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Evaluation of efficacy of epidural and wound infiltration analgesia for total abdominal hysterectomy: A comparative study

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Abstract

Background: Abdominal hysterectomy is one of the most commonly performed gynaecological operative procedures. While in cases adequate analgesia is provided by epidural infusion with local anaesthetics, literature quotes considerable case reports highlighting the presence of complications associated with it. Hence; the present study was undertaken for comparing and evaluating the efficacy of epidural and wound infiltration analgesia for total abdominal hysterectomy.

Materials & methods: A total of 50 patients between the age group of 30 to 55 years and belonging to ASA grade of I/II were enrolled. Complete demographic and clinical profile of all the patients was recorded. All the patients were randomized into two study groups as follows: Group 1: Patients who received epidural analgesia, and Group 2: Patients who received wound infiltration analgesia. Visual analogue scale (VAS) was calculated on a scale of 0 to 10 (0 indicating no pain and 10 indicating worst pain). Apart from assessing VAS, time to first analgesic requirement was also recorded. All the results were recorded in Microsoft excel sheet and were analysed by SPSS software.

Results: Mean VAS among patients of group 1 was significantly lower in comparison to patients of group 2 at 8 hours and 12 hours postoperatively. In the present study, mean time to first analgesic requirement among patients of group 1 and group 2 was 8.99 minutes and 9.16 minutes respectively. Non-significant results were obtained while comparing the mean time to first analgesia and mean hospital stay among the two study groups.

Conclusion: Continuous epidural analgesia has superior efficacy in comparison to wound infiltration analgesia in patients undergoing abdominal hysterectomy.

Keywords: Epidural, Hysterectomy, Wound infiltration

Introduction

Abdominal hysterectomy is one of the most commonly performed gynaecological operative procedures. The major conditions indicated for abdominal hysterectomy to be performed are: dysfunctional uterine bleeding, fibroid uterus, endometriosis and cervical intraepithelial dysplasia etc. The patients usually suffer from moderate to severe anemia due to chronic blood loss in absence of the proper treatment [1-3]. While in cases adequate analgesia is provided by epidural infusion with local anaesthetics, literature quotes considerable case reports highlighting the presence of complications (such as hypotension, motor blockade, epidural haematoma) associated with it. Local wound infiltration catheter has been used regularly in the handling of post-treatment analgesia. It has also been observed by previous researchers that it is an effective method for early recovery of bowel function, reduced opioid consumption and home readiness. Different studies have also demonstrated that wound infusion of local anaesthetics at the surgical site has an anti-inflammatory effect [4-7]. Hence; the present study was undertaken for comparing and evaluating the efficacy of epidural and wound infiltration analgesia for total abdominal hysterectomy.

Materials and methods

The present study was conducted in the department of anaesthesia with the aim of comparing and evaluating the efficacy of epidural and wound infiltration analgesia for total abdominal hysterectomy. A total of 50 patients between the age group of 30 to 55 years and belonging to ASA grade of I/II were enrolled. Ethical approval was obtained from institutional ethical committee and written consent was obtained from all the patients after explaining in detail

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the entire research protocol. Exclusion criteria for the present study were as follows:

- Hypertensive and diabetic patients,
- Patients having history of any other metabolic disorder,
- Patients who refused to give the informed consent,
- Patients with any known drug allergy

Complete demographic and clinical profile of all the patients was recorded. Pre-medication in the form of famotidine, metoclopramide and diazepam was given to all the patients on the day of the surgery. Complete hemodynamic profile of all the patients was recorded throughout the surgery. All the patients were randomized into two study groups as follows:

Group 1: Patients who received epidural analgesia, and Group 2: Patients who received wound infiltration analgesia Through monitoring of the pulse rate, blood saturation and oxygen saturation was done in all the patients throughout the surgery and postoperatively till 24 hours. Visual analogue scale (VAS) was calculated on a scale of 0 to 10 (0 indicating no pain and 10 indicating worst pain). Apart from assessing VAS, time to first analgesic requirement was also recorded. All the results were recorded in Microsoft excel

sheet and were analysed by SPSS software. Chi- square test and student t test were used for evaluating of level of significance.

Results

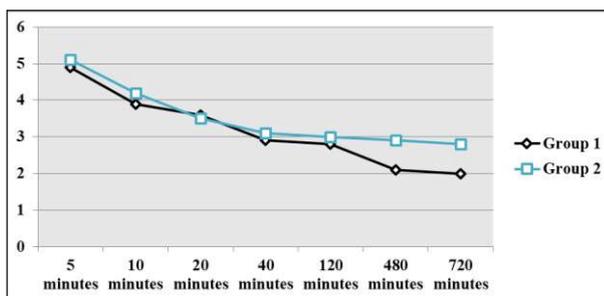
In the present study, a total of 50 patients were enrolled and were randomized into two study groups as follows: Group 1: Patients who received epidural analgesia and Group 2: Patients who received wound infiltration analgesia. Mean age of the patients of group 1 and group 2 was found to be 48.4 and 47.3 years respectively. 15 patients of group 1 and 13 patients of group 2 were of rural residence. 18 patients of group 1 and 16 patients of group 2 had ASA grade of I. Mean BMI of patients of group 1 and group 2 was 23.5 Kg/m² and 24.8 kg/m² respectively. Mean VAS among patients of group 1 was significantly lower in comparison to patients of group 2 at 8 hours and 12 hours postoperatively. In the present study, mean time to first analgesic requirement among patients of group 1 and group 2 was 8.99 minutes and 9.16 minutes respectively. Non-significant results were obtained while comparing the mean time to first analgesia and mean hospital stay among the two study groups.

Table 1: Demographic profile

Parameter		Group 1	Group 2
Age group (years)	30 to 40	9	7
	41 to 50	11	12
	51 to 55	5	6
Residence	Rural	15	13
	Urban	10	12
ASA grade	I	18	16
	II	7	9
Mean BMI (Kg/m ²)		23.5	24.8

Table 2: Comparison of VAS

Time (minutes)	Group 1	Group 2	p- value
5 minutes	4.9	5.1	0.12
10 minutes	3.9	4.2	0.19
20 minutes	3.6	3.5	0.38
40 minutes	2.9	3.1	0.44
120 minutes	2.8	3.0	0.28
480 minutes	2.1	2.9	0.04 (Significant)
720 minutes	2.0	2.8	0.01 (Significant)



Graph 1: Mean VAS at different time intervals

Table 3: Outcome

Variable	Group 1	Group 2	p- value
Time to first analgesia (minutes)	8.99	9.16	0.22
Mean hospital stay (days)	3.85	3.91	0.39

Discussion

Abdominal hysterectomy is the ultimate standard operation

among various gynecologic surgeries. It is usually performed through laparotomy under general anaesthesia as an in- hospital procedure, with the duration of hospitalisation between 2 and 11 days. Medical factors such as postoperative pain, nausea and paralytic ileus may affect the length of the hospital stay. In addition, time to discharge may vary because of different medical and local traditions, as well as geographic and social differences. The concept of ‘fast- track surgery’ has developed with the aim of reducing recovery times, reflected in reduced hospitalisation. There is paucity of data in literature in relation to the type of anaesthesia used.^{7- 9} Hence; the present study was undertaken for comparing and evaluating the efficacy of epidural and wound infiltration analgesia for total abdominal hysterectomy.

In the present study, a total of 50 patients were enrolled and were randomized into two study groups as follows: Group 1: Patients who received epidural analgesia and Group 2: Patients who received wound infiltration analgesia. Mean age of the patients of group 1 and group 2 was found to be 48.4 and 47.3 years respectively. Mean BMI of patients of group 1 and group 2 was 23.5 Kg/m² and 24.8 kg/m² respectively. Mean VAS among patients of group 1 was significantly lower in comparison to patients of group 2 at 8 hours and 12 hours postoperatively. Mihic DN *et al* randomly assigned 200 ASA and I and II patients who requested regional anaesthesia for abdominal hysterectomy (with or without elective appendicectomy) to one of five groups: 1) subarachnoid bupivacaine; 2) subarachnoid

bupivacaine plus intravenous midazolam and buprenorphine; 3) epidural bupivacaine; 4) epidural bupivacaine plus epidural morphine; 5) subarachnoid bupivacaine plus epidural morphine and bupivacaine. The last combination provided by far the best analgesia. Only two of 40 patients complained of slight discomfort, and this was easily controlled. Success rates correlated also with the height of the blockade. It was concluded that the combination of subarachnoid bupivacaine plus epidural morphine and bupivacaine represents an effective and reliable technique for abdominal hysterectomy with or without elective appendectomy^[10]. Stamenkovic DM *et al* compared the efficacy of combined spinal-epidural (CSE) analgesia vs. intermittent bolus epidural analgesia (EA) for pain relief after major abdominal surgery. 160 Patients were assigned to one of four groups: (i) subarachnoid morphine, bupivacaine and fentanyl (MBF group); (ii) morphine and bupivacaine (MB group); (iii) morphine (M group) and (iv) normal saline (EA group). They concluded that combined spinal-epidural improved intra-operative analgesia and reduced pain with cough in the immediate postoperative period^[11].

In the present study, mean time to first analgesic requirement among patients of group 1 and group 2 was 8.99 minutes and 9.16 minutes respectively. Non-significant results were obtained while comparing the mean time to first analgesia and mean hospital stay among the two study groups. Cherng YG *et al* reported a case of myotonic dystrophy in a 34-year-old woman who presented for total abdominal hysterectomy. In this patient, the authors used combined spinal and epidural block for intraoperative anesthesia and postoperative analgesia. The advantages of the combined technique offered rapid onset and good muscle relaxation from subarachnoid block, with the ability to supplement analgesia through the epidural catheter both during and after surgery. After the postoperation, optimal analgesia was obtained by infusing local anesthetic (0.125% bupivacaine) via the epidural catheter^[12]. In another study conducted by Thangavel AR *et al*, authors compared the efficacy of continuous wound infusion and continuous epidural infusion in upper abdominal surgery. A total of 40 patients who consented to this trial and undergoing upper abdominal surgery were included. In the continuous wound infusion (CWI) group, the wound catheter was placed in the subcutaneous plane of the surgical incision; the continuous epidural infusion (CEI) group received thoracic epidural with a catheter placed. There was no significant difference in pain scores both at rest and on movement between the two groups at all the time points assessed. Morphine consumption was less in the CEI group, though not significant. The time to appearance of bowel movement, time to ambulate, and length of hospital stay were significantly lower in the CWI group. The incidence of hypotension requiring intervention was higher in the CEI group. Hence, analgesia provided by continuous wound catheter infusion is not inferior to CEI with better preservation of hemodynamics and faster recovery^[13].

Conclusion

From the above results, the authors concluded that continuous epidural analgesia has superior efficacy in comparison to wound infiltration analgesia in patients undergoing abdominal hysterectomy. However; further studies are recommended for better exploration of results.

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