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Comparative evaluation of 0.25% Levobupivacaine and 0.25% Ropivacaine in Transversus abdominis Plane block for postoperative analgesia following lower segment caesarean section.

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Abstract *:Lower segment caesarean section is one of most common surgeries among parturient women and pain management is very important among them, as they have to nurse the newborns .Use of opioid analgesics, despite good performance has their share of side effects. Aim of our study was to evaluate the effect of 0.25% Levobupivacaine and 0.25% Ropivacaine in Transversus abdominis plane block for postoperative analgesia after caesarean delivery .METHOD – 60 Parturient of ASA class I-II scheduled for elective/emergency caesarean section were enrolled in our study and randomly divided into two groups. Group A-received 20ml 0.25%Levobupivacaine in TAP block on each side, Group B-received 20ml 0.25%Ropivacaine on each side .RESULTS- Both the groups were comparable in demographic data .Reduction of VAS score was comparable in both groups(P>0.05).Requirement of Rescue analgesia in postoperative period was similar in both groups .CONCLUSION-TAP blocks can be regarded as new technique in approach to provide analgesia following caesarean section.*

Keywords*: TAP BLOCK, ANALGESIA, CAESAREAN,LEVOBUPIVACAINE,ROPIVACAINE .*

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I. Introduction

Women following Caesarean delivery need to be comfortable in order to care for their Newborn. Opioids are routinely used to achieve effective postoperative analgesia. However, opioids are associated with dose-dependent side-effects and can hamper nursing of newborn.

Transversus abdominis plane block (TAP block) is a regional technique [1] where abdominal wall neural afferents are blocked by depositing local anesthetic into the neurofascial plane **between internal oblique and transversus abdominis muscle**. It is gaining popularity as an alternative to opioids due to less side effects and the simple method .

TAP block can be studied for postoperative analgesia and provides analgesia to parietal peritoneum as well as skin and muscles of anterior abdominal wall.

II. Material/methods

Source of data: Parturient posted for elective/emergency caesarean section in Indira Gandhi Institute In Of Medical Science, Patna.

Method of collection of data : After approval from the institutional ethical committee and written informed patients consent 60 Parturient were included in the study.

Mode of selection of cases : Randomised computer sampling technique

Group A :TAP Block with 0.25% Levobupivacaine 20 ml each side

Group B : TAP Block with 0.25% Ropivacaine 20 ml each side.

Technique: anatomical landmark-based approach

The skin should be pierced just cephalic to the iliac crest over the triangle of Petit with a blunt 18 gauge Tuhoy needle after infiltration with 2% lignocaine.

The thoracolumbar nerve roots of T7-L1, which course in a plane between the transversus abdominis and internal oblique muscles, provide sensory innervation of the skin, muscles, and parietal peritoneum of the anterior abdominal wall.

Intraoperative:
All patients received a standardized spinal anaesthesia with 0.5 % hyperbaric Bupivacaine 2.2 ml without any with 25 G Quinckie's needle at L 3-4 spinal interspace.
Routine intraoperative monitoring was done for all parturient.
At end of surgery Petit's triangle was identified on both side above the iliac crest between the fibres of external oblique and latissimus dorsi muscles.
In Group A 20 ml of 0.25% of Levobupivacaine injected on either side and Group B 20 ml of 0.25% of Ropivacaine injected on either side .
The patient was observed for 15 minutes and then shifted to post-anaesthesia care unit.

Postoperative:
The presence and severity of pain, nausea, vomiting and any other side effects were assessed for all patients in both groups. These assessments were performed in the PACU at 30 minutes 2, 4, 6, 12 and 24 hrs postoperatively.
All patients were asked to give scores for their pain according to VAS score.
Pain severity was measured using visual analog scale, first described by Bond MR and Pilowsky [2] (VAS, 10 cm unmarked line in which 0 cm = no pain and 10 cm=worst pain imaginable).

Rescue analgesia was given for VAS ≥ 4 , in the form of Tramadol 2mg/kg intravenously for Pain .
Nausea & Vomiting was assessed & patients were given score acc to nausea & vomiting score described by McDonnell et al.
0-No nausea/ vomiting
1- Nausea in post operative period
2- Vomiting in post operative period
Rescue antiemetic were given for any patient who complained of nausea. Signs of any side effects were recorded.
Statistical analysis: Statistical analyses was performed using the SPSS version 18.0 , ANOVA , chi-2 or student's t test were used for analyses. Significance defined as $p<0.05$.

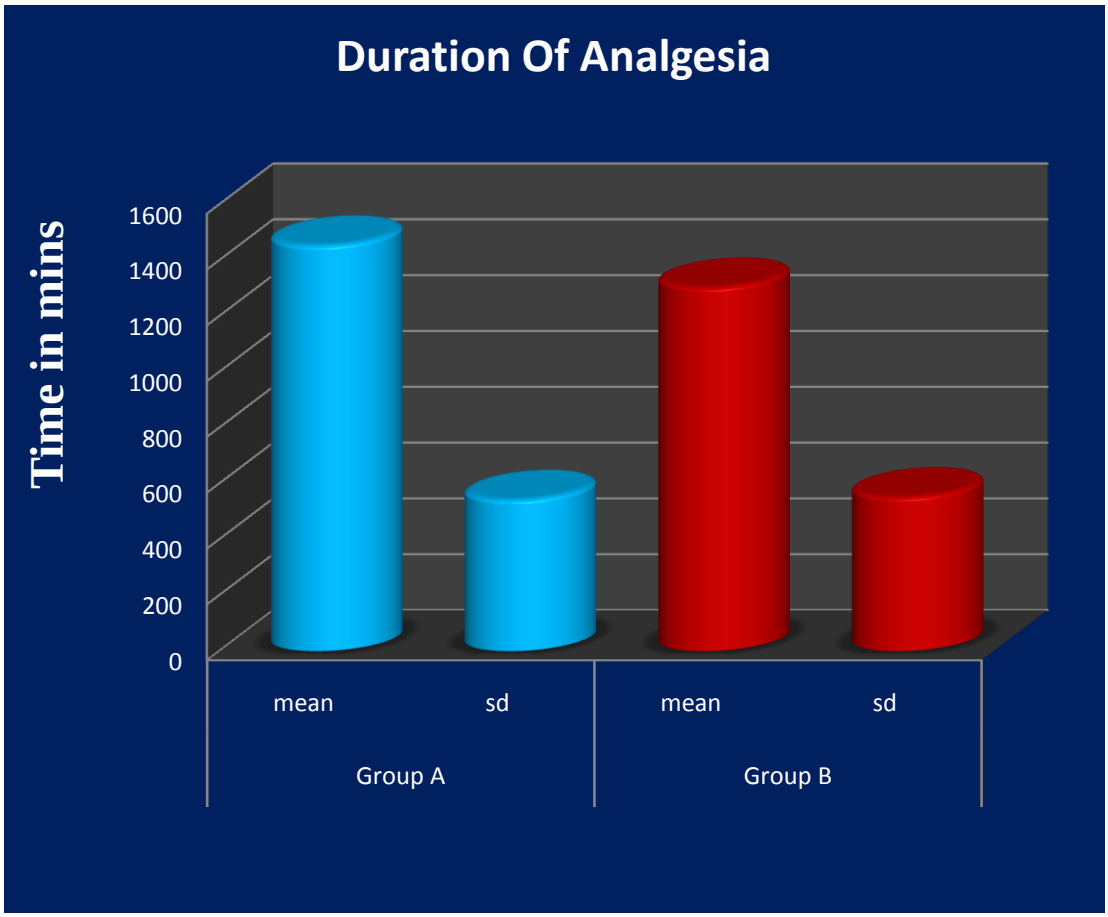
III. Results

Demographic Data: The mean age (mean ± S.D.) in Group A was 25.7 ± 3.03 yrs and in group B was 25.2 ± 4.373 yrs. The groups were comparable in terms of age (p =0.60).
The mean height was 158.33 ± 5.005 cm in group A and 157.60 ± 5.506 cm in group B. The groups were comparable in terms of height. (p=0.591).
The mean weight was 62.40 ± 5.15 kg and 62.13 ± 5.17 kg respectively in group A and group B which was not statistically significant (p=0.842)
Postoperative Pain: The mean VAS score in group A at 30 minutes , 2,4,6,12 and 24 hours were 0.33±0.88 , 0.66±1.09 , 0.86±1.27 , 1.1±1.47 , 0.9±1.29 and 0.3±0.74 respectively .The mean VAS score in group B at 30 minutes , 2,4,6,12 and 24 hours were 0.36±0.88 , 0.93±1.08 , 1.40±1.35 , 1.83±1.44 , 1.26±1.22 and 0.7±0.91 respectively .The difference in mean VAS score was less at all time interval in group A but was not significant . (p>0.05)

VAS (Mean±S.D.)	**30 mins**	**2 hrs**	**4 hrs**	**6 hrs**	**12 hrs**	**24 hrs**
Group A	0.33±0.88	0.66±1.09	0.86±1.27	1.1±1.47	0.9±1.29	0.3±0.74
Group B	0.36±0.88	0.93±1.08	1.40±1.35	1.83±1.44	1.26±1.22	0.7±0.91
P value	0.88	0.34	0.12	0.055	0.26	0.06

Table : VAS scores in both groups at different time interval.

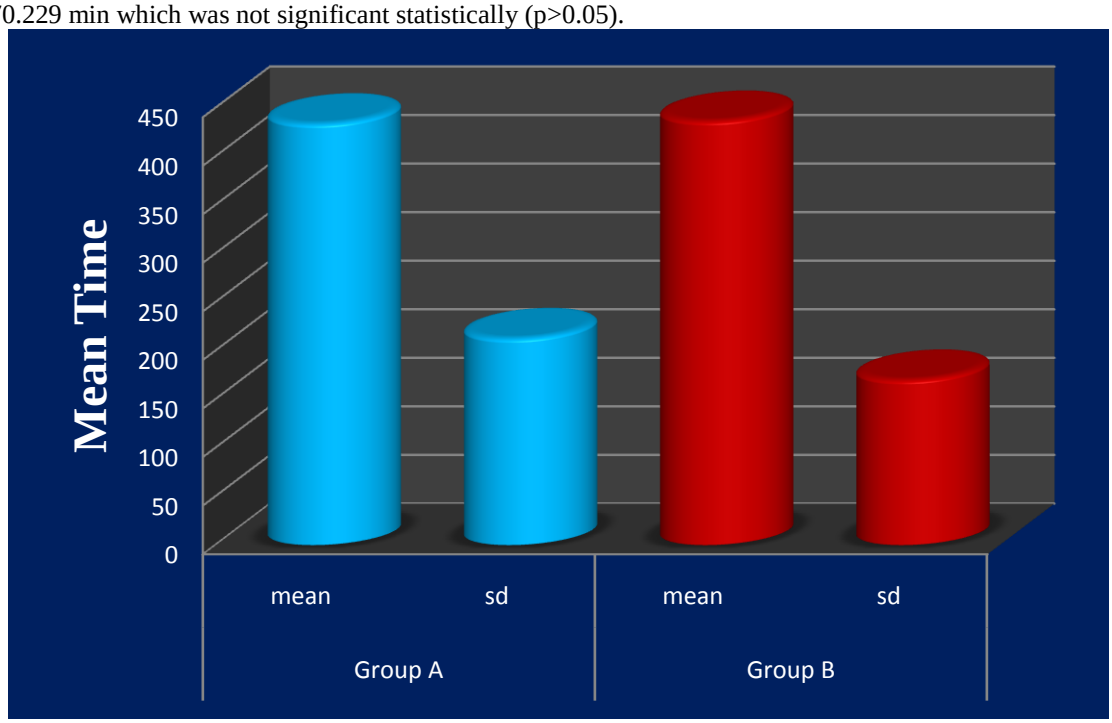
Duration of Analgesia: The mean duration of analgesia was 1454.266 (24 hrs) minutes with standard deviation of ± 542.798 (9 hrs) in Group A and 1303.833 (22 hrs) minutes with a standard deviation of ± 552.447 (9 hrs 20 minutes) in Group B. which was insignificant. P value was >0.05.



Graph : Mean duration of analgesia(minutes) in both groups

Mean Time to First Rescue Analgesia

The mean time to first rescue analgesia in Group A was 434.166 ± 213.035 min and in Group B it was 436.875 ± 170.229 min which was not significant statistically (p>0.05).



Graph: Mean time to first rescue analgesia in both groups.

Postoperative Nausea And Vomiting: The incidence of nausea at 30 mins , 2 & 4 hours were found in 17% , 7% and 7% of patients in Group A and 27%, 17% and 10% of patients in Group B respectively . There was no nausea in any patient of either group at 6, 12 and 24 hours. The incidence of nausea was found to be comparable (p>0.05) between two groups at all time interval . There was no incidence of vomiting in any patient in 24 hours period. None of the patient in either group required rescue antiemetic.

N/V Score	30 mins		2 hours		4hours		6hours		12 hours		24 hours	
	Group A	Group B	Group A	Group B	Group A	Group B	Group A	Group B	Group A	Group B	Group A	Group B
0	83%	73%	83%	83%	93%	90%	100%	100%	100%	100%	100%	100%
1	17%	27%	17%	17%	7%	10%	0%	0%	0%	0%	0%	0%
2	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
P value	0.347		1.0		0.640							

Table : Percentage of Patients with Postoperative Nausea And Vomiting

Postoperative Nausea And Vomiting : The incidence of nausea at 30 mins , 2 & 4 hours were found in 17% , 7% and 7% of patients in Group A and 27%, 17% and 10% of patients in Group B respectively . There was no nausea in any patient of either group at 6, 12 and 24 hours. The incidence of nausea was found to be comparable (p>0.05) between two groups at all time interval . There was no incidence of vomiting in any patient in 24 hours period. None of the patient in either group required rescue antiemetic.

N/V Score	30 mins		2 hours		4hours		6hours		12 hours		24 hours	
	Group A	Group B	Group A	Group B	Group A	Group B	Group A	Group B	Group A	Group B	Group A	Group B
0	83%	73%	83%	83%	93%	90%	100%	100%	100%	100%	100%	100%
1	17%	27%	17%	17%	7%	10%	0%	0%	0%	0%	0%	0%
2	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
P value	0.347		1.0		0.640							

Table : Percentage of Patients with Postoperative Nausea And Vomiting

IV. Discussion

The principal finding of our study is that 0.25% Levobupivacaine and 0.25% Ropivacaine are equally effective in TAP block and provides effective postoperative analgesia in patients undergoing Lower Segment Caesarean Section . Our study data were comparable in both the groups in terms of demographic data , Post op analgesia , vas score , nausea / vomiting or any other side effects.

We have found the superiority of TAP block in providing immediate postoperative analgesia reflected by a lower VAS score. Our finding is consistent with **McDonnell et al.**[3] found that TAP block, as a component of a multimodal analgesic regimen, provided superior analgesia when compared with placebo block up to 48 postoperative hours after elective caesarean delivery. **Carney et al.**[4] in Total abdominal hysterectomy found that anatomical TAP block significantly reduces postoperative pain scores up to 48 h period. Similar to our study **Kocum A, Turkoz A et [5] al.** also compared efficacy of Ropivacaine 0.25% and Bupivacaine 0.25% in Lumbar Plexus and Sciatic Nerve Block and found that Ropivacaine 0.25% and Bupivacaine 0.25% are equally efficacious in providing analgesia as well as surgical anaesthesia . Further, the blockade achieved by either drug was of similar quality and provided similar duration of postoperative analgesia.

V. Conclusion:

From our study it can be conclude that 0.25% Levobupivacaine and 0.25% Ropivacaine are equally effective in TAP block and provides effective postoperative analgesia.Both the groups are comparable in demographic data and other parameters of our study .This block helps to facilitate early ambulation, infant care and minimum side effects for mother and child. Studies have shown that the consumption of intravenous opioids has been reduced with use of this block, resulting in fewer opioid-mediated side effects. Limited data also suggest that TAP blocks/catheters may provide comparable analgesia as well as patient satisfaction to epidural therapy.

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