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Comparison of 0.2% Ropivacaine with 0.25 % Levobupivacaine in Ultrasound Guided Transverse Abdominis plane block for Postoperative Analgesia in LSCS

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Abstract

Background: Transverse abdominis plane block is effective modality of post operative analgesia for anterior abdominal wall surgeries . Women undergoing LSCS need good pain relief for comfort and early recovery and mobilization. Ultrasound guided transverse abdominis plane block is safe and effective way for postoperative analgesia.

Objectives: The primary objective is total duration of postoperative analgesia. The secondary objective is to compare any side effects.

Methods: 80 primigravida ASA 1 status, undergoing LSCS were recruited in this prospective randomized study. They were divided into two groups ,group R ropivacaine ,who received 20 ml 0.2% ropivacaine, and group L patients who received 20ml 0.25% of levobupivacaine via TAP block under ultrasound guidance. Postoperative pain was assessed using the visual analog scale upon arriving at the recovery room ,just prior to being discharge to ward and at 6hrs,12 hours,18hrs,and 24hrs postoperatively to compare the effectiveness of analgesia.

Results: A total of 80 patients were analyzed . Duration of analgesia was significantly longer in L group 10.94$\pm$0.62hrs compared to group R 8.16$\pm$0.36hrs($p<000.1$),mean consumption of diclofenac was 150.77$\pm$14.90mg and 75.88$\pm$28.77 mg in group R and and L respectively $p<0.005$).

Conclusion : Postoperative analgesia is better with 0.25%levobupivacaine as compared to 0.2% ropivacaine.

Keywords: LSCS, analgesia, diclofenac, levobupivacaine, ropivacaine

Introduction

A Caesarean section is a major surgical surgery that can result in significant postoperative pain and discomfort. Early ambulation, new-born care (including breast feeding, mother-infant bonding), and the avoidance of postoperative morbidity all require adequate postoperative analgesia.[1] Systemic or neuraxial opioids are frequently used to manage postoperative pain.[2] Despite the fact that single-shot neuraxial analgesic techniques utilising long-acting opioids or patient-controlled epidural opioid administration provide adequate analgesia, they are accompanied with side effects such as nausea, vomiting, and pruritus, which impair overall patient satisfaction.[3]

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Regional anaesthesia using local anaesthetics can decrease or eliminate the need of opioids and associated negative effects.[4] In patients following caesarean section, direct blocking of the neural afferent supply of the abdominal wall, such as abdominal field blocks, ilioinguinal, and hypogastric nerve blocks, provides considerable postoperative analgesia. However, in patients having caesarean delivery, the lack of well-defined anatomical landmarks makes abdominal wall blockage challenging.[5] All of this has resulted in the development of innovative techniques of post-operative pain treatment. There is a need for a new localised analgesic approach that is easy, dependable, and effective.

The abdominal wall incision is a significant source of discomfort for people following abdominal surgery. The nerves that feed the anterior abdominal wall run between the internal oblique and transverses abdominis muscles in the neurofascial plane.[6] It is feasible to block the sensory nerves of the anterior abdominal wall before they leave this plane and pierce the muscle to innervate the whole anterior abdominal wall on that side by administering local anaesthetic into the transverses abdominis plane through petit triangle.

TAP Block as part of a multimodal analgesic regimen might reduce opioid intake while also improving analgesia. In this study, the efficacy of Transversus abdominis plane (TAP) block in delivering postoperative analgesia in caesarean section as well as its opioid sparing effect was assessed.

Materials and Methods

Type of Study: Random Cross-sectional study

Sample size: 80 patients with 40 patients each in Group

Inclusion Criteria

Patients with

- Primigravida
- ASA I

Exclusion Criteria

Patients with

- ASA II
- Other than primigravida
- Unwilling to participate in the study

80 primigravida ASA 1 status, undergoing LSCS were recruited in this prospective randomized study.

They were divided into two groups ,group R ropivacaine ,who received 20 ml 0.2% ropivacaine, and group L patients who received 20ml 0.25% of levobupivacaine via TAP block under ultrasound guidance.

Postoperative pain was assessed using the visual analog scale upon arriving at the recovery room ,just prior to being discharge to ward and at 6hrs,12 hours,18hrs,and 24hrs postoperatively to compare the effectiveness of analgesia.

Statistical analysis: The SPSS 22 software was used to do the statistical analysis. The data was presented in the form of tables with means and percentages.

Observation and Results

A total of 80 patients were divided into 2 groups of 40 patients each

Table 1: Distribution based on Age group

Age Group	Group - R		Group - L	
	Frequency	Percentage	Frequency	Percentage
18 to 25	28	70%	30	75%
26 to 35	12	30%	10	25%
Total	**40**	**100%**	**40**	**100%**

Group A: Majority of the patients belonged to the 18 to 25 yrs age group with 70% and 30% belonged to the 26 to 35 yrs age group. The mean age was 27.72 + 2.56 yrs.

Group B: Majority of the patients belonged to the 18 to 25 yrs age group with 75% and 25% belonged to the 26 to 35 yrs age group. The mean age was 28.58 + 3.41 yrs.

Table 2: Distribution based on various parameters

Parameters	Group - R	Group - L	T-value	p-value
Height	157.72 + 5.73	158.34 + 5.80	0.880	0.380
Weight	56.22 + 6.59	57.88 + 7.64	-0.240	0.810
Duration of Surgery	35.85 + 2.476	35.53 + 2.837	-0.546	0.785
Duration of analgesia	8.16 + 0.36	10.94 + 0.62	0.329	<0.001
Mean consumption of diclofenac	150.77+14.90	75.88+28.77	0.421	<0.005

Group A: The mean Height was 157.72 ± 5.73 cms, The mean weight was 56.22 ± 6.59 kgs, the mean duration of surgery was 35.85 ± 2.476 minutes and duration of analgesia was 8.16±0.36hrs. Mean consumption of diclofenac was 150.77±14.90mg

Group B: The mean Height was 158.34 ± 5.80 cms, The mean weight was 57.88 ± 7.64 kgs, the mean duration of surgery was 35.53 ± 2.837 minutes, and duration of analgesia was 10.94±0.62hrs. mean consumption of diclofenac was 75.88±28.77 mg.

Table 3: Distribution based on mean vital parameters

Vital parameters	Group - R		Group - L	
	0 mins	30 mins	0 mins	30 mins
SBP	125.52 ± 8.21	117.44 ± 8.99	125.38 ± 7.95	114.6 ± 4.40
DBP	79.62 ± 6.50	76.2 ± 4.2	80.16 ± 6.42	75.52 ± 4.68
PR	80.6 ± 7.54	77.98 ± 5.87	80.74 ± 7.87	77.08 ± 5.55
MAP	95.01±5.89	89.75 ± 4.89	95.21 ± 5.85	89.05 ± 3.89

The mean SBP, DBP, PR and MAP decreased significantly across both the groups from 0 to 30 minutes, with slightly better improvement in Group-L.

Table 4: Distribution based on VAS

Time	Groups	N	Mean	S.D	Z-value	P-value
6 hours.	R	40	2.28	1.021	1.802	0.072
	L	40	1.64	1.524		
12 hours.	R	40	2.96	.554	3.524	0.0005
	L	40	2.16	.841		
18 hours.	R	40	2.12	.600	0.729	0.466
	L	40	2.00	.577		
24 hours.	R	40	1.76	.690	0.660	0.509
	L	40	1.68	.523		

The visual analogue scale shows significant values in (Group A) and (Group B) in 12 hours of the post-operative period. with 0.0005 is the p-value.

Table 5: Distribution based on post-op complications

Post-op complications	Group - R	Group - L	Total
Bradycardia	0	0	0
Nausea & vomiting	2	0	2
Hypotension	0	0	0

Conti.. Table 5: Distribution based on post-op complications

Post-op complications	Group - R	Group - L	Total
Sedation(>3)	1	0	1
Respiratory depression	2	0	2

Post-op complications were seen more in Group – R compared to Group – L

Discussion

The pain experienced following a caesarean section is frequently significant. Effective analgesia has been demonstrated to minimise postoperative stress and speed recovery, early ambulation, newborn care (including breast feeding and maternal-infant bonding), and caesarean section postoperative morbidity prevention. Local anaesthetic treatments are widely known for improving the quality of postoperative recovery by lowering pain and analgesic requirement.[7]

TAP block can be used during a Caesarean section performed under regional anaesthesia. Injecting during the postoperative phase saves time in the operating room, and the neonate has already been born and is not at risk.[8] As a result, at the conclusion of surgery, we did a TAP block. Although the Transversus Abdominis Plane Block plays an important function in abdominal procedures as an analgesic, it is not well understood. In our research, we show that it has potential efficacy in lowering pain ratings and opiate use in patients receiving lower segment caesarean section for the first 48 hours. Under ultrasound guidance, we performed a transversus abdominis plane block. McDonnell et al. assessed the efficiency of TAP block with ropivacaine for postoperative analgesia in caesarean deliveries conducted under spinal anaesthesia, and they discovered that TAP block significantly reduced pain score and 48-hour morphine consumption.[9]

Sirvasta et al. conducted a randomised double-blind study on 62 pregnant women scheduled for caesarean delivery to evaluate the role of TAP block as a component of multimodal postoperative analgesia. They discovered that the TAP block significantly decreased pain score at all study times during rest and movement, as well as decreased parturients tramadol consumption through patient controlled analgesia.[10]

There were several limitations to this study. The sample size was sample to establish the block's safety. Furthermore, the participants were not followed up on for the occurrence of chronic pain over a long period of time.

Conclusion

TAP block is a component of multimodal analgesia that offers extremely effective postoperative analgesia in the first 24 hours after caesarean sections. The TAP block with Levobupivacaine as a multimodal analgesic regimen with i.m. Diclofenac as the standard analgesic resulted in a superior analgesic effect with a lower postoperative VAS score, lower mean opioid consumption, and a longer time before the first request for rescue analgesia, all without complications.

Ethical Clearance: Ethical Clearance was obtained from the institutional ethics committee of Bhaskar Medical College prior to the commencement of study.

Source of funding: Self

Conflict of interest: Nil

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