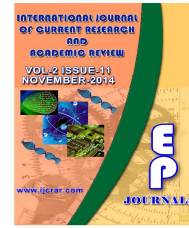




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## Evaluation the efficacy of indomethacin suppository on post operative pain in abdominal surgery

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### KEYWORDS

Indomethacin  
Suppository, Pain  
Score, Abdominal  
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### A B S T R A C T

The pain is the most common complaint in various diseases. Post operative pain is common complication and especially in elderly patient because of exacerbation of heart and vessel was impotents. Many different methods have ever been proposed for analgesic purposes after surgery. This study aimed at comparing the efficacy of the two methods such as pethidine and suppository indomethacin on postoperative pain relief in patients with abdominal surgery. It is a clinical trial study performed in the surgery ward of Shahid Mahallati Hospital of Tabriz on 68 patients who had undergone abdominal surgery at 2012–2014. The efficacy of Pethidine and suppository Indomethacin on postoperative pain relief in patients with abdominal surgery evaluated. In this study, 68 patients with abdominal surgery for postoperative pain control usage Pethidine and suppository Indomethacin that patients divided in two groups. 35 patients enrolled into suppository Indomethacin group and 33 patients enrolled into Pethidine group. Mean age of patients was  $36.35 \pm 3.85$  year. Mean of pain score at after surgery in Pethidine group was  $8.54 \pm .56$  and in suppository Indomethacin group was  $8.52 \pm 0.51$  ( $P=0.832$ ). Mean of pain score at 12 hour late of operation in Pethidine group was  $6.49 \pm 0.74$  and in suppository Indomethacin group was  $6.76 \pm 0.50$  ( $P=0.083$ ). Mean of pain score at 24 hour late of operation in Pethidine group was  $5.86 \pm 0.43$  and in suppository Indomethacin group was  $6.00 \pm 0.25$  ( $P=0.097$ ). Significantly difference was not found between pain scores of patients at two groups at after surgery, 12 and 24 hours after surgery. Conclusion: The result of our study showed that the suppository Indomethacin is considerably more efficacious than IM morphine in alleviating the pain after abdominal surgery.

## Introduction

Every year a large number of surgical operations are conducted in hospitals with different equipment and facilities. Almost in all surgical operations (such as colorectal surgeries), post-surgical pain management is a major challenge (Steohan *et al.*, 2007).

The attempts made to manage and control post-surgical pain are aimed at the following goals: reducing the intensity of post-surgical pain; reducing the physical and psychological complications caused by the

pain in the patient, patient's family and society; improving the ultimate condition of patients after surgery; reducing the duration and costs of hospitalization; and increasing the patient's content with the healthcare he/she receives (Steohan *et al.*, 2007).

Multidisciplinary teams are required for patient pain management and control. A good knowledge of analgesic drugs and their different applications and properties helps prescribe the best and most suitable drug for post-surgical pain control. Research results suggest that unfortunately the majority of surgeons and physicians responsible for patient pain relief do not prescribe adequate dosages of opioids (which are the most important drugs for post-surgical pain relief) because they are concerned about the side effects of such drugs such as respiratory depression (Steohan *et al.*, 2007; Carr, 1998).

Post-surgical acute pain management has undergone extensive changes in the past three decades (Hurlery and Wu, 2009) as it is one of the most important challenges that if addressed leads to the relief of the patient and surgeon and facilitates the release of patients from hospital. Post-surgical pain is a common classic indication considered in administration of systemic analgesics (Schwemmle, 1990). Effective management of post-surgical pain is an important part of post-surgical healthcare (Dahl *et al.*, 2003).

Opioids are used as preliminary means of treating patients suffering from mild to intense pain (Ranucci *et al.*, 2009). These drugs mainly affect the patient through the receptor in CNS (Hurlery and Wu, 2009). However, these drugs are not always taken easily by patients and their side effects vary depending on the dosage (Ranucci *et al.*, 2009).

This group of analgesics has various side effects such as the following depending on the dosage: nausea, vomiting, ileus, sedation, and hypoventilation (respiratory depression). As a result the duration of hospitalization also increases (Sinatra *et al.*, 2005).

Sometimes patients cannot bear the side effects of opioids and physicians have to cope with some problems in administering these drugs. Since in these center opioids ampules are commonly used to control post-surgical pain, this drug was selected in this research. Moreover, since no study had made a comparison between the effects of Indomethacin suppository and Pethidine on abdominal surgery, it was decided to compare the pain relief resulted from Indomethacin suppository and Pethidine following abdominal surgery. Therefore, it was decided to introduce Indomethacin suppository as an effective means of controlling pain and a substitute for opioids (including Pethidine) provided that its side effects were less than other means of treatment.

A drug suitable for post-surgical pain control shall meet the following requirements (Steohan *et al.*, 2007; Woolf and Max, 2001): It should be easily available; it should not impose high costs on the patient, hospital and the national health and treatment system; its consumption mechanism imposes the minimum risk of invasion; its prescription does not rely on professional discretion; it has to be consumable by the patient and thus takes less time from the medical team; different forms of the medicine have to be available in different dosages so that the suitable dosage is administered based on the patient's weight (this is of higher importance in the case of children); it is accepted by the patient; it does not have much side effects; it

does not cause considerable drug interactions; it does not reduce the consciousness of the patient; it does not pose the risk of aspiration to drowsy patients following premedication or administration of anesthetics; it has to be administrable to patients with cardiovascular, respiratory, and renal malignant diseases; it does not need dosage modifications; it is administrable to different age and gender groups.

Pethidine, which was synthesized in 1930, has been used widely as an analgesic in the past decades. According to some accounts, the analgesic effect of this drug is more than morphine or equals it. Its side effects are also less than morphine (Kredo and Onia, 2005). In spite of the advances in the improvement of surgical methods and control of their side effects and in spite of the fact that clinical pharmacological scientists always introduce newer and more effective drugs with fewer side effects to global markets, post-surgical pain is still an unsolved problem in surgery. Even the interventions used for post-surgical pain relief have not been able to control pain effectively.

In this study, a comparison was drawn between the performance of Indomethacin suppository and injection Pethidine in relieving pain in the first 24 hours following abdominal surgery. According to the research results, Indomethacin suppository works as injection Pethidine. In addition, patients receiving Indomethacin suppository were more satisfied than patients receiving injection Pethidine with regard to the prescription method and their analgesic effects and side effects.

### **Materials and Methods**

A clinical trial study that performed in the surgery ward of Shahid Mahallati Hospital

of Tabriz on 68 patients who had undergone abdominal surgery at 2012–2014. This study was aimed at examining the effect of Indomethacin suppository and intramuscular Pethidine ampoule on post-surgery pain relief. In this study, 35 patients experienced pain control following their surgery using 100 mg Indomethacin suppository (inserted every 12 hours). The other 33 patients also received pain relief treatment using 25 mg intramuscular Pethidine ampoule injected every 8 hours. The level of pain in the patients of the two groups was measured and assessed following the surgery and 12 and 24 hours after the surgery through VAS.

The age, weight, height and BMI of patients of the both groups were measured and the results were homogeneous.

Finally, a comparison was drawn between the levels of pain experienced by the two groups in the aforementioned periods as well as the variations resulted in two stages of examination. It is worth noting that, none of the participants had any background of any physical or psychological disease.

### **Statistical analysis**

The collected data were analyzed by SPSS-17 statistical software. The collected data were expressed as percentage and mean  $\pm$  SD. Continuous (quantitative) variables were compared by Independent samples and Paired t test. Categorical (qualitative) variables were compared by contingency tables and Chi-square test or Fisher's exact test. P-value  $\leq 0.05$  was considered statistically significant.

### **Ethical considerations**

Before including the patients in the study, the treatment methods along with its side effects and advantages were described to the

patients. Therefore, the patients participated in the study with full awareness after their informed consent was obtained.

## **Results and Discussion**

Mean age of patients was  $36.35 \pm 3.85$  year. In this study, 68 patients with abdominal surgery for postoperative pain control usage Pethidine and suppository Indomethacin that patients divided in two groups. 35 patients enrolled into suppository Indomethacin group and 33 patients enrolled into Pethidine group.

General Demographic findings of the patients between two groups are shown and compared in Table 1. General Demographic findings of the patients between two sexes are shown and compared in Table 2. Pain score in after surgery, 12 and 24 hours after surgery are shown in two groups at Table 3, charts 1, 2 and 3.

Mean of pain score at after surgery in Pethidine group was  $8.54 \pm 0.56$  and in suppository Indomethacin group was  $8.52 \pm 0.51$  ( $P=0.832$ ). Mean of pain score at 12 hour late of operation in Pethidine group was  $6.49 \pm 0.74$  and in suppository Indomethacin group was  $6.76 \pm 0.50$  ( $P=0.083$ ). Mean of pain score at 24 hour late of operation in Pethidine group was  $5.86 \pm 0.43$  and in suppository Indomethacin group was  $6.00 \pm 0.25$  ( $P=0.097$ ).

Significantly difference was not found between pain scores of patients at two groups at after surgery, 12 and 24 hours after surgery.

Pain is still a big health problem that can be prevented. No pain is usually cured adequately due to the unavailability of medical and non-medical effective treatment methods (Dahl *et al.*, 2003).

Post-surgical pain can considerably contribute to the improvement of health conditions of patients. It is useful to consider and understand post-surgical pain experiences of patients so as to develop methods for improving post-surgical healthcare (Apfelbaum, acute pain). Instructions have been developed to administer post-surgical acute pain and address the problem of inadequate post-surgical pain relief. These instructions recommend physicians to change the traditional pain management methods to new, active and multi-modal methods (Hurlery and Wu, 2009).

Inadequate management of post-surgical acute pain can be the most important factor leading to CPSP (chronic post-surgical pain).

Analgesic techniques are divided into two groups: systemic and regional. Some of the systemic analgesic techniques include opioids and non-opioid analgesics such as NSAIDS, ketamine, and acetaminophen (Hurlery and Wu, 2009).

In a systematic study carried out to analyze the post-surgical side effects of narcotics on patients 45 random controlled cases were studied. 31% of patients experienced gastrointestinal (GI) side effects (e.g. ileus, nausea, vomiting, and constipation). Moreover, 30.3% of the patients experienced complications in their central neural system (CNS) including drowsiness. 18.3% of the patients experienced itching and 17.5% of patients experienced urinary retention. 2.8% also showed the symptoms of respiratory depression. The aforementioned side effects (especially nausea and vomiting) can be very annoying. Therefore, some patients prefer to

experience more pain to avoid these side effects (Gan *et al.*, 2004).

Since physicians are responsible for reducing the pain of patients, post-surgical pain relief is considered a necessity (Edwards, 1990).

Previous studies indicated that 30% to 40% of patients experience mild to intense pains following surgery. Anxiety (i.e. suffering caused by increased sensitivity of nerve endings) is the result of an objective or subjective multifactor phenomenon affected by physiological, cultural, psychological and social factors (Edwards, 1990). A great deal of effort has been made since a very long time ago to reduce/control pain or fully address it. The current pre- and post-surgical pain treatment methods are mainly based on analgesics, narcotics and NSAIDS drugs.

In addition to narcotics (opioids) it is possible to control pain using non-opioid drugs. Many patients experience itching, nausea and vomiting after consuming epidural morphine. In order to address these side effects, naloxone or diphenhydramine is usually prescribed. Moreover, intramuscular prescribed injection can only mitigate the pain for a short period of time and it is generally followed by the aforementioned side effects.

About 11% of patients receiving intramuscular morphine injection following surgery do not need another shot for the first 24 hours. Respiratory depression also occurs in 0.25% of cases. Apparently, intrathecal morphine injection is more effective than intramuscular injections. However, it causes

the same side effects (Fuller *et al.*, 1990; Writer, 1990, Palmer *et al.*, 1999).

The lack of a significant statistical difference between the age, gender and intensity of initial pain (in the recovery room) reflects the success of the random selection of patients in this research. Hence, the difference between the results of the two groups cannot be possibly ascribed to an agent other than the administered analgesic. Few studies have so far compared the efficiency of these two post-surgical pain relief methods. However, the results of the present study comply with the results of those studies to a great extent.

Since non-oral drugs are preferred in the early hours following surgery, injection narcotics are still considered to be the standard analgesics administered following surgical operations. However, there are studies that have investigated the effects of other analgesic drugs.

Results of the present study and previous studies in this regard suggest that Indomethacin suppository demonstrate an acceptable performance as compared to Pethidine in reducing post-surgical pain.

The side effects of Indomethacin suppository have been also either similar in both groups or have been less in the group receiving Indomethacin suppository. Considering the aforementioned findings and the ease of administration of Indomethacin suppository, it seems that it is logical to prescribe this suppository for post-surgical pain relief.

**Table.1** Demographic finding of patients in two groups

	Group		P
	Indomethacin Supp. Mean ±Std Deviation	Pethidine Mean ± Std Deviation	
Age	36.53 ± 3.82	36.17 ± 3.94	0.702
Weight	70.71 ± 10.13	70.30 ± 10.35	0.869
Height	172.46 ± 9.97	171.79 ± 9.59	0.779
BMI	23.68 ± 1.92	23.71 ± 1.84	0.946

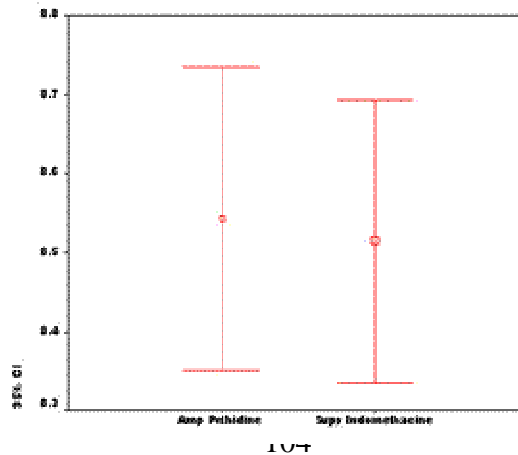
**Table.2** Demographic finding of patients in two sexes

	Sex		P
	Male Mean ± Std Deviation	Female Mean ± Std Deviation	
Age	36.88 ± 4.11	35.73 ± 3.48	0.222
Weight	77.49 ± 6.94	62.19 ± 6.43	<0.001
Height	179.78 ± 5.58	163.00 ± 3.90	<0.001
BMI	23.95 ± 1.63	23.39 ± 2.10	0.224

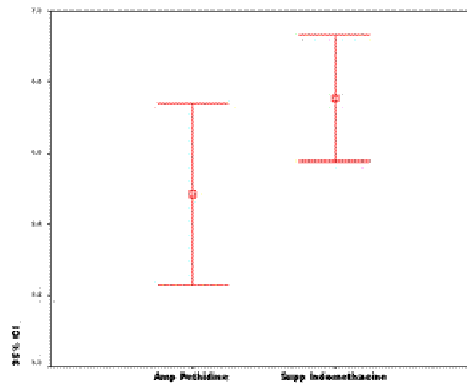
**Table.3** Pain score of patients in two groups

	Group		P
	Indomethacin Supp. Mean ± Std Deviation	Pethidine Mean ±Std Deviation	
Pain Score after surgery	8.52 ± 0.51	8.54 ± .56	0.832
Pain Score 12 hour after surgery	6.76 ± 0.50	6.49 ± .74	0.083
Pain Score 24 hour after surgery	6.00 ± 0.25	5.86 ±.43	0.097

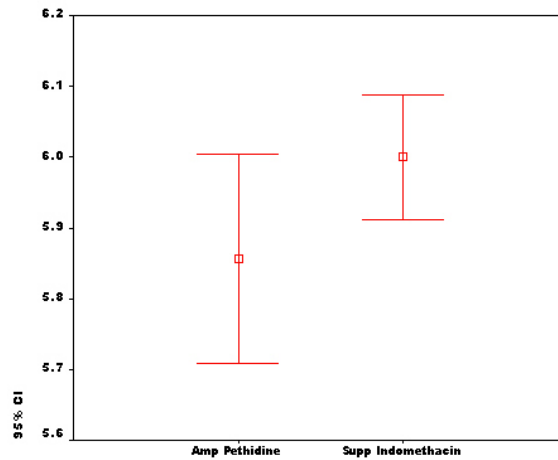
**Chart.1** Distribution of pain score of patients in two groups at after surgery



**Chart.2** Distribution of pain score of patients in two groups at 12 hours after surgery



**Chart.3** Distribution of pain score of patients in two groups at 24 hours after surgery



Results of the present study showed that Indomethacin suppository is an effective drug for reducing the pain of patients following abdominal surgery. The efficiency of this method is similar to the injection of Pethidine while it brings about more patient satisfaction.

Therefore, this drug can be used as a medicine with early long-lasting effects. It is easier to administer as compared to injection drugs and it is more effective than these drugs. It also causes slight side effects. Hence, this drug has to be added to post-surgical pain control standard protocols.

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