Comparison of ultrasound guided transversus abdominis plane block and quadratus lumborum block for postoperative pain in cesarean section: A prospective, randomized-controlled study

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Introduction

Neuroaxial anesthesia methods are preferred in cesarean section. General anesthesia is performed when the regional anesthesia is contraindicated or when the patient does not want regional anesthesia. Effective analgesia after cesarean section is important for faster recovery and prevention complications.

Transversus abdominis plane block (TAP) and Quadratus lumborum block (QL) are used for postoperative analgesia in lower and upper abdominal surgeons (1-4). However, studies comparing the analgesic efficacy of truncal blocks after cesarean section under general anesthesia are inadequate.

The aim of this study is to compare the postoperative analgesic efficacy of TAP Block and QL Block administered by ultrasound (US) guidance under the general anesthesia for cesarean section.

Materials and Methods

The study protocol was approved by the Local Ethics Committee and Australian New Zealand Clinical Trials Registry (Ref: ACTRN12617000842369). A written informed consent was obtained from each patient. The study was carried out in accordance with The Code of Ethics of the Declaration of Helsinki. 99 pregnant women aged 18-49 years who refused or contraindicated to regional anesthesia were included in study. In this prospective, randomized, and double blinded study, patients that scheduled for elective cesarean section, were randomly allocated in two groups (Group TAP n=49, Group QL n=50). Standard monitorization and general anesthesia was performed. After surgery was completed, TAP or lateral QL Block (QL1 Block) was applied bilaterally with US guidance.

All patients received tenoxicam (20 mg) iv as a multimodal analgesic component. Patient-controlled analgesia (PCA) pump was used for all patients (no loading dose, 25 mg tramadol bolus, 20 minutes of lock out time). The severity of postoperative pain was measured by VAS scale (0=no pain, 10=the worst possible pain). Patients were asked to score the pain at different times after the operation, both at rest and during coughing, 0. 2. 6. 12. and 24 h later.

Results Demographics, intraoperative hemodynamic changes, duration of surgery and intraoperative fentanyl consumption were similar in both groups (p>0,05). Duration of anesthesia was statistically longer in the Group QL (p=0.044).

Primary Outcomes Total tramadol consumption was 227±97 mg in Group TAP and 166±101 mg in Group QL (p=0.003). However, no significant difference was found statistically regarding to demand of rescue analgesics (p=0.876). First analgesic administration with PCA was later in Group QL (0,43±0,76h vs 1,74±2,36 h, p<0,001). VAS scores at rest and movement were found in Table 1-2.

Secondary Outcomes There was no statistically significant difference between groups in terms of postoperative side effects (p>0,05). Patient satisfaction in Group QL was significantly higher (p = 0.013)

Discussion Lateral QL Block with US guidance after laparotomy resulted in reduction of pain scores and opioid requirement for 24 hours. Authors noted that the need for more randomized controlled trials to compare lateral QL Block with TAP Block in abdominal surgeries. Blanco et al. (3) performed a randomized controlled study that involving 50 patients to evaluate the analgesic efficacy of posterior

QL Block in cesarean sections with spinal anesthesia (bupivacain 15mg+fentanyl 20mcg). In the QL block group, 0,125% bupivacaine 0.2 ml/kg and in the control group 0.9% saline 0.2 ml/kg was used to perform US guided posterior approach QL block. Patients in the QL Block group had less morphine needed and pain scores were lower than the control group. It is stated that QL block is an important method in postoperative pain management after caesarean section. Blanco et al. (4) in another randomized double-blind study performed TAP Block and posterior QL block (0.125% bupivacain 0.2 mL/kg) in 76 patients after cesarean section with spinal anesthesia (bupivacain 15mg+fentanyl 20mcg). Although posterior QL block provides significantly longer analgesic activity and significantly less morphine usage than TAP block, both pain scores were found to be similar.

Conclusion The data from this study show that that QL1 block as part of multimodal analgesia, provides better analgesia than TAP block. Also QL1 block reduces the amount of opioid used and the first analgesic administration interval after cesarean section. We believe that QL block is a good alternative for pain relief after cesarean section.

Table 1: Resting VAS scores according to groups

VAS	Group TAP (n=49)	Group QL (n=50)	p
0th h ^{''}	2,65 ±1,01	2,00±0,96	0,001 *
2nd h ^{''}	1,53±0,64	1,18 ±0,69	0,011 *
6th h ^{''}	1,35 ±0,72	0,94±0,62	0,003 *
12th h ^{''}	1,57 ±0,76	1,30±0,78	0,085
24th h ^{''}	0,94±0,45	0,70±0,54	0,022 *

VAS: Visual Analog scale #: Mean±Standard Deviation, *p<0,05

Table 2: Movement VAS scores according to groups

VAS	Group TAP (n=49)	Group QL (n=50)	p
0th h ^{''}	4,59±1,01	3,72±1,01	<0.001 *
2nd h ^{''}	3,22±0,71	2,72 ±0,78	0,001 *
6th h ^{''}	2,86±0,61	2,30 ±0,64	<0.001 *
12th h ^{''}	2,92±0,81	2,46±0,73	0,004 *
24th h ^{''}	2,29±0,57	1,90±0,54	0,001 *

VAS: Visual analog scale #: Mean ±Standard Deviation, *p<0,05

References

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