

## Original Research

**“EFFICACY OF USG GUIDED B/L QUADRATUS LUMBORUM BLOCK - TYPE II VS ILIOINGUINAL ILIOHYPOGASTRIC BLOCK FOR POSTOPERATIVE ANALGESIA IN ELECTIVE CAESAREAN SECTION SURGERIES: AN OBSERVATIONAL COMPARATIVE STUDY”**

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**ABSTRACT**

**Background:** Pain management is an important component of enhanced recovery. With the demand of effective and opioid sparing pain management, regional blocks has the advantage of immediate and prolonged postoperative pain control, it helps the parturients for early ambulation, breast feeding and early discharge from hospital. Both Quadratus lumborum block and ilioinguinal iliohypogastric nerve blocks were extensively studied individually in caesarean sections, but the purpose of this study was to perform a relatively credible and comprehensive assessment to compare the efficacy of QL Type-II, ILIH Block with 0.375% ropivacaine and 8mg dexamethasone as an adjuvant in parturients undergoing caesarean section.

**Methods:** This prospective observational study was conducted in 100 parturients of ASA II posted for elective caesarean section were randomly assigned into 2 groups. Group Q parturients were given bilateral QL block Type-II (Posterior QL Block) with 25 ml volume of 0.375% ropivacaine with 8mg dexamethasone on each side. Group I were given bilateral ILIH block with 25 ml volume of 0.375% ropivacaine with 8mg dexamethasone on each side. Patient satisfaction Score, VAS and DYNAMIC VAS scores at 2nd, 4th, 6th, 8th, 12th and 24hrs, the time required for 1st rescue analgesia and number of rescue analgesic doses in 24 hrs after surgery for both blocks were measured.

**Results:** Patient satisfaction score was significantly more in QL group compared to ILIH Group ( $P < 0.05$ ). VAS scores and DYNAMIC VAS scores at 2nd, 4th, 6th, 8th, 12th and 24 hrs in group Q were significantly lower than GROUP I ( $p < 0.05$ ). The time for first rescue analgesia was longer in group Q ( $624 \pm 91$  mins) compared to group I ( $361 \pm 73$  mins) ( $P < 0.05$ ). The total number of rescue analgesics required were lower in Group Q ( $0.95 \pm 0.60$ ) compared to Group I ( $2.82 \pm 0.86$ ) ( $P < 0.05$ )

**Conclusions:** Quadratus lumborum block was superior to ILIH Block in providing better pain management with less opioid consumption and enhanced recovery after surgery.

**Keywords:** QL Block, ILIH Block, Post-Operative Analgesia

## INTRODUCTION

Cesarean section<sup>1</sup> is one of the common lower abdominal surgeries in young females with significant postoperative pain. It is imperative for the new mother to be pain-free to facilitate the early mobilization and for the optimum care of the newborn by early initiation of breastfeeding. Postoperative analgesia also plays an important role in reducing the duration of hospital stay and the incidence of perioperative complications. Multimodal analgesia in the form of parenteral nonsteroidal anti-inflammatory drugs, opioids, epidural analgesia, and peripheral nerve blocks have been tried over several decades. Peripheral nerve blocks with local anaesthetics has shown to reduce the opioid consumption postoperatively and its associated side effects such as sedation, pruritis, nausea, and vomiting.

Ilioinguinal Iliohypogastric block was widely used for post-operative analgesia after caesarean section. From the literature, it was proved that ILIH Block does not provide visceral analgesia as it blocks T12 and L1 nerve roots which supply skin over lower abdomen.

Quadratus Lumborum block is being practiced as analgesic method for various abdominal surgeries including caesarean sections. QL block can be given at three locations and termed as I,II, III and Intra-muscular depending on the site of injection. In our study, we have chosen QL Block Type-II which involves depositing the drug in the lumbar interfascial triangle.

Our aim was to compare efficacy of post-operative analgesia between USG guided B/

L Quadratus Lumborum block Type II (Posterior QL Block) Vs Ilioinguinal

Iliohypogastric block and the objectives were to estimate patient satisfaction score, the severity of post-operative pain assessment via visual analogue scale (VAS) score at rest and with movement (Dynamic VAS Score), mean time for rescue analgesic requirement, the total number of analgesic dose required over a period of 24 hours,

## MATERIALS AND METHODS:

This Prospective observational study was conducted from April 2023 to September 2023. After receiving informed consent, the study was carried out on 100 parturients who were ASA II and III, with normal pregnancies scheduled for elective caesarean section at Narayana Medical college and Hospital, Nellore.

Sample size: 100 patients (Two groups of 50 each).

$$n = \frac{2[(a + b)^2 \sigma^2]}{(\mu_1 - \mu_2)^2}$$

**Fig.1 Sample size formula**

Using the above formula, sample size was determined while maintaining two-sided alpha error at 5% and power at 80%. Each group needed at least 46 individuals, but for greater validation, 50 patients were chosen for each group.

Patients were randomly assigned into two groups.

Group Q - Bilateral QL block Type-II (Posterior QL Block) with 0.375% Ropivacaine + 8mg dexamethasone, 25ml on each side .

Group I - Bilateral ILIH block with 0.375% Ropivacaine + 8mg dexamethasone, 25ml on each side.

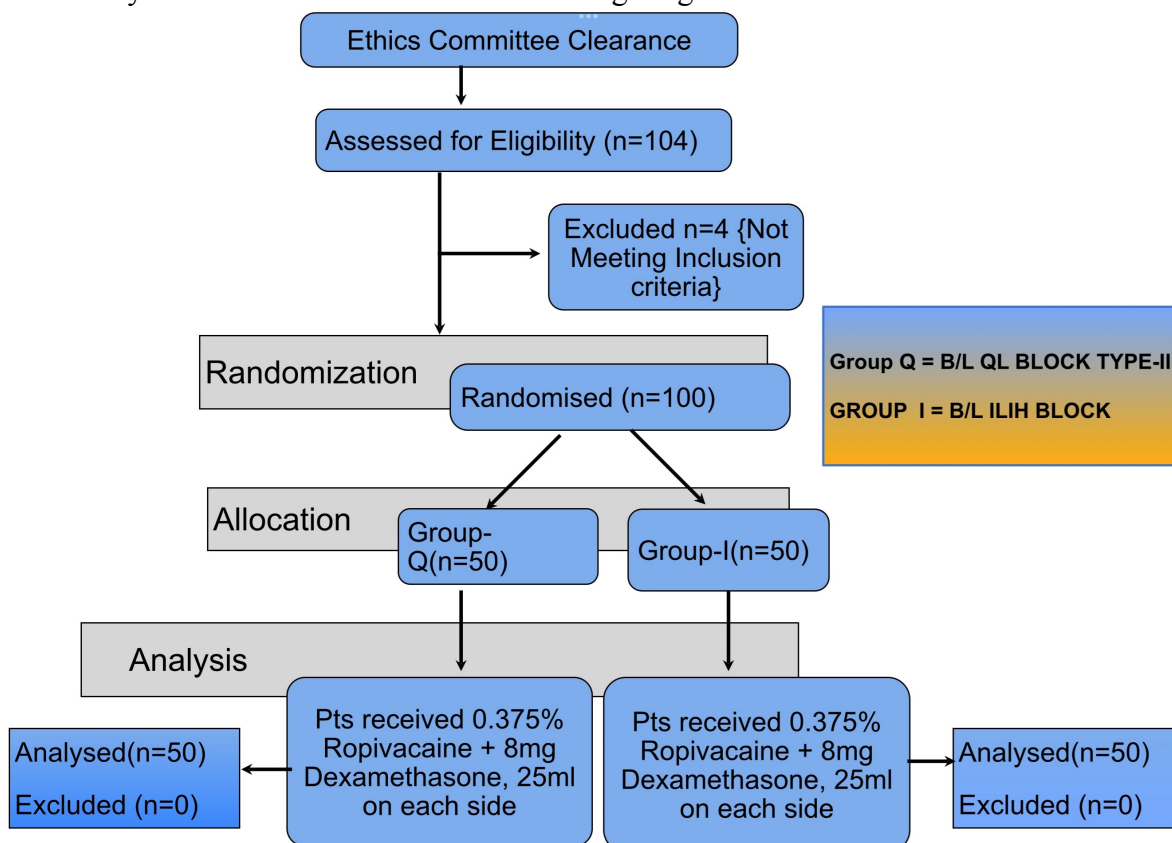
## Inclusion criteria:

- 1)Parturients undergoing cesarean sections
- 2)ASA grade II and III

- 3) Age between 18 to 40 yrs
- 4) Valid informed/explained consent

**Exclusion criteria:**

- 1) Parturients own refusal for participation
- 2) ASA grade IV
- 3) Known history of coagulation disorders
- 4) Inflammatory / infective skin lesions at the site of giving block

**Fig.2 Consort flow chart**

Both block procedures were performed under the supervision of an experienced anaesthesiologist after completion of surgery and before transfer to the postanaesthesia care unit. As per peri-operative anaesthesia management, all patients received 40-mg pantoprazole by mouth in the morning, 2 hours before surgery. In the operating room, an intravenous cannula of 18-gauge was secured in the non-dominant hand or arm. Spinal anaesthesia was executed in the usual manner. At the end of the procedure, the participants were randomly allocated into one of the study arms (1:1 allocation ratio): QL Type-II or ILIH Block. The team member who anaesthetized the patient opened an opaque envelope which contained the patient's study group allocation. The envelope was sealed, and the patient allocation was prepared according to the randomization procedure by a team member not directly involved in the process of anesthesia or further evaluation of the participants.

For the QL block Type II (Group Q), A wedge was placed beneath the buttocks to facilitate probe movement, thereafter the transducer was placed at the level of the anterosuperior iliac spine and moved cranially until clear visualisation and identification of the 3 abdominal wall muscles. Then, the transducer probe was moved posteriorly until appreciation of the lumbar interfascial triangle covering the paraspinal muscle between the latissimus dorsi and QL muscles. A 21 gauge spinal

needle was inserted in the plane anterolaterally to posteromedially. The needle tip was further progressed until it was inside the thoracolumbar fascia's middle layer. A total volume of 25ml of Inj. Ropivacaine 0.375% along with dexamethasone 8 mg was then injected. The spread of injectate was observed ultrasonographically(Fig.3) .The same procedure was repeated on the other side also.



**Figure 3**

For ILIH block(Group I), the probe was placed medial to the lateral one-third of the line joining the umbilicus and the anterior superior iliac spine (ASIS), with part of the probe sitting on the ASIS. The ASIS, iliacus muscle, internal oblique, transverses abdominis, and the ILIH nerves between them were identified (Figure 4). After appreciating the sonoanatomy, the ILIH nerves were approached with the 23-gauge Quincke spinal needle through in-plane technique and a total volume of 25ml of Inj. Ropivacaine 0.375% along with dexamethasone 8 mg was then injected. The same procedure was repeated on the other side. At the end of the procedure, patients were shifted to the post-Anesthesia recovery room and later to the postoperative ward after establishing the block.

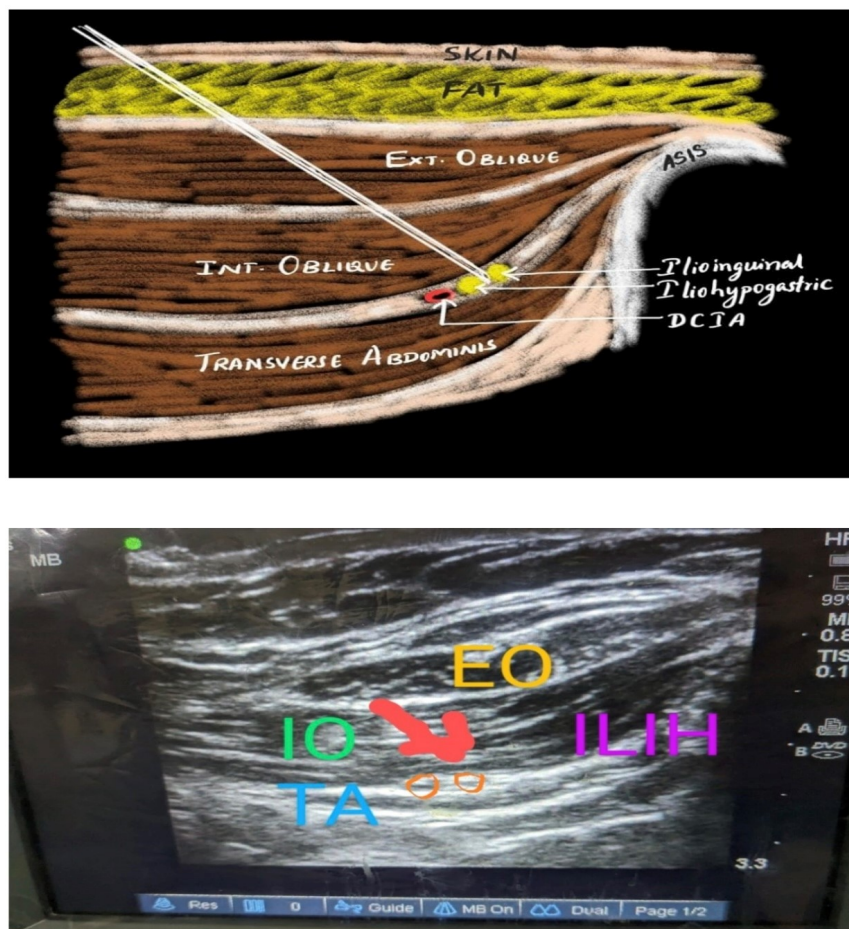


Figure-4

A blinded observer who was not aware of the group allocation visited the patient at 2, 4, 6, 8, 12, and 24 h postoperative intervals and analysed the study parameters and recorded in the common standard data collection sheet. Patient satisfactory score dividing into Extremely satisfied, satisfied and not satisfied was noted. The quality of analgesia was assessed by NRS (unidimensional 11-point pain scale ranging from 0 to 10 with 0 no pain, 10 being severe pain, and the patients were asked to mark the pain score on the scale) during rest as well as on movement (turning lateral to any one side). Duration of analgesia was taken as time interval between the block time and the time of first analgesia. The 24 h requirement of rescue analgesics of Inj. Paracetamol was noted

## RESULTS:

Statistical analysis showed that Quadratus Lumborum Block provides better patient satisfaction score, better visual analogue scale (VAS) score at rest and with movement. The mean time for rescue analgesic requirement was significantly longer and the total number of rescue analgesics were lesser in QL block when compared to ILIH Block. There was no significant difference in haemodynamic parameters and there were no significant side effects observed in both groups.

There was no significant difference in demographic data between the two groups. 42 out of 50 patients were extremely satisfied in QL block and 30 out of 50 patients were extremely satisfied in ILIH group ( $P < 0.05$ ). The resting VAS score and Dynamic VAS Score at 2nd, 4th, 6th, 8th, 12th and 24 hr after surgery in group Q was significantly lower than group I ( $p < 0.05$ ). The VAS score at rest at the end of 24hrs was lower in QL Group ( $4.56 \pm 1.17$ ) when compared to ILIH group ( $6.51 \pm 0.77$ ). Also, The Dynamic VAS score at the end of 24hrs was lower in QL Group ( $5.59 \pm 1.05$ )

when compared to ILIH group( $7.99 \pm 1.10$ ). The time for first rescue analgesia was longer in group Q ( $624 \pm 91$  mins) compared to group I ( $361 \pm 73$  mins)( $P < 0.05$ ). The total number of rescue analgesics required were lower in Group Q ( $0.95 \pm 0.60$ ) compared to Group I ( $2.82 \pm 0.86$ ) ( $P < 0.05$ )

## DISCUSSION

Most commonly used modalities to control post-operative pain after a cesarean section includes intravenous, intrathecal and epidural administration of opioids and NSAIDs which are associated with alteration of the normal gastrointestinal, hepatic and renal system. A near ideal option of post-caesarean pain relief in terms of simplicity, safety, efficacy, and feasibility is regional anaesthesia techniques.

One such regional technique is QL block which claims to provide extensive analgesia of T7 to L1 dermatomes due to the spread of local anaesthetic into the paravertebral space or in the thoracolumbar plane that contains mechanoreceptors and multiple sympathetic fibres, thus contributing to extensive somatic and visceral analgesia

The another regional technique is the ILIH block at the level of the ASIS providing conduction blockade of L1 and L2 nerves. We anesthetize only the skin and lower one-third of the rectus muscle and leave the upper two-third of the rectus muscle unblocked in it. Lower segmental CS is performed by Pfannenstiel incision which lies on L1-L2 dermatome. Sensory innervation of L1-L2 dermatome is accomplished by ilioinguinal and Iliohypogastric nerves. Block of these nerves enables somatic pain relief in caesarean sections, but is ineffective for visceral pain, as viscerae are innervated by nerve roots from T10-L1 segments.

Naglaa Khalil Yousef et al.<sup>2</sup> conducted a study in comparing ultrasound- guided bilateral TAP block versus bilateral QL block in patients undergoing total abdominal hysterectomy and observed that duration of postoperative analgesia was higher in QL group than in TAP group with significantly reduced opioid requirement in QL group. QL Block is the only truncal block that claims to provide visceral analgesia for lower abdominal surgeries as opposed to the existing ultrasound guided truncal blocks that cater only to the somatic component of pain in lower abdominal surgeries

Blanco et al.<sup>3</sup> in their study observed that QL block was better than TAP block in postcaesarean pain relief with longer effective analgesia exceeding 24 hours and less supplementary opioid consumption

In a study conducted by Oriola et al.<sup>4</sup> reported a 51% decrease in morphine consumption following ILIH block given for patients who underwent nonlaparoscopic gynecological technique. The amount of morphine consumption was  $21 \pm 9$  mg in ILIH block group while it was  $41 \pm 24$  mg in patients who did not receive block for first 48 h postoperatively, but there was no reduction in opioid-related side effects.

## CONCLUSION

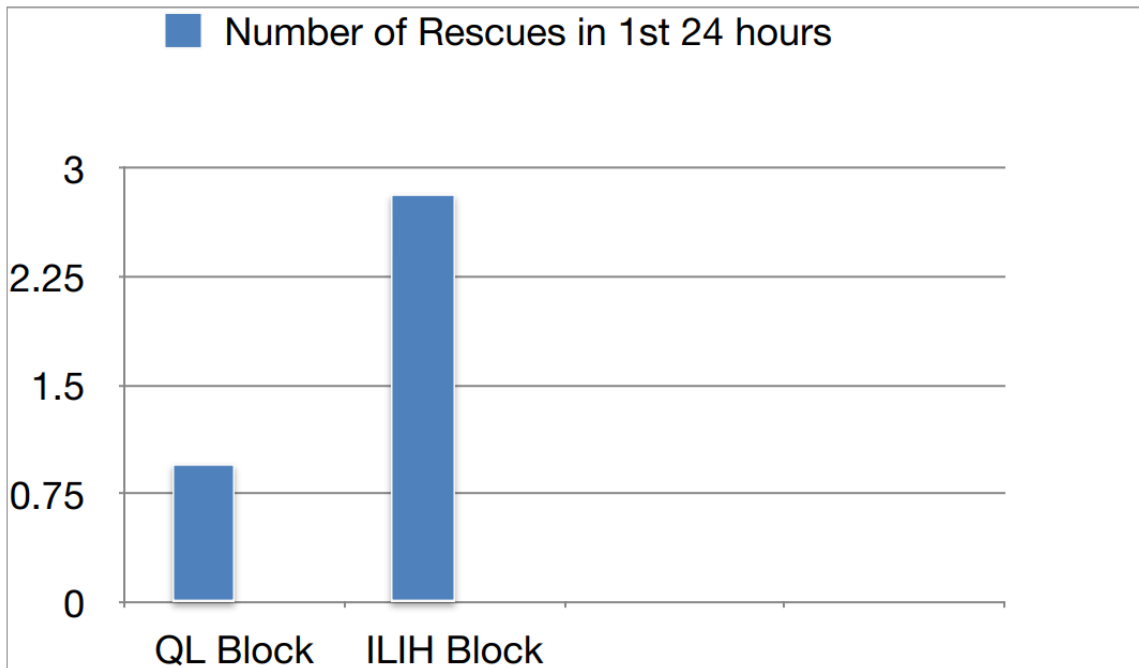
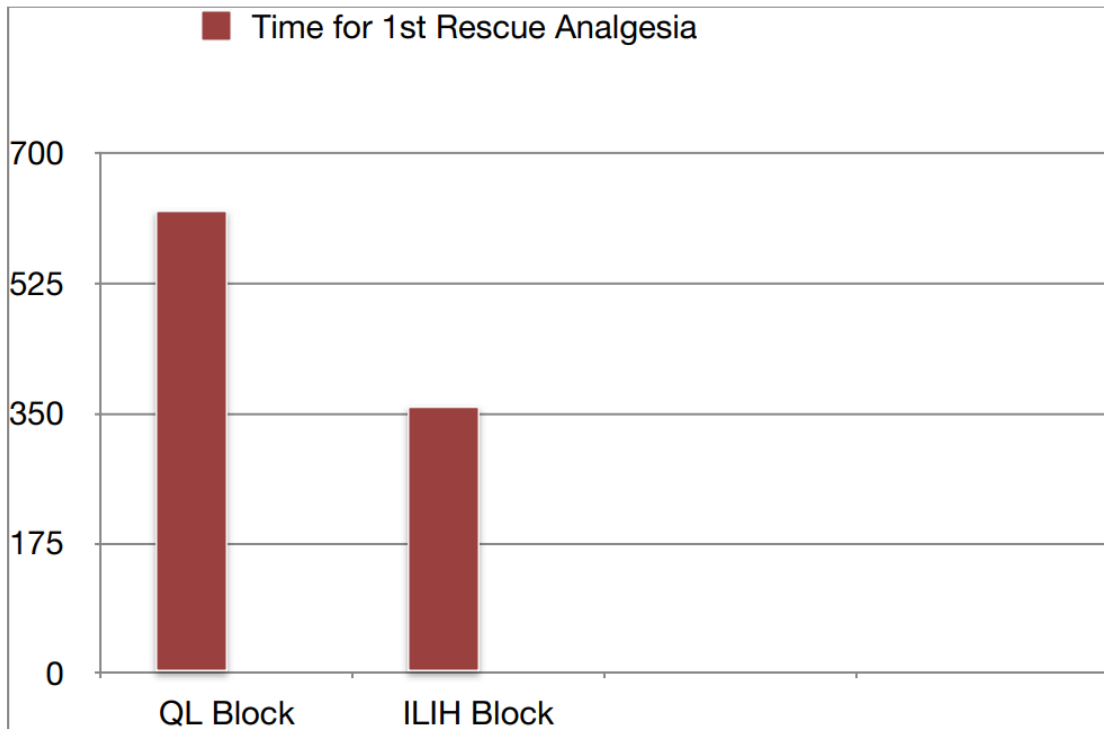
As part of multimodal pain management following LSCS, Ultrasound guided Bilateral QL block-Type II is more effective than Bilateral ILIH block for postoperative Analgesia in terms of reduced VAS scores and more duration of analgesia.

PATIENT SATISFACTION SCORE	QL BLOCK (Out of 50)	ILIH BLOCK (Out of 50)	P-VALUE
Extremely satisfied	42	30	0.01
Satisfied	6	14	0.001
Not satisfied	2	6	0.02

VISUAL ANALOG SCALE	QL BLOCK Mean $\pm$ SD	ILIH BLOCK Mean $\pm$ SD	P-VALUE
VAS At 2 hrs	0.49 $\pm$ 0.27	1.28 $\pm$ 0.38	0.01
VAS At 4 hrs	1.82 $\pm$ 0.60	3.29 $\pm$ 0.80	0.001
VAS At 6 hrs	2.41 $\pm$ 1.06	4.56 $\pm$ 1.14	0.02
VAS At 8 hrs	3.04 $\pm$ 1.02	5.08 $\pm$ 1.25	0.01
VAS At 12 hrs	3.58 $\pm$ 1.24	5.61 $\pm$ 1.26	0.03
VAS At 24 hrs	4.56 $\pm$ 1.17	6.51 $\pm$ 0.77	0.001

DYNAMIC VISUAL ANALOG SCALE	QL BLOCK Mean $\pm$ SD	ILIH BLOCK Mean $\pm$ SD	P VALUE
D VAS At 2 hrs	0.98 $\pm$ 0.48	2.03 $\pm$ 0.49	0.002
D VAS At 4 hrs	2.59 $\pm$ 0.95	4.01 $\pm$ 0.68	0.001
D VAS At 6 hrs	3.51 $\pm$ 0.64	5.45 $\pm$ 0.88	0.03
D VAS At 8 hrs	4.04 $\pm$ 1.02	6.01 $\pm$ 1.01	0.005
D VAS At 12 hrs	4.54 $\pm$ 0.99	6.68 $\pm$ 1.17	0.001
D VAS At 24 hrs	5.59 $\pm$ 1.05	7.99 $\pm$ 1.10	0.001

	QL BLOCK Mean $\pm$ SD	ILIH BLOCK Mean $\pm$ SD	P VALUE
Time for 1 <sup>st</sup> rescue analgesia (minutes)	624 $\pm$ 91	361 $\pm$ 73	0.002
Number of rescues in 24hrs	0.95 $\pm$ 0.60	2.82 $\pm$ 0.86	0.001



**DECLARATIONS**

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*Conflict of interest: None to be declared*



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