Original Article

Ultrasound-Guided Transversus Abdominis Plane Block versus Land Mark Technique in Lower Abdominal Surgery

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ABSTRACT

OBJECTIVE: To determine the efficacy of pain for Ultrasound-Guided Transversus Abdmominis Plane Block versus landmark technique in lower abdominal surgery.

METHODOLOGY: This Randomized Control trial study was conducted from July to December 2018 at the Department of Anesthesiology, Peoples Medical University & Hospital Shaheed Benazirabad.

The sample techniques were used randomly through envelopes, and the sample size was 120.

RESULTS: The study findings revealed that age distribution among L and U groups regarding gender was 70% females 66.7% females. Moreover, for ASA status in the L group, 58.3% of the participants stand in 2-4 ASA status, whereas in the U group, 50% of the participants were in ASA status 1 and 2-4 each. The bilateral block was performed among 85% of the participants in the L group and 96.7% of the participants in the U group. In the surgical procedure in the L group, 15% underwent appendectomy, whereas, in the U group, 28.3% underwent lower c- section. The overall rate of postoperative pain at 60 minutes was observed in 10 women among both groups. Statistically significant results among both groups with a p-value of 0.001.

CONCLUSION: Our study results showed that surgeries performed using Ultrasound-Guided Transversus Abdominis Plane Block are more effective with less postoperative analgesia.

KEYWORDS: Efficacy, Ultrasound Guided Tranversus Abdominis Plane Block, landmark technique, Lower Abdominal Surgery, Anesthesia, TAP block

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INTRODUCTION

Intense postoperative pain is a typical issue experienced in clinical practice. Although acute postoperative pain control on surgical outcomes remains unclear, widespread agreement exists that intense postoperative pain is the significant reason for delayed clinic stay and patient disappointment[1]. The recent concept of "multimodal analgesia" is a better approach that utilizes several agents with varying modes of action on pain control pathways to reduce postoperative pain with minimum elevation possessions[1,2].

Transversus Abdominis Plane Block is an original methodology portrayed by Kuppuvelumani P 1993 and later presented by Rafi AN 2001[4] as a landmark guided strategy to hinder the neural afferents to Anterior Abdominal Wall[1]; It has now gone through various changes, which have improved its likely utility for a higher number of surgeries[4] Transversus abdominis plane block, provincial sedation procedure giving pain-relieving impact to the peritoneum just the same as to the skin as well as muscles of foremost Abdominal Wall[5]. TAP blocks are overwhelmingly underutilized, and Instead of being exceptionally generally safe from producing inconveniences and moderately an extremely high achievement proportion[6].

The landmark guided "double pop" loss of opposition strategy includes getting to and blocking the T_6 to L_1 nerve branches[7,8]. This procedure has been demonstrated to be a powerful pain-relieving subordinate for lower abdominal surgeries[8].

According to recent studies, the landmark-guided TAP block has been termed a "blind" technique due to the issues of inaccurate placement of needles and the potential for damage to adjacent structures[9]. Previous studies have reported inaccurate needle and anesthetic placement incidences using the standard landmark-guided technique in adult and pediatric populations[9,10].

Likewise, liver cut, colonic cut, and intraperitoneal infusion have also been accounted for via landmark guided TAP block[7,9]. At the same time, no investigation has been done to date on the precision of infusion of anesthesia in Transversus Abdominis Plane Block.

Also, McDonnell JG et al. [9] reported a more significant reduction in morphine consumption. It is in contrast, who reported only a 43% reduction in morphine consumption.

Previous evidence suggests that the ultrasound-guided Transversus Abdominis Plane Block had a

long-term effect in addition to a safe and easy approach that has been increasingly used in abdominal surgeries such as colorectal, bariatric and plastic, Cesarean delivery, hysterectomy, and donor nephrectomy[1,2,11].

Brogi E 2016[12] revealed that the patients with Transversus Abdominis Plane Block had reduced pain assessed on VAS at 6, 12, and 24 hours compared to the placebo group. Likewise, contrasted and fake treatment, Transversus Abdominis Plane Block decreased the utilization of Morphine 24 hours after a medical procedure. This reduction was seen in the Transversus Abdominis Plane Block group after an appendectomy, Gynaecology, Bariatric, and Urological Surgery. Several reviews have reported its effectiveness in reducing the score of pain and utilization of Morphine within 24 hours[1,11,12].

METHODOLOGY

A study of Randomized Control Trial was carried out in the Department of Anesthesiology, Peoples Medical University, and Hospital Shaheed Benazirabad. The study period was from July to December 2018. The example methods were utilized haphazardly through envelopes, and the sample size was 120. The sample calculation was finished using the past studies[2,5,7], and our research for comparative studies in different settings.

The sample size was 120, with error and omissions of 5%, a certainty level of 95%, and a reaction circulation of 85. The investigation was led by the institutional Ethical Review Committee (ERC). After the preoperative appraisal was written, approval for the research was taken by the patients. After an assortment of information, section and investigation have been checked in SPSS software with the latest version. Frequency and percentages were computed for age, gender, height, weight, ASA status, and surgical procedure performed. Moreover, a Chi-square test was applied to contrast the frequency of Analgesia use among the Ultrasound-Guided and Landmark guided TAP block groups. Outcome variable efficacy was evaluated based on analgesia use among Ultrasound-guided and landmark guided TAP block group.

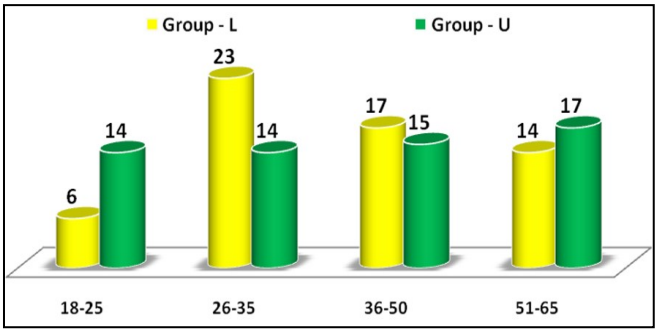
Patients undergoing elective lower abdominal surgeries, American Society of Anesthesiology (ASA) I to IV criteria, Ages between 18 to 65 years were included. Patients with the disease at the proposed site of infusion, Patients with draining or coagulation problems, Patients with sensitivity to neighborhood sedatives were excluded

RESULTS

Our study findings revealed that the distribution of age among L and U groups study participants was n=23 (38.3%) for 26-35 years of age and n=17 (28.3%) for 51-65 years of age, respectively; regarding gender, it was n=42 (70%) females in L group and n=40 (66.7%) females in U group, for height in L group n=31 (51.7%) of the participants whereas for U group n=33 (55%) of them fall in 5.1-5.9 inches category. Moreover, for weight in the L and U groups, n=40 (66.7%) and n=34 (56.7%) of the participants fall in the 45 and above category, respectively, regarding ASA status in the L group n=35 (58.3%) of the participants stand in 2-4 ASA status whereas in U group n=30 (50%) of the participants were in ASA status 1 and 2-4 each. Moreover, for the type of block performed, it was reported that bilateral block was performed among n=61 (85%) of the participants in the L group and n=58 (96.7%) of the participants in the U group regarding the surgical procedure in the L group n=9 (15%) underwent appendectomy whereas in U group n=17 (28.3%) underwent lower c- section. The overall rate of postoperative pain at 60 minutes was observed in 10 women among both groups. Moreover, all 10 of them belong to group L, whereas none in group U, showing statistically significant results among groups with a p-value of 0.001; this indicated the Ultrasound-Guided TAP block is further helpful compared to Land-mark Guided TAP block among lower abdominal surgery patients.

Compared with the results of other 36 randomized controlled trials (RCTs) contrasting TAP squares and fake treatment. Pain scores at 6 & 12 hrs were examined in and study, consequently. Only three studies tended to correlate the Transversus Abdominis Plane Block and Epidural sedation. In addition to none, one was seen any stark contrasts between the two strategies.

GRAPH I: DISTRIBUTION OF AGE



GRAPH II: GENDER DISTRIBUTION

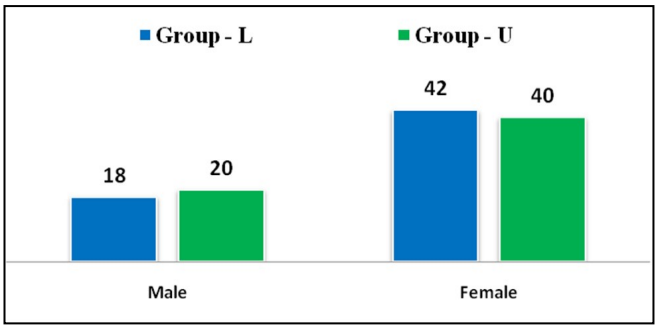


TABLE I: DISTRIBUTION OF SURGICAL PROCEDURE GROUP – L AND GROUP U

Distribution of surgical procedure Group – L			Distribution of surgical procedure Group – U		
Surgical Procedure	**Frequency**	**Percentage (%)**	**Surgical Procedure**	**Frequency**	**Percentage (%)**
Lower Segment Caesarean Section	8	13.3	Lower Segment Caesarean Section	17	28.3
Appendectomy	9	15.0	Appendectomy	8	13.3
Prostectomy	6	10.0	Prostectomy	5	8.3
Hysterectomy	6	10.0	Hysterectomy	6	10.0
Cholecystectomy	7	11.7	cholecystectomy	8	13.3
Vesical calculus (cystolithotomy	3	5.0	Vesical calculus (cystolithotomy)	3	5.0
Laprotomy	9	15.0	Laprotomy	5	8.3
Ovarian cyst (Laprotomy)	2	3.3	Ovarian cyst (Laprotomy)	2	3.3
Left inguinal hernia	4	6.7	Left inguinal hernia	2	3.3
Right Inguinal Hernia	6	10.0	Right Inguinal Hernia	1	1.7
			Myos Repair	3	5.0
Total	**60**	**100.0**	**Total**	**60**	**100.0**

TABLE II: COMPARISON OF THE FREQUENCY OF POSTOPERATIVE ANALGESIA BETWEEN GROUPS

Time	Group – L	Group – U	p-Value
30 Minute	3	0	0.122
60 Minute	10	0	0.001
120 Minute	16	12	0.259
4 Hours	14	8	0.119
6 Hours	18	24	0.169
12 Hours	5	5	0.628
18 Hours	0	2	0.248

Results are presented as n (%), Chi-Square test applied

DISCUSSION

This study focused on the adequacy of Tranversus Abdominis Plane Block for postoperative analgesia pain in a comprehensive group of abdominal surgeries. In contrasted and fake treatment group U, L, when TAP blocks are utilized for postoperative analgesia, the information shows a considerable decrease in pain scores at 30min, 60min, 120min, 4 hrs, 6 hrs, 12 hrs, and 18 hrs just as a decrease in opioid utilization. A sum of 120 patients was focused on in the study. Patients were haphazardly partitioned into two groups; in Group L, 60 patients got landmark-guided transverses abdominis plane, and in Group U, 60 patients received ultrasound-guided transverses abdominis plane. The overall rate of postoperative analgesia at 60 minutes was observed in 10 women, 10 in group L, and 0 in group U with a significant p-value of 0.001, which is similar to a previous study[2]. The level of significance among ultrasound-guided TAP block was < 0.05. Unlike previous study[3-5], our results showed ultrasound-guided TAP blocks were more effective.

Similar results were seen in the present study, like previous studies revealed that patients with TAP block have reduced pain assessed on VAS at 6, 12, and 24 hours compared to placebo group U, L. This reduction was seen in the Tranversus Abdominis Plane Block group after an appendectomy, gynecological surgeries, bariatric surgery, and urological surgery[12]. Similarly, Several reviews have reported TAP effectiveness in reducing pain scores and 24-hour morphine consumption[1,11,12].

Because of our discoveries, the best proposal (for example, further developed pain score and diminished opioid utilization) for utilizing TAP block for

postoperative analgesia is gynecological procedures, bariatric medical procedures, appendectomy, and inguinal hernia J nerve block[13].

Because of our discoveries, the best proposal (i.e., further developed pain score and diminished opioid utilization) for utilizing TAP block for postoperative analgesia is gynecological methods, bariatric medical procedures, appendectomy, and inguinal hernia fix.

It can likewise be suggested for Cesarean section due to a reduction in opioid utilization). There is, at this point, no substantial suggestion for its capability to diminish pain or opioid utilization in abdominal surgical procedures overall or urological; whether TAP block isn't pretty much as successful as ITM or epidural analgesia, TAP block may be utilized to give analgesia when neuraxial strategies or opioids are contraindicated.

CONCLUSION

Our study results showed that surgeries performed using ultrasound-guided TAP block are more effective than landmark techniques and require less postoperative analgesia.

Ethical permission: Peoples University of Medical & Health Sciences for Women Nawabshah ERC letter No. PUMHS/ SBA/PVC83. Dated: 06-03-2021.

Conflict of Interest: There is no conflict of interest among the authors.

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DATA SHARING STATEMENT: The data supporting this study's findings are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions

AUTHOR CONTRIBUTIONS

Khaskheli MS: Concept, manuscript writing
Tabassum R: Manuscript writing
Awan AH: Data collection
Imtiaz A: Data analysis
Shah S: Data collection
Baloch ZD: Manuscript writing, data collection, data analysis

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