

A COMPARITIVE STUDY TO DETERMINE THE EFFICACY OF SURGEON ADMINISTERED OPEN WOUND TAP BLOCK VERSUS STANDARD ANATOMICAL TAP BLOCK

Archana Mehra¹, Neelam Sharma², Urmila Palaria³, Namrata Gupta⁴

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Corresponding Author:

Dr. Neelam Sharma

Email: neelighata@gmail.com

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¹3rd year Postgraduate Resident, Department of Anesthesiology, critical care, pain and palliative medicine, government medical college, Haldwani, Uttarakhand, India

²Assistant Professor, Department of Anesthesiology, Critical Care, Pain and Palliative Medicine, Government Medical College, Haldwani, Uttarakhand, India

³Professor and Head, Department of Anesthesiology, Soban Singh Jeena Government Institute Of Medical Sciences and Research, Almora, Uttarakhand, India

⁴Assistant Professor, Department of Anesthesiology, Critical Care, Pain and Palliative Medicine, Lokmanya tilak municipal general hospital and medical college, Mumbai, Maharashtra, India

Abstract

Background: The rates of Cesarean delivery (CS) have increased in the present time and postoperative pain is of great concern, affecting postoperative recovery and bonding with the new born. Multimodal analgesia (MMA) is recommended for providing effective pain relief after CS. MMA regimes including regional anesthesia techniques such as nerve block and local infiltration have been suggested to reduce opioids and non-steroidal anti-inflammatory associated side effects. Transversus abdominis plane (TAP) blocks are a widely used regional anesthetic procedure that introduces local anesthetics into the neurovascular plane via the 'Triangle of Petit'. **Materials and Methods:** This was a prospective comparative study conducted on 58 ASA grade II patients undergoing cesarean section, divided into two groups, O and T (29 in each group). In group O, patient received 20 ml of 0.25% bupivacaine with 4 mg dexamethasone bilaterally through open wound after closure of peritoneum in between the muscle layer in a fan shaped manner. Group T, received 20 ml of 0.25% bupivacaine with 4 mg dexamethasone bilaterally through standard anatomical TAP block. Pulse rate, mean blood pressure and oxygen saturation were monitored every 5 min during the intraoperative phase until the patient shifted out of the OT, then in immediate postoperative period hourly for first three hours, then three hourly after the completion of surgery for upto 24 hours. Pain was assessed using the VAS score at above mentioned intervals. **Result:** It was observed that post operative pain relief was better in group O patient and need for rescue analgesia was more in group T patients. **Conclusion:** Open wound TAP block, administered by surgeon's provides long lasting analgesia with lesser requirement of postoperative rescue analgesics in first twenty-four hours after surgery.

INTRODUCTION

Cesarean Section (CS) is the most commonly done surgery among women in the fertile age group.^[1] The rate of Cesarean delivery has increased in the present time and postoperative pain is of great concern for women, affecting postoperative recovery and bonding with the new-born. The reported incidence of pain after the CS varies from 77.4 to 100% postoperatively.^[2] Inadequately treated pain can lead to chronic pain and post-traumatic stress syndrome.^[3] High patient to paramedic's ratios in developing countries, often

also result in inadequate pain assessment and management.^[4]

In the present era, Enhanced recovery after Cesarean section (ERAC) is a multi-disciplinary, evidence-based approach. The aim is to enhance and improve maternal and neonatal outcomes. ERAS society also recommends a multi-modal, opioid-sparing stepwise analgesic approach as the first-line therapy after the CS.^[5] Well-established side effects of opioids, NSAIDs circumvent their extensive use and acquisition of alternative strategies to decrease opioid consumption postoperatively.^[6] Multimodal analgesia (MMA) is now recommended for providing effective pain relief after CS.^[6] MMA

regimes including regional anesthesia techniques like nerve block and local infiltration have been suggested to reduce opioids and non-steroidal anti-inflammatory associated side effects.

First introduced in 2001, transversus abdominis plane (TAP) blocks are a widely used regional anesthetic technique that introduces local anesthetics into the neurovascular plane via the 'Triangle of Petit'.^[7] This procedure blocks the sensory nerves of the anterolateral abdominal wall, T6-L1, that innervate the abdomen.^[8]

MATERIALS AND METHODS

A double blinded randomised control study. Total 58 cases were randomized into two groups using computer generated random numbers:

- Group T (patients undergoing Standard anatomical Landmark based TAP block)
- Group O (patients undergoing open wound TAP block)

Inclusion Criteria

Women of ASA I & II, posted for cesarean section

Exclusion Criteria

1. Patient refusal for consent.
2. ASA grade III and IV
3. History of allergy to proposed/used drugs in the study.
4. Patient with chronic pain history.
5. Patient with any Contraindication of spinal anesthesia
6. Morbid obesity
7. Local infection at the site of block administration

Following approval from Institutional Ethics Committee, informed written consent was taken from all patients included in the study. IV fluid Ringer's lactate solution was infused at a rate of 10ml/ Kg over 20 minutes before spinal anesthesia. On arrival to the operation theatre, standard non-invasive ASA monitors were attached including non-invasive blood pressure (NIBP), pulse-oximetry (SpO₂), electrocardiogram ECG, Pulse Rate (PR) and temperature. Spinal anesthesia was given to the patient using BD Quincke 25G spinal needle, 2ml of 0.5% bupivacaine(H) was given intrathecally to all patients in L4 –L5 intervertebral space in sitting position after confirming free flow of CSF. Patients were divided into 2 groups having 29 patients each as mentioned above. Level of motor and sensory blockade was noted.

At the end of surgery, one group participants (Group T) received 20 ml of bupivacaine 0.25% bilaterally in TAP block (total 40 ml) and dexamethasone 4 mg bilaterally. In this approach, the lumbar triangle of Petit was identified. A needle was inserted perpendicular to the skin just cephalad to the iliac crest near the midaxillary line. The TAP was identified using a 2-pop sensation (loss of resistance). The first pop indicates penetration of the

fascia of the external oblique muscle, and the second indicates penetration of the fascia of the internal oblique muscle. Local anesthetic is then injected with multiple aspirations.

Other group (Group O) received 20 ml of 0.25% bupivacaine (total 40 ml) and 4mg dexamethasone (surgeon administered TAP block through open wound after closure of peritoneum). In open TAP block, drug was infiltrated bilaterally around the incision in fan shaped manner between the muscle layer.

Patient remained blinded to the type of block administration Postoperative pain assessment was done by blinded observer (Double Blinding). Local anesthetic being used was prepared by anesthetist not involved in study.

Pulse rate, mean blood pressure and oxygen saturation was monitored every 5 min during the intraoperative phase until the patient shifts out of operation theatre, then in immediate postoperative period, then hourly for first three hours and then three hourly after completion of surgery upto 24 hours

The pain scores were assessed using the Visual analog score (VAS score) ranging from 0 to 100 mm (0-4mm no pain, 5-44 mild pain, 45-74 moderate pain and 75-100 worst pain ever) recorded in the immediate postoperative period and then hourly for first three hours and then three hourly upto 24 hours. The first request of rescue analgesia and total 24 hour consumption was noted. Every patient received intravenous injection paracetamol 15 mg/kg TDS. First rescue analgesia was intravenous injection diclofenac 1mg/kg SOS. Patients were explained about VAS.

Patient satisfaction was assessed by questionnaire in preoperative and postoperative phase. Questionnaire includes following questions:

Preoperative

1. Do you think your surgery will be painful? Yes/No
2. Do you think your anesthesia will be painful? Yes/No
3. Are you anxious about your surgery? Yes/No

Postoperative

1. Was your needle insertion painful? Yes/No
2. Was your surgery painful? Yes/No
3. Were you anxious during surgery? Yes/No
4. Do you have nausea, back pain, incision pain now"? Yes/No

The primary outcome was to compare the VAS at rest and in movement between the two groups. The secondary outcome was to compare the first request of analgesia between the two groups, total rescue analgesic consumption over 24 hours, adverse reactions and patient's satisfaction.

RESULTS

No difference was observed between study groups with respect to hemodynamic parameters at baseline and also during the course of surgery (p>0.05).

Mean VAS score at rest was comparable between the two group for first 2 hours in the postoperative period ($p>0.05$). From 3rd hour mean VAS score was significantly less in cases with surgeon's administered open wound TAP block as compared to anatomical TAP block. The mean VAS score remained significantly lower till the 24 hour follow up period ($p<0.05$).

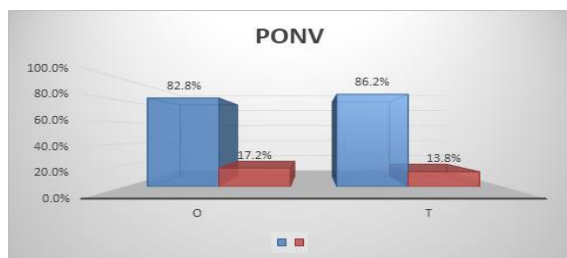
Mean VAS score at movement was comparable between the two group for first 2 hours in the postoperative period ($p>0.05$). From 3rd hour mean VAS score was significantly less in cases with surgeon's administered open wound TAP block as compared to anatomical TAP block. The mean VAS score remained significantly lower till the 24 hour follow up period ($p<0.05$).

A total of 8 cases (27.6%) in anatomical TAP group required rescue analgesics in first 24 hours of postoperative period as compared to only 3 cases (10.3%) in open TAP group ($p<0.01$).

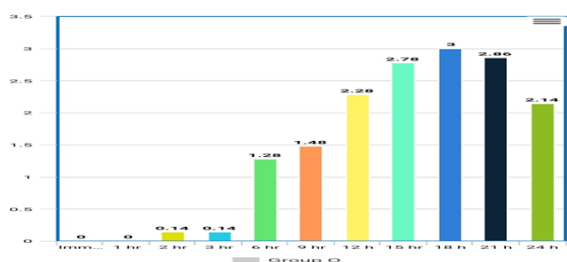
Incidence of postoperative nausea and vomiting was comparable in anatomical and open TAP groups (13.85 vs 17.2%; $p=1.0$).

Pre-operative subjective assessment regarding patients expectation for surgery was similar in both groups ($p>0.05$).

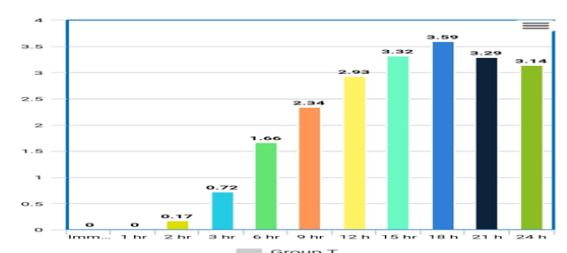
Postoperative subjective assessment showed that cases in open TAP experienced surgery to be less painful and have lesser needle pain, back pain and feeling of nausea in postoperative period ($p<0.05$).



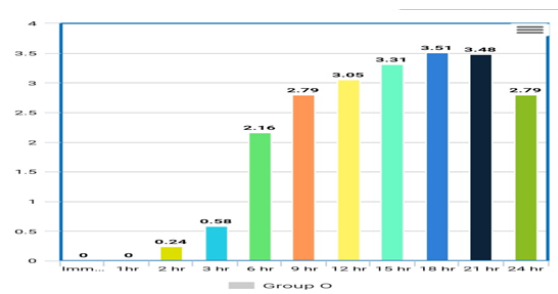
VAS at rest in group O



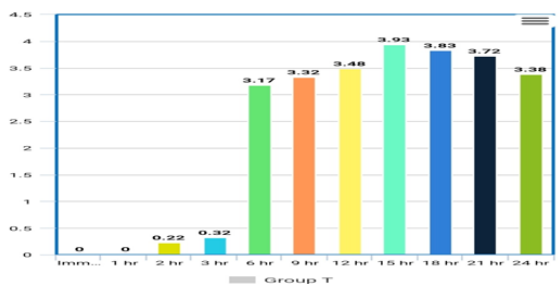
VAS at rest in group T



VAS at movement in group O



VAS at movement in group T



DISCUSSION

Incidence of postoperative nausea and vomiting was comparable in anatomical and open TAP groups (13.85 vs 17.2%; $p=1.0$). On comparing the two groups with regards to subjective well-being, we observed that cases in open TAP experienced surgery to be less painful and have lesser needle pain, back pain and feeling of nausea in postoperative period ($p<0.05$). Gasanova et al,^[9] compared the analgesic efficacy of TAP blocks with surgical site infiltration in patients undergoing open total abdominal hysterectomy. The pain scores at rest and with coughing were significantly lower in the surgical site infiltration group at all postoperative time points ($P < 0.0001$) except at rest in the post anesthetic care unit and opioid requirements between 24 and 48 hours were significantly lower in the infiltration group ($P = 0.009$), similar to this in our study VAS was less in group O patients than that of group T patients. Kaur B et al,^[10] in a similar study observed that median VAS was less in the TAP group compared to WI group and was statistically significant ($p=0.0032$). The mean time to first rescue analgesia was prolonged in group WI (4.060 ± 0.682 hrs) compared to group TAP (3.302 ± 0.519 hrs) ($P < 0.001$), similar to this in our study mean time for first rescue analgesia was more in group O than group T. To the best of our knowledge, not much studies are available in literature where subjective assessment regarding these two blocks has been made. Hence, we could not thoroughly compare this part of our observations with other previous literature. Contrary to our findings, Pratheeba N et al,^[11] study observed that both WSI and USG TAPB are effective in providing postoperative analgesia as a part of multimodal analgesia in lower abdominal

surgeries. However, postoperative VAS scores in Group TAP were significantly reduced from 30 mins onwards and total doses of rescue analgesics administered were also low in comparison to Group WSI ($p < 0.01$)

CONCLUSION

According to the observations made in the present study, surgeon's administered open wound TAP block is better than standard anatomical TAP block for postoperative pain management in females undergoing cesarean delivery. Open wound TAP block, administered by surgeon's provides long lasting analgesia with lesser requirement of postoperative rescue analgesics in first twenty-four hours after surgery.

REFERENCES

1. S Beiranvand M Noparast N Eslamizade S Saeedikia The effects of religion and spirituality on postoperative pain, hemodynamic functioning and anxiety after cesarean section. *Acta Med Iran.* 1014; 51(9):909-15
2. BL Sng AT Sia K Quek D Woo Y Lim Incidence, and risk factors for chronic pain after cesarean section under spinal anesthesia. *Anaesth Intensive Care.* 2009; 37(7):48-52
3. E Olde VD Hart R Kleber MV Son Posttraumatic stress following childbirth: a review. *Clin Psychol rev.* 1006; 16(1):1-6
4. IA Bagi ME Ahmed Postoperative pain and analgesic prescription in Khartoum: evaluation of current practice. *East Afr Med J.* 1993;70(5):12-15
5. ACOG committee opinion no. 741: postpartum pain management. *Obstet Gynecol.* 1018.
6. R Chou DB Gordon OA Leon-Casasola JM Rosenberg S Bickler T Brennan Management of postoperative pain: a clinical practice guideline from the American Pain Society, the American Society of Regional Anesthesia and Pain Medicine, and the American Society of Anesthesiologists' Committee on Regional Anesthesia, Executive Committee, and Administrative Council *J Pain.* 2016.
7. Abdominal field block a new approach via the lumbar triangle. Rafi AN. *Anesthesia.* 2001;56:1024–1026.
8. Addition of dexmedetomidine to bupivacaine in transversus abdominis plane block potentiates post-operative pain relief among abdominal hysterectomy patients: a prospective randomized controlled trial. Almarakbi WA, Kaki AM. *Saudi J Anaesth.* 2014;8:161–166.
9. Gasanova I, Alexander J, Ogunnaike B, et al. Transversus abdominis plane block versus surgical site infiltration for pain management after open total abdominal hysterectomy. *Anesth Analg.* 2015;121:1383–1388
10. Kaur B, Sharma LM, Choudhary R, Sharma R, Gupta L. Comparison of analgesic efficacy of transversus abdominis plane block with local wound infiltration using 0.25% levobupivacaine for post cesarean analgesia: A randomized controlled trial. *IJCA.* 2021.
11. Pratheeba N, Remadevi R, Raajesh II, Bhavani V, Tripathy DK, Bhat RR. Comparison of postoperative analgesic efficacy of wound site infiltration and ultrasound-guided transversus abdominis plane block with 0.5% ropivacaine in lower abdominal surgeries under spinal anesthesia. *Anesthesia, essays and researches.* 2018 Jan;12(1):80.