

EFFICACY OF TAP BLOCK AND PLACEBO FOR PAIN IN PATIENTS UNDERGOING C-SECTION SURGERY

Usman Khalid, Kaukab Majeed, Maihmoona Yasmeen, Khalid Mehmood, Muhammad Ali Muazzam, Jawad Rehmani

Combined Military Hospital Quetta/National University of Medical Sciences (NUMS) Pakistan

ABSTRACT

Objective: To compare efficacy of transversus abdominis plane block and placebo for pain in patients undergoing C-section surgery.

Study Design: Comparative cross-sectional study.

Place and Duration of Study: Department of Anaesthesiology, Combined Military Hospital Quetta, from Apr to Oct 2018.

Methodology: A sample size of 200 patients calculated by WHO calculator undergoing Elective C-section and of age 20-40 year were randomized in a double blind study to undergo transversus abdominis plane block or placebo group in two equal groups. Group A received block as placebo and group B with Bupivacaine. Results recorded and analysed there-after for conclusion.

Results: The mean age of patients in group A was 29.98 ± 5.18 years and in group B was 29.68 ± 5.43 years (p -value ≤ 0.01). Majority of the patients 141 (70.50%) were between 31 to 40 years of age. Out of 200 patients, 108 (54.0%) were ASA I and 92 (46.0%) were ASA II (p -value ≤ 0.01). Mean body mass index was 25.20 ± 2.28 kg/m² (p -value ≤ 0.01). Meantime for the first analgesia in the patients undergoing elective C-section in group A (placebo group) was 4.96 ± 1.44 hours while in group B (transversus abdominis plane block group) was 11.24 ± 1.83 hours (p -value ≤ 0.01).

Conclusion: This study concluded that meantime for the first analgesia was found longer in Transversus Abdominis plane block for post-operative pain management in patients undergoing elective C-section.

Keywords: Bupivacaine, Caesarean section, Transverse adominis plane block.

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INTRODUCTION

Pain after caesarean section is usually described as moderate to severe by most patients and failure to adequately treat may affect mother baby bonding, care of baby and breastfeeding. In order to relieve pain after surgery, local anesthetic infiltration (LAI) is commonly used as a traditional method¹. Opioids analgesics are also commonly used for pain relief in the immediate post operative period^{2,4}. Use of opioids in the immediate post operative period is associated with a number of side effects³. Postoperative pain and incidence of opioids related side effects can be effectively reduced by transversus abdominis plane block¹⁻³. Ultrasound-guided transversus abdominis plane block is a newer technique for

postoperative analgesia compared to other conventional techniques⁴⁻⁶.

Transversus abdominis plane block was first described by Rafi in 2001⁷. It is a desired anatomic location from where four peripheral nerves subcostal; ilioinguinal, iliohypogastric, and genitofemoral nerves pass through the abdominal wall between the transversus abdominis and the internal oblique. Transversus abdominis plane block is actually a field block in which local anesthetic is administered within an anatomical plane of the surgical site⁴ between transversus abdominis and internal oblique muscle⁷. Pain associated with an abdominal incision can be effectively reduced by transverses abdominis plane block which blocks neural afferents in the abdominal wall between T6 and L13-5. It is usually performed in a supine position. Transversus abdominis plane block provides both distal as well as localized field effects⁸.

Correspondence: Dr Muhammad Ali Muazzam, Combined Military Hospital, Quetta Pakistan

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Ultrasound guided TAP block provides better pain relief after laparoscopic cholecystectomy compared to port site infiltration¹⁰ and prolongs the time for first analgesic request in the early post-operative period⁹. The cost-effectiveness of anesthesia has also been found to be better in patients receiving TAP block¹¹.

The study was being conducted in our center for the first time to evaluate the benefits of TAP block in comparison to those not receiving TAP block so that it can be practiced, if found beneficial, for the better pain relief.

METHODOLOGY

After approval of hospital ethics committee, this comparative cross-sectional study was conducted in the Department of Anaesthesiology, Combined Military Hospital, Quetta, from April 2018 to October 2018. The study consisted of 200 patients with 100 patients in each group. The sample size was calculated by using WHO sample size calculator with following assumptions, mean time required of 1st analgesia in placebo group was 5.57 ± 1.7312 and in TAP block group = 12.25 ± 2.6112).

A total of 200 patients undergoing Elective C-section and of age 20-40 year were randomized in a double blind study to undergo TAP block or placebo group in two equal groups. Patients belonging to ASA I and II requiring elective caesarean via pfannentiell incision were included. Patient of <50 kg or >100 kg weight, with any contraindication to spinal anaesthesia or who were unable to understand numeric rating scale were excluded. Group A received block as placebo and group B with bupivacaine. Results recorded and analysed thereafter for conclusion. Patients who were unable to understand the Numerical Rating score and contra indication for spinal anesthesia were excluded. Analgesic in the form of injection Nalbuphine was dispensed, strictly on first demand by the patient using NRS and the time for first analgesic demand was noted.

Written informed consent was obtained from each patient included in the study. After explaining the purpose of the study and the advantages

and disadvantages of each technique used. Patients were selected from Gynae opd and pre-anesthesia clinic, randomly allocated to one of the two groups based on random number tables generated by a computer.

The group A patients who received TAP block with 22G spinal needle with 10ml normal saline bilateral (placebo) and group B patients who received TAP block with 22G spinal needle with 0.25% bupivacaine 10ml bilateral.

Spinal Anaesthesia was given by the same consultant having 5 years of experience, at least, and all patients have undergone the standard C section from the same Obstetrician. All patients received Metoclopramide (10mg) I.V. Each patient received spinal anesthesia with 1.5ml of 0.75% hyperbaric bupivacaine from the same manufacturer.

After surgery, each patient of group A received Ultrasound guided TAP Block with Placebo and group B received Ultrasound guided TAP Block with Bupivacaine by a researcher who is kept blind with the administration of drug or Placebo. In all patients surgical incision was covered with dressing and patient was shifted to Post Anaesthesia Care Unit (PACU) and monitored for postop pain for 24 hours.

Data were analyzed using Statistical Package for Social Science (SPSS) version 23. For quantitative variables like age, BMI, duration of surgery, Number of previous C-sections and time required for the first analgesia were presented as mean and standard deviation (SD). For qualitative variables like ASA status, was measured as frequency and percentages by using independent t-test if data show normal distribution, for nonparametric data Mann-Whitney U-test keeping p -value ≤ 0.05 as significant.

Effect modifier like age, body mass index, duration of surgery, number of previous C-sections and ASA status were controlled through stratification. Post-stratification independent t-test, for non-parametric data, Mann-Whitney U-test was applied to keep these values < 0.05 as significant.

RESULTS

A total number of 200 patients undergoing Elective Cesarean Section were randomized in a double blind study to undergo TAP block or placebo trial. The age range in this study was from 20-40 years with a mean age of 29.76 ± 5.22 years. The mean age of patients in group A was 29.98 ± 5.18 years and in group B was 29.68 ± 5.43 years (p -value <0.01). Majority of the patients 141 (70.50%) were between 31 to 40 years of age.

Out of 200 patients, 108 (54.0%) were ASA I and 92 (46%) were ASA II (p -value ≤ 0.01). Mean duration of surgery was 30.36 ± 6.43 minutes. Mean BMI was 25.20 ± 2.28 kg/m² (p -value <0.01) and mean number of previous cesarean section was 1.32 ± 1.08 .

Mean time duration for first analgesia requirement in patients of elective C-section in group A (placebo group) was 4.96 ± 1.44 hours while in group B (TAP block group) was 11.24 ± 1.83 hours (p -value <0.01). Stratification of time for the first analgesia with respect to age groups and ASA status is shown in (table-I & II) which shows

Table-I: Stratification of time for the first analgesia with respect to age groups (n=100).

Age of Patients (Years)	Group A	Group B	<i>p</i> -value
	Time for the First Analgesia (mins) Mean \pm SD	Time for the First Analgesia (mins) Mean \pm SD	
20-30	5.39 ± 1.47	10.65 ± 1.84	<0.01
31-40	4.79 ± 1.39	11.71 ± 1.77	<0.01

Table-II: Stratification of time for the first analgesia with respect to ASA (n=100).

ASA Status	Group A	Group B	<i>p</i> -value
	Time for the First Analgesia (mins) Mean \pm SD	Time for the First Analgesia (mins) Mean \pm SD	
I	5.04 ± 1.45	11.68 ± 1.94	<0.01
II	4.87 ± 1.42	10.80 ± 1.60	<0.01

we observed a significant difference in the mean time for the first analgesia in all age groups and genders. Similarly, a statistically significant difference was found in the mean time for the first analgesia with respect to duration of surgery and BMI as shown in (table-III & IV) respectively. Stratifi-

cation of mean time for the first analgesia with respect to a number of previous cesarean section is shown in table-V.

Table-III: Stratification of time for the first analgesia with respect to duration of surgery (n=100).

Duration of Surgery (minutes)	Group A	Group B	<i>p</i> -value
	Time for the first analgesia (mins) Mean \pm SD	Time for the First Analgesia (mins) Mean \pm SD	
≤ 30	4.92 ± 1.52	11.92 ± 2.02	<0.01
>30	5.00 ± 1.35	10.53 ± 1.28	<0.01

Table-IV: Stratification of time for the first analgesia with respect to BMI (n=100).

BMI (kg/m ²)	Group A	Group B	<i>p</i> -value
	Time for the First Analgesia (mins) Mean \pm SD	Time for the First Analgesia (mins) Mean \pm SD	
19-24	5.07 ± 1.47	10.61 ± 1.87	<0.01
25-29	4.88 ± 1.42	11.72 ± 1.65	<0.01

Table-V: Stratification of time for the first analgesia with respect to a number of cesarean sections (n=100).

No. of Caesarean Section	Group A	Group B	<i>p</i> -value
	Time for the first analgesia (mins) Mean \pm SD	Time for the First Analgesia (mins) Mean \pm SD	
0-1	4.78 ± 1.36	11.45 ± 2.05	<0.01
2-3	5.21 ± 1.51	10.98 ± 1.47	<0.01

DISCUSSION

Managing pain following caesarean section is challenging. The analgesic regimen should be effective, safe and devoid of side effects. Cesarean section is associated with moderate to severe pain. In effective pain management affects breastfeeding and childcare¹², and the immobility resulting from pain is a risk factor of thromboembolism¹³. The results of this study demonstrated that TAP block supplemented by placebo was effective in reducing severity of pain both at rest and on movement. Mean time for the first analgesia in patients undergoing elective C-section in group A (placebo group) was 4.96 ± 1.44 hours while in group B (TAP block group) was 11.24 ± 1.83 hours (p -value 0.0001).

According to a study conducted by Belavy *et al*, in 2009, 50 women received TAP block with

either placebo or ropivacaine after C- section and showed a substantial decrease in 48 hours pain scores, post-surgical consumption of morphine, and adverse effects¹⁴. Eslamian *et al*¹⁵, in 2012 also assessed the efficacy of TAP blockade in which Lower Visual Analogue Pain score was observed in patients of TAP group both at rest and during coughing.

Similarly, a study conducted by Mc Donnell *et al*, in 2008 using TAP block after cesarean delivery by the blind approach, with 1.5 mg/kg ropivacaine or normal saline on each side and revealed good analgesia by TAP block¹⁶.

Study by Cansiz *et al*, in 2015 of TAP block revealed that pain scores were lower and time of demand for the first analgesia was significantly longer in study groups compared to control (no drug) groups¹⁷. Study conducted by Chansoria *et al* in 2015 using 20 ml of 0.375% ropivacaine revealed reduction in mean VAS score (p -value <0.001) and reduced opioids requirements¹⁸.

A systematic review and meta analysis¹⁹, by Abdallah *et al*, in 2012 concluded that pain score, consumption of analgesia, and PONV for 24 h were less as compared to the control group, receiving a placebo. Over recent years, there has been growing interest in regional nerve block techniques with promising results on efficacy, TAP block is a relatively new abdominal nerve block with excellent efficacy.

CONCLUSION

The analgesia was found longer in transversus abdominis plane (TAP) block post-operatively. So, we recommend that the TAP block may be used in patient undergoing cesarean section in order to lessen the morbidity of patients.

CONFLICT OF INTEREST

This study has no conflict of interest to be declared by any author.

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