

An Evaluation of Post-Operative Pain Management in Elective Laparotomies in a Tertiary Care Facility: An Observational Study

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Conflict of interest: Nil

Abstract

Aim: The aim of the present study was to analyse of post-operative pain management in elective laparotomies in a tertiary care centre in Bihar region.

Methods: This study was conducted in the Department of General Surgery and Anesthesiology. The present study was conducted for period of 18 months. A sample size of 100 patients fulfilling eligibility criteria was taken for the study.

Results: The patients who underwent elective laparotomies were aged between 22 and 74. (34%) patients were in the age group of 40-50 years. The 20 different types of surgeries were recorded. The most common surgery performed in our study was open appendectomy which included 24 (24%) patients followed by open cholecystectomy (for carcinoma gall bladder and other indications) which included 8 (8%) patients. Most common was general anaesthesia with transverse plane block which was used in 42 (42%) patients, followed by general anaesthesia with quadratus lumborum block which was used in 18 (18%) patients. Most common mode of analgesia used was combined analgesia. Injection tramadol 50 mg in 100 ml normal saline with continuous epidural bupivacaine in 55 patients followed by injection diclofenac AQ 75 mg in 100 ml N.S with continuous epidural in 38 patients. 7 (7%) patients were on transdermal patch on post-operative day 2 and 1 patients were on diclofenac patch and 5 patients were on fentanyl patch.

Conclusion: Multimodal analgesia was used in most of the patients for management of post-operative pain combined analgesia was better mode of pain management method than a single analgesic. Due to different multimodal analgesics used in different institutions patients experienced different degrees of pain, hence we need a standard protocol for a best pain management method.

Keywords: post-operative pain management, elective laparotomies, tertiary care centre, Bihar

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Introduction

Pain continues to be a significant problem following laparotomy. [1,2] In this era of fast track surgery, the ERAS (enhanced recovery after surgery) group has suggested that a multimodal rehabilitation programme with epidural analgesia, short laparotomy, early feeding and early mobilisation improve outcomes after elective colonic surgeries. Pain is subjective, and it is modified by developmental, behavioural, personality factors. Post-surgical pain is initially of acute it may be nociceptive, inflammatory or neuropathic in nature. It is a common post-operative complication. Post-operative pain may progress to chronic pain leading to prolonged rehabilitation and recovery. [3] Poorly controlled pain is associated with poor mobility,

prolonged hospital stays, and increased complication rates.

Pain assessment scales were-Numerical rating scale (NRS), visual analog scale (VAS), defence and veterans pain rating scale (DVPRS), Adult non-verbal pain scale (NVPS), pain assessment in advanced dementia scale (PAINAD), Behavioural pain scale (BPS) and critical-care pain observation tool (CPOT). Commonly used to evaluate pain intensity, the visual analogue scale, verbal rating scale and numerical rating scale are valid, reliable and appropriate for use in monitoring postoperative pain in patients who are able to self-report. [4]

Improper planning of pain management in the postoperative period often leads to inadequate pain control and patient discomfort on one end or an overdosed patient with many analgesics and related complications on the other end [2]. Inadequate pain control is associated with patient complications such as increased sympathetic activity, risk of major cardiac events, poor mobilization, venous thrombosis, atelectasis, wound infection, chronic pain syndrome development, longer hospital stay, and poor patient experience. [5]

The Faculty of Pain Medicine from the United Kingdom published core standards for pain management services in 2021, which state that all patients with acute pain must have an individualized plan for pain control appropriate to their clinical condition that is effective, safe, and flexible with a review at frequent intervals. [6] It also states that all inpatients with acute pain must have regular pain and functional assessment using consistent and validated tools, with results recorded. Any deficiency in patient care is not evident until it is studied with valid methods such as patient questionnaires, feedback, audits, or statistical studies. A detailed review of the literature shows that there is no ideal system that is flawless and acceptable to all settings. [5] Every hospital should have its own policy on pain control, which suits their patient's spectrum, surgeries performed, availability of resources, and expertise of the doctors and staff in the postoperative ward. [6,7]

The aim of the present study was to analyse of post-operative pain management in elective laparotomies in a tertiary care centre in Bihar region.

Materials and Methods

This study was conducted in the Department of General Surgery and Anesthesiology, IGIMS, Patna, Bihar, India. The present study was conducted for period of 12 months. A sample size of 100 patients fulfilling eligibility criteria was taken for the study.

Informed written consent was obtained. Detailed history of the patient, condition, surgery performed, analgesics used were documented. NRS score was calculated.

Inclusion Criteria

For the study was all the patients who had undergone an elective laparotomy and had a stay of at least 3 days post operatively were included in the study.

Exclusion Criteria

Patients with cognitive impairment, critically ill and intubated patients, patients under the age of 18 were excluded in the study.

Statistical Analysis

The collected data were analysed with IBM SPSS Statistics for Windows, version 23.0. (Armonk, NY: IBM Corp). To describe about data descriptive statistics frequency analysis, percentage analysis was used for categorical variables and the mean and SD were used for continuous variables. To find significance in categorical data Chi-Square test was used similarly if the expected cell frequency is less than 5 in 2×2 tables then the Fisher's Exact was used. In both the above statistical tools probability value 0.05 is considered as the significant level.

Results

Table 1: Age distribution

Age (Years)	N	%
20-30	7	7
30-40	29	29
40-50	34	34
50-60	20	20
60-70	10	10

The patients who underwent elective laparotomies were aged between 22 and 74. (34%) patients were in the age group of 40-50 years.

Table 2: Surgery details

Type of surgery	N
Gastrectomy	4
Gastrojejunostomy + truncalvagotomy	2
Open cholecystectomy with CBDexploration	3
Open partial nephrectomy	1
Whipple's procedure	10
Lap converted to opencholecystectomy	2
Open appendectomy	24
Open cholecystectomy (carcinoma gallbladder and other indications)	8

Right hemicolectomy	8
Left hemicolectomy	3
Exploratory laparotomy (tuberculosis abdomen)	4
Hydatid cyst of the liver (excision of the cyst)	1
Splenectomy	2
Lateral pancreaticojejunostomy	1
Transhiatal esophagectomy	7
Ileocecal resection and anastomosis (ileocecal tuberculosis)	4
Ileocecal resection and anastomosis (other indications)	3
Abdominoperineal resection	4
Abdominal wall reconstruction	1
Exploratory laparotomy for other indications	7

The 20 different types of surgeries were recorded. The most common surgery performed in our study was open appendectomy which included 24 (24%) patients followed by open cholecystectomy (for carcinoma gall bladder and other indications) which included 8 (8%) patients.

Table 3: Anaesthesia details

Type of anaesthesia	N
General anaesthesia (propofol)	20
Spinal anaesthesia (bupivacaine in hyperbaric solution)	18
GA+TAP [general anaesthesia+ transversus abdominis plane block (propofol with bupivacaine)]	42
GA+QL [general anaesthesia+ quadratus lumborum block (propofol with bupivacaine)]	18
SA+TAP (spinal anaesthesia + transversus abdominis plane block)	2

Most common was general anaesthesia with transverse plane block which was used in 42 (42%) patients, followed by general anaesthesia with quadratus lumborum block which was used in 18 (18%) patients.

Table 4: Analgesics (Intravenous with epidural) used on post-operative day 1-3

Type of analgesic (Intravenous + epidural)	N, POD1 (<6 hours)	N, POD2 (24-48 hours)	N, POD3 (48-72 hours)
Inj. tramadol 50 mg/ml in 100 ml NS (tid)	12	7	1
Inj. diclofenac aq. 75mg in 100 ml NS	6	2	1
Inj. pct 100 ml (tid)	2	1	Nil
Inj. Tramadol 50 mg in 100 ml NS (tid) + continuous epidural (bupivacaine)	55	26	8
Inj. Diclofenac aq. 75mg/ml in 100 ml NS (tid) + continuous epidural (bupivacaine)	38	14	8

Most common mode of analgesia used was combined analgesia. Injection tramadol 50 mg in 100 ml normal saline with continuous epidural bupivacaine in 55 patients followed by injection diclofenac AQ 75 mg in 100 ml N.S with continuous epidural in 38 patients.

Table 5: Analgesics (Oral with transdermal patch) used on post-operative day 1-3

Type of analgesic (Oral + transdermal patch)	N (%), POD1 (<6 hours)	N (%), POD2 (24-48 hours)	N (%), POD3 (48-72 hours)
T. Aceclofenac + PCT + Serratiopeptidase (tid)	Nil	22	7
T. Aceclofenac + PCT (tid)	Nil	12	5
T. PCT 650 mg (tid)	Nil	3	2
T. Ultracet (bd)	Nil	10	3
Diclofenac transdermal patch + T. Ultracet	Nil	2	1
Fentanyl transdermal patch + T. Ultracet	Nil	5	3

7 (7%) patients were on transdermal patch on post-operative day 2 and 1 patient was on diclofenac patch and 5 patients were on fentanyl patch.

Discussion

Pain is defined as an unpleasant sensory and emotional experience arising from actual or potential tissue damage. Many patients suffer from severe pain after surgery. [8,9] Pain is subjective, and it is modified by developmental, behavioural, personality factors. Post-surgical pain is initially of acute it may be nociceptive, inflammatory or neuropathic in nature. It is a common post-operative complication. Post-operative pain may progress to chronic pain leading to prolonged rehabilitation and recovery. Poorly controlled pain is associated with poor mobility, prolonged hospital stays, and increased complication rates. [10]

Drugs with different mechanisms of action are then combined to produce synergistic effects, allowing use of lower doses, thus reducing the burden of side-effects from single-drug strategies. When given prophylactically, intravenous paracetamol is associated with reduced postoperative nausea and vomiting, postulated to be due to superior pain control. [11] Observational cohort study of 9264 patients undergoing elective or emergency gastrointestinal surgery reported that use of NSAIDs was not associated with major complications, acute kidney injury or postoperative bleeding after propensity score matching and adjusting for confounding factors. [12] Opioids have long been the cornerstone treatment for moderate and severe acute pain. In the USA, a survey of patients receiving chronic opioid therapy revealed that 27% were first started on opioids after surgery. [13] The patients who underwent elective laparotomies were aged between 22 and 74. (34%) patients were in the age group of 40-50 years. In a multicenter drug utilization study done by Vallano et al [14] in Spain, nine hundred and ninety-three patients (547 men) were included.

A German prospective cohort study of 50 523 patients reported that up to 47.2% of patients experienced severe pain (numerical rating scale score at least 8) in the first 24 hours after surgery. [15] The 20 different types of surgeries were recorded. The most common surgery performed in our study was open appendectomy which included 24 (24%) patients followed by open cholecystectomy (for carcinoma gall bladder and other indications) which included 8 (8%) patients. Most common was general anaesthesia with transverse plane block which was used in 42 (42%) patients, followed by general anaesthesia with quadratus lumborum block which was used in 18 (18%) patients. Most common mode of analgesia used was combined analgesia. Injection tramadol 50 mg in 100 ml normal saline with continuous epidural

bupivacaine in 55 patients followed by injection diclofenac AQ 75 mg in 100 ml N.S with continuous epidural in 38 patients. Vallano et al [14] in their study included five hundred and eighty-seven patients (59%) who only received a non-opioid analgesic, and 89 (9%) only received an opioid analgesic.

7 (7%) patients were on transdermal patch on post-operative day 2 and 1 patient was on diclofenac patch and 5 patients were on fentanyl patch. 17 Rodgers et al, Beattie et al, and Ballantyne et al that showed reductions in mortality and morbidity in patients receiving epidurals compared with postoperative systemic morphine. [16-18] "Measurement and Monitoring" should be approached at two levels: from the patient perspective and the institutional level. Pain should be considered the fifth vital sign, as widely accepted now. There should be subjective and objective variables that will be documented at hourly or two-hourly intervals at least for the first postoperative day. The use of validated pain assessment tools such as the visual analog scale, numerical rating scale, and verbal rating scale should be encouraged to avoid disparity and ambiguity. [19]

Conclusion

Multimodal analgesia was used in most of the patients for management of post-operative pain combined analgesia was better mode of pain management method than a single analgesic. Due to different multimodal analgesics used in different institutions patients experienced different degrees of pain, hence we need a standard protocol for a best pain management method.

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