

## POST OPERATIVE ANALGESIA AFTER ABDOMINAL SURGERY AND ITS MANAGEMENT IN OUR HOSPITAL

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### ABSTRACT

**Introduction:** : Pain after abdominal surgery is often treated inadequately, maximum utilization of the available resources is essential for improving pain management. **Aim:** Our study was to determine pain management strategies employed after major abdominal surgeries at our institute and their efficacy and safety. **Methodology:** Study include patients posted for abdominal surgeries, in these patients post-operative analgesia outcome is noted with the help of pain score, motor block, nausea and vomiting were recorded and patient satisfaction was determined. **Results:** Study included 72 patients. Epidural analgesia was used in 34, intermittent opioid analgesia in 27 and opioid infusion in 11 patients. Motor block was seen more in patients with a lumbar epidural. 15 patients complained of nausea. The quality of post-operative analgesia was rated as excellent by 57 patients and good by 11 patients while 2 patients did not comment. **Conclusion:** Epidural, Intermittent opioid analgesia and infusions are used for pain relief after abdominal surgeries at our hospital. By acute pain management (APM) in patients and use of multimodal analgesia led to a high level of patient satisfaction. We suggest to the primary anesthesiologists by Acute pain management (APM) is of utmost importance to enable improvement in practice

**KEY WORDS:** Post-operative analgesia, Epidural, Intermittent opioid analgesia.

### INTRODUCTION

'For all the happiness mankind can gain is not in Pleasure but in rest from pain' - John Dryden.

Atmost attention is paid for acute post-operative pain in recent years with considerable advancement in the field. [1], [2] Although postoperative pain is most common clinical problem to patient for which clinician has to attend, it is often dismissed with an order for intermittent intramuscular opiate injections to be given at the discretion of an overworked nursing staff. This generally results in patients waiting for pain relief, then a period of relief and perhaps drowsiness, and then the cycle is

repeated. With this method, pain relief is only satisfactory. [3]

In spite of advancement, post-operative pain continues to be a challenge and is often inadequately treated, leading to patient anxiety, stress and dissatisfaction. [4, 5, 6] Inadequately treated pain can lead to physiological effects and may also have psychological, economic and social adverse effects. [4, 6] It is believed that if sincere efforts are made, it could be possible to significantly improve the treatment of pain. [7, 8] These efforts are of utmost importance as effective pain relief is a powerful technique to modify surgical stress responses, [9] thereby leading to an improved outcome.

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Abdominal surgeries cause pain due to cutting of the skin which stimulates nerve fibers signal pain. As the body begins to heal, pain should decrease and eventually stop. The amount of time pain lasts after surgery can depend on several factors. On rare occasions, pain may remain, though the cause of pain cannot be identified. This condition can become long-term pain.

Pain may be able to cause shallow breathing, atelectasis, and retention of secretions and lack of cooperation in physiotherapy. This increases the incidence of post-operative morbidity and leads to delayed recovery. The post-operative analgesic employed after major abdominal surgeries may vary from patient to patient and hospital to hospital and even from anesthetist to anesthetist, primly it depends on the duty anesthetist depending on the drugs available in our hospital.

Pain management helps to follow up of patient ie for unevaluated complications. Evaluation of the practice of post-operative pain management by different anesthesiologists and its effectiveness is an essential step toward identifying the better pain management strategies and devising guidelines to improve practice.[10]

Our data helps to streamline pain management protocol and also make drugs available. With these objectives in mind, we planned a prospective observational study to determine the practice of post-operative analgesia provision by anesthesiologists of our department and the effectiveness and safety of different modalities used. By this study our objective is to identify and promote the more effective pain relief strategies within our resources for the management of moderate to severe post-operative pain.

## METHODOLOGY

This study is a prospective study conducted over 1 year in Konaseema institute of medical sciences and Hospital.

### Inclusion criteria:

ASA grade I and II patients .

Age between 20-60 years.

Patients undergoing elective major abdominal surgical procedures (inguinal hernia, incisional hernia, open cholecystectomy, colectomy, exploratory laparotomy, extended radical cystectomy and nephrectomy, hysterectomy, ileojejunostomy surgery).

### Exclusion criteria:

Patient of age > 60 years .

Patients undergoing emergency surgeries, cesarean section and other surgeries (except those included in criteria)

Approval from the Departmental Research Committee and also consent of patient was obtained . History was taken before surgery for demographic details.

Follow-up of patient after surgery for at least twice daily was done by the doctor and nurse of acute pain service as per the routine practice. Principle mode of analgesia and all co-analgesics used were noted. Pain score, motor block, nausea, vomiting or any other complication related to pain management was recorded.

In present study VAS (visual analog scale) is used for pain assessment. Using a ruler, the score is determined by measuring the distance (cm) on the 10-cm line between the “no pain” anchor and the patient’s mark, providing a range of scores from 0–10. A higher score indicates greater pain intensity. Based on the distribution of pain, VAS scores in post- surgical

patients who described their post operative pain intensity as none , mild, moderate, severe, very severe and worst pain possible .

The following cut points on the pain VAS (Table-1) have been recommended. [11]

**Table-1: Pain was assessed by VAS score of 0-10.**

|    |                                                             |
|----|-------------------------------------------------------------|
| 0  | No Pain                                                     |
| 2  | Mild Pain (nagging, annoying, interfering little with ADLs) |
| 4  | Moderate Pain (interferes significantly with ADLs)          |
| 6  | Severe Pain (disabling; unable to perform ADLs)             |
| 8  | Very Severe Pain (disabling; unable to perform ADLs)        |
| 10 | Worst possible Pain ( unable to perform ADLs)               |

ADL-activities of daily living

Observer's assessment of alertness/sedation was used to assess sedation on a scale of 1-5.

**Table-2: Scaling of motor block**

|   |                                                   |
|---|---------------------------------------------------|
| 0 | no block,                                         |
| 1 | unable to raise straight leg, able to flex knee,  |
| 2 | unable to flex knee, able to move ankle and toes, |
| 3 | unable to move the lower limb                     |

Modified Bromage Score [12] was used to assess the motor block

**Table-3: Nausea and vomiting scaling**

|   |                                                |
|---|------------------------------------------------|
| 0 | None                                           |
| 1 | mild nausea on enquiry,                        |
| 2 | moderate nausea/vomiting - treatment required, |
| 3 | vomiting unresponsive to simple antiemetics    |

While discharge, patient was asked for satisfactory result scaling as excellent, good, fair or poor results.

## RESULTS

Present study was carried out in konaseema institute of medical sciences in anesthesia department over a period of 1 year for the cases posted for abdominal surgeries .Total number of samples attained in this period are 72 in number. The data were analyzed using SPSS for windows version 16.0 and following statistical method

applied. Descriptive statistic which includes mean, standard deviation and range to know the nature of sample, age and group wise. Proportions were calculated for all categorical variables and frequencies were generated for the side effect.

**Table-4: Demographic details of study**

|         | 20-30 years | 30- 40 years | 40-50 years | 50-60 years | Total |
|---------|-------------|--------------|-------------|-------------|-------|
| Males   | 12          | 13           | 10          | 4           | 39    |
| Females | 6           | 4            | 13          | 10          | 33    |
| Total   | 18          | 17           | 23          | 14          | 72    |

Most of the case involved in the study belong to 40-50 years age group

Figure-1: Bar diagram showing data of males and females in study.

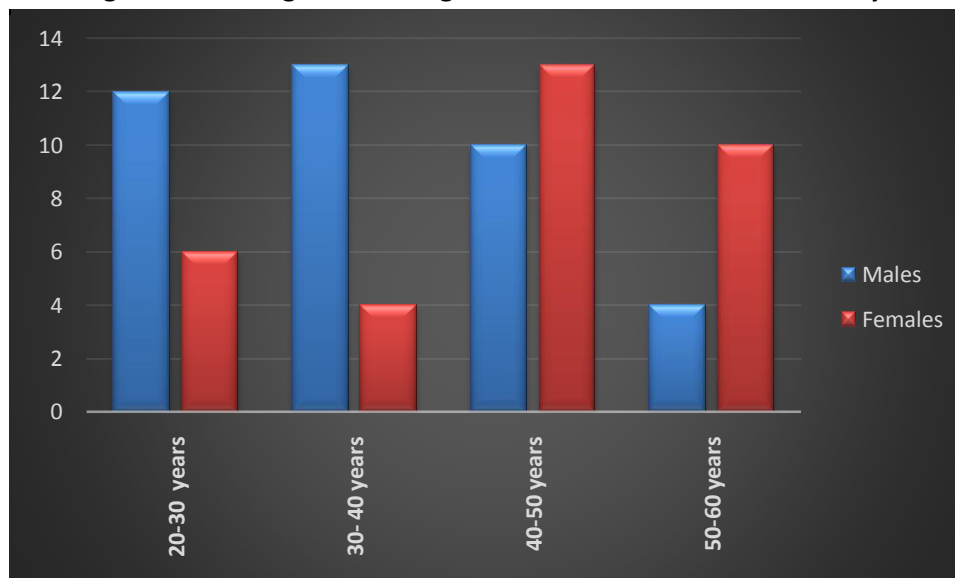
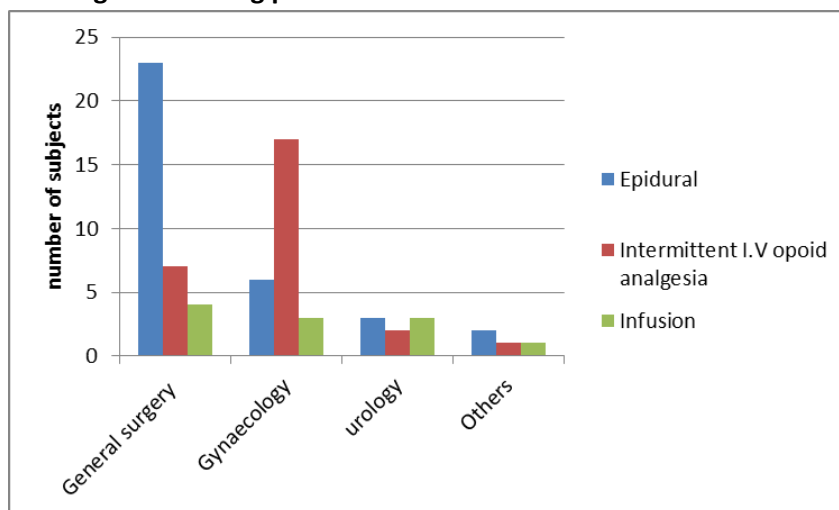


Table-5: showing the pattern of distribution of cases and method of analgesia

|                                   | General surgery | Gynaecology | Urology | Others | Total |
|-----------------------------------|-----------------|-------------|---------|--------|-------|
| Epidural                          | 23              | 6           | 3       | 2      | 34    |
| Intermittent I.V opioid analgesia | 7               | 17          | 2       | 1      | 27    |
| Infusion                          | 4               | 3           | 3       | 1      | 11    |
| Total                             | 34              | 26          | 8       | 4      | 72    |

Figure-2: Bar diagram showing pattern of distribution of cases and method of analgesia.



Post-operative analgesia details are obtained from the case sheet in the patient's files for all patients. Post-operative analgesia was provided with epidural analgesia in 34 patients, whereas intermittent opioid analgesia was used in 27 and

intravenous (I.V) opioid infusion in 11 patients. Multimodal analgesia was employed i: I.V paracetamol was used in 65, ketorolac in five and diclofenac suppositories in two patients. In most patients receiving epidural infusion (33/34,

97%), the drug used for the infusion included bupivacaine 0.1%, while bupivacaine 0.125% and 0.0625% was used in one patient each. Fentanyl 2µ g/ml was added to the epidural infusion in all patients. Epidural infusion was continued for 2

days post-operatively in all patients depending on pain.

**Table-6: Pain score in post operative days**

|                                  | Mild           | Moderate        | Severe          |
|----------------------------------|----------------|-----------------|-----------------|
| 1 st post-operative day(N)       | 48             | 18              | 4               |
| Pain score $\pm$ SD              | 2.81 $\pm$ 0.6 | 5.98 $\pm$ 0.81 | 7.82 $\pm$ 0.62 |
| Evening of post-operative day(N) | 65             | 4               | 1               |
| Pain score $\pm$ SD              | 2.21 $\pm$ 0.5 | 6.24 $\pm$ 0.62 | 8               |
| 2 nd post-operative day(N)       | 69             | 1               | 0               |
| Pain score $\pm$ SD              | 1.15 $\pm$ 0.9 | 4               | 0               |

Patients receiving epidural infusions were given one to two additional 5 ml boluses of the same infusion at half-hourly intervals and if pain relief was still unsatisfactory, I.V bolus of tramadol 50 mg was administered. In patients receiving opioids through intermittent opioid analgesia or continuous I.V infusion inadequate pain relief was treated with a bolus of I.V tramadol 50 mg.

The originally prescribed analgesic strategy was continued and patients were reassessed.

All patients with epidurals inserted in them 6 (6/30, 20%) and 10 (10/40, 25%) patients with epidural at T8-T12 and L1-L3 levels, respectively continued to feel pain despite adjustments in dose, mainly in the upper part of the incision site requiring the administration of co-analgesics and additional boluses to settle the pain.

**Table-7: Side effect: vomiting and nausea after surgery**

| Vomiting /nausea        | Score -0 | Score-1 | Score-2 | Score-3 |
|-------------------------|----------|---------|---------|---------|
| Recovery room           | 46       | 19      | 4       | 1       |
| 1 st post operative day | 55       | 15      | 0       | 0       |
| 2 nd post operative day | 69       | 1       | 0       | 0       |

Nausea was relieved in all patients by simple antiemetics.

**Table-8: Effect of motor block after surgery.**

| Motor block                        | Score -0 | Score-1 | Score-2 | Score-3 |
|------------------------------------|----------|---------|---------|---------|
| 1 <sup>st</sup> post operative day | 51       | 17      | 2       | 0       |
| 2 <sup>nd</sup> post-operative day | 66       | 4       | 0       | 0       |

The action taken to relieve the motor block was change in position, making the patient lie on the side with the blocked leg up.

The quality of post-operative analgesia was rated as excellent by 57 patients and good by 11

patients while 2 patients did not comment. 70 patients stated that they were satisfied with their post-operative analgesic modality.

No side effects were observed on 3<sup>rd</sup> post operative day.

## DISCUSSION

Post-operative analgesia was provided with epidural analgesia in 34 patients, whereas I.V intermittent opioid analgesia was used in 27 and I.V opioid infusion in 11 patients. The follow-up and management performed by APM led to improvement in pain scores and reduction in complications. Pain is one of the most feared factors in the perioperative period. Effective post-operative analgesia is desirable on humanitarian grounds, as well as for its potential to improve post-operative recovery, rehabilitation and outcome. [1],[2] In our hospital regular APM rounds are conducted twice a day and all post-operative patients receiving epidural infusions, intermittent opioid analgesia, continuous I.V opioid infusions are visited. Patients are assessed for pain and any analgesia related side-effects. Dosages of analgesic agents are adjusted accordingly, additional analgesics are added if required and the side-effects are managed.

Park et al. [13] in their study, have concluded that intra operative 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.

Intermittent opioid analgesia was used in 27 patients out of 72 as post-operative analgesia during our study period. This mode of post-operative analgesia is convenient but demand for analgesics is more because of increase incidence of breakthrough pain and this leading to increased consumption of drugs.

11 patients received opioids by continuous I.V infusion which has been shown to be superior to the intermittent administration, with much reduced incidence of breakthrough pain.

Patients with epidural at L1-L3 also had the highest incidence of motor block (25%).

Chisakuta et al., [15] in their comparison between lumbar and thoracic epidural for major upper abdominal surgeries, concluded that the thoracic epidural route proved significantly more reliable than the lumbar and provided effective analgesia in all patients. This was not accompanied by significant hypotension or respiratory depression. The incidence of side-effects was significantly higher with lumbar epidural route. They supported the use of thoracic epidural for post-operative pain management after upper abdominal surgery. Königsrainer et al. reported that 52.4% of patients with lumbar epidural catheters developed post-operative lower limb motor weakness, compared with only 4.8% of patients with a thoracic epidural. [16]

In our patients, there is a marked improvement in pain relieved between the morning and evening of the first post-operative day. This observation highlights the role of APM in maximizing pain relief by regular pain assessment and dose adjustments/addition of analgesics accordingly. The importance of formal APM to improve the post-operative pain management has been recognized for several years in hospitals of the developing countries. Cousins et al. [17] have rightly stated that the introduction of APM has led to an increase in the use of specialized pain relief methods, such as patient-controlled analgesia and epidural infusions of local anesthetic/opioid mixtures, in surgical wards. We have observed that APM has been instrumental in improving the safety profile of these methods in surgical ward. Many authors have presented this data in to help achieve better post-operative pain relief.

We assessed the presence of side-effects as a means of ascertaining the safety and tolerability of the different drugs and strategies employed. Nausea and vomiting was the main side-effect seen with the use of I.V opioids while motor

block was the most common side-effect in patients receiving epidural infusions. Nausea and vomiting is a very unpleasant sensation leading to considerable discomfort. Motor block is unpleasant and also delays rehabilitation. The management steps taken by APM to address these side-effects resulted in a marked decrease in their occurrence and intensity, as ascertained in subsequent rounds. Motor block was seen in a higher number in patients with a lumbar epidural which correlates with study done by Aliya ahemd et al [18].

We have recommended the insertion of lower thoracic epidurals for upper abdominal surgeries rather than lumbar epidurals. This change of practice is expected to decrease the incidence of motor block, as observed by Königsrainer et al. [16] However, an audit will be required in the future to ascertain this change in practice.

Data received from present study revealed high level of satisfaction among our patients with post operative pain management. We conclude that APM rounds and interventions lead to an overall improvement in pain relief and reduction in side-effects. Feedback to the primary anesthesiologists is of utmost importance to enable improvement in practice trends. It helps primary anesthesiologists in improving the protocol followed.

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