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Original Research Article.

Evaluating Opioid Consumption and Patient Satisfaction with Transversus Abdominis Plane Block Versus Local Anaesthetic Wound Infiltration for Postoperative Analgesia in Women Undergoing Total Abdominal Hysterectomy: A Randomized Control Trial

Yogen Deo[1*], Kartik Mudliar[2], Kenton Biribo[3], Aadarshni Chand[4]

[1*]Senior Medical Officer, Department of Anesthesia, Critical Care and Pain Management Services, Lautoka Hospital, Health Care (Fiji) Pte Limited, Aspen Medical, Fiji.
[2]Chief Medical Officer, Department of Anesthesia, Critical Care and Pain Management Services, Lautoka Hospital, Health Care (Fiji) Pte Limited, Aspen Medical, Fiji.
[3]Assistant Professor, School of Medical Sciences, College of Medicine Nursing and Health Sciences, Fiji National University, Fiji.
[4]Medical Officer, Department of Paediatrics, Lautoka Hospital, Health Care (Fiji) Pte Limited, Aspen Medical, Fiji.

ABSTRACT

Background: TAP block and LWI are regional anesthesia techniques used for postoperative pain management in lower abdominal surgeries.

Objective: To compare the effectiveness of TAP block and LWI in reducing opioid consumption and improving patient satisfaction in women undergoing TAH.

Methods: A single-center, prospective, double-blinded, randomized controlled trial was conducted among 30 women scheduled for elective TAH. Ethics approval was obtained before the study was commenced. Randomization was done using computer-generated randomization, assigning participants to parallel groups namely either the TAP or LWI group. Participants in TAP Group received bilateral ultrasound guided TAP blocks while those in LWI Group received local anaesthetic wound infiltration (LWI).

Results: TAP block significantly reduced postoperative opioid consumption in the first 24 hours compared to LWI. Additionally, TAP block resulted in earlier mobilization out of bed and improved patient satisfaction scores.

Conclusion: TAP block is superior to LWI for postoperative analgesia in TAH, reducing opioid consumption, promoting earlier mobilization, and improving patient satisfaction.

Keywords: Transversus Abdominis Plane (TAP) Block, Local Wound Infiltration (LWI), Postoperative Analgesia, Total Abdominal Hysterectomy (TAH), Opioid Consumption, Patient Satisfaction.

***Correspondence to:**

Dr. Yogen Deo,
Senior Medical Officer, Department of Anesthesia, Critical Care and Pain Management Services, Lautoka Hospital, Health Care (Fiji) Pte Limited, Aspen Medical, Fiji.
Email: deoyogen@gmail.com

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INTRODUCTION

TAP blocks are useful in a number of lower abdominal surgeries in a number of surgical specialties including; major gynaecology surgery, general surgery, urological surgery, plastic surgery and obstetric surgery with some examples such as TAH +/- BSO, caesarian sections, appendectomies, inguinal hernia, colorectal surgery, plastic reconstructive surgery of abdomen and renal transplant. TAP block provides sensory blockade to the anterolateral aspect of the lower abdominal wall from the dermatomal level of T10 to L1.[1] Local anaesthetic wound infiltration is also a useful method of postoperative analgesia commonly used either on its own or with other analgesics as a part of multimodal analgesia.[2] It involves direct injection of local anaesthetic into the wound edges either only subcutaneously or also in the sub-fascial layer depending on the surgeons' knowledge and experience. This simple technique was developed to enhance postoperative analgesia, reduce opioid consumption and promote earlier patient recovery.[2] Surgeons may inject LWI for the TAH at the end of the surgery either before closing the skin or even after skin closure. In our setting the Anaesthetist assists the surgeon to calculate and prepare the appropriate dose and volume of local anaesthetic to be given for the specific surgical procedure depending on the size of the incisional wound and

patient's weight. Although this technique has been shown to be effective in the management of postoperative analgesia when compared to no LWI, numerous studies found the superiority of other new and advanced regional anaesthetic techniques including TAP block, Rectus Sheath block, Epidural block and Quadratus Lumborum block.[3-6] The main advantages of this technique (LWI) is that it does not require any additional specialized personnel or equipment to perform the procedure, it is relatively simple, easy and quick to perform hence saves time and has a good margin of safety.

Hence, the present study is undertaken to investigate the efficacy of two pain management strategies; Transversus Abdominis Plane (TAP) block and Local Wound Infiltration (LWI), in reducing opioid consumption and enhancing patient satisfaction among women undergoing Total Abdominal Hysterectomy (TAH).

The primary objective is to compare the total opioid consumption between the two groups during the first 24 hours following surgery.

Secondary objectives include evaluating patient satisfaction with postoperative pain management at 24 hours post-TAH, assessing the time to first mobilization out of bed, and comparing the incidence of opioid-related side effects between the TAP block and LWI groups. By comparing these outcomes, this study seeks to determine the most effective pain management approach for women undergoing TAH.

MATERIALS AND METHODS

A single-center, prospective, double-blinded, randomized controlled trial was conducted among 30 women scheduled for elective total abdominal hysterectomy at Lautoka Hospital, collaborating with the Department of Anaesthesia, Critical Care and Pain Management Services and Department of Obstetrics & Gyneacology over a six-month period.

Lautoka Hospital is a referral hospital in the Western division of Fiji and is managed by Health Care (Fiji) Pte Ltd, trading as Aspen Medical after the Fijian Government made a commitment to their people to modernize the local healthcare system in 2018/19 through a public private partnership.

An informed voluntary written consent was obtained prior to joining the study. The intervention took place in the Operation Theatre, and outcomes were assessed in the Post-Anaesthesia Recovery Unit (PARU) and monitored in Women Surgical Ward (WSW) until hospital discharge.

To determine the required sample size, a formula provided by the FNU Research Unit was used, taking into account the average of 2-3 TAH surgeries performed per week, equivalent to 10-12 surgeries per month. With a study duration of six months, the potential participant pool was estimated to be around 60-70 women. However, the calculated sample size revealed that a minimum of 28 participants would be sufficient to power the study adequately.

A total of 36 participants were assessed for eligibility to be enrolled. Three participants were excluded based on an ASA score of III. Hence, 33 participants were approached to participate. The TAP group had 17 participants and the LWI had 16 participants. A single participant was later excluded due to surgical complication in the TAP group. Both the groups had 1 participant each who had been lost to follow up due to missing information in the data collection sheet. Therefore, the results from 15 participants in each group, were analyzed.

Ethics approval was obtained from the Fiji National University (FNU) - Centre for Health, Human Research Ethics Committee (CHHREC) and facility approval was granted from the medical superintendent of Lautoka Hospital before the study was commenced.

In the present study, enrollment took place in the Women Surgical Ward (WSW) one day before surgery, where women were assessed for eligibility as per the eligibility criteria of the study as shown in Table 1. Eligible participants were provided study information and voluntary informed consent was taken. They also received education on pain assessment, management, and the blinding process of the study. Randomization was done using computer-generated randomization, assigning participants to parallel groups namely either the TAP or LWI group.

Table 1: Inclusion and Exclusion Criteria

Inclusion Eligibility Criteria	Exclusion Eligibility Criteria
All Women scheduled to undergo elective TAH under general anaesthesia at Lautoka Hospital: ▪ From 1st February, 2021 to 31st July 2021. ▪ With American Society of Anaesthesiologists Score (ASA) of I to II. ▪ Who give voluntary written consent.	Women were excluded from the study if they met the following criteria: ▪ Lack of consent for the study. ▪ Known allergy to opioids or any analgesics used in this study. ▪ ASA score of more than II. ▪ Weight less than 50kg. ▪ Included in the study but did not have the surgery or ended up with intraoperative or postoperative complication requiring additional procedures or ICU care. ▪ Included in the study but were lost to follow up due to missing information in the data collection sheet. ▪ Known psychiatric illness, dementia or intellectual impairment. ▪ Already on regular opioid therapy before surgery

Intervention occurred in operation theatre (OT) where its allocation was concealed using identical opaque envelopes, which were handed directly to the anaesthetist involved on the day of surgery and opened once the patient was under general anaesthesia. The envelope contained the participant's code, instructions for the anaesthetist, and a data collection sheet. Blinding was maintained in the OT, PARU, and WSW, with participants unaware of their intervention under general anaesthesia and outcome assessors blinded through documentation and handing over, with notes stating "Regional Anaesthesia as per study protocol". Follow-up and outcome assessment took place in PARU and WSW, with data collected on opioid usage by nurses and patient analgesia satisfaction by Pain Team doctors.

A summary of the recruitment process is as follows: Firstly, the women booked for elective TAH at Lautoka Hospital for the study time-frame as stated earlier were approached to voluntarily participate in this study. First contact was made with the participants once they were already admitted to Women Surgical Ward a day before their surgery by the researcher himself (or the facility supervisor in case the researcher was unable to meet the participants (few cases). The women were assessed for eligibility to participate in the study using the inclusion and exclusion criteria. The eligible women were informed about the study including the risks and the benefits, questions were answered, and their understanding was checked. Voluntary written consent was then sought.

Women were also informed that they could withdraw from the study at any time. In the same meeting, the participants were informed that they would be randomized into one of the two study groups and they would not be aware of their groups themselves as the study is double blinded. Education was provided on the pain assessment (use of Numerical Rating Scale) and management protocols including the multimodal analgesia approach and drugs used for the pain management. Any allergies to included drugs was checked as well.

The participants of this study were randomized into two parallel groups, namely Group 1, also called TAP Group or Group 2 also called LWI Group. Participants in TAP Group received bilateral ultrasound guided TAP blocks while those in LWI Group received local anaesthetic wound infiltration (LWI). The process of randomization was carried out using computer generated randomization. The participants were assigned a unique code number for de-identification. The intervention allocation was concealed using identical opaque concealed envelopes. These envelopes were personally handed over to the anaesthetist involved in the case on the day of surgery with specific instructions to maintain confidentiality and safe keeping of these envelopes throughout the day. These envelopes were personally collected at the end of the list for that day from the same Anaesthetist. The envelopes were opened by the anaesthetist once the participants were under general anaesthesia as they were blinded in the study. The content of the envelope included the intervention group allocation for the participant, instructions for the anaesthetist, participant unique code number and the data collection sheet.

The outcome assessors were also blinded as it was not documented in the patients notes whether patient had received TAP block or LWI specifically, however, it was documented that patient had received “40 ml of 0.25% bupivacaine given as a regional anaesthesia as per study protocol” in the regional section of the anaesthetic chart. The handover to the PARU staff, ward staff and the pain team included that patient has received “regional anaesthesia as per study protocol”. The documentation for records purpose, separate paper was used for documenting what method patient had received including the description of the technique which was kept in the same envelope as per intervention allocation and these was later translated into the patients notes upon discharge of patient from the hospital.

For both groups of patients, on the day of surgery, participants had undergone general anaesthesia for TAH. General anaesthesia was conducted by the rostered anaesthetist in the operating room and was standardized to all patients. General anaesthesia was induced after preoxygenation with 100% Oxygen for 3 – 5 minutes. Induction was done using with

Fentanyl 1-2mcg/kg, Propofol 2-3mg/kg and Atracurium 0.5 mg/kg or Vecuronium 0.1mg/kg. The trachea was intubated with a size 7.0 – 7.5mm endotracheal tube and secured. General anaesthesia was maintained with Isoflurane at Minimum Alveolar Concentration of 1.0. Patients were mechanically ventilated with oxygen: air at 1:1 ratio and tidal volume of 6-8ml/kg. Once patients were hemodynamically stable, Morphine at 0.1mg/kg was administered to all patients for intraoperative analgesia. Dexamethasone 4mg single bolus dose was also given intraoperatively post induction as a prophylactic antiemetic medication. For all patients, Diclofenac 100mg was given per rectally at the end of surgery before extubation and charted every 12 hourly after that.

Apart from the standard general anaesthesia as explained above, participants in TAP group received bilateral ultrasound guided Transversus abdominis plane (TAP) blocks with 20mls of 0.25% Bupivacaine on each side at the end of the surgery. The TAP block was performed by the theatre Anaesthetist under direct supervision by a Consultant Anaesthetist. The ultrasound scan machine available in the operation theatre at Lautoka Hospital was used for this procedure. The linear probe of the ultrasound scan was placed transversely between the iliac crest and the costal margin in the mid-axillary line at the same level of the umbilicus and important structures including the external oblique, internal oblique and transversus abdominis muscles was visualized. The 18-gauge cannula needle was introduced from the medial side of the ultrasound scan probe (anterior of the abdomen) in an in-plane view to deposit the local anaesthetic under direct visualization in the intermuscular plane between the transversus abdominis muscle and the internal oblique muscle. Sterility was maintained during the procedure to avoid any infection.

Participants in LWI group had also undergone TAH under standard general anaesthesia as for TAP Group. LWI group patients also received local anaesthetic wound infiltration (LWI) at the end of surgery. The Surgeon was provided with sterile solution of 40 mL of 0.25% Bupivacaine to inject at both wound edges. LWI was performed by the same Surgeon doing the surgery. At the end of surgery, neuromuscular reversal was administered (neostigmine 2.5 mg and atropine 1.2mg). Patients emerged from general anaesthesia and were extubated prior to transfer to the recovery unit (PARU).

In PARU, standard postoperative care was provided by trained PARU nurses and participants were monitored closely until they

were ready to be discharged back to the Women's Surgical Ward. Outcome assessment commenced from PARU. Pain severity scores were taken from participants using the Numerical Rating scale and documented by the PARU staff at an hour of patients' arrival to PARU. Pain scores were taken on rest and upon movement. For movement, two separate actions were asked for participants to perform including coughing and flexing the hip. Rescue analgesics mainly fentanyl (only in PARU) and morphine were charted for patients and given if the pain score was 4 or more. The data collection sheet was used to record pain score and the usage of opioids for postoperative analgesia. The length of PARU stay was documented. For postoperative pain management in the ward, multimodal analgesia was prescribed by the Anaesthesia team. The analgesia prescription included: Paracetamol 1g per oral every six hourly, Diclofenac 100mg per rectal twice a day and Morphine 2.5mg – 5mg intravenously as required (prn) were charted for patients for further pain relief. Patients were followed up in WSW to assess opioid requirements and patient satisfaction up to 24 hours.

For the primary outcome, at the end of first 24 hours post operation, patients' total opioid use was calculated including the number of breakthrough pain treatment required in the ward. For secondary outcomes, patient analgesia satisfaction scores were taken by the Acute Pain team at 24 hours post-surgery, time to mobilize out of bed was measured and opioid related side effects were compared between the groups.

Figure 1 below shows the flow of the participants from eligibility to analysis of this study.

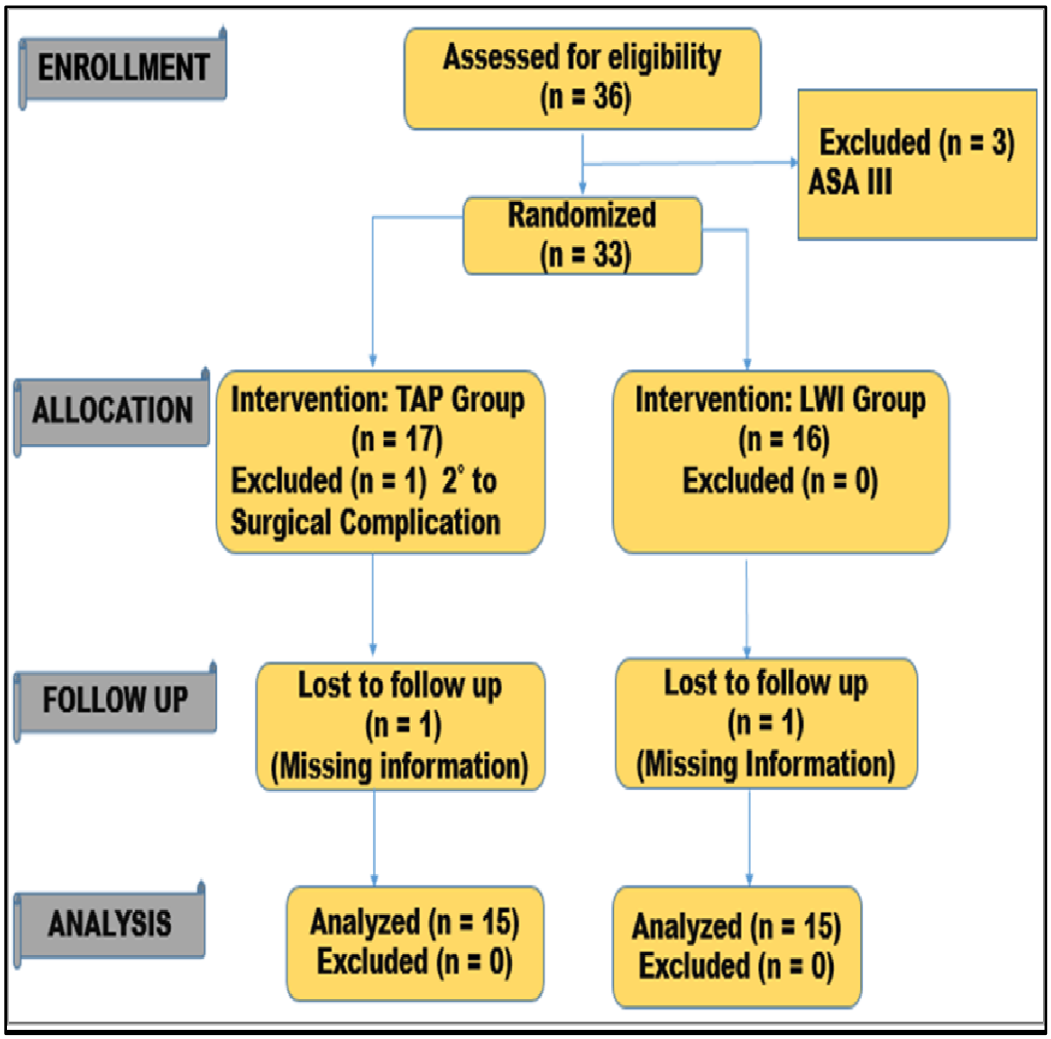

Figure 1: The flow of the participants from eligibility to analysis

RESULTS

Table 2 shows demographic characteristics of participants of this study which are described below.

Age: Upon comparing the age between the two groups, the results showed that there was statistically significant difference in the median age between the TAP group and LWI group. The median age (IQR) in TAP group was 49 (23) years as compared to 45 (11) years in the LWI group (P=0.002).

Body Mass Index (BMI), height and weight: There were no statistically significant differences observed between the 2 groups in these variables. The median BMI in TAP group was 27.4kg/m² whereas the median BMI in LWI group was 26.7kg/m² (P= 0.624). This suggests that the majority of the women in the study were overweight.

Ethnicity: There were no statistically significant differences observed in the ethnicity of participants between the 2 groups. However, of interest, majority of the participants were of Fijian of Indian Descent (FID) in both the groups (67% in TAP group vs 73% in LWI group).

Indications of TAH: Amongst the women that underwent TAH, there were no statistically significant differences observed in the

indications of surgery between the TAP and LWI groups. Of interest, the 2 most common indications of TAH noted in both the groups were similar and included Uterine fibroid (47% in TAP group vs 27% in LWI group) and Endometrial cancer (40% in TAP group vs 13% in LWI group).

ASA Classification: There was no statistically significant difference between the ASA scores of participants between the groups. However, majority of the participants were of ASA II in both the groups (80% in TAP group vs 73% in LWI group).

Type of Incision: There was no statistically significant difference amongst the participants between the 2 groups on the type of incision done. Of interest, majority of the participants had midline incision below the umbilicus in both the groups (80% in TAP group vs 93% in LWI group).

Table 2: Comparison of Demographic Characteristics

Variable	TAP Group (n = 15) Median (IQR)	LWI Group (n = 15) Median (IQR)	P value
Age (years)	49 (23) (40 - 79)	45 (11) (32 - 60)	0.002*†
BMI (kg/m2)	27.39 (5.09) (18.38 – 41.27)	26.72 (14.98) (20.40 – 48.27)	0.624†
Weight (kg)	68.00 (25) (55 - 111)	75 (45) (50 - 130)	0.436†
Height (cm)	161 (11) (151 - 177)	163 (10) (140 - 178)	0.305†
Ethnicity	No. (%)	No. (%)	
FID	10 (67%)	11 (73%)	1.000
I-taukei	5 (33 %)	4 (27%)	1.000
Indications of TAH			
Endometrial Ca	6 (40%)	2 (13.33%)	0.215
Ovarian Ca	0	1 (6.67%)	1.000
DUB	1(6.67%)	1 (6.67%)	1.000
Ovarian mass	0	4 (26.67%)	0.100
Uterine mass	0	1 (6.67%)	1.000
Uterine Fibroid	7 (46.67%)	4 (26.67%)	0.450
GTD	0	1 (6.67%)	1.000
Pelvic Mass	0	1 (6.67%)	1.000
Cervical Fibroid	1 (6.67%)	0	1.000
ASA Classification			
ASA I	3 (20%)	4 (27%)	1.000
ASA II	12 (80%)	11(73%)	1.000
Type of Incision			
Midline	12 (80%)	14(93%)	0.598
Pfannenstiel	3 (20%)	1 (7%)	0.598
Operative Duration (minutes)	120 (60) (80 - 200)	130 (75) (75 - 190)	0.389†

NB: * denotes statistically significant, † denotes Mann Whitney U test used

Primary Outcome

Postoperative opioid consumption analysis is demonstrated in Table 3. The results showed that total morphine dose that was consumed in TAP group was statistically significantly lower compared to the LWI group in the first 24 hours postoperatively. There was also a statistically significant reduction in the number of breaks through pain relief used in the ward in the TAP group compared to the LWI group. The dose of Fentanyl used postoperatively amongst both the group showed no statistically significant difference. The number of breakthrough pain relief required in PARU was also not statistically significant amongst both the TAP and LWI groups.

Secondary Outcomes

The secondary outcomes of this study are presented in Table 4 and mentioned below:

I. Patient Satisfaction Scores: The study results showed that patient satisfaction scores in women who received TAP block had statistically significant difference when compared to women who received LWI. The patient satisfaction scores were better in TAP group with median score of 4 compared to a median score of 3 in LWI group ($P < 0.05$).
II. Time to Mobilize Out of Bed: The results showed that women in the TAP group had statistically significant reduction in the time to get out of bed compared to women in LWI group. The

median time taken to mobilize out of bed in TAP group was 18hours compared to 22hours in LWI group (P = 0.01).

III. Opioid Related Side Effects: As a secondary outcome, we have analyzed data on opioid-related side effects. Table 5 demonstrates the opioids side effects profile for women who underwent TAH in this study. The side effects that were seen in this study include postoperative nausea and vomiting, dizziness, pruritus, and constipation. There were no significant differences between the groups as described below.

- **Postoperative Nausea and Vomiting (PONV):** No statistically significant difference seen between the groups (33% in TAP group vs 27% in LWI group, p=1.0).
- **Dizziness:** No statistically significant difference seen between the groups (13% in TAP group vs 20% in LWI group, p=1.0).
- **Pruritus:** No statistically significant difference seen between the groups (7% in TAP group vs 7% in LWI group, p=1.0).
- **Constipation:** No statistically significant difference seen between the groups (7% in TAP group vs 7% in LWI group, p=1.0).
- **Side Effects free:** No statistically significant difference seen between the groups but majority of women undergoing TAH experienced no side effects (53% in TAP group vs 47% in LWI group, p=1.0).

Table 3: Postoperative Opioid Consumption Analysis

	TAP Group (n = 15) Median (IQR) (Range)	LWI Group (n = 15) Median (IQR) (Range)	Median difference	95% Confidence Interval	P Value
Fentanyl Dose Post-op (mcg)	0.00 (0) (0 - 25)	0.00 (0) (0 - 50)	0	-1.2581 – 6.2581	1.000
Morphine Dose Post-op (mg)	10 (8) (5 - 22)	19 (5) (15 - 22)	9	13.0344 – 16.8656	0.001*
No. of breakthrough pain relief in PARU	1 (2) (0 – 2)	1 (1) (0 - 4)	0	.7699 – 1.4967	0.089
No. of breakthrough pain relief in Ward	2 (2) (1 – 4)	4 (1) (2 - 6)	2	2.4469 – 3.531	0.0001*

NB: Mann Whitney U test used to analyze data. *denotes statistically significant data

Table 4: Assessment of post-operative outcomes and patient satisfaction score

	TAP Group (n = 15) Median (IQR) (Range)	LWI Group (n = 15) Median (IQR) (Range)	Median difference	95% Confidence Interval	P Value
Time to get out of bed (hours)	18 (7) (13 – 26)	22 (10) (18 - 36)	4	19.0493 – 23.1507	0.010*
Patient satisfaction score (1 – 5)	4 (1) (4 – 5)	3 (1) (2 - 5)	1	3.4315 – 4.1018	0.0001*

NB: Mann Whitney U test used to analyze data. *denotes statistically significant data

Table 4: Opioids Side Effects Profile

	TAP Group (n = 15)	LWI Group (n = 15)	Difference	P Value
Postoperative Nausea and Vomiting	5 (33.33%)	4 (26.67%)	1	1.000
Dizziness	2 (13.33%)	3 (20%)	1	1.000
Pruritus	1 (6.67%)	1 (6.67%)	0	1.000
Constipation	1 (6.67%)	1 (6.67%)	0	1.000
Nil side effects	8 (53.33%)	7 (46.67%)	1	1.000

NB: Fisher's exact test used for categorical data analysis.

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DISCUSSION

The Transversus Abdominis Plane (TAP) block, initially described by Kuppuvelumani P et al in 1993[7] and formally documented by Rafi in 2001,[8] has emerged as a valuable technique for managing surgical abdominal pain. This method involves injecting local anesthesia into the plane between the internal oblique and transversus abdominis muscle.[8,9] An alternative approach for reducing postoperative pain is single-shot local anesthetic wound infiltration (LWI).[10,11] This method involves injecting local anesthesia into the skin and subcutaneous tissue layer at surgical incision sites, providing pain relief for up to 24 hours postoperatively.[12] Hence, the present study compared the pain management strategy for women undergoing total abdominal hysterectomy (TAH). The primary focus is on comparing the total opioid consumption between two groups - Transversus Abdominis Plane (TAP) block and Local Wound Infiltration (LWI) - during the

first 24 hours following surgery and the result of the present study suggests that TAP blocks reduce postoperative opioid consumption in the early postoperative period up to 24 hours. Similar results in terms of reduced opioid consumption have been demonstrated by; Atim et al., Sivapurapu et al., Ranjit et al. and Sherbeny et al. [3-6]

In this study TAP blocks were associated with reduced breakthrough analgesia requirement in the ward. This was a unique outcome measure that was not present in previous studies. In this study there were no significant differences noted in opioid related side effects which were PONV, dizziness, pruritus and constipation between the groups. Sherbeny et al[6] demonstrated similar results with regards to PONV. In another study, Sivapurapu et al[4] found lower incidence of PONV in TAP group. This study was not specifically designed to detect PONV as a primary outcome, a larger sample size might be required to confirm this potential opioid related side effect.

This study showed improved patient satisfaction in the TAP group compared to LWI. This is consistent with findings from Sherbeny et al. as this was the only RCT that assessed patient satisfaction as an outcome.[6] The participants in the TAP block group mobilized out of bed earlier in this study. This finding is also consistent with findings from Sherbeny et al.[6] The data contributes to a clearer understanding of the role TAP block plays in postoperative TAH pain management showing superiority over LWI. Thus, these results build on the existing evidence of the usefulness of TAP blocks in lower abdominal surgeries.

The findings of this study is contradicting few studies present in the literature including Ismail et al., Dai et al., Chang et al. and Gasanova et al.[13-16] Ismail et al. could not demonstrate any statistically significant differences in opioid consumption while comparing TAP block with placebo for TAH.[7] Dai et al. in a retrospective review, found no difference in reduction in narcotic consumption beyond PARU.[8] Chang et al. found no reduction in opioid consumption in the first 24 hours post operation.[9] Gasanova et al. found LWI was superior compared to TAP blocks for TAH with significantly reduced opioid consumption in LWI group.[16]

The ineffectiveness of previous studies can be attributed to their methodological limitations. Two of the studies were retrospective reviews[14-15], which may be subject to biases. Another study used a longer-acting local anesthetic in the LWI group, resulting in an extended analgesic effect that may have skewed the results.[10] Furthermore, Ismail et al.'s RCT[13] focused primarily on stress response rather than analgesic efficacy, which may explain why TAP did not demonstrate superiority. The differing outcome measures in Ismail et al.'s study could account for the conflicting results. Consequently, our study challenges the existing literature that suggests LWI is superior to TAP block for Total Abdominal Hysterectomy (TAH).

While the ultrasound-guided TAP block is a relatively straightforward procedure, its success hinges on careful consideration of several crucial factors. A thorough understanding of the relevant sonoanatomy is essential, as is the ability to accurately identify the TAP on ultrasound and visualize the local anesthetic spreading in the correct plane. Selecting the appropriate approach tailored to the specific surgery is also vital. Notably, the effectiveness of TAP block in this study can be attributed to the expertise of the anesthetist performing the procedure, equivalent to a consultant level.

However, in real-world practice, the outcomes may vary when inexperienced personnel perform the procedure, highlighting the importance of adequate training and expertise. This study boasts several methodological strengths, solidifying its position as a high-quality investigation. As a prospective, double-blinded, and randomized controlled trial, it represents the gold standard in evidence hierarchy. The use of computer-generated randomization and concealed allocation ensured the avoidance of selection bias. Additionally, performance bias was mitigated through participant blinding and standardized perioperative care. Detection bias was also minimized by blinding the outcome assessors. While the Anaesthetist and Surgeon performing the interventions could not be blinded due to practical and ethical constraints, the study's design robustly addresses potential biases. Furthermore, this study has significant real-world implications, as it tackles a prevalent issue at our hospital and provides a straightforward, safe, and effective solution, making it a valuable contribution to the field.

CONCLUSION

Bilateral ultrasound guided TAP block is superior to LWI for postoperative analgesia in TAH and is associated with significantly reduced opioid requirement postoperatively, earlier time for mobilization out of bed and improved patient satisfaction.

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