid issues related to the use of NSAIDS and opioids, which were addressed in the literature study. As an adjunct to general anesthesia, this can be accomplished using subarachnoid block, epidural block, peripheral nerve block, or wound infiltration. Nevertheless, a drawback of subarachnoid and extradural block is the possibility of motor and sympathetic block concurrent with sensory block [15]. When opposed to peripheral nerve block, subarachnoid block alone has the drawback of offering a shorter period of post-operative analgesia.

Significant autonomic effects are not produced by peripheral nerve block. If the afflicted nerve is a mixed nerve, motor block could be an issue. The hypogastric and ilioinguinal nerves, on the other hand, are sensory nerves.

In the post-operative phase, ilioinguinal and hypogastric nerve block will offer analgesia for patients undergoing cesarean sections via Pfannenstiel incisions. The analgesia that is produced by bilateral blockage of the hypogastric and ilioinguinal nerves at the anterior superior iliac spine covers the dermatome that is supplied by the lumbar nerves in its distal distribution. This dermatome is where the Pfannenstiel incision is located. Therefore, utilizing the above procedure, analgesia of the anterior abdominal wall can be provided after this incision.[29]

Although peripheral nerve blocks need some skill and dedication, it is feasible to significantly increase the patient's comfort level with these straightforward blocks.[28]

Local anesthetic infiltration of the surgical wound blocks voltage-dependent sodium channels in the nerves, which causes calcium ions to be displaced from the phospholipids of the neural membrane and prevents the transmission of nerve impulses from damaged tissues. Furthermore, by blocking sympathetic efferents and axon reflux, topical anesthetics may lessen neurogenic inflammation.[35] Furthermore, research conducted in vitro has shown that local anesthetics impact a wide range of non-neuronal cellular activities related to lymphocyte and inflammatory function [22-26], fibroblast proliferation and collagen synthesis,[20,21] platelet aggregations,[19] and the synthesis or release of phosphlipase A2, superoxide, and histamine.[32-34,18]

According to a recent study, local anesthetics can be used in surgical wounds to lessen leucocyte migration and metabolic activity in the affected area,[17]

Additional local anesthetics have been shown to suppress experimental peritonitisand have anti-microbial activity.[16]

According to Ganta et al., wound infiltration is similar to ileoinguinal and hypogastric nerve block in that it can effectively lower opioid demand and pain scores following cesarean delivery under general anesthesia.

In his research, Hannibel et al., discovered that pre-operative wound infiltration to the surgical site reduces pain both during and after surgery.[15] In the second trial by Cobby and Reid, it was discovered that bupivacaine wound infiltration was ineffective at delivering analgesia following surgery.[14]

Huffnagle et al found no significant difference in pain control and opioid consumption during the first day after surgery between patients who received bilateral II-IH nerve block after spinal anesthesia but before incision and those who received a sham block for elective cesarean sections. However, in the same study, patients who received bilateral II-IH nerve block after the cesarean delivery reported experiencing more pain compared to those who received a sham block[13]. This contradicts some data suggesting that postoperative nerve blocks or wound infiltrations may not effectively reduce postoperative pain and could potentially increase it. One explanation proposed is that these interventions might inhibit the body's natural adaptive responses to pain when administered after the onset of the painful stimulus. Consequently, when the effects of local anesthetics wear off, the returning unmodulated pain could be more severe than if no anesthesia had been administered[10]. In contrast to the above hypothesis, Bell et al[12] reported a significant reduction in intravenous morphine use when ilioinguinal-iliohypogastric nerve blocks were performed after wound closure in patients undergoing cesarean delivery. Our study yielded similar results to Bell et al, with patients who received II-IH nerve block after surgery reporting lower pain scores compared to the control group. Additionally, the consumption of tramadol by patients with II-IH block appeared to be notably lower during the first postoperative day.

In a study by Krishnegowda et al[11]., the ILIH nerve block was found to offer prolonged analgesia compared to other methods. Those who received the ILIH nerve block had significantly lower cumulative analgesic requirements in the first 24 hours post-cesarean section. Additionally, the group that received local anesthetic infiltration showed significantly better analgesia compared to the placebo group, with reduced cumulative analgesic requirements and fewer demands for analgesics. These findings mirror those of Wolfson et al.,[10] who administered bilateral ILIH nerve blocks with 24 mL of 0.5% bupivacaine. In their study, the ILIH group had a significantly longer time to first analgesic request compared to the saline group. However, it's worth noting that all patients in the Wolfson study received both morphine and fentanyl intrathecally, likely contributing to the delayed request for postoperative analgesia. In contrast, our study did not use any adjuvants intrathecally.

Bamigboye et al. observed that only 48% of patients who received local infiltration experienced pain and requested a rescue analgesic 1 hour after cesarean section under general anesthesia, compared to 94% of those who did not receive any local anesthetic infiltration. Additionally, patients who received ILIH nerve blocks reported higher satisfaction scores compared to the saline group in their study.[8,9]

The initial dosage of Tramadol was administered when the patient complaint of pain, and then observed for a period of 24 hours as per the established procedure for postoperative analgesia in our obstetric department.

Therefore, we aimed to offer a different approach to pain management that could eliminate the need for additional analgesics during the early post-operative phase and last for a significant amount of time.

Pain scores using NRS were assessed in both the groups at 0 hr, 1 hr, 2 hr, 4 hr, 6 hr, 8 hr, 12 hr and 24 hr post-surgery. There was no statistically significant difference in NRS, at 0 hr after surgery (P-value =0.079) between group 1 and group 2 which may be due to the effect of spinal anaesthesia. Group 1 showed a significantly lower NRS than that of the Group 2 as assessed at 1hr (P-value = 0.003), 2 hr (P-value = 0.0004),4 hr (0.003), 6 hr (P-value =< 0.001), 8 hr (P-value = 0.0002), 12 hr (P-value =0.0002), and 24 hr (P-value = 0.0002) after the operation indicating that the ultrasound guided IL- IH block had a good analgesic effect post caserean section for 24hours.

These days, the VNRS scale is frequently employed as a reliable and sensitive way to gauge pain intensity. They do not, however, necessitate a certain level of awareness or coordination, which confuses some patients.

Since regional anesthesia was employed in our trial, every patient was awake and cooperative in the first post-operative period, allowing them to finish the VNRS scale during that time.

Ilioinguinal and hypogastric nerve block complications

As noted in the assessment of literature, there have been two case reports of lower limb paralysis after this nerve block.[6,7] The aforementioned problem was not experienced by any of the 30 individuals in our study who underwent ilioinguinal and hypogastric nerve block.

Technique For Wound Infiltration Complications

None of the thirty patients in our study who had bupivacaine infiltrated wounds experienced any of the aforementioned problems.

Therefore, our patients might be pain-free in the short post-operative period by employing one of the two procedures (Wound infiltration and Ilioinguinal and Hypogastric nerve block). They encountered no difficulties in finishing the VNRS. They had already been mobilized. Rescue analgesia was not used too soon.

From a pharmacokinetic standpoint, breast milk serves as a distinct compartment where drugs are excreted, primarily through passive diffusion. For example, only approximately 0.1% of the tramadol administered passes into breast milk. In our study, we observed that total tramadol consumption differed significantly between the II-IH block group i.e. group 1 and group 2 . Notably, during the early postoperative period, tramadol usage was markedly lower in the II-IH group compared to the no block group. This finding underscores the effectiveness of the II-IH nerve block, particularly in managing early postoperative pain. The lower tramadol consumption in the II-IH group suggests that the nerve block effectively mitigated pain, potentially reducing the need for additional analgesics during the critical early recovery period.

It is possible to administer oral analgesics and move these people sooner by offering alternative pain treatment techniques. The wound infiltration technique appears to be the most straightforward and economical of the two methods we employed; an anesthetist's skill is required for the ilioinguinal and iliohypogastric nerve blocks.

CONCLUSION

The research on the efficacy of bilateral ilioinguinal and iliohypogastric nerve block as a method for managing postoperative pain after cesarean section reveals promising outcomes.

Certainly, let's delve deeper into the elaboration of the conclusion regarding the efficacy of bilateral ilioinguinal and iliohypogastric nerve block for postoperative analgesia in cesarean section:

1. **Precise Pain Management:** The targeted blockade of the ilioinguinal and iliohypogastric nerves offers a specific and effective approach to managing postoperative pain after cesarean delivery. By interrupting the transmission of pain signals from the surgical site, this technique has the potential to provide significant relief without the need for excessive systemic opioids.
2. **Enhanced Postoperative Comfort**: Effective pain management is essential for facilitating a comfortable recovery process for mothers following cesarean section. By minimizing postoperative pain, bilateral ilioinguinal and iliohypogastric nerve block can contribute to a smoother and more tolerable postoperative experience, potentially improving overall patient satisfaction.
3. **Reduced Opioid Dependence**: One of the notable advantages of this nerve block technique is its potential to decrease the reliance on systemic opioids for pain relief. This is particularly significant given the well-documented risks associated with opioid use, including adverse effects such as nausea, sedation, and respiratory depression. By minimizing opioid consumption, the nerve block can help mitigate these risks and promote safer postoperative recovery.
4. **Facilitated Early Mobilization**: Effective pain management is conducive to early mobilization, which is beneficial for postoperative recovery. By alleviating pain, the nerve block can encourage patients to move and engage in activities sooner after surgery, potentially accelerating the overall recovery process and reducing the length of hospital stay.
5. **Support for Breastfeeding**: Another important consideration is the impact of pain management on breastfeeding initiation and continuation. Opioid medications can sometimes interfere with breastfeeding due to their potential to pass into breast milk and affect the infant. By minimizing opioid use, the nerve block may support maternal breastfeeding efforts, promoting bonding and enhancing the postpartum experience for both mother and baby.
6. **Areas for Further Research**: While the existing evidence supports the efficacy of bilateral ilioinguinal and iliohypogastric nerve block, there is still a need for further research to fully establish its long-term effectiveness and safety profile. Future studies should also explore optimal techniques and protocols for administering the nerve block to maximize its benefits and ensure its widespread adoption in clinical practice.

In summary, bilateral ilioinguinal and iliohypogastric nerve block offer a promising approach to postoperative analgesia in cesarean section, with potential benefits including precise pain management, reduced opioid dependence, enhanced postoperative comfort, facilitated early mobilization, and support for breastfeeding. Continued research efforts will be crucial for fully realizing the potential of this technique and optimizing its integration into standard obstetric anesthesia practice.

Acknowledgement

Authors would like to thank the staff and residents of the Department of Anaesthesia, Santosh Medical College and Hospital, Ghaziabad in conducting in this trial.

Funding: no funding sources

Conflict of interest: None declared

Ethical Approval: The study was approved by the Institutional Ethics Committee

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