International Journal of Medical and Pharmaceutical Research

Online ISSN-2958-3683 | Print ISSN-2958-3675
Frequency: Bi-Monthly
Available online on: https://ijmpr.in/

Original Article

Comparative Analgesic Effectiveness of Ultrasound-Guided TAP Block and Wound Infiltration in Abdominal Surgeries: A Randomized Controlled Trial

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Received: 20-05-2026
Accepted: 03-06-2026
Available online: 16-06-2026

ABSTRACT

Background: Abdominal surgery leads to moderate to severe postoperative pain. Uncontrolled postoperative pain may lead to delayed recovery, delayed return of normal physiological functions and increased morbidity postoperatively.

AIM: The present study was carried out to compare the efficacy of ultrasound guided TAP block and wound site infiltration to prevent postoperative pain in patients undergoing abdominal surgeries under general anaesthesia.

Methods And Methods: The present study was a double blinded randomized control study carried out in 60 patients of ASA I and II, between the ages of 18- 60 years of either gender, undergoing elective abdominal surgeries under general anaesthesia. Patients were randomly allocated in two groups of 30 each. Group A patients received ultrasound guided TAP block with 0.2% ropivacaine mixed with dexmedetomidine (1µg/kg), 15 ml on each side and Group B patients received 30 ml of 0.2% ropivacaine mixed with dexmedetomidine (1µg/kg). The observations were made for vNRS (Verbal Numeric Rating Scale) scores at rest and with movement and haemodynamic parameters at 2, 4, 6, 12 and 24 hours. Also, time to demand of first rescue analgesia, total analgesic requirement and number of times rescue analgesia given over the first 24 hours postoperatively and side effects, if any, were noted. Data was statistically analysed using the Statistical Package for Social Sciences "SPSS version 20"(IBM, Chicago, USA) and two groups were then compared according to the distribution of the data.

Results: It was observed that vNRS scores at rest and with movement were significantly reduced in group A at 2, 4 and 6 hours with p-value <0.05. Time to first rescue analgesia was significantly prolonged in group A as compared to group B (p-value<0.05). The total dose of rescue analgesia required 24 hours postoperatively was significantly less in group A as compared to group B (p-value<0.05). There was a significant decrease in the number of times rescue analgesia was given in group A as compared to group B (p-value<0.05).

Conclusion: It can be concluded from the present study that TAP block provides more effective form of postoperative analgesia as compared to wound site infiltration in abdominal surgeries under general anaesthesia.

***Keywords**: Analgesia, Postoperative; Anaesthesia, General; Pain Management; Ultrasonography.*

INTRODUCTION

Major abdominal surgeries lead to intense postoperative pain mainly arising from parietal and visceral sites.(1) This postoperative pain can result in nausea, vomiting, increased hospital stays, anxiety, sleeplessness, increased oxygen consumption due to heightened catecholamine response and an adverse surgical outcome.86% patients approximately go through postoperative pain in abdominal surgeries and 75% have moderate to severe pain in intensity.(2)

Frequent administration of potent analgesics like opioids, narcotics, NSAIDs etc for preventive analgesia after major abdominal surgeries is accompanied by adverse effects such as decreased bowel movements, sedation, peptic ulcers, nausea, vomiting and increased time to mobilisation.

Effective technique of pain relief with lesser side effects and long-lasting analgesia can be provided by the use of regional afferent neural blockade with local anaesthetics.(3) The transversus abdominis plane (TAP) block represents an analgesic technique that inhibits afferent nociceptive transmission originating from the anterolateral abdominal wall within the T6-L1 dermatomal distribution through the administration of local anaesthetic agents, which may be utilized independently or in combination with adjunctive medications.(4) Other effective mode of blocking local somatic afferents is the use of local anaesthetic infiltration at the wound site which prevents acute postoperative pain and offers a smooth and comfortable recovery to the patients.

Various local anaesthetics used in TAP block or wound site infiltration are bupivacaine, ropivacaine, levobupivacaine etc. Ropivacaine in an analgesic concentration (0.2%) has an onset of action of 1 to 5 minutes with duration of pain relief about 2 to 6 hours.(5)

Many adjuvants have been studied for their role in prolonging the analgesia after regional blocks including opioids, alpha 2 (α_2) agonists, midazolam, dexamethasone, adrenaline etc. Dexmedetomidine functions as a potent selective α_2 adrenoceptor agonist that initiates presynaptic α_2 adrenoreceptor activation, consequently inhibiting norepinephrine release and interrupting nociceptive signal transmission.(6)

Available evidence remains inadequate to clearly establish whether TAP block or direct wound infiltration provides superior analgesic effectiveness after abdominal surgery. Hence, this study was done to compare the safety and efficacy of ultrasound guided TAP block versus wound site infiltration for postoperative analgesia after abdominal surgeries under general anaesthesia. Primary objective of the study was to calculate vNRS (Verbal Numeric Rating Scale) scores at rest and with movement and haemodynamic parameters at 2, 4, 6, 12 and 24 hours. Seconday objectives included time to demand of first rescue analgesia, total analgesic requirement and number of times rescue analgesia given over the first 24 hours postoperatively and side effects, if any.

MATERIAL AND METHODS

After due permission from the Institutional Ethics Committee [IEC 1719], informed and written consent from the patients, this prospective, double blind randomized control study was conducted in the Department of Anaesthesiology, in MMIMSR,MMU,Ambala.

The study incorporated a total of 60 patients over a timeframe of 2 years with the following inclusion criteria: willing and able to give consent, ASA grade I and II, age 18 years to 60 years of both sexes, elective abdominal surgeries under general anaesthesia. Exclusion criteria included: patients refusal to participate, infection around site of block and allergy to local anaesthetic agent, ASA grade III and IV, coagulation disorder, renal insufficiency, congestive cardiac failure, chronic opioid dependence and drug addictions.

The patients were distributed between two cohorts, thirty participants per group, utilizing a random number sequence for allocation. Both patient and the observer anaesthesiologist who collected the postoperative data were blinded to the procedure. The baseline parameters like respiratory rate (RR), heart rate (HR), systolic blood pressure (SBP), diastolic BP (DBP), mean arterial BP (MAP) and oxygen saturation (SPO_2) were noted in the pre operating room.

Group A patients received bilateral ultrasound guided (Philips Ultrasound. Innosight Diagnostic Ultrasound System. USA) TAP block (n=30) with 0.2% ropivacaine mixed with dexmedetomidine (1µg/kg), 15 ml administered per side. Group B patients received wound site infiltration (n=30) with 30ml of 0.2% ropivacaine mixed with dexmedetomidine (1µg/kg) after completion of skin sutures.

USG guided TAP block was performed using a linear transducer (depth 3.5 cm, 6–13 MHz, InnoSight DUS, Philips, USA) positioned in the axial plane between the subcostal margin and iliac crest along the midaxillary line. Upon identification of the three abdominal wall muscle layers external oblique muscle (EOM), internal oblique muscle (IOM) and transversus abdominis muscle (TAM) the needle was inserted at the anterior axillary line and advanced to the fascial plane between the IOM and TAM near the midaxillary line, where half of the drug was deposited following a 5 mL normal saline injection for sonographic confirmation in group A patients. The needle tip was then further advanced (medial to the anterior superior iliac spine) until positioned between the IOM and TAM, adjacent to the deep circumflex iliac artery (with the linear transducer oriented toward the umbilicus and tilted caudally), where the remaining drug was deposited. The procedure was repeated bilaterally. Only patients with confirmed ultrasound visualization of successful spread of the drug solution (0.2% ropivacaine mixed with dexmedetomidine 1 µg/kg) were included in the study.

Wound site infiltration was given by injecting the drug solution in and around wound margins using three ten ml syringes with 25 G needle in group B patients with 30ml of 0.2% ropivacaine mixed with dexmedetomidine 1µg/kg. Intravenous tramadol 100 mg was administered 30 minutes prior to the completion of surgery, and intravenous ondansetron 4 mg was given prophylactically to prevent opioid-induced nausea and vomiting.

Assessment of hemodynamic parameters including pulse rate, systolic blood pressure, diastolic blood pressure, mean arterial pressure and SpO_2, along with evaluation of pain severity at the surgical site using vNRS at rest and during movement, was performed at 2, 4, 6, 12, and 24 hours postoperatively. For movement, coughing and hip flexion were considered. For rescue analgesia, injection diclofenac 75mg was given intramuscularly on demand for pain relief if vNRS score at rest was more than 4. The time to first rescue analgesia request, total analgesic consumption, and the frequency of rescue analgesia administration within the first 24 hours postoperatively were evaluated. The side effects like hypotension, nausea, vomiting, bradycardia, dryness of mouth or respiratory depression in the postoperative period, if any, were noted. The results of all the parameters assessed in both the groups were compared statistically.

STATISTICAL ANALYSIS

A post hoc power analysis was performed using the software package G*Power version 3.1.9.2 (Franz Faul, University of Kiel, Germany). The alpha level for this analysis was $p<0.05$ and beta was 0.20. Sample size was estimated from the results of previous study using the vNRS at 2 and 6 hrs as the parameter, which is the primary outcome of our study. Our sample size came out to be 30 subjects per group at power of 0.99 and with an effect size of 1.57 with 10% chance of error with $\alpha = 0.05$, $\beta = 0.20$ and confidence interval of 95%.

Data was entered in Microsoft Excel sheet and was statistically analysed using the Statistical Package for Social Sciences "SPSS version 20"(IBM, Chicago, USA). Data was expressed as mean ± standard deviation and range. The two groups were then compared according to the distribution of the data. If data was normally distributed, Student t-test was applied. Otherwise, Mann Whitney test was used. For categorical data, Chi-square test was applied. P value of < 0.05 was considered as statistically significant. The data for the above study was systemically collected, statistically analyzed and compiled to draw relevant conclusions.

RESULTS

In this prospective, randomized, double-blind controlled trial, 72 subjects underwent major abdominal procedures during the study period. Analysis included 60 participants after exclusions: 7 declined consent and 5 failed inclusion criteria. (Figure 1)

Demographic characteristics including gender distribution and age were comparable between groups with no statistically significant differences observed.(Table 1) Hemodynamic parameters (respiratory rate, heart rate, systolic/diastolic blood pressure, mean arterial pressure, and oxygen saturation) demonstrated no significant intergroup variation ($p>0.05$) at baseline (Figure-2) or at subsequent postoperative time points (2, 4, 6, 12, and 24 hours), indicating physiological stability across both cohorts throughout the observation period.

As demonstrated in Table 2, Group A exhibited statistically significant reductions in mean vNRS pain scores at rest compared to Group B at 2, 4, and 6 hours postoperatively ($p<0.05$). However, this analgesic advantage diminished at extended time points, with no significant intergroup differences observed in resting vNRS scores at 12 and 24 hours ($p>0.05$).

Table 3 demonstrates that Group A exhibited significantly lower mean vNRS scores during movement at 2, 4, and 6 hours postoperatively compared to Group B ($p<0.05$). However, this dynamic pain control advantage was not maintained at later assessment intervals, with no statistically significant differences in movement-evoked vNRS scores between groups at 12 and 24 hours ($p>0.05$).

Analysis of rescue analgesia requirements (Table 4) revealed significantly prolonged time to first analgesic demand in Group A (8.30±3.41 hours) compared to Group B (2.93±0.45 hours), representing a statistically significant difference ($p<0.05$). This temporal extension of analgesic efficacy suggests superior initial postoperative pain management in the former group.

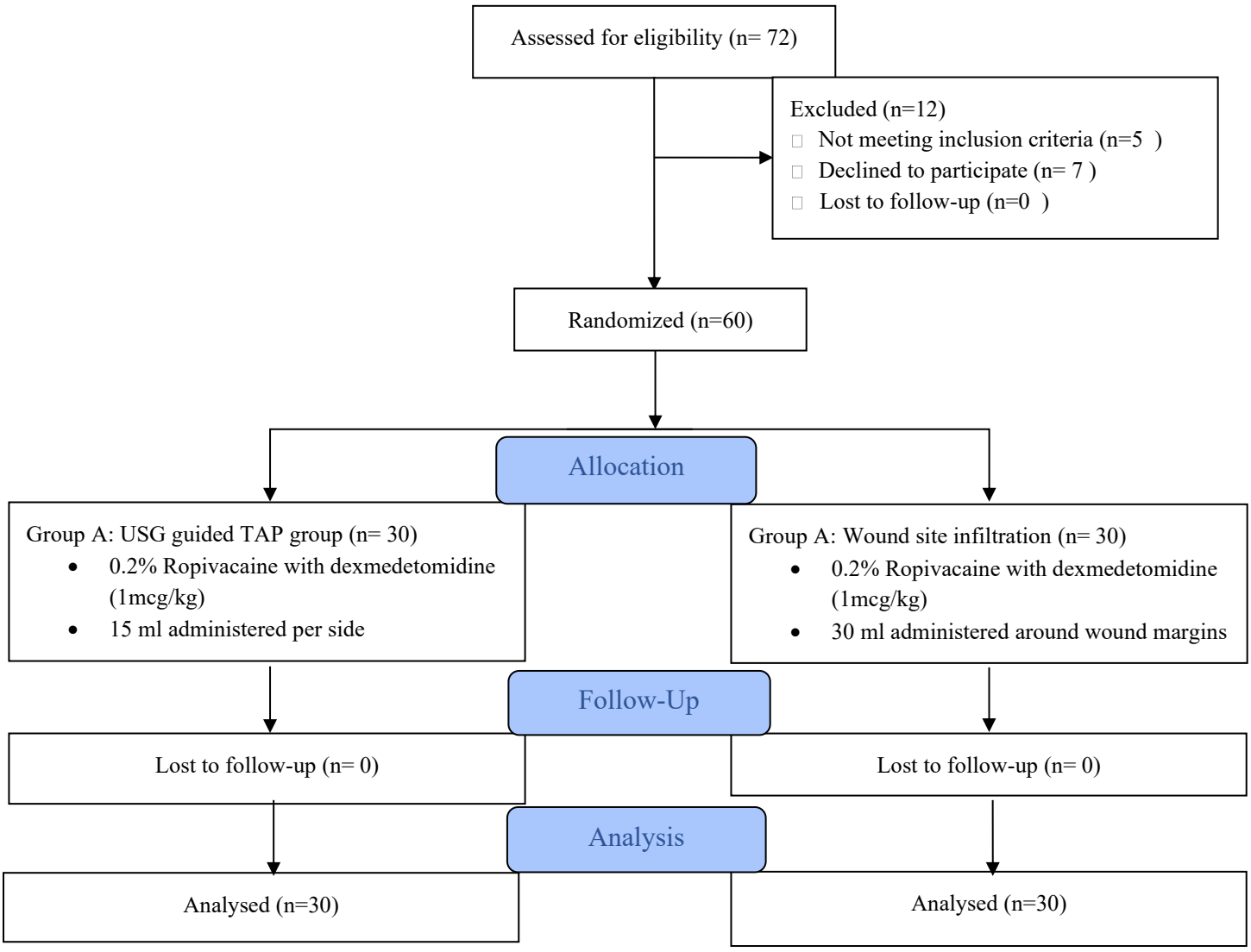
The cumulative requirement for rescue analgesia during the initial 24-hour postoperative period was significantly lower in Group A (112.50±38.14 mg) compared to Group B (240.00±30.51 mg), demonstrating a statistically significant difference between cohorts ($p<0.05$) (Figure 2).

Frequency analysis of rescue analgesia administration (Table 5) revealed that in Group A (n=30), 15 patients required one dose while 15 patients received two doses. Contrastingly, in Group B (n=30), 24 patients necessitated three doses and 6 patients required four doses ($p=0.0001$). This represents a statistically significant reduction in rescue analgesia frequency for Group A versus Group B ($p<0.05$).

Adverse event analysis revealed hypotension in 3% of Group A subjects, while nausea occurred in 7% of Group B participants. Statistical comparison of these side effect profiles yielded no significant intergroup differences ($p=0.221$). The overall incidence of adverse events was comparable between treatment cohorts ($p>0.05$) (Figure 3), suggesting similar safety profiles for both analgesic regimens.

TABLES AND FIGURE LEGENDS

FIGURE-1 CONSORT FLOW DIAGRAM



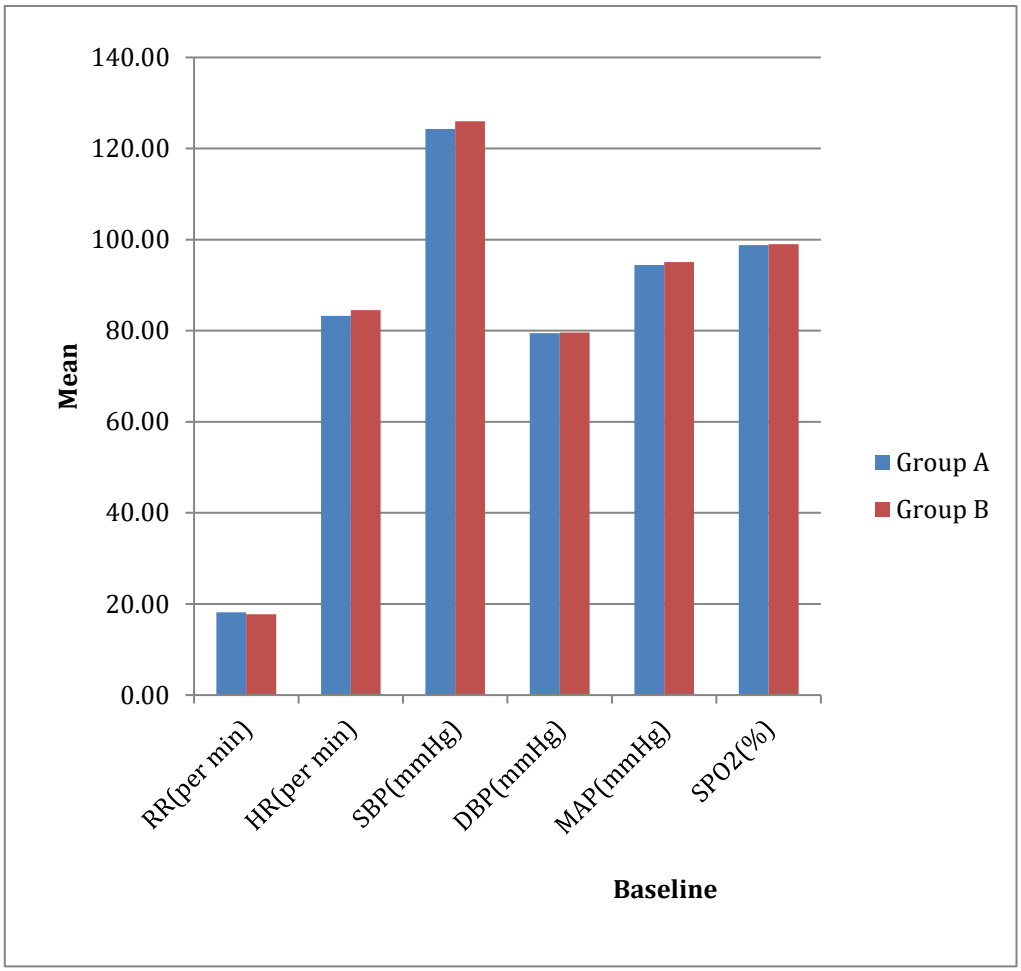


Figure 2: BASELINE PARAMETERS COMPARISON IN BOTH THE GROUPS

The above table shows that the mean baseline respiratory rate in group A was 18.20±2.54 per minute and in group B, it was 17.73±2.66 per minute with p-value of 0.490.

The mean baseline heart rate in group A was 83.27±7.15 per minute and in group B, it was 84.53±9.05 per minute with p-value of 0.550.

The mean baseline systolic BP in group A was 124.33± 9.11 mmHg and in group B, it was 126.00±8.61 mmHg with p-value of 0.470.

The mean baseline diastolic BP in group A was 79.47±5.43 mmHg and in group B, it was 79.60±5.49 mmHg with p-value of 0.925.

The mean baseline arterial BP in group A was 94.42±6.40 mmHg and in group B, it was 95.07±6.09 mmHg with p-value of 0.691.

The mean baseline SPO_2 in group A was 98.77±1.10 % and in group B, it was 99.00±0.98 % with p-value of 0.391.
The difference between both the groups was statistically not significant ($p>0.05$) in the baseline haemodynamic parameters like respiratory rate, heart rate, systolic BP, diastolic BP, mean arterial pressure and SPO_2.

		Group A		Group B		Total	Chi-square value	p-value
		No. of cases	Percentage	No. of cases	Percentage			
SEX	F	15	50%	18	60%	33	0.606	0.436
	M	15	50%	12	40%	27		

Total	30	100%	30	100%	60		

Table 1: Demographic data

In group B, out of 30 patients, 18 were female patients and 12 were male patients. The p-value was 0.436.
The difference between both the groups was statistically not significant (p>0.05).

Table 2: COMPARISON OF MEAN vNRS SCORE AT REST IN BOTH THE GROUPS AT DIFFERENT TIME INTERVAL

	Group A		Group B		T	p-value
	Mean	SD	Mean	SD		
vNRS REST_2 hours	0.77	0.63	1.27	0.74	-2.826	0.006
vNRS REST_4 hours	2.30	0.92	4.93	0.87	-11.431	0.001
vNRS REST_6 hours	2.90	0.99	2.13	0.51	3.760	0.001
vNRS REST_12 hours	2.70	0.95	2.83	1.23	-0.468	0.641
vNRS REST_24 hours	2.43	1.01	2.57	1.25	-0.455	0.651

It can be observed from the above table that the mean vNRS score at rest at 2 hours was 0.77±0.63 in group A and 1.27±0.74 in group B with p-value of 0.006.

The mean vNRS score at rest at 4 hours was 2.30±0.92 in group A and 4.93±0.87 in group B with p-value of 0.001.

The mean vNRS score at rest at 6 hours was 2.90±0.99 in group A and 2.13±0.51 in group B with p-value of 0.001.

The mean vNRS score at rest at 12 hours was 2.70±0.95 in group A and 2.83±1.23 in group B with p-value of 0.641.

The mean vNRS score at rest at 24 hours was 2.43±1.01 in group A and 2.57±1.25 in group B with p-value of 0.651.

There was a statistically significant decrease in mean vNRS score at rest in group A at 2,4 and 6 hours as compared to group B with p-value<0.05.

Table 3: COMPARISON OF MEAN vNRS SCORE WITH MOVEMENT IN BOTH THE GROUPS AT DIFFERENT TIME INTERVAL

	Group A		Group B		T	p-value
	Mean	SD	Mean	SD		
vNRS MOVEMENT_2 hours	2.47	1.01	3.10	0.71	-2.811	0.007
vNRS MOVEMENT_4 hours	2.60	0.93	3.47	0.68	-4.111	0.001
vNRS MOVEMENT_6 hours	2.37	0.85	3.60	0.56	-6.623	0.001
vNRS MOVEMENT_12 hours	2.57	0.94	2.53	1.28	0.115	0.909
vNRS MOVEMENT_24 hours	2.43	0.97	2.53	1.28	-0.341	0.734

It can be observed from the above table that the mean vNRS score with movement at 2 hours was 2.47±1.01 in group A and 3.10±0.71 in group B with p-value of 0.007.

The mean vNRS score with movement at 4 hours was 2.60±0.93 in group A and 3.47±0.68 in group B with p-value of 0.001.

The mean vNRS score with movement at 6 hours was 2.37±0.85 in group A and 3.60±0.56 in group B with p-value of 0.001.

The mean vNRS score with movement at 12 hours was 2.57±0.94 in group A and 2.53±1.28 in group B with p-value of 0.909.

The mean vNRS score with movement at 24 hours was 2.43±0.97 in group A and 2.53±1.28 in group B with p-value of 0.734.

There was a statistically significant decrease in mean vNRS score with movement in group A at 2,4 and 6 hours when compared to group B with p-value<0.05.

However, there was no statistically significant decrease in mean vNRS score with movement in group A at 12 and 24 hours as compared to group B (p-value>0.05).

Table 4: COMPARISON OF MEAN TIME TO DEMAND OF FIRST RESCUE ANALGESIA IN BOTH THE GROUPS

	Group A		Group B		T	p-value
	Mean	SD	Mean	SD		
TIME TO DEMAND OF FIRST RESCUE ANALGESIA (HRS)	8.30	3.41	2.93	0.45	8.557	0.001

It was observed that the mean time to demand of first rescue analgesia was 8.30±3.41 hours in group A and 2.93±0.45 hours in group B with p-value of 0.001.
Group A showed significantly prolonged mean time to demand of first rescue analgesia as compared group B (p value<0.05).

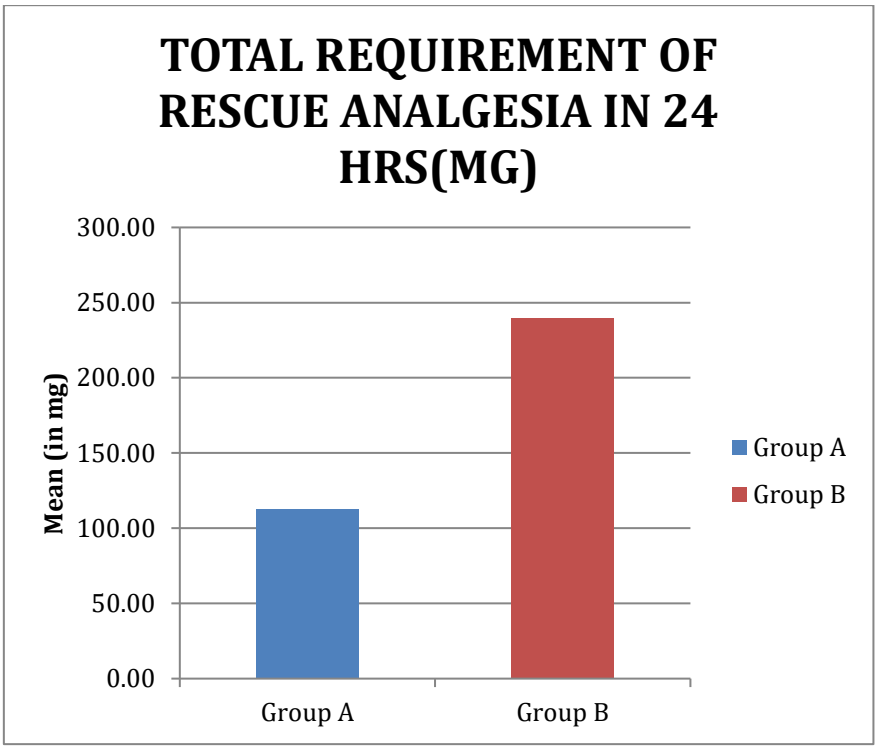


Figure 3: COMPARISON OF MEAN TOTAL REQUIREMENT OF RESCUE ANALGESIA IN THE FIRST 24 HOURS POSTOPERATIVELY IN BOTH GROUPS

It was observed that the mean total requirement of rescue analgesia in the first 24 hours postoperatively was 112.50±38.14 mg in group A and 240.00±30.51 mg in group B with p-value of 0.001.
The mean total requirement of rescue analgesia in the first 24 hours postoperatively was lesser in group A as compared to group B, showing statistically significant difference between both the groups (p value<0.05).

Table 5: COMPARISON OF NUMBER OF TIMES RESCUE ANALGESIA GIVEN IN 24 HOURS POSTOPERATIVELY

		Group A		Group B		Total	Chi-square value	p-value
		No. of cases	Percentage	No. of cases	Percentage			
TOTAL NUMBER OF TIMES RESCUE ANALGESIC GIVEN IN 24 HRS	1	15	50%	0	0%	15	60.000	0.0001
	2	15	50%	0	0%	15		
	3	0	0%	24	80%	24		
	4	0	0%	6	20%	6		
Total		30	100%	30	100%	60		

It was observed from the above table that in group A, out of 30 patients, 15 patients received rescue analgesia one time, 15 patients got rescue analgesia twice. In group B, out of 30 patients, 24 patients needed rescue analgesia three times and 6 patients required it four times. The p-value was 0.0001. There was a significant decrease in the number of times rescue analgesia was given in group A as compared to group B (p value<0.05).

The mean total number of analgesic demand in 24 hours was 1.50±0.51 in TAP block group while it was 3.20±0.41 in the wound site infiltration group and the difference between both the groups was statistically significant(p value<0.05)

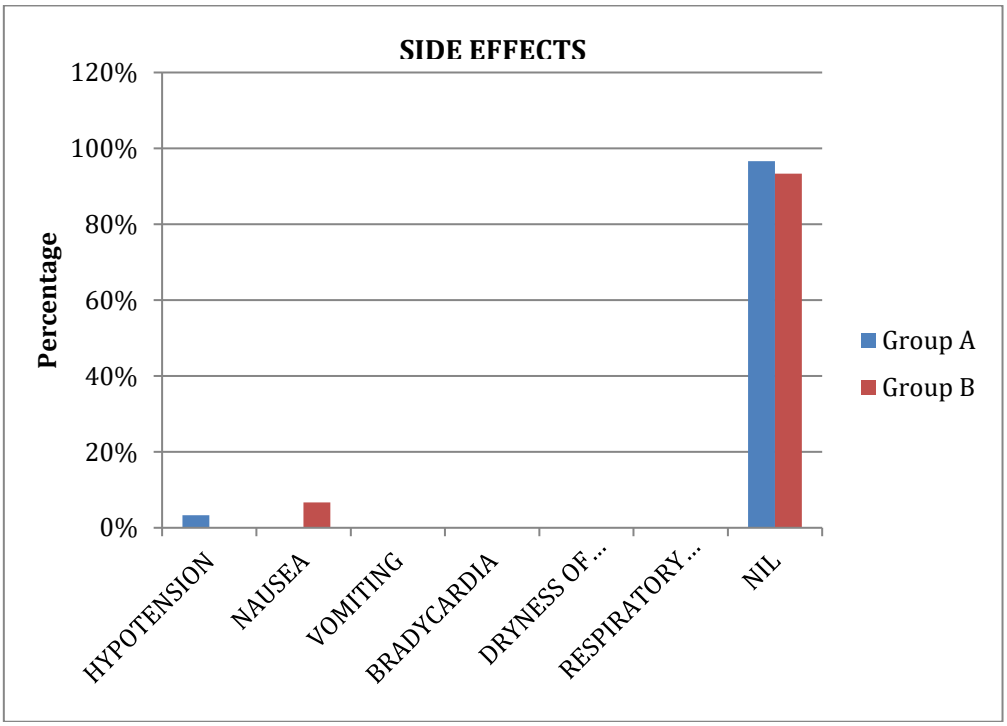


Figure 4: COMPARISON OF SIDE EFFECTS IN BOTH THE GROUPS

It was observed that in group A, 3% patients experienced hypotension. In group B, 7% patients experienced nausea. The p-value was 0.221.

Both the groups showed statistically insignificant difference when compared for the side effects(p value>0.05).

DISCUSSION

Regional analgesic techniques help to reduce the pain intensity and to decrease the adverse effects of standard analgesics like narcotics, NSAIDs thereby reducing the postoperative morbidity. The acute postoperative pain treatment like management protocols include patient-controlled opioid analgesia systems; however, these modalities are frequently associated with significant adverse effects and potential complications.(7)

Ultrasound guided TAP block is an efficacious technique to relieve the postoperative pain following abdominal procedures through targeted neural blockade of afferent pathways supplying the anterolateral abdominal wall and parietal peritoneum.(8) The anterior branches of the spinal nerves from T6 to L1 which lie in the neurofascial plane between the internal oblique and transversus abdominis muscles will be blocked by TAP block and the median and lower abdominal wall will be anaesthetized. Systematic, meticulous and extensive wound site local anaesthetic infiltration in the peritoneal, musculofascial and subdermal tissue planes, which is the origin of pain foci, provides substantial pain control following surgery.(9)

Das N et al. found no significant difference in scores was observed at the time of first mobilization. Pain scores in the TAP group at the 6th, 12th, and 24th hours were lower compared to the surgical site infiltration group.(7)

A meta-analysis by Cai Q et al. showed TAP block had lower postoperative pain at rest and movement in 2^{nd},4^{th},6^{th},12^{th} and 24^{th} hour and not at 1^{st} hour as compared to wound infiltration.(10)

The meta-analysis by Ferrari FA et al. involving participants undergoing minimally invasive surgeries showed that TAP block was associated with lower pain scores at rest and 1, 4, 12, and 24 hours.(11) In a study by Guo Q et al., TAP block

was associated with significant lower pain scores at rest and with movement at 8th hour (p-value=0.009) and 24th hour (p=0.03) postoperatively compared to wound infiltration. No significant difference was found at 1 hour (p=0.08) postoperatively.(12) Tawfik MM et al. found no significant differences between two groups at rest and on movement (hip flexion and movement) at 2, 4, 6, 12 and 24 hours.(13)

Susanabadi A et al. did a meta-analysis and found lower postoperative pain at rest and movement at 2nd, 4th, 6th, 12th and 24th hour ($p<0.05$) except at 1 hour($p>0.05$). (14) Thus, the results of current study were matching with the study done Das N et al.(7), Cai Q et al.(10), Ferrari FA et al. (11), Guo Q et al.(12) and Susanabadi A et al.(14) However, the present study is not in accordance to the study done by Tawfik MM et al. probably due to the use of local anaesthetic (bupivacaine 0.25%) only without an adjuvant in both TAP and wound infiltration groups and the use of 15µg of intrathecal fentanyl in their study.(13)

The present study was in accordance with Osaheni O et al.(15) and Selvaraju G et al. (16) in terms of haemodynamic parameters.

In our study, it was observed that the mean time to demand of first rescue analgesia in group A was significantly prolonged (p-value<0.05) when compared to group B .The findings were similar with the finding of study by Cai Q et al.(10)

Paul D et al. showed that the time of the first demand of rescue analgesia increased in TAP block group (mean 421±118.8 min) in comparison to wound infiltration group (mean 187±148.3min) (p=0.001) which was significant.(17) In a study by Wayu B et al., the median time of first analgesia request were longer in TAP block group (672 minutes) compared to local anaesthetic infiltration group (225 minutes) (p-value<0.001).(18)

The study done by Eldegwy MH et al. observed that in TAP block group with dexmedetomidine, the time to demand of first rescue analgesia in the postoperative period was significantly prolonged when compared to local infiltration group (p-value<0.001).(19)

The study conducted by Abd El-Hamid AM et al found the time to first analgesic request in minutes was significantly longer in TAP block group (489.4±93.2) than in wound infiltration group (263.1±43.32), with a p-value<0.001.(20) The present study was in accordance with Paul D et al(18), Eldegwy MH et al.(19) and Abd EL-Hamid AM et al.

In the current study, the mean total requirement of rescue analgesia in 24 hours was lesser in group A compared to group B and the difference between them was statistically significant ($p<0.05$). This study is consistent with the study conducted by Salman MS et al.(21)

The findings of the present study were consistent with the study done by Sivapurapu V et al. where the 24 hours morphine(mg) requirement was less in the TAP block group (22.15±4.14) when compared to the wound infiltration group (29.15±3.93) ($p<0.001$).(9)

In a study by Sherbeny MF et al. the total nalbuphine consumption in 24 hours post operatively lower in TAP block group when compared to local anaesthetic wound infiltration group ($P<0.001$).(22)

The study conducted by Talib MT et al. found that the mean opiate requirement in TAP block group was 17.2±68.4 mg of tramadol which was significantly less as compared to 136.4±86.3mg of tramadol in local anaesthesia infiltration group ($p<0.001$).(23)

Paul D et al. observed that the mean amount of rescue analgesia needed in the form of injection diclofenac 75mg intramuscularly in 24 hours postoperatively in TAP block group was 93.75±32.8 mg which was significantly less in comparison to 127.5±34.8 mg in wound site infiltration group, with p-value of 0.041 (statistically significant).(17)

In meta-analysis of Guo Q et al. in adult patients, TAP block reduced the 24-hour overall morphine consumption by 3.85mg ($p<0.04$) compared with wound infiltration.(12)

Present study results matched the results of Kumar D et al. (24) and Amjad QU et al(25) that TAP block required postoperatively lesser total number of doses of rescue analgesia in 24 hours postoperatively when compared to wound site infiltration.

The side effects of the present study were found to be similar with the study done by Yu N et al(26), Tawfik MM et al(13), Osaheni O. et al(15), Sherbeny MF et al(22) and Kumar D et al(24).

CONCLUSION

We conclude that ultrasound-guided TAP block provides superior postoperative analgesia compared with wound site infiltration in patients undergoing abdominal surgery under general anesthesia. This is reflected by lower vNRS scores at rest and during movement, a prolonged time to first rescue analgesia, reduced total analgesic consumption, and fewer rescue analgesic doses over the first 24 hours postoperatively.

LIMITATIONS

Limitation of this study was postoperative pain assessment was restricted to the first 24 hours.

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