



## Ilioinguinal and Iliohypogastric Nerve Blockade for Post Caesarean Analgesia

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### ABSTRACT

**Background:** Over the last decade, the incidence of elective caesarean sections has increased drastically which demand more postoperative analgesia by a safe and cost-effective method.

**Aim:** To study the quality and duration of post-caesarean analgesia by ilioinguinal and iliohypogastric nerve blocks and to study any complications associated with it.

**Material and Methods:** A prospective comparative clinical study involving 100 ASA PS I & II patients, undergoing elective caesarean section through Pfannenstiel incision under subarachnoid block. Group 1 received bilateral ilioinguinal and iliohypogastric nerve block with 10 ml of 0.25% bupivacaine while Group 2 received ilioinguinal and iliohypogastric nerve injections with 10 ml of isotonic saline.

**Result:** Our study showed that ilioinguinal and iliohypogastric nerve block produce satisfactory quality and duration of post-caesarean analgesia.

**Key Words:** Ilioinguinal and Iliohypogastric nerve blocks, post-caesarean analgesia.

### Background

The incidence of elective caesarean sections has increased drastically during the past decade due to various reasons. Increased patient demand by the healthy parturient is one among them. Such group of patients demand more post operative analgesia. Even though epidural analgesia is the gold standard<sup>1</sup> for post caesarean analgesia, it has got its own inherent pit falls like high cost, need for technical expertise and risk for respiratory depression<sup>2</sup>, vomiting and pruritus if opioids are added. The aim of this study is to find out the

efficacy of an alternative technique for post caesarean analgesia. Lower segment caesarean sections are performed by Pfannenstiel incision which lies at L1-L2 dermatomes which are supplied by ilioinguinal and iliohypogastric nerves. So bilateral blockade of these nerves must provide somatic pain relief<sup>3,12</sup>

### Aim and Objectives

1. To determine whether bilateral ilioinguinal and iliohypogastric nerve blocks can provide satisfactory duration of post

operative analgesia in patients undergoing elective LSCS.

2. To determine whether the block can reduce postoperative analgesic requirement.
3. The study the occurrence of any complications associated with the block.

### **Ethical Considerations**

The study was given approval by the institutional ethics committee.

### **Informed Consent**

All the participants of the study were instructed about the study, the techniques used and the possible complications and written informed consent was taken.

### **Material and Methods**

#### **Inclusion Criteria**

1. Patients willing to undergo elective LSCS through Pfannenstiel incision under Subarachnoid Blockade ( SAB)
2. ASA Physical status class I & II
3. Body weight 45-65 Kg
4. Height 145-165 cm

#### **Exclusion Criteria**

1. Known hypersensitivity to local anesthetic, bupivacaine
2. Infection at the nerve block site.
3. Patient with pregnancy induced hypertension, gestational diabetes mellitus, cardiac or renal disease.
4. Patients with placenta praevia on ultrasonogram.
5. Patients with altered coagulation status.

100 patients meeting the inclusion criteria and exclusion criteria are randomly allocated into two groups, using computer generated random numbers.

Group 1= Study

Group 2 = Control

All patients are shown a verbal pain score ranging from 0-4 and are instructed to express their degree of postoperative pain according to it.

All the patients are pre-medicated with intravenous injections of Ranitidine 50 mg and Metoclopramide 10 mg 30 minutes before surgery. Inside the Operation theatre, after attaching ECG, SpO<sub>2</sub> and NIBP monitors, an 18 G intravenous cannula is inserted into the forearm vein. All patients are preloaded with 10 ml / kg of Isotonic saline. All the patients are given SAB with 1.8 ml of 0.5% heavy bupivacaine with the patient in the left lateral decubitus position at L3-L4 interspinous space using 25 G LP needle. The patients are turned to supine position and a wedge is kept under the right buttocks to prevent supine hypotension syndrome. O<sub>2</sub> 4 ltr. /minutes is given through simple oxygen mask. Ensured that all patients have bilateral block upto T6 dermatome. After delivery of the baby Oxytocin 10 u is given as an intravenous infusion and 1 mg Midazolam is given intravenously. No patient received any analgesics up to 1.5 hours after giving SAB. 1.5 hours after SAB Group I patients received bilateral ilioinguinal and iliohypogastric nerve block with 10 ml of 0.25% Bupivacaine (on each side) while Group 2 patients received nerve injections with 10 ml of Isotonic saline (on each side). The block technique is as follows. Stand on the side that which is to be blocked. Mark a point 2.5 cm medial and 2.5 cm inferior to the anterior superior iliac spine. A 3.8 cm 22 G needle is introduced vertically through this point till the first pop is felt. This is the piercing of the external oblique aponeurosis. Inject 5 ml of the local anesthetics at this point after a negative aspiration test. Then the needle is advanced further till the second pop is felt. Now the needle tip is between internal oblique and transverse abdominis muscles. Inject 5 ml of local anesthetic at this point. The same procedure is performed on the contra lateral side. In the control group 10 ml of isotonic saline is used for the injections. All the blocks are performed by the same person. The person administering the block and the patient are blinded to the nature of solution injected. Duration of postoperative analgesia is studied by the observer using the verbal pain score.

0→ No pain

1→ insignificant pain or discomfort without pain

2→Mild pain

3→Severe pain

4→ Worst imaginable pain

Patients are asked about the pain each hour during the first 24 hours postoperatively and recorded using the above pain score. Duration of analgesia and quality of analgesia are compared in between the two groups. Complications if any like local hematoma, femoral nerve palsy and local anesthetic toxicity are noted.

Duration of analgesia is taken from the time when the nerve block is performed to the time when pain score has reached 2. When the pain score has reached 2, 50 mg Tramadol injection is given intravenously over 10 minutes as a rescue analgesic. Number of rescue analgesics in the first 24 hours postoperatively is taken as an indicator of the quality of postoperative analgesia.

### Statistical Analysis and Results

Patients age, height, weight and duration of analgesia are analyzed using students 't' test. Number of rescue analgesics are compared using Mann-Whitney U Test.

**Table I** Comparison of age (Years)

	Group I	Group 2	P Value
Age	26.42 + 2.86	26.94 + 3.24	0.40

**Table II** Comparison of Height (cm)

	Group I	Group 2	P Value
Height	159 + 3.03	158.52 + 3.14	0.38

**Table III** Comparison of Weight (kg)

	Group I	Group 2	P Value
Weight	50.92 + 2.66	50.46 + 2.55	0.38

**Table IV** Comparison of duration of analgesia (Hours)

	Group I	Group 2	P Value
Duration of analgesia	10.5 + 4.59	2.4 + 0.56	< 0.001

**Table V** Comparison of the number of rescue analgesics

Number of rescue analgesics	Group I	Group 2
0	2	0
1	35	0
2	13	4
3	0	36
4	0	10

The number of rescue analgesics received by Group 2 is significantly more when compared to that of Group 1, the P value being <0.001

From the above Tables it is evident that both the groups are comparable in age, height and weight. The duration of analgesia is significantly high in the nerve block group. (Group 1). The consumption of rescue analgesics is significantly less in nerve block group (Group 1) which reflects better quality analgesia.

No patient in either group experienced local hematoma or numbness in medial part of thigh compared to lateral part or inability to extend leg at knee (features of femoral nerve blockade)

There was no hemodynamic instability in either group during intraoperative or postoperative period.

### Discussion

Blocking the ilioinguinal and iliohypogastric nerves even though not a novel technique is still under utilized for post caesarean analgesia. Our study results clearly demonstrates that ilioinguinal and iliohypogastric nerve block provides adequate duration and quality of analgesia after cesarean section. The duration of analgesia in Group 1 was 10.5 + 4.55 hours which is consistent with Harrison & Morris<sup>4</sup> finding that nerve block with bupivacaine will last from 4-12 hours.

Bunting and McConachie<sup>5</sup> studied the analgesic effects of ilioinguinal and iliohypogastric nerve blocks in women having caesarean sections under general anesthesia. Blocks performed after wound closure prolonged the duration of postop analgesia and reduced rescue analgesic requirement compared to unblocked patients. In contrast our patients received SAB which is the more common form of anesthesia in obstetrics. But SAB itself

can reduce postop analgesic requirement. The same block was used by Buggedo et al.<sup>3</sup> after SAB for herniorrhaphy which reduced the postop analgesic requirement upto 48 hours.

In a study by Raghavendar Ganta<sup>6</sup>, the inguinal nerve block produced satisfactory duration and quality of postop analgesia which is consistent with our results.

But the study by Huffnagle et al.<sup>7</sup> showed that ilioinguinal block showed no significant analgesia in post caesarean patients. The probable reason may be the incision might have gone above L1 dermatome. One of the greatest disadvantage of single nerve block is that if the incision goes beyond that dermatome analgesia will be inadequate. In our study we used 0.25% bupivacaine as suggested by Ding, Y et al.<sup>8</sup>

It is practically difficult to place the block before caesarean section because the gravid uterus markedly distorts the anatomy. In our study we placed our blocks 1.5 hours after SAB, by which time surgery finished in all cases. Moreover SAB itself will provide analgesia upto 1.5 hours. Ilioinguinal block is generally reported to be an extremely safe procedure. However there are side effects like local hematoma, transient femoral nerve block whose mechanism are described by Rosario<sup>9</sup> and Buist<sup>10</sup> and rapid absorption of local anesthetics resulting in high plasma levels as reported by Stow and Scotts<sup>11</sup>. Successful ilioinguinal nerve block depends on clear identification of external oblique aponeurosis by a feeling of loss of resistance. Another reported complication by M. John and R Sossai<sup>12</sup> is colonic puncture which can be prevented by using a short bevel needle. Another reported complication is pelvic hematoma<sup>13</sup>. In an ideal set up, ilioinguinal nerve block should be done under ultrasound guidance<sup>14, 15</sup> but lack of availability in our institution prevented us from using it.

### Conclusion

The present study proves that ilioinguinal and iliohypogastric nerve block can provide significant duration and quality of analgesia in

post caesarean patients without any minor or major adverse effects. From this study it is evident that ilioinguinal and iliohypogastric nerve block is an effective, simple, cost effective and safe way of adding good quality postoperative analgesia without any additional monitoring than the routine postoperative care.

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