Original Research Article

Observational study to assess the effectiveness of post-operative pain management of patients undergoing major abdominal surgeries in a tertiary care hospital

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Abstract

Background: Patients undergoing major surgical operations continue to experience pain with an overall reported incidence of 29.7% for moderate-to-severe pain and 10.9% for severe pain. Even in developed countries, 86% of patients experience postsurgical pain and 75% of those who reported pain described its severity as moderate-to-severe during the immediate postoperative period Major abdominal surgical operations ideally require the Acute Pain Management Service (APMS) for regular pain assessment and timely management of breakthrough pains and complications in the postoperative period.

Aim of the study: To determine the effectiveness of Postoperative Analgesia used for Major Abdominal surgery and its efficacy and safety.

Materials and methods: 38 Patients under General Anesthesia and 13 Patients under Regional + General Anesthesia who underwent major Laparotomy procedures were included in the study. Data regarding the type of postoperative Analgesia, Co–Analgesic used (NSAIDS, Paracetamol in oral/suppository form) during both intra and postoperative period were noted. All patients were followed on the first and second postoperative day at 4 PM. Pain severity with VAS score, side effects of Analgesia and Patient satisfaction with Pain management were recorded.

Results: Use of Epidural Analgesia and Multimodal approach for Postoperative Pain relief greatly improves the patient satisfaction and early recovery of patients undergoing Major Abdominal surgeries.

Conclusions: Although there is limited drug availability, regular assessments and appropriate dose adjustments and Use of Epidural and multimodal analgesic practice led to a high level of patient satisfaction.

Key words

Major Abdominal Surgery, Analgesia strategies, Epidural analgesia, VAS Score.

Introduction

Management of acute postoperative pain has received keen attention in recent years with considerable concurrent advancement in the field. Despite this advancement, post-operative pain continues to be a challenge and is often inadequately treated, leading to patient anxiety, stress, and dissatisfaction [1]. Inadequately treated pain can lead to detrimental physiological effects and may also have psychological, economic and social adverse effects. It is believed that if sincere efforts are made, it could be possible to significantly improve the treatment of pain in the developed, as well as the developing countries [2]. These efforts are of utmost importance as effective pain relief is a powerful technique to modify surgical stress responses, thereby leading to an improved outcome [3]. Major abdominal surgeries with upper abdominal incisions lead to severe abdominal pain, which is treated inadequately, can cause shallow breathing, atelectasis, retention of secretions and lack of cooperation in physiotherapy [4]. This increases the incidence of postoperative morbidity and leads to delayed recovery. The choice of post-operative analgesic modality employed after major abdominal surgeries at our university hospital is at the discretion of the primary anesthesiologist responsible for managing the patient in the operating room. The choice mainly depends upon the strategy favored by the concerned anesthesiologist and the availability of drugs and equipment. The supply of drugs is erratic and the quantity of equipment might not be sufficient for every patient [5]. The acute pain management service (APMS) is responsible for the follow-up of these patients, assessment of their pain, management of inadequate pain relief and treatment of any complications [6]. Evaluation of the practice of post-operative pain management by different anesthesiologists and its effectiveness is an essential step toward identifying better pain management strategies and devising guidelines to improve practice. By reviewing our own practices, our objective is to identify and promote the more effective pain relief strategies within our own resources for the management of moderate to severe post-operative pain [7, 8].

Materials and methods

This prospective observational study was done at Department of Anesthesia, Stanley Medical College Hospital, Chennai, Tamil Nadu (January 2019After obtaining Institutional Ethical board approval and Informed consent from the patient, the study was carried out. On the day of surgery, Data regarding Patients name, Age, Hospital number, Technique of Anesthesia used, intra-operative analgesics used and Post-operative orders assigned to patients were noted. All the patients were followed on first Postoperative day & enquired about Pain severity. In our study, we used the VAS of 0-10. VAS of 0-3 graded as Mild, 4-6 as Moderate, 7-10 as Severe pain. In addition, Any rescue analgesic provided on request of the patient was noted. Safety & tolerability of analgesics provided were assessed by side effects such as Nausea, Vomiting, Drowsiness, Headache, Backache, Pruritis, Sedation (with Ramsay Sedation Scale), Respiratory depression, Urinary retention, muscle weakness. Dose adjustments were done

for patients complained of moderate and severe pain and Rescue Analgesics were continued. Their Side effects were treated with appropriate medications. On the second postoperative day, Patients are again enquired about the severity of pain and side effects.

Results

In the study month of January 2019, 51 patients underwent Midline Laparotomy procedures. 8 surgeries were elective surgeries and the remaining 43 were emergency procedures. The LA used to activate the epidural was 0.125% bupivacaine + Inj Fentanyl Citrate 20 mcg. The average volume of LA used epidurally in the intra-operative period 6 ml and 3 intra-operative doses of the epidural drug were used for activation. In the emergency surgeries, 9/43 patients received Epidural in addition to GA/CV. The intra-operative analgesia used was Inj. Fentanyl Citrate 2 mcg/kg and Inj. Paracetamol 1gm IV. An additional bolus of Fentanyl was administered in all the patients depending on the decision of the in charge anesthesiologist. All Epidurals after placement received a standard test dose prior to induction of GA. Intra-operative activation of Epidural was done in only 5/9 cases. The epidural activation was done with intermittent boluses and continuous infusions were not used. The LA used to activate the epidural was 0.125% bupivacaine in all cases. No additives were used. The average volume of LA used epidurally in the intra-operative period was 6 ml. 3/5 cases received only a single intra-operative dose of epidural drugs and 2/5 cases received 2 intra-operative doses of epidural drugs for activation.

Table - 1 shows that all patients received GA/CV. No patient was operated on an RA technique alone. In the elective surgeries, 4/8 patients received Epidural in addition to GA/CV. The intra-operative analgesia used was Inj. Fentanyl Citrate 2 mcg/kg and Inj. Paracetamol 1gm IV. An additional bolus of Fentanyl was administered in all the patients depending on the decision of the in charge anesthesiologist. All Epidurals after placement received a standard test dose prior to induction of GA. Intra-operative activation of Epidural was done in only 1 (1/4) case.

Table – 1: Number of intra operative epidural activation.

Intra-operative epidural activation	Elective	Emergency
Activated	1 out of 4	5/9
Not Activated	3 out of 4	4/9

Table – 2: Drugs used for epidural activation.

Drugs for epidural activation	Elective	Emergency
O.125% Bupivacaine	6 ml/dose	6 ml/dose
Fentanyl	20 mcg	-
Other additives	-	-

Table – 3: Analgesia for non-epidural group.

	Elective	Emergency
IV Paracetamol	4/4	34/34
IV Fentanyl infusion	-	2/34
IV Tramadol	4/4	30/34
IM Fortwin+ Phenergan	-	2/34

Table – 4: Analgesia for epidural group.

	Elective	Emergency
Epidural Tramadol	4/4	9/9
Epidural Bupivacaine	-	-
Epidural Morphine	1(1/4)	-
IV Paracetamol	1(1/4)	3/9
IM Tramadol	1(1/4)	1/9

Table – 5: Pain severity in elective group.

	Post-operative day 1	Post-operative day 2
No pain	1	3
Mild pain	4	5
Moderate pain	2	0
Severe pain	1	0

Table - 2 shows that all the 8 cases of Elective surgery and 36/43 cases of Emergency surgery were extubated on the day of surgery. Remaining 6 cases of Emergency Surgery were extubated on the first postoperative day in Post Anesthesia Care Unit by ICU Anaesthetists around 10 Am. All the Patients were hemodynamically stable when assessing the severity of their Pain Score. In this group, all 4(4/4) patients who were operated for elective indications received Inj. Paracetamol 1 gm IV tds and Inj Tramadol 100 mg IV bd. Among patients who underwent emergency surgery, 34/34 received Inj Paracetamol 1gm IV tds; 30/34 received Inj Tramadol 100mg IV bd; 4/34 received Inj Fortwin + Inj Phenargan 2cc IM Hs. 2/34 patients received Inj Fentanyl Citrate continuous infusion 5 mcg/hr on the first postoperative day and dosage was reduced according to the severity of their pain.

Table – 3 shows that among patients after Elective surgery, 3(3/4) patients received Inj Tramadol 100mg BD (diluted) epidurally ; 1(1/4) patient received Inj Morphine 4mg BD(diluted) epidurally.; 1(1/4) patient received Inj Tramadol 100 mg IM bd and 1(1/4) received Inj Paracetamol 1g IV tds in addition to epidural analgesia. Among patients after Emergency surgery, 9/9 received Inj Tramadol 100mg BD epidurally; 1/9 patients received Inj Tramadol 100 mg IM BD and 3/9 patients received Inj Paracetamol 1g IV tds in addition to epidural analgesia.

Table – 4 showed that in Elective surgery, 1/8 patients received single dose and 4/8 patients received 2 doses of rescue analgesia on their request. In Emergency surgery, 2/43 received single dose and 38/43 received 2 rescue analgesic doses in addition to their regular analgesic drugs.

Table – 5 shows that in elective group, 1/8 patients had no Pain (VAS 0); 4/8 had Mild pain (VAS 1-3); 2/8 had Moderate Pain (VAS 4-6); 1/8 complained of Severe pain (VAS 7-10). In Emergency group, 4/43 had no pain; 18/43 had Mild pain; 17/43 had Moderate pain and 4/43 had severe pain. In the elective group, 3/8 patients had no pain; 5/8 patients had mild pain. In Emergency group, 8/43 had no pain; 24/43 had moderate pain; 10/43 patients had moderate pain; only one patient complained of severe pain.

Discussion

Pain is one of the most feared factors in the perioperative period. Effective pain relief is very important not only for humanitarian and ethical reasons, but also to avoid many postoperative complications and for faster recovery and earlier discharge from hospital [9]. Effective pain management in the intra and postoperative period helps to ensure the best outcome for the patient [10]. In addition to pain relief, Postoperative morbidity and hospital stays are dependent on many other factors such as preoperative information, quality of analgesia, postoperative care and rehabilitation, including orders for mobilization, oral nutrition, and discharge criteria in recent years, pain management techniques have substantially improved [11]. The recognition that unrelieved pain contributes to postoperative morbidity and mortality has inspired many institutions to develop an Acute Pain Service (APS) in an attempt to provide effective postoperative relief [12]. This has led to successful and safe implementation of multi-modal pain management strategies and increase in use of specialized pain relief methods such as patient-controlled analgesia (PCA) and epidural infusions of local anesthetics/opioid mixtures [13]. Under treatment of pain has been determined to have a negative impact on short-term recovery and may even have a long term effect on health. Park, et al. in their study, have concluded that intraoperative epidural with general anesthesia followed by continuous epidural infusion improve the overall outcome and shorten the intensive care stay in patients undergoing abdominal aortic operations and other major abdominal surgeries. A multimodal approach is recommended for post-operative pain management [14]. This usually consists of regional analgesic techniques, opioids, non-steroidal anti-inflammatory agents and

paracetamol [15]. The rationale for using multimodal analgesia is the achievement of effective analgesia with the additive or synergistic effects of different classes of analgesic agents with reduced doses of individual drugs and decreased incidence of side effects, improved recovery, shorter hospitalization times and better patient satisfaction [16, 17].

Conclusion

IV multimodal analgesia was the most commonly practiced peri-operative analgesic technique. Pain scores were lower in the Epidural group when compared to the IV group. Patients needing rescue analgesics were more in the GA group when compared to the epidural group. Patients in the GA group had higher VAS scores at 6 and 12 hours and they needed more doses of rescue analgesics when compared to the epidural group. Patients received epidural Morphine and IV Fentanyl infusion had sedation and a small percentage of people had nausea. Epidural when combined with GA/CV offers better analgesia in the immediate postoperative period when compared to IV multimodal analgesia.

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