Direct Field Block with 40 ML of 0.125% Bupivacaine in Conjunction with Intrathecal Morphine for Analgesia after Cesarean Section: A Randomized Controlled Trial

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Objective: *To investigate the effect of direct field block with 40 ml of 0.125% bupivacaine on the top of intrathecal morphine on postoperative pain free period.*

Material and Method: *The present prospective randomized controlled trial was undertaken in 56 pregnant patients that underwent elective cesarean delivery at Siriraj Hospital. All patients were randomized into two groups to receive spinal block with intrathecal morphine as a control group, or direct field block on the top of spinal block with intrathecal morphine as a study group. The assessment of pain score, 24-hour morphine usage, satisfaction score, pruritus, nausea and vomiting, sedation score, and motor power were recorded.*

Results: *Both groups had similar pain score. The number of subjects who had pain free period during the 24 hours in the direct field block group was seven of 28, while in the control group it was four of 28. Median time of pain free period was 2.10 hours in control group and 2.36 hours in direct field block group. There was no significant difference in 24-hour morphine consumption, satisfaction score, pruritus, nausea, vomiting, and sedation score. Motor power was fully recovered within six hours postoperative in both groups.*

Conclusion: *Direct field block with 40 ml of 0.125% bupivacaine in conjunction with intrathecal morphine for cesarean section did not increase pain free period or decrease morphine consumption.*

Keywords: *Direct field block, Cesarean section, Postoperative pain, Pain free period*

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The rate of cesarean delivery has been increasing significantly in Siriraj Hospital[1]. To avoid the complications from general anesthesia, such as difficult intubation and gastric aspiration, spinal anesthesia became a commonly used anesthetic technique[2-5]. However, spinal anesthesia with bupivacaine provides analgesia for only three to four hours, not sufficient for first 24-hour postoperative pain. Thus, intrathecal morphine is practically added to bupivacaine for prolonged analgesic duration of spinal anesthesia[6]. However, spinal morphine is associated with dose-related side effects such as nausea and vomiting, pruritus, and respiratory depression[7]. Therefore, the multimodal analgesic regimen including non-steroidal anti-inflammatory drugs (NSAIDs) and local anesthetic infiltration has been applied to decrease opioid requirements and enhance post-cesarean analgesia[8].

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The anterior abdominal wall has multiple segmental nerve supplies derived from the anterior divisions of the lower thoracic (T7-12) and first lumbar (L1) nerves. These nerves course through the neurofascial plane between the internal oblique and transversus abdominis muscles in the transversus abdominis plane[9,10]. Injection of local anesthetic into this plane can anesthetize the lower abdominal wall. Recently, the use of transversus abdominis plane block (TAPB) with local anesthetics and either an anatomical landmark technique or ultrasound guidance to block the T6-L1 sensory nerve roots that innervate the lower anterior abdominal wall have been considered as an effective way to manage postoperative pain after a variety of abdominal surgeries including cesarean delivery[11-15]. During abdominal wall closure in cesarean section, surgeons can also perform direct field block at transversus abdominis plane to provide postoperative analgesia. This technique is simple and safe. Local anesthetic agents can be administered under direct vision by surgeons, even in setting with limited resources. The efficacy of this technique in the parturients undergoing cesarean delivery under spinal block has not been reported.

The present study has designed to determine whether low doses of local anesthetic infiltration at transversus abdominis plane under direct vision can be effective in improving postoperative analgesia. The purpose of the present study was to investigate the effect of direct field block with 40 ml of 0.125% bupivacaine on the top of intrathecal morphine on postoperative pain free period.

Material and Method

The protocol approval was obtained from the Siriraj Institutional Review Board (SIRB). This prospective, randomized, double-blinded study was registered at the Thai Clinical Trial Registry (Registration number TCTR20140903003). Non-laboring, ASA I-II, term, singleton 56 parturients scheduled for elective caesarean section under spinal anesthesia were enrolled after informed written consent. Exclusion criteria were pre-eclampsia, history of back surgery, progressive neurological deficit, allergy to the medication used in this trial including local anesthetic, opioids, and paracetamol, or history of drug abuse. No patient was excluded or dropped out from the present study.

All patients were randomized to allocate into two groups by block of four. Randomization assignments were placed in envelopes and sealed. On arrival in the operating theatre, the patient received preload of isotonic solution 500 ml prior to induction of spinal anesthesia. Standard monitoring including electrocardiography, non-invasive blood pressure, pulse oximetry were applied. Non-invasive arterial pressure was measured at 1-minute intervals after intrathecal injection until delivery and thereafter at 5-minute intervals until the end of surgery. Spinal anesthesia was performed with the patient in the lateral position, using a 26G or 27G quincke needle or a 25G whitacre needle. The dose of 0.5% hyperbaric bupivacaine with 0.2 mg morphine, total volume 2.2 ml was administered. Then the patients were turned supine with a 15° left lateral tilt. Anesthetic level was achieved at the fourth thoracic dermatome, assessed by cold sensation of pinprick. If hypotension, define as a decrease in systolic blood pressure by >20% from baseline or less than 100 mmHg occurred, it was promptly treated with intravenous (IV) boluses of ephedrine or norepinephrine. After the baby was delivered, ondansetron (Zetron, Onsia) 8 mg and oxytocin three units of oxytocin were given intravenously and then continuous infusion of two to 10 units per hour of oxytocin was started.

Prior to wound closure at posterior rectus sheath, a study team member opened the envelope and prepared the assigned study drug. If the patient was assigned into the direct field block group, 40 ml of 0.125% bupivacaine was injected under direct vision by a surgeon. The surgeon who attended the present study had been demonstrated the direct field block technique preoperatively. The needle was passed at both sides of incisional margin along transversus abdominis plane and the injection was started at the mid-point of the incision. Each side of incisional margin was injected three points and the ends of both edges were infiltrated. Eight points were injected, as shown in Fig. 1 and 2. The volume of 0.125% bupivacaine was 5 ml per point (total 40 ml). In control group, local anesthetic infiltration was not performed. The postoperative pain regimen consisted of intravenous parecoxib (Dynastat) 40 mg given at the end of operation and the next 12 hours. The IV patient-controlled analgesia (PCA) morphine was initiated with no background infusion and 1 mg bolus, with a 5-minute lockout.

The primary outcome measure was post-operative pain free period, defined as time to first morphine requirement. Secondary outcome measures included pain scales at rest, 24-hour morphine consumption, patient satisfaction, and side effects associated with morphine usage. Postoperative pain

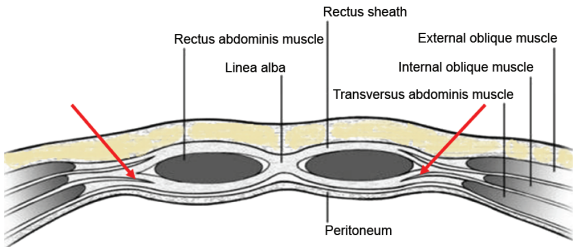

Fig. 1 Direct field block technique; cross sectional view.

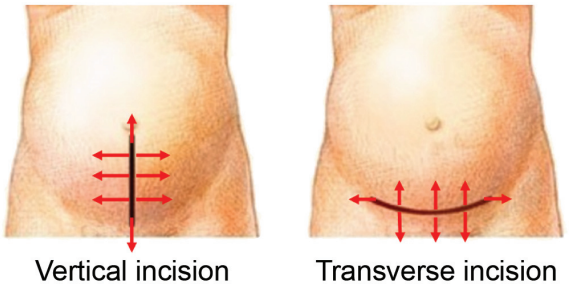

Fig. 2 Direct field block technique; vertical and transverse incision.

score assessment was carried out by team members who were blinded to patient group allocation. The assessment of pain at rest consisted of a numerical rating scales (NRS, 0 = no pain at all and 10 = severe uncontrolled pain), measured after arrival in the post-anesthesia care unit (PACU) and at 2-, 4-, 6-, 12-, 24-, and 48-hour postoperatively. Time to first morphine demand and the 24-hour morphine usage via IV-PCA were recorded. The patient's perception of pruritus, nausea, and vomiting were observed at each time interval on a 4-point scale of 0 to 3, where 0 = no symptoms and 3 = severe symptoms. Sedation score was assigned using sedation scale (0 awake, 1 slightly drowsy, 2 drowsy, and 3 somnolent). Motor power by Bromage score was also recorded. In addition, each patient's overall satisfaction with pain management within 24 and 48 hours were noted on a 4-point scale of 0 to 3, with 0 = very dissatisfied, and 3 = very satisfied.

Statistical analysis

Based on the study of Wolfson et al[16], a target sample size was calculated. A sample size of 22 subjects per group would allow us to detect a 20% difference of pain free period with 90% power using a nQuery program at the *p*-value 0.05. Assuming an estimated 20% drop rate, 28 subjects per group were enrolled.

Continuous data were reported as means ± standard deviation (or medians and interquartile ranges, if appropriate) while categorical data were reported as frequencies and percentages. Comparisons between the groups were performed with Independent t-test, the Mann-Whitney U test, Kaplan-Meier curve and Breslow test for comparing pain free period between groups. A *p*-value of 0.05 was considered statistically significant. Statistical analysis was performed using a software program, SPSS version 18 (SPSS Inc., Chicago, IL, USA).

Results

Fifty-six parturients were enrolled in the study between October and November 2013 (28 patients per group). No patient was excluded or withdrawn during the study period. The control and direct field block group had no difference in age, body mass index, gestational age, baseline hematocrit, duration of surgery, and type of surgical incision (Table 1).

The number of subjects who did not require morphine within 24 hours was four in control group and seven in direct field block group. Therefore, the number of patients who need morphine within 24 hours in control and direct field block group were 24 and 21 respectively. Pain free period as mean ± SD was 5.8±1.5 hours in control group and 9.0±1.9 hours in direct field block group. Minimum and maximum pain free period in control group were 0.3 and 12.4 hours, in direct field block group were 0.05 and 22.1 hours respectively (Table 2). As for the primary outcome of the present study, the pain free period was not significantly different between the two groups. Median time to first request for IV-PCA morphine was 2.1 hours in control group and 2.4 hours in direct field block group (Fig. 3). In addition, 24-hour morphine consumption was similar between the groups. The groups had no difference in effectiveness of postoperative pain control. The pain assessment by NRS in 48 hours was similar for two groups (Fig. 4).

A degree of maternal satisfaction with the pain relief within 24 and 48 hours postoperative was not different between groups (Table 3). Similar rates of opioid-side effects, including nausea, vomiting, pruritus, and sedation were observed among all patients. All subjects had sedation score 0 without respiratory depression. At any time, there was no significant difference in the incidence of nausea and vomiting or distribution of nausea scores between

Table 1. Demographic data, mean ± SD or number (%)

Variable	Control (n = 28)	Direct field block (n = 28)	*p*-value
Age (year)	34.0±4.3	32.6±5.6	0.07
Body mass index (kg/m^2)	27.9±3.6	26.9±3.9	0.34
Gestational age (weeks)	37.8±1.0	38.2±0.9	0.18
Baseline hematocrit (%)	36.1±2.4	35.6±3.9	0.62
Duration of surgery (minutes)	71.3±17.1	69.0±11.9	0.54
Type of incision			0.42
Pfannenstiel	21 (75.0)	23 (82.1)	
Low midline	7 (25.0)	5 (17.9)	

Table 2. Morphine consumption and pain free period

	Control (n = 28)	Direct field block (n = 28)	*p*-value
No need morphine in 24 hours, n (%)	4 (14.3)	7 (25.0)	0.31
Need morphine in 24 hours, n (%)	24 (85.7)	21 (75.0)	
Pain free period (hours)			0.53
Mean ± SD	5.8±1.5	9.0±1.9	
Minimum	0.3	0.05	
Maximum	12.4	22.1	
Median	2.1	2.4	
Morphine consumption in 24 hours (mg)			0.52
Median (min, max)	3.0 (1, 24)	1.5 (1, 16)	

Table 3. Maternal satisfaction, %

	Control (n = 28)	Direct field block (n = 28)	*p*-value
Satisfaction score at 24-hour			0.355
3 (very satisfied)	17.9	32.1	
2	78.6	67.9	
1	3.6	0	
0 (very dissatisfied)	0	0	
Satisfaction score at 48-hour			0.789
3 (very satisfied)	17.9	17.9	
2	64.3	71.4	
1	17.9	10.7	
0 (very dissatisfied)	0	0	

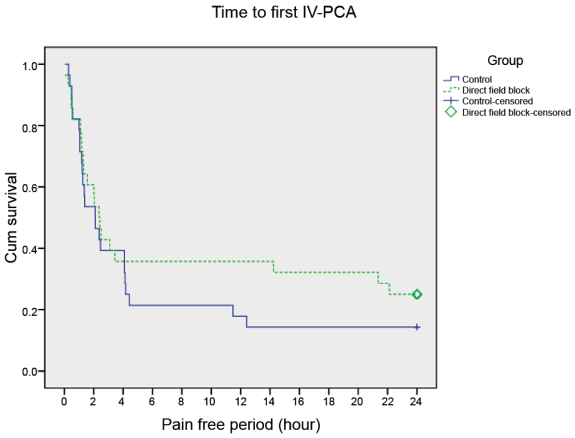

Fig. 3 Time to first IV-PCA (median): control group = 2.10 hours, direct field block group = 2.36 hours (*p*-value = 0.53).

groups (Table 4). None had severity score more than 2. The pruritus score in both groups were also similar (*p*-value >0.05). There was no patient with severe pruritic symptom (Table 5). Patients in both groups had returned full motor power which assessed by Bromage score within six hours postoperative (Fig. 5).

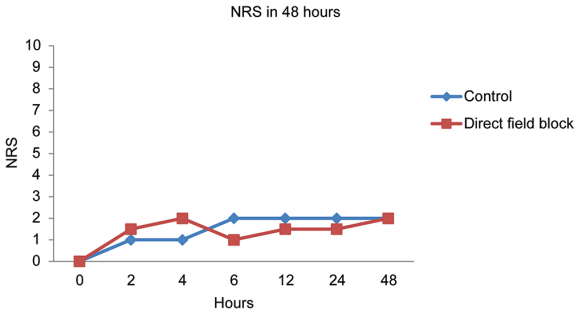

Fig. 4 Pain NRS in 48 hours postoperatively (median), *p*-value >0.05.

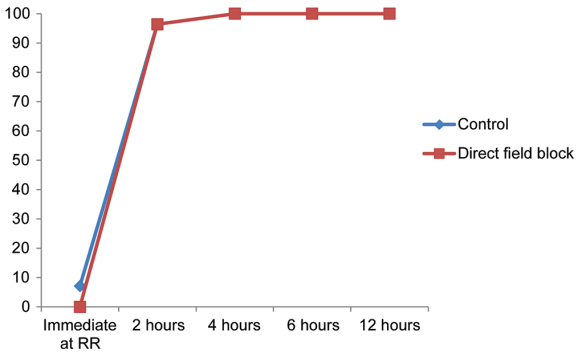

Fig. 5 Bromage score; Bromage score <2, n (%).

Table 4. Nausea and vomiting (N/V), number (%)

	N/V score				*p*-value
	0	1	2	3	
In PACU					1.000
Control	26 (92.9)	0 (0)	2 (7.1)	0 (0)	
Direct field block	27 (96.4)	0 (0)	1 (3.6)	0 (0)	
2-hour					0.547
Control	19 (67.9)	8 (28.6)	1 (3.6)	0 (0)	
Direct field block	22 (78.6)	6 (21.4)	0 (0)	0 (0)	
4-hour					0.876
Control	19 (67.9)	8 (28.6)	1 (3.6)	0 (0)	
Direct field block	21 (75.0)	6 (21.4)	1 (3.6)	0 (0)	
6-hour					0.417
Control	21 (75.0)	7 (25.0)	0 (0)	0 (0)	
Direct field block	21 (75.0)	5 (17.9)	2 (7.1)	0 (0)	
12-hour					0.491
Control	26 (92.9)	2 (7.1)	0 (0)	0 (0)	
Direct field block	28 (100)	0 (0)	0 (0)	0 (0)	
24-hour					1.000
Control	26 (92.9)	2 (7.1)	0 (0)	0 (0)	
Direct field block	27 (96.4)	1 (3.6)	0 (0)	0 (0)	
48-hour					1.000
Control	27 (96.4)	1 (3.6)	0 (0)	0 (0)	
Direct field block	28 (100)	0 (0)	0 (0)	0 (0)	

PACU = post-anesthesia care unit

Table 5. Pruritus, number (%)

	Pruritus score				*p*-value
	0	1	2	3	
In PACU					1.000
Control	26 (92.9)	1 (3.6)	1 (3.6)	0 (0)	
Direct field block	26 (92.9)	2 (7.1)	0 (0)	0 (0)	
2-hour					0.102
Control	8 (28.6)	19 (67.9)	1 (3.6)	0 (0)	
Direct field block	15 (53.6)	13 (46.4)	0 (0)	0 (0)	
4-hour					0.216
Control	8 (28.6)	19 (67.9)	1 (3.6)	0 (0)	
Direct field block	14 (50.0)	13 (46.4)	1 (3.6)	0 (0)	
6-hour					0.060
Control	6 (21.4)	21 (75.0)	1 (3.6)	0 (0)	
Direct field block	15 (53.6)	12 (42.9)	1 (3.6)	0 (0)	
12-hour					0.269
Control	15 (53.6)	13 (46.4)	0 (0)	0 (0)	
Direct field block	20 (71.4)	8 (28.6)	0 (0)	0 (0)	
24-hour					1.000
Control	14 (50.0)	11 (39.3)	3 (10.7)	0 (0)	
Direct field block	15 (53.6)	11 (39.3)	2 (7.1)	0 (0)	
48-hour					0.491
Control	26 (92.9)	2 (7.1)	0 (0)	0 (0)	
Direct field block	28 (100)	0 (0)	0 (0)	0 (0)	

Discussion

The blockade of the neural afferent supply of the abdominal wall, such as transversus abdominis plane (TAP) block, ilioinguinal, and hypogastric nerve blocks, and rectus sheath block have been recognized as capable of providing significant postoperative analgesia in patients undergoing abdominal surgical procedures[11-15]. Many previous studies have demonstrated a benefit of TAPB or iliohypogastric-ilioinguinal (IHII) nerves block for postoperative analgesia in obstetric surgery[12,16-19]. The transversus abdominis plane block aims to anesthetize the peripheral nerves that provide sensation to the lower abdominal wall from T9 to L1. Several techniques of the block including the ultrasound-guided and the anatomical landmark technique have been reported[12,19,20].

In the present study, the surgical approach to the transversus abdominis plane was applied. This adaptation of the technique, local anesthetic was administered at the time of closure of the anterior abdominal wall to the plane by a surgeon. This approach enables the local anesthetic to be delivered under direct vision without requirement of any special equipment or expertise. The technique also enables the reliable identification of viscera and vessels and so inadvertent injury to these becomes unlikely. However, the present study demonstrated that the addition of direct field block at transversus abdominis plane with 40 ml of 0.125% bupivacaine to spinal morphine after cesarean delivery did not further improve analgesia. The block neither further increased the pain free period nor decreased the cumulative morphine consumption at 24 hours.

As accurate placement of local anesthetic in the transversus abdominis facial plane is essential to complete blockade. The multi-injection technique might cause error in needle placement, which affects the spread of local anesthetic and the resulting block. Besides, local infiltrate technique variation by surgeons might also affect the result. In addition, the dose and volume of bupivacaine were empirically chosen, and since there was no dose-response study, the optimal concentration and volume to produce effective analgesia is not known. In the present study, we administered the large volume of bupivacaine (40 ml) to fill the plane along incisional margins, therefore, the low concentration of bupivacaine (0.125%) was applied, and the total dose of the injected bupivacaine was only 50 mg. The effectiveness of the block may be associated to local anesthetic dosage[21-23]. The dose of bupivacaine used in the present study was considerably less than the others. The doses and concentration of local anesthetic used varied among the studies, possible affecting the analgesic outcome[24].

McDonnell et al demonstrated that the TAPB provided effective postoperative analgesia in patients undergoing major abdominal surgery under general anesthesia[15]. Some recent studies showed postoperative analgesic efficacy of TAPB in parturients receiving cesarean delivery under general anesthesia or spinal anesthesia without intrathecal morphine[19,20,25,26], while in conjunction with neuraxial morphine, the TAPB did not provide an additional postoperative analgesia[21,22,27]. The present meta-analysis suggested that TAPB significantly improved postoperative analgesia in parturients undergoing cesarean section who did not receive intrathecal morphine but reported no improvement in those who received intrathecal morphine[24].

As the multimodal analgesic regimen was applied, all patients were received intravenous parecoxib (Dynastat) postoperatively. Parecoxib was effective for post-cesarean delivery analgesia, by reducing pain scores and the 24-hour morphine consumption[28]. Paech et al found that intravenous parecoxib given in few days after cesarean delivery had low concentration of drug in breastmilk and no adverse effects to breastfed infants[29].

The present study has some limitations. First, the investigator did not examine the distribution of the cutaneous analgesia to ensure a successful block, so it is possible that a portion blocks were placed incorrectly. The patients and investigators may be inadvertently unblinded when performing sensory tests on the abdomen. Residual spinal sensory block confounded the early assessment of blocks adequacy. Another limitation was that NRS pain scores were only determined at rest. Pain on movement and the contribution of visceral pain were not obtained. The direct field block might be a useful technique in patients undergoing general anesthesia, or in those with a contraindication to long-acting neuraxial opioids. Further research is essential to organize the optimal use of this technique. The effective technique and an optimal dosage of local anesthetic need to be investigated.

Conclusion

Direct field block with 40 ml of 0.125% bupivacaine in conjunction with intrathecal morphine for post-cesarean section analgesia does

not increase pain free period or decrease morphine consumption.

What is already known on this topic?

The TAPB is effective in providing post-operative pain relief in patients undergoing abdominal surgery including cesarean delivery. The TAPB can be accomplished by either an anatomical landmark technique or ultrasound guidance.

What this study adds?

In elective cesarean delivery performed under spinal anesthesia with intrathecal morphine, direct field block along the transversus abdominis plane with 40 ml of 0.125% bupivacaine did not improve postoperative analgesia. The block neither further increased the pain free period nor decreased the cumulative morphine consumption at 24 hours.

Potential conflicts of interest

None.

References

1. Titapant V, Phitakwatchara N. Trends in modes of delivery in Siriraj Hospital. Siriraj Med J 2007; 59: 271-3.
2. Alan M, Adnan M. General anaesthesia for caesarean section. Cont Educ Anaesth Crit Care Pain 2009; 9: 148-51.
3. Bowring J, Fraser N, Vause S, Heazell AE. Is regional anaesthesia better than general anaesthesia for caesarean section? J Obstet Gynaecol 2006; 26: 433-4.
4. Shroff R, Thompson AC, McCrum A, Rees SG. Prospective multidisciplinary audit of obstetric general anaesthesia in a district general hospital. J Obstet Gynaecol 2004; 24: 641-6.
5. Kelly GD, Blunt C, Moore PA, Lewis M. Consent for regional anaesthesia in the United Kingdom: what is material risk? Int J Obstet Anesth 2004; 13: 71-4.
6. Pöpping DM, Elia N, Marret E, Wenk M, Tramèr MR. Opioids added to local anesthetics for single-shot intrathecal anesthesia in patients undergoing minor surgery: a meta-analysis of randomized trials. Pain 2012; 153: 784-93.
7. Gehling M, Tryba M. Risks and side-effects of intrathecal morphine combined with spinal anaesthesia: a meta-analysis. Anaesthesia 2009; 64: 643-51.
8. Leung AY. Postoperative pain management in obstetric anesthesia--new challenges and solutions. J Clin Anesth 2004; 16: 57-65.
9. Yarwood J, Berrill A. Nerve blocks of the anterior abdominal wall. Contin Educ Anaesth Crit Care Pain 2010; 10: 182-6.
10. Rozen WM, Tran TM, Ashton MW, Barrington MJ, Ivanusic JJ, Taylor GI. Refining the course of the thoracolumbar nerves: a new understanding of the innervation of the anterior abdominal wall. Clin Anat 2008; 21: 325-33.
11. Rafi AN. Abdominal field block: a new approach via the lumbar triangle. Anaesthesia 2001; 56: 1024-6.
12. Belavy D, Cowlishaw PJ, Howes M, Phillips F. Ultrasound-guided transversus abdominis plane block for analgesia after Caesarean delivery. Br J Anaesth 2009; 103: 726-30.
13. El Dawlatly AA, Turkistani A, Kettner SC, Machata AM, Delvi MB, Thallaj A, et al. Ultrasound-guided transversus abdominis plane block: description of a new technique and comparison with conventional systemic analgesia during laparoscopic cholecystectomy. Br J Anaesth 2009; 102: 763-7.
14. Crosbie EJ, Massiah NS, Achiampong JY, Dolling S, Slade RJ. The surgical rectus sheath block for post-operative analgesia: a modern approach to an established technique. Eur J Obstet Gynecol Reprod Biol 2012; 160: 196-200.
15. McDonnell JG, O'Donnell B, Curley G, Heffernan A, Power C, Laffey JG. The analgesic efficacy of transversus abdominis plane block after abdominal surgery: a prospective randomized controlled trial. Anesth Analg 2007; 104: 193-7.
16. Wolfson A, Lee AJ, Wong RP, Arheart KL, Penning DH. Bilateral multi-injection iliohypogastric-ilioinguinal nerve block in conjunction with neuraxial morphine is superior to neuraxial morphine alone for postcesarean analgesia. J Clin Anesth 2012; 24: 298-303.
17. Bell EA, Jones BP, Olufolabi AJ, Dexter F, Phillips-Bute B, Greengrass RA, et al. Iliohypogastric-ilioinguinal peripheral nerve block for post-Cesarean delivery analgesia decreases morphine use but not opioid-related side effects. Can J Anaesth 2002; 49: 694-700.
18. Bunting P, McConachie I. Ilioinguinal nerve blockade for analgesia after caesarean section. Br J Anaesth 1988; 61: 773-5.
19. McDonnell JG, Curley G, Carney J, Benton A, Costello J, Maharaj CH, et al. The analgesic

efficacy of transversus abdominis plane block after cesarean delivery: a randomized controlled trial. Anesth Analg 2008; 106: 186-91.
20. Abdallah FW, Halpern SH, Margarido CB. Transversus abdominis plane block for post-operative analgesia after Caesarean delivery performed under spinal anaesthesia? A systematic review and meta-analysis. Br J Anaesth 2012; 109: 679-87.
21. Costello JF, Moore AR, Wieczorek PM, Macarthur AJ, Balki M, Carvalho JC. The transversus abdominis plane block, when used as part of a multimodal regimen inclusive of intrathecal morphine, does not improve analgesia after cesarean delivery. Reg Anesth Pain Med 2009; 34: 586-9.
22. McMorrow RC, Ni Mhuircheartaigh RJ, Ahmed KA, Aslani A, Ng SC, Conrick-Martin I, et al. Comparison of transversus abdominis plane block vs spinal morphine for pain relief after caesarean section. Br J Anaesth 2011; 106: 706-12.
23. Loane H, Preston R, Douglas MJ, Massey S, Papsdorf M, Tyler J. A randomized controlled trial comparing intrathecal morphine with transversus abdominis plane block for post-cesarean delivery analgesia. Int J Obstet Anesth 2012; 21: 112-8.
24. Mishriky BM, George RB, Habib AS. Transversus abdominis plane block for analgesia after cesarean delivery: a systematic review and meta-analysis. Can J Anaesth 2012; 59: 766-78.
25. Tan TT, Teoh WH, Woo DC, Ocampo CE, Shah MK, Sia AT. A randomised trial of the analgesic efficacy of ultrasound-guided transversus abdominis plane block after caesarean delivery under general anaesthesia. Eur J Anaesthesiol 2012; 29: 88-94.
26. Eslamian L, Jalili Z, Jamal A, Marsoosi V, Movafegh A. Transversus abdominis plane block reduces postoperative pain intensity and analgesic consumption in elective cesarean delivery under general anesthesia. J Anesth 2012; 26: 334-8.
27. McKeen DM, George RB, Boyd JC, Allen VM, Pink A. Transversus abdominis plane block does not improve early or late pain outcomes after Cesarean delivery: a randomized controlled trial. Can J Anaesth 2014; 61: 631-40.
28. Wong JO, Tan TD, Cheu NW, Wang YR, Liao CH, Chuang FH, et al. Comparison of the efficacy of parecoxib versus ketorolac combined with morphine on patient-controlled analgesia for post-cesarean delivery pain management. Acta Anaesthesiol Taiwan 2010; 48: 174-7.
29. Paech MJ, Salman S, Ilett KF, O'Halloran SJ, Muchatuta NA. Transfer of parecoxib and its primary active metabolite valdecoxib via transitional breastmilk following intravenous parecoxib use after cesarean delivery: a comparison of naive pooled data analysis and nonlinear mixed-effects modeling. Anesth Analg 2012; 114: 837-44.

การศึกษาประสิทธิภาพการระงับปวดภายหลังการผ่าตัดคลอด โดยการทำ direct field block ด้วย bupivacaine 0.125% จำนวน 40 มล. ร่วมกับการให้มอร์ฟีนทางช่องไขสันหลัง: วิธีการศึกษาแบบสุ่มและมีการควบคุม

น้ำทิพย์ ไตรยสุนันท์, ฐิติมา ชินะโชติ, สิริกาญจน์ ดวงบุรงค์

วัตถุประสงค์: *เพื่อศึกษาประสิทธิภาพการระงับปวดหลังการผ่าตัดคลอดภายใต้การให้ยาระงับความรู้สึกเฉพาะส่วนร่วมกับการให้มอร์ฟีนทางช่องไขสันหลัง โดยการทำ direct field block ด้วย bupivacaine 0.125% จำนวน 40 มล.*

วัสดุและวิธีการ: *ทำการศึกษาแบบ prospective randomized controlled trial ในผู้ป่วยที่มารับการผ่าตัดคลอดแบบไม่เร่งด่วนภายใต้การให้ยาระงับความรู้สึกเฉพาะส่วนในโรงพยาบาลศิริราช จำนวน 56 ราย โดยผู้ป่วยจะได้รับการแบ่งเป็น 2 กลุ่ม โดยวิธีการสุ่ม กลุ่มควบคุมจะได้รับการทำ spinal block with intrathecal morphine ส่วนในกลุ่มศึกษาจะได้รับการทำ spinal block with intrathecal morphine ร่วมกับ direct field block หลังจากนั้นจึงทำการประเมินระดับความเจ็บปวด ปริมาณการใช้ยา morphine ใน 24 ชั่วโมงแรก ระดับความพึงพอใจ อาการคัน อาการคลื่นไส้อาเจียน ระดับความง่วงซึม และกำลังของกล้ามเนื้อ*

ผลการศึกษา: *ผู้ป่วยทั้งสองกลุ่มมีระดับความเจ็บปวดหลังผ่าตัดที่ใกล้เคียงกัน โดยมีจำนวนผู้ป่วยที่ไม่ต้องการยาแก้ปวดเลยจำนวน 7 ราย จาก 28 ราย ในกลุ่มที่ได้รับ direct field block และ 4 ราย จาก 28 ราย ในกลุ่มควบคุม ระยะเวลาเฉลี่ยหลังการผ่าตัดที่ผู้ป่วยไม่มีอาการปวดคือ 2.10 ชั่วโมง ในกลุ่มควบคุม และ 2.36 ชั่วโมง ในกลุ่ม direct field block โดยที่ไม่พบความแตกต่างอย่างมีนัยสำคัญทางสถิติของปริมาณการใช้ยามอร์ฟีน ใน 24 ชั่วโมงแรก ระดับความพึงพอใจ อาการคัน อาการคลื่นไส้อาเจียน และระดับความง่วงซึม ส่วนกำลังของกล้ามเนื้อสามารถฟื้นกลับมาทำงานเต็มที่ภายหลังผ่าตัด 6 ชั่วโมง*

สรุป: *การทำ direct field block ด้วย bupivacaine 0.125% จำนวน 40 มล. ไม่ช่วยเพิ่มประสิทธิภาพการระงับปวดหลังผ่าตัดและไม่ลดความต้องการใช้ยาแก้ปวดมอร์ฟีน ในผู้ป่วยที่มารับการผ่าตัดคลอดภายใต้การให้ยาระงับความรู้สึกเฉพาะส่วนและได้รับมอร์ฟีนทางช่องไขสันหลัง*