



POST-OPERATIVE PAIN ASSESSMENT IN PATIENTS OF TOTAL ABDOMINAL HYSTERECTOMY DONE UNDER GENERAL ANESTHESIA PLUS EPIDURAL AND GENERAL ANESTHESIA PLUS TAP BLOCK

Anaesthesiology

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ABSTRACT

Background: Total abdominal hysterectomy is one of the most common surgeries performed for malignant as well as benign indications. Parenteral analgesics and epidural analgesia are two standard options to treat postoperative pain after total abdominal hysterectomy (TAH). Fascial plane blocks, such as the transversus abdominis plane (TAP) blocks, have gained popularity recently. Effective pain management depends on the cooperation between the surgeons, anesthetists, and the hospital's pain management service, and is a combination of preemptive analgesia, general and regional anesthesia, peripheral blocks, and multimodal postoperative pain treatment. **Aim:** The aim of the present study was to assess the postoperative pain in patients of total abdominal hysterectomy done under general anesthesia plus epidural (Group A) and general anesthesia plus TAP block (Group B) **Methods:** A profile of 30 female patients with ASA physical status I and II and aged between 40-60 years undergoing TAH were randomized into two groups, Group A and Group B, of 15 patients in each group for postoperative analgesia in the Department of Anesthesiology and Critical Care, Lalla Ded hospital, Government Medical College, Srinagar over the period of three months after getting approval from the Institutional Ethical Committee and informed consent of the patients. The epidural group (Group A) received boluses of 0.1% ropivacaine for 24 h, and the TAP group (Group B) received a bilateral TAP (Transverse Abdominal Plane) block with 0.2% ropivacaine at the end of surgery. Patients were monitored for tramadol consumption, both at rest and on coughing, hemodynamics, and side effects at 0, 2, 4, 6, 8, 12, and 24 hours postoperatively. Data was obtained on a pre-structured proforma and entered into a Microsoft Excel spreadsheet. The said data was then coded and exported to the data editor of Statistical Package for Social Sciences (SPSS Ver. 23). A p-value of < 0.05 was considered statistically significant. **Results:** Patients were comparable with regard to demographic profile among the study population. The total consumption of tramadol in 24 h was greater in the TAP group as compared to the Epidural group (109 ± 5.38 vs. 334 ± 27.15 mg, $P < 0.001$). The NRS scores at rest and on coughing were higher in the TAP group as compared to the epidural group at 6, 8, 12, and 24 h postoperatively ($P < 0.05$). None of the patients in either group had any adverse effects. **Conclusion:** Epidural analgesia was more effective in providing visceral and somatic pain analgesia after total abdominal hysterectomy (TAH) in comparison to TAP block. Epidural resulted in wider sensory blockade compared to TAP block with less incidence of postoperative nausea and/or vomiting.

KEYWORDS

Total Abdominal Hysterectomy, General Anesthesia, Epidural Analgesia, Postoperative Analgesia, Transversus Abdominis Plane Block, VAS.

INTRODUCTION:

Effective pain management depends on the cooperation between the surgeons, anesthetists, and the hospital's pain management service and is a combination of preemptive analgesia, general and regional anesthesia, peripheral blocks, and multimodal postoperative pain treatment.^[1]

Total abdominal hysterectomy (TAH) is the most common non-obstetric major surgical procedure performed in Indian women^[2] and is associated with significant postoperative pain and discomfort^[3] Traditionally, postoperative pain relief following TAH is provided by intravenous opioid/ nonopioid medications or epidural analgesia. The Transversus abdominis plane (TAP) block is increasingly used for both upper and lower abdominal surgeries.^[4-8]

Hysterectomy can be performed in several different approaches: vaginal, laparoscopic, and open abdominal. The choice of surgical approach depends on the indication for surgery, the presence of previous abdominal or pelvic surgery, the patient's medical history and background illnesses, Body Mass Index, and the surgeon's expertise. The level of pain associated with hysterectomy, as well as the length of the period of convalescence, depends on the surgical approach. The open abdominal hysterectomy is considered a major surgery and is associated with a medium to high pain level^[9]

Patients' satisfaction and subjective success of the operation are crucially influenced by the efficacy of analgesia both in the immediate as well as long term period following the operation. Inadequate attention to acute postoperative pain has short-term consequences such as recovery rate, length of hospitalization, as well as immediate complications, infectious, neurological, cardiovascular, and thromboembolic sequelae caused by immobility. It also carries long-term consequences in the form of chronic pain syndromes, e.g., post-hysterectomy or hysterectomy chronic pelvic pain syndrome^[10]

METHODS:

The study was conducted in a tertiary care hospital, Lalla Ded Hospital which is one of the associated hospitals of Government Medical College Srinagar. After approval of the Institutional Ethics Committee and written informed patient consent, we enrolled 30 women with the American Society of Anesthesiologists physical Status I-II. Patients aged 40–60 years, weight 50–80 kg, were scheduled for TAH in this prospective observational study. Patients were excluded if they had a history of relevant drug allergy, inability to use PCA device, contraindication to epidural anesthesia, or history of psychiatric illness.

The enrolled patients were randomized to two groups of 15 each, epidural and TAP block group, by using a computer-generated random number table.

A detailed history was noted and a complete general and systemic examination was done. The procedure was explained to patients, and written informed consent was taken. In the surgical theatre, the monitor was attached to record ECG, NIBP, SpO₂, HR, and RR. The baseline readings were noted. All patients were instructed to report pain on the NRS (Numerical Rating Scale) with zero equaling "no pain" and 10 indicating "the worst imaginable pain." A standardized general anesthetic management with standard monitoring was employed in both groups.

Anesthesia technique

Group A: In the epidural group, an epidural catheter was placed at L2–L3 interspace, and 10–15 ml of 0.1% ropivacaine was administered to ensure a sensory block up to T8 dermatome by 30 min, failing which an additional 5 ml of 0.1% ropivacaine was injected.

Group B: In the TAP group, the TAP block was performed under ultrasound guidance with a high-frequency (5–10 MHz) probe (Sonosite, Inc., Bothell, WA 98021, USA) and an in-plane technique using a 23-gauge spinal needle after the institution of general anesthesia. Following the placement of the needle, 1.5 mg/kg of 0.2%

ropivacaine (maximum dose of 150 mg on each side) was injected between the internal oblique and the transversus abdominis muscle. The same procedure was repeated on the other side, and a single investigator performed blocks on all the patients.

This was followed with the standard anesthetic protocol; General anesthesia was induced with IV propofol 2.0–2.5 mg/kg followed by succinylcholine 2 mg/kg to facilitate orotracheal intubation. The trachea was intubated with a cuffed orotracheal tube of appropriate size. Anesthesia was maintained with 66% nitrous, and 33% oxygen, with 0.5–1% isoflurane. Intermittent boluses of atracurium bromide were used to achieve muscle relaxation. Minute ventilation was adjusted to maintain normocapnia (end-tidal carbon dioxide [EtCO₂] between 34 mm and 38 mm Hg), and EtCO₂ was monitored. The trachea was extubated after recovery of neuromuscular blockade.

Following surgery, the patients in both groups were shifted to Post Anesthesia Care Unit (PACU). In the epidural group, continuous epidural infusion of 0.1% ropivacaine at 10 ml/h was started in the postoperative period.

Patients were monitored for tramadol consumption, numerical rating scale (NRS) both at rest and on coughing, hemodynamics, and side effects at 0, 2, 4, 6, 8, 12, and 24 h postoperatively.

Statistical Methods

Statistical software SPSS (version 20.0) and Microsoft Excel were used to carry out the statistical analysis of data. Data was analyzed by means of descriptive statistics viz, means, standard deviations and presented by Bar diagrams. The chi-square test or Fisher's exact test, whichever is appropriate, was used for non-parametric data. A p-value of less than 0.05 was considered statistically significant.

Conflict of interest: Nil

Funding: Nil

RESULTS:

Thirty patients were enrolled, and the data of all these 30 patients were analyzed. Both groups had comparable characteristics with respect to the demographics of the study population [Table 1].

Table 1: Demographic profile of the study population

Variables	Group A (n=15)	Group B (n=15)	P Value
Age (Years)	49.9±7.4	51.2±6.3	0.1
Weight (kg)	63.3±11.3	62.5±10.8	0.7
Height (cm)	154.3±4.8	155.4±5.1	0.8
ASA I/II	10/5	12/3	0.6

ASA=American Society of Anesthesiologists Category,

DUB=Dysfunctional Uterine Bleed. Values are expressed as mean ± SD or number. The parametric data in this table was analyzed with ANOVA and categorical variables using the Chi-square test.

The majority of patients were operated on for a Fibroid uterus, followed by endometrial carcinoma, adnexal mass, and DUB (dysfunctional uterine bleeding) among the study population (Table 2).

Table 2: Surgical diagnosis of the study population

Diagnosis	Group A (n=15)	Group B (n=15)	P Value
Fibroid uterus	7	8	0.7
Endometrial carcinoma	4	3	0.9
Adnexal mass	3	3	0.6
DUB	1	1	0.8

The postoperative NRS scores were similar in both the groups up to 6 h, but at 8, 12, and 24 h, the mean NRS score was greater in the TAP group, both at rest and on coughing ($P < 0.05$) [Tables 3 and Fig 1]. There were no significant differences in hemodynamics in both groups. At 24 h, 10% of women in the TAP group reported greater nausea as compared to the epidural group (Median, IQR, 0 [0–0] vs. 0 [0–1], $P < 0.001$). There was no difference in mean consumption of antiemetics, sedation score, and side effects. The total 24-hour consumption of tramadol was significantly higher in women of the TAP group as compared to the epidural group 109 ± 5.38 vs. 334 ± 27.15 mg, $P < 0.001$ mg, $P < 0.001$ [Fig 2].

Table 3: Comparison of NRS (numerical rating scale) scores at rest during 24 h postoperative period among the study population

Time	Group A (n=15)	Group B (n=15)	P Value
0 h	0.4 (0-1)	0 (0-1)	>0.01
2 h	0.9 (0-1)	1.1 (1-1)	>0.01
4 h	1 (0-1)	1.3 (1-2)	>0.01
6 h	0.5 (0-1)	1.5 (1-2.2)	>0.01
8 h	0(0.09)	2(1.9-3.1)	<0.01
12 h	0(0-1)	2.5(2-3)	<0.01
24 h	1(1-2)	5(4.5-6.1)	<0.01

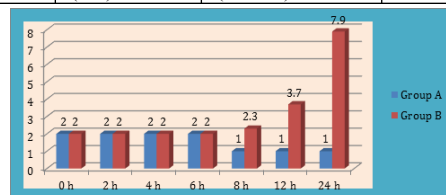


Fig 1

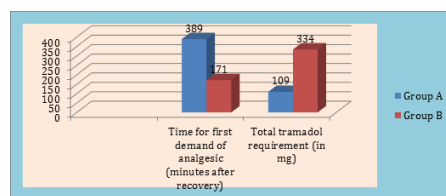


Fig 2

DISCUSSION:

Pain after total abdominal hysterectomy is often severe. Effective analgesia has been shown to reduce postoperative stress response and accelerate recovery, allow early ambulation, and prevent postoperative morbidity from total abdominal hysterectomy. It is well-recognized that local anesthetic techniques can improve the quality of postoperative recovery by reducing pain and analgesic requirements. Bilateral USG-guided TAP block has been demonstrated to provide excellent analgesia to the skin and musculature of the anterior abdominal wall in patients undergoing TAH.^[11] There is also the possibility of using an Epidural PCA for the post-operative period with advantages similar to those achieved by IV PCA.^[12]

In our study, there was more consumption in the TAP group of tramadol within 24 hrs as compared to the epidural group. Epidural analgesia treats both somatic (abdominal wall wound) and visceral (uterus) components of pain, whereas the TAP block covers pain derived from the abdominal wall only.^[13] In a previous study,^[14] a comparison of tramadol, tramadol-metamizol, and tramadol-lornoxicam administered by IV PCA in the management of postoperative pain relief after lower abdominal surgeries resulted in a 24 h tramadol consumption of 267 (91.4) mg which was quite similar^[14] to the present study. TAP for postoperative pain has been used in cesarean section patients, but the results cannot be compared with women undergoing TAH due to different Nociceptive inputs of the two surgeries.^[15] Rao Kadam *et al.* compared epidural versus continuous TAP catheter techniques for postoperative analgesia after abdominal surgery but did not find any differences in pain scores. The study was underpowered, and the authors suggested randomized trials with a larger number of patients.^[16]

In the present study, the mean NRS score at rest and coughing was higher in TAP group at 8, 12, and 24 h in the present study. This could be explained as the analgesic effect of the TAP block starts to decrease at 6 h.^[14] However, studies have reported effective postoperative analgesia following a single shot TAP block for up to 24–36 hours.^[15,17] In the present study, we used GA instead of spinal anesthesia,^[17,18] which possibly prolongs the effect of TAP block. The benefits of a single shot TAP block could be of advantage in situations where epidural analgesia is contraindicated or not desired. The hemodynamic parameters in the present study were within the normal physiological range with no adverse effects.^[19,20]

Patients receiving TAP block for postoperative analgesia had been shown to exhibit reduced incidence of postoperative nausea vomiting (PONV) by more than half (69% vs. 31%)^[21,22], but in the present study, patients in the TAP group at 24 h showed an increased PONV due to increased tramadol consumption.

CONCLUSION:

Epidural analgesia was more effective in providing visceral and somatic pain analgesia after total abdominal hysterectomy (TAH) in comparison to TAP block; epidural resulted in wider sensory blockade compared to TAP block with less incidence of postoperative nausea and/or vomiting.

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