

# A Prospective Study Comparing Post Cesarean Analgesia of Transversusabdominis Plane Block Using 0.25 % Ropivacaine, 0.25 % Ropivacaine with Dexmedetomidine and 0.25 % Ropivacaine with Clonidine

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**Abstract:** ***Introduction:** Postoperative pain control after cesarean delivery (CD) is an important issue for patients and health care providers. The plan for analgesia after CD must facilitate bonding between the mother and her neonate and allow safe breastfeeding. **Methods:** Patients admitted to GSL medical college undergoing elective and emergency (where no maternal and fetal compromise exists) lower segment cesarean section were included in the study after ethical committee clearance and informed written consent. **Results:** The total dose of Inj. Ketorolac used in 24hours in Group II was  $39.6 \pm 14.3\text{mg}$ ; in Group III was  $81.6 \pm 18.4\text{mg}$ ; and in Group I was  $94.8 \pm 16.6\text{mg}$ . There was a statistically significant difference between the three groups ( $p < 0.0001$ ). Group II had the lowest analgesic consumption in 24 hours and this was statistically significant when compared to Group III ( $p < 0.0001$ ) and Group I ( $p < 0.0001$ ). **Conclusion:** To conclude TAP block is a safe and effective way of relieving postoperative pain in LSCS patients and addition of dexmedetomidine to ropivacaine significantly enhances its effect in terms of block quality and duration of analgesia. Also addition of dexmedetomidine to ropivacaine in TAP block reduces the overall analgesic consumption in a multimodal approach to pain when compared to plain ropivacaine or clonidine addition to TAP block.*

**Keywords:** Postoperative pain, analgesia, the mother and her neonate, lower segment cesarean section, Inj. Ketorolac, TAP block, dexmedetomidine, ropivacaine, duration, clonidine, ethical committee, written consent

## 1. Introduction

Postoperative pain control after cesarean delivery (CD) is an important issue for patients and health care providers. The plan for analgesia after CD must facilitate bonding between the mother and her neonate and allow safe breastfeeding. These goals are achieved through multimodal analgesia, which for most patients is based on the use of long - acting neuraxial opioids, while minimizing the use of systemic opioids. Early recovery is especially important for a patient who is expected to take care of her newborn shortly after an operative procedure.

The present study compared the effects of plain 0.25 percent ropivacaine; 0.25 percent ropivacaine with dexmedetomidine and 0.25 percent ropivacaine with clonidine in Transversus abdominis plane block for post cesarean section analgesia.

### Aims and objectives:

To compare the effects of plain 0.25 percent ropivacaine; 0.25 percent ropivacaine with dexmedetomidine and 0.25 percent ropivacaine with clonidine in Transversus abdominis plane block for post cesarean section analgesia.

### Primary objective:

1) 24hours analgesic consumption

### Secondary objective:

2) Time of first request for analgesia

3) Quality of analgesia (VAS score)

4) Complications: Nausea, Sedation in mother and other complications like local anesthesia toxicity, visceral injury, hematoma, peritonitis.

## 2. Material & Methods

Patients admitted to GSL medical college undergoing elective and emergency (where no maternal and fetal compromise exists) lower segment cesarean section were included in the study after ethical committee clearance and informed written consent.

## 3. Study Design

A prospective, randomized double blind comparative study Patients were allotted to one of the three groups based on a computer generated random numbers table.

**Group I:** Patients receiving 20cc plain 0.25percent ropivacaine plus 1ml normal saline on each side bilaterally.

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**Group II:** Patients receiving 20cc 0.25percent ropivacaine each side with dexmedetomidine (1µg/kg - diluted to 2ml and 1ml to each side) bilaterally.

**Group III:** Patients receiving 20cc 0.25percent ropivacaine each side with clonidine (1µg/kg - diluted to 2ml and 1ml to each side) bilaterally.

#### Inclusion criteria:

Non - laboring women who have consented for elective cesarean section under spinal anaesthesia, Laboring women (where no maternal or fetal compromise existed) under spinal anaesthesia, Age between 18 to 45 years, BMI<40, ASA physical II/III.

#### Exclusion criteria:

Patient refusal, Abnormal coagulation profile, Allergy (to local anaesthetics, clonidine / dexmedetomidine), Contraindications for neuraxial anaesthesia, History of severe chronic pain, Patients who complained of severe pain (VAS ≥7) within 2hours of TAP block administration or who required rescue analgesia in less than 6 hours interval of rescue analgesic administration are termed as failed block and excluded from the study.

## 4. Results

24 hours total analgesic consumption

Group	24 hours analgesic consumption	
	Mean	SD
Group I	94.8	16.6
Group II	39.6	14.3
Group III	81.6	18.4
'p' for		
I, II & III	<0.0001 Significant	
I & II	<0.0001 Significant	
I & III	0.0106 Significant	
II & III	<0.0001 Significant	

The total dose of Inj. Ketorolac used in 24hours in Group II was 39.6±14.3mg; in Group III was 81.6±18.4mg; and in Group I was 94.8±16.6mg. There was a statistically significant difference between the three groups (p<0.0001). Group II had the lowest analgesic consumption in 24 hours and this was statistically significant when compared to Group III (p<0.0001) and Group I (p<0.0001).

#### Variations in Mean arterial Pressure:

Group II had lower mean arterial pressure at 2nd and 4th postoperative hours when compared to Group I (p<0.0001) and Group III (p<0.05) separately and this was statistically significant. But this lower mean arterial pressure required no treatment.

#### Variations in Heart Rate:

Group II (dexmedetomidine) had lower heart rate at all post operative points upto 6 hours except the 0 hour and this was statistically significant when compared to Group III (p<0.0001) and Group I (p<0.0001) separately. However this lower heart rate required no treatment.

Group III (clonidine) had lower heart rate when compared to Group I (plain ropivacaine) only (p<0.0001) for upto 6 postoperative hours starting from 2<sup>nd</sup> postoperative hour. The incidence of nausea in Group I was 4.0%; Group II was 8%; Group III was 12%. The incidence of retching in Group I was 8.0%; no patient in Group II developed retching and it was 8.0% in Group III. Only one patient (4%) in Group III had vomiting. Antiemetic medication was used in 2 patients (8%) in Group I; 3 patients (12%) in Group III. When all the three groups were compared for the incidence of post operative nausea and vomiting it was statistically insignificant against each other (p>0.05).

## 5. Discussion

All the three groups were comparable demographically with respect to their age, weight, height and surgical duration as there was no statistically significant difference among the groups (p>0.05). All the three groups were comparable hemodynamically as there was no statistically significant difference in the heart rate, mean arterial pressure and oxygen saturation before administration of Transversus abdominis plane block (p>0.05).

#### 24 Hours analgesic consumption

Group II had almost 58% dose reduction in 24 hours analgesic consumption when compared to group I whereas group III had only 14% dose reduction on comparison to group I.

#### Time for first analgesic request

The time of first analgesic request was longer in Group II (dexmedetomidine) (435.2±101.5mins) when compared to Group III (clonidine) (278.1±36.8mins) and Group I (plain ropivacaine) (191.1±26.6mins).

#### Visual Analog Scale at rest and mobility

In our study Post operative mean VAS scores at rest and mobility were reduced at all postoperative points in Group II (dexmedetomidine), this was statistically significant when compared to Group III (clonidine) and Group I (plain ropivacaine) (p<0.05).

## 6. Conclusion

To conclude TAP block is a safe and effective way of relieving postoperative pain in LSCS patients and addition of dexmedetomidine to ropivacaine significantly enhances its effect in terms of block quality and duration of analgesia. Also addition of dexmedetomidine to ropivacaine in TAP block reduces the overall analgesic consumption in a multimodal approach to pain when compared to plain ropivacaine or clonidine addition to TAP block.

Thus, TAP block becomes an important component of multimodal analgesia for post LSCS pain relief and dexmedetomidine addition when compared to clonidine or plain ropivacaine is a safe and effective adjunct to decrease the consumption of additional analgesics, to increase the block quality and duration without any significant adverse effects to mother or baby.

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