

OUTCOME OF INTRAVENOUS ACETAMINOPHEN IN PAIN RELIEF AMONG UNDERGOING ABDOMINAL HYSTERECTOMY

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Abstract

Objective; To determine the efficacy of intravenous acetaminophen for postoperative pain after abdominal hysterectomy. **Material and Methods;** A total of 114 women undergoing abdominal hysterectomy were taken in this study. The study was conducted from June 2018 to May 2019 at department of Anesthesiology, Nishtar Hospital, Multan. **Results;** Our study comprised of 114 ladies undergoing abdominal hysterectomy, mean age of the study cases was 54.13 ± 6.89 years (with minimum age of the patients was 39 years while maximum age was 68 years). Majority of our study cases i.e. 92 (80.7 %) had parity more than 3 and American Society of Anesthesiology (ASA) score level 1 in 93 (81.6%). Sixty one (53.1%) belonged to rural areas, while mean duration of surgery was 72.80 ± 11.32 minutes. Mean BMI level in our study cases was noted to be 23.98 ± 4.17 Kg/m² and obesity was present in 34 (29.8%) of our study cases and Efficacy in terms of pain reduction was 73.7%. **Conclusion;** Our study results support the use of intravenous acetaminophen (IVA) for pain management in patients undergoing abdominal hysterectomy. Intravenous acetaminophen is safe, reliable and effective for the pain management in postoperative abdominal hysterectomy patients which was associated with shorter hospital stay and cost effective for the suffering families. No adverse reactions were noted in this study with the use of intravenous acetaminophen.

Keywords; Intravenous acetaminophen, pain relief, Abdominal Hysterectomy.

DOI: 10.7176/JMPB/62-10

Publication date: December 31st 2019

Introduction:

Abdominal hysterectomy is one of the most common surgeries performed in gynecology. Abdominal hysterectomy is performed for malignant as well as benign indications such as uterine leiomyoma, persistent vaginal bleeding, or pelvic organ prolapse. Hysterectomy can be performed in several different approaches: vaginal, laparoscopic and open abdominal. The choice of surgical approach depends on the indication for surgery, the presence of previous abdominal or pelvic surgery, the patient's medical history and background illnesses, Body Mass Index, and the surgeon's expertise. The level of pain associated with hysterectomy as well as the length of the period of convalescence depends on the surgical approach. The open abdominal hysterectomy is considered a major surgery and is associated with a medium to high pain level.¹

The International Association for the Study of Pain defines pain as “an unpleasant sensory and emotional experience associated with actual or potential damage, or described in terms of such damage”. Intense and prolonged pain transmission, as well as analgesic under medication, can increase surgical postsurgical / traumatic morbidity, delay recovery, and lead to development of chronic pain.²

Treatment of pain after abdominal hysterectomy begins with pre-emptive analgesia, starting with preparation and premedication for anesthesia, balanced anesthesia during the operation, and of course continued analgesia(repeated boluses or infusion) during the entire recovery period.³ Pain management can take many forms, although systemic opioid analgesics and patient-controlled analgesia remain at the forefront of pain management, this class of medications is associated with multiple common adverse reactions (pruritus, nausea, vomiting, constipation, respiratory complications, urinary retention, and altered mentation).⁴ Nonsteroidal anti-inflammatory drugs (NSAIDs), ketamine, acetaminophen, and local anesthetics have all been reported to reduce postoperative opioid consumption.⁵

Although oral and rectal forms of acetaminophen have been in use for decades, intravenous (IV) acetaminophen has only recently become available. Despite its recent introduction, it has become a routine analgesic in operating rooms and inpatient wards. Its analgesic action has not been fully elucidated, but evidence suggests that it is mediated by both cannabinoid and serotonergic pathways in the central nervous system and, to a lesser degree, through peripheral anti-inflammatory effects.⁶ Intravenous acetaminophen has been shown to have significant opioid-sparing effects for a multitude of surgical procedures, including abdominal hysterectomies.⁷ Ketamine is N-methyl-D-aspartate (NMDA) receptor antagonist. Ketamine reduces the sensitivity of the central nervous system to painful stimuli.^{8, 9} A recent study has reported that Visual analog scale score and the total analgesic use were both significantly less in the Acetaminophen group in comparison with the ketamine group.¹⁰ Faiz HR and his associates has reported in a recent study that Visual analog scale scores were significantly lower in the IV acetaminophen ($P=0.05$), Visual analog scale score >3 was less in the IV acetaminophen group.¹¹

Material and methods:

Adult women with Planned abdominal hysterectomy having their age 25–70 years having American Society of Anesthesiologists (ASA) classification of 1 or 2 were included in this case series study which was conducted by Department of Anesthesiology, Nishtar Hospital, Multan. Patients with H/o diabetes, Smokers, having severe hemorrhage (bleeding more than 1,500 ml during the surgery)(Blood was measured by using soaked gauzes,

pads (weight = after use - before use) and blood clots which was weighed standardizing one milliliter blood to one gram) were excluded from our study. At study entry baseline demographics were recorded. All patients were transferred to the operating room, standard ASA monitors was applied. Intubation was performed using 7 mm polyvinyl chloride endotracheal tubes. Anesthesia was maintained through the infusion of propofol at a rate of 100–120 $\mu\text{g}/\text{kg}/\text{min}$. Patients received IV acetaminophen 15 mg/kg and medication solutions were prepared by the research pharmacist in 100 mL of normal saline and were administered by the anesthesia care team within a 15-minute time period. Duration of procedure was recorded. In the recovery room, an IV infusion pump (set to deliver a continuous infusion of fentanyl 30 μg per hour) was connected to each fully conscious patient. Patients were taught how to use Visual analog scale. Patients' levels of pain were assessed in the recovery room using a visual analog scale (VAS) 4 hours, 6 hours, 12 hours, and 24 hours after the surgery. Efficacy was finally assessed when Visual analog scale scores was < 3 at the end of 24 hours. Data was analyzed with statistical analysis program (SPSS version 21).

Results;

Our study comprised of 114 ladies undergoing abdominal hysterectomy due to various underlying indications. Mean age of the study cases was 54.13 ± 6.89 years (with minimum age of the patients was 39 years while maximum age was 68 years).

Majority of our study cases i.e. 92 (80.7 %) had parity more than 3 and American Society of Anesthesiology (ASA) score level 1 in 93 (81.6%). Sixty one (53.1%) belonged to rural areas. Mean duration of surgery was 72.89 ± 11.72 minutes. Our study results have indicated that majority of our study cases i.e. 84 (73.7 %) had duration of surgery more than 60 minutes.

Mean BMI level in our study cases was noted to be $23.98 \pm 4.17 \text{ Kg}/\text{m}^2$ (with minimum BMI value was 20.5 while maximum level was $32 \text{ kg}/\text{m}^2$). Our study results have indicated that obesity was present in 34 (29.8%) of our study cases. Efficacy was 73.7% study cases in receiving intravenous acetaminophen.

Discussion;

Hysterectomy is the second-most-common gynecological surgery in the United States after cesarean section. Nearly 40% of American women undergo hysterectomy before the age of 60 years^{12,13}. Of the various surgical

approaches to hysterectomy (abdominal, vaginal, laparoscopic, or open), the open abdominal approach has been correlated with relatively greater postoperative pain^{14,15}.

Our study comprised of 114 ladies undergoing abdominal hysterectomy due to various underlying indications. Mean age of the study cases was 54.13 ± 6.89 years (with minimum age of the patients was 39 years while maximum age was 68 years). A study conducted by Faiz et al¹¹ has reported mean age in acetaminophen group as 49.9 ± 6.9 years which is close to our study results. A study conducted by Yelchin et al¹⁶ reported mean age in acetaminophen group was 48.26 ± 5.66 years. Bhatti et al¹⁷ from Sukkhar also reported peak age of abdominal hysterectomies occurring in 35 – 60 years of age which is in compliance with that of our study results. Another study from Karachi by Iftikhar R et al¹⁸ reported 47 years mean age of the patients undergoing abdominal hysterectomy which is close to our study results.

Different studies conducted in Pakistan have documented relationship with increasing parity and hysterectomy^{17,18}, similar findings were noted in our study as well. Majority of our study cases i.e. 92 (80.7 %) had parity more than 3 and American Society of Anesthesiology (ASA) score level 1 in 93 (81.6%). A study conducted by Yelchin et al¹⁶ documented similar findings.

Mean duration of surgery was 72.89 ± 11.72 minutes and our study results have indicated that majority of our study cases i.e. 84 (73.7 %) had duration of surgery more than 60 minutes. A study conducted by Yelchin et al¹⁶ has reported mean duration of surgery in acetaminophen group to be 70.00 ± 13.41 minutes. These findings of Yelchin et al are similar to that of our study results.

Mean BMI level in our study cases was noted to be 23.98 ± 4.17 Kg/m² (with minimum BMI value was 20.5 while maximum level was 32 kg/m²). Our study results have indicated that obesity was present in 34 (29.8%) of our study cases. A study conducted by Faiz et al¹¹ has reported mean BMI value in women undergoing abdominal hysterectomy to be 24.5 ± 3 kg/m² which is similar to that of our study results.

Postoperative pain and its complications can be attenuated with an appropriate perioperative analgesic regimen. Insufficient pain control has been suggested to contribute to various short-term and long-term complications, including poor patient satisfaction, development of chronic pain syndromes, delayed postoperative rehabilitation and patient mobilization, atelectasis, deep vein thrombosis, pulmonary embolism, psychological trauma, ischemia, and myocardial infarction. Conversely, adequate pain relief reduces patients' anxiety, morbidity, and duration of hospitalization, along with the associated costs of care¹⁹. In our study,

efficacy was 73.7% study cases, while Faiz HR and his associates has reported in a recent study that Visual analog scale scores were significantly lower in the IV acetaminophen treated patients ($P=0.05$). Another study by Yelchin et al ¹⁶ documented similar findings which are in compliance with our study results.

Conclusion;

Our study results support the use of intravenous acetaminophen (IVA) for pain management in patients undergoing abdominal hysterectomy. Intravenous acetaminophen is safe, reliable and effective for the pain management in postoperative abdominal hysterectomy patients which was associated with shorter hospital stay and cost effective for the suffering families. No adverse reactions were noted in this study with the use of intravenous acetaminophen.

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