

**Research Study**

**Comparative Study of Intravenous Acetaminophen with Diclofenac  
Suppository in Reducing Postoperative Pain in Patients Undergoing Elective  
Cesarean under Spinal Anesthesia**

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**ABSTRACT:**

Postoperative pain is one of the most important problems after surgery. The impact on the different systems of the body can cause unwanted side effects. This study aimed to evaluate and compare the intravenous acetaminophen and diclofenac suppository on pain relief after surgery in patients undergoing elective cesarean section was performed under spinal anesthesia.

**Method:** This study, as a double-blind randomized clinical trial (Double blind clinical trial) on 84 pregnant women 18 to 45 years with ASA class I and II, that candidates for elective cesarean section under spinal anesthesia were carried out during the year 2013-2014. After the completion of the operation, the skin divided into 2 groups and a one-gram of acetaminophen intravenous saline in a volume of 100 mL with placebo suppository serum and in Group D 100 ml normal saline solution was administered every 6 hours with diclofenac 100 mg suppositories. Information such as systolic and diastolic blood pressure - HR and VAS pain before administering the drug at a time enter the recovery , 15 minutes after entry recovery, time leaving the recovery and 2-4-6-12-18 and 24 hours after surgery were measured and recorded. Chi-square tests and t-test and SPSS / V16 were analyzed.

**Results:** The mean pain intensity over 24 hours after caesarean section, significantly in the group receiving intravenous acetaminophen was less than diclofenac suppository (P value <0.001). Consumer groups also less nausea and vomiting Acetaminophen (P=0.037) and more satisfied (P=0.017) reported a significant difference between the two groups. The mean arterial pressure was higher in the group receiving diclofenac suppository was also a significant difference (P=0.006). In the group, receiving diclofenac analgesic was prescribed.

**Conclusion:** Intravenous acetaminophen than diclofenac suppository in control of the postoperative pain, spinal anesthesia in patients undergoing cesarean section, was more effective and resulted in a significant increase in the level of satisfaction of patients.

**Keywords:** acetaminophen, diclofenac, spinal anesthesia, pain

## 1. INTRODUCTION:

Postoperative pain after surgery is one of the most common and important problems that affect multiple organ systems can cause unwanted side effects (1). Cesarean surgery is a surgery that is associated with moderate to severe pain. In this type of surgery, anesthesia technique used spinal anesthesia (spinal) (4-2). One of the ways in which post-operative analgesia in cesarean section used and join opioid (fentanyl or sufentanil) to seize local anesthetic in spinal anesthesia but in this method the duration of analgesia caused short-term (2 to 4 hours) (1). Pain control regimes according to the patient's condition cannot be the same routine, they should be compatible with the patient's personal needs and circumstances, such as medical condition, psychological, physical, age, degree of fear and anxiety and surgical procedures, personal preferences and response to prescribed factors should be considered. The main goal of pain management after surgery minimizes the rate of prescription, to reduce side effects still providing adequate analgesia. The aim of the best is through preventive analgesia and multidimensional done (2). Pain after surgery can cause respiratory problems, deep vein thrombosis (immobilization and hypercoagulable), delay in healing of surgical wounds (decrease immune function and hyperglycemia) have been known to increase morbidity and mortality rates of patients, so the launch faster patient post-operative pain management, reduce length of stay in hospital, reducing health care costs and increasing patient satisfaction in it. Moreover, a common post-operative analgesia with opioids traditionally achieved (7-5). The main goal in the treatment of postoperative pain and analgesic drugs with fewer side effects is adequate (1). Due to the side effects of acetaminophen and non-steroidal analgesics than opiates more attention in recent years are (10,9,8) opioid analgesics such as non-acetaminophen (paracetamol) and non-steroidal anti-inflammatory drugs (NSAIDS) and aspirin ... alone or in combination, are suitable for the treatment of moderate to severe pain. Intravenous

acetaminophen, a drug with side effects and drug interactions is low and easy method of administration (14-11). Paracetamol in the central and peripheral pain receptors N-methyl-D-aspartate is by direct inhibition and inhibition of cyclooxygenase isozymes COX3 in the brain and reducing the production of PGE in the central nervous system effects. In adults paracetamol at a rate of 1 g per 100 ml of normal saline within 20 to 30 minutes is the maximum dose Infusion 4gr / day administered. The drug by the liver and excreted through the urine is metabolized. So it should be used with caution in patients with hepatic or renal disease (18-15).

NSAIDS (diclofenac suppository) are also cheap drugs and analgesic effects through inhibition of cyclooxygenase are available and 2 (COX2) takes place (20,19). Many studies have compared acetaminophen and NSAID in various surgical procedures have been performed. The results of these studies have shown that in many surgical procedures acetaminophen and NSAID effects were identical, as in the application of dental surgeries NSAID slightly more effective than acetaminophen ,in abdominal surgery (cholecystectomy) in orthopedic surgery NSAID and paracetamol are equally effective (20). Given that many studies in this regard has been taken in cesarean section. Therefore, this study aimed to investigate the influence of drugs, intravenous acetaminophen and diclofenac suppository in patients undergoing caesarean section under spinal anesthesia was performed.

## 2. METHOD:

The study, a randomized, double-blind clinical trial (Double blind clinical trial) after confirming that the university ethics committee on 84 women aged 18 to 45 years old with ASA class I and II, who were candidates for elective cesarean section under spinal anesthesia, intravenous acetaminophen and diclofenac suppository to compare the two drugs in reducing post-operative pain, after 2014-2013 years. The sample size

taking into account the 95% confidence level and power of 80% was calculated as follows for each group of 42 people.

$$n = \frac{(z_{\alpha} + z_{1-\beta})^2 \cdot (p_1 + p_2)}{(p_1 - p_2)^2}$$

$\alpha = \%5$   
 $\beta = \%20$   
 $z_{\alpha} = 1.96$   
 $z_{1-\beta} = 1.28$   
 $p_1 = \%20$  Analgesic consumption in the acetaminophen group  
 $p_2 = \%40$  Analgesic consumption in the diclofenac group  
 $n = 9.41$   
 $n = 42$

Exclusion criteria included patients with liver disease, kidney disease, cardiac disease, hypertension, peptic ulcer disease (PUD), preeclampsia and eclampsia, diabetes, allergic reactions, emergency caesareans, patients with bleeding disorders or a history of anticoagulant, increased intracranial pressure, spinal infection, neurological disorders, etc.. Patients did not receive premedication and after entering the operating room first with IV No. 18 to connect the catheter and upon receipt of 10ml / kg, Ringer sitting under spinal anesthesia with a needle (25G) were Quicke. Moreover, 12.5mg of 0.5% bupivacaine with sufentanil 2.5ug injected in the subarachnoid space and then placed the patient in the supine position and under standard monitoring (blood pressure - heart rate and SPO2) and vital signs were measured at regular intervals. The patient's blood pressure less than 100 mm Hg and was defined as hypotension were treated with intravenous injection of 10 mg of ephedrine. Patients are placed in block 6 and assigned to one of two groups A or D have been placed. After completion of the operation and close the skin, patients in-group A one-gram intravenous acetaminophen in a volume of 100 mL normal saline within 30 minutes with placebo suppository of serum and group D 100 ml Miter normal saline solution with 100 mg diclofenac suppository with nurses who had no knowledge of the plot. Then every 6 hours prescribed in section Likewise (coded drugs with the same appearance and shape) by nurses who had no knowledge of the plan was given. Information such as systolic and diastolic

blood pressure - heart rate and VAS pain medication prescribed from time to time to enter the recovery time of entry -15 minutes after leaving the recovery and 2-4-6-12-18 and 24 hours after the act of measuring it is registered.

In the case of VAS > 3, 25 mg intravenous pethidine injected. Finally the opioids consumption and nausea and vomiting after surgery and patient satisfaction were recorded. After collecting the information in the questionnaire, statistical analysis using software v 16 / spss and evaluate and compare the analgesic groups A and D of T-test and test for other variables, the Chi-squar test was used. A significance level of  $p < 0.05$  was considered significant.

Visual analog instrument, a benchmark of 10 cm, which left it (zero), indicates no pain and the right side of (10) represents the most severe pain. Score 1-3 indicates mild pain, 4-7 moderate pain, severe pain is 8-10 (21). This study ethics code 9.2962/16.35 / d / c and IRCT2013010710841N3 at the Hamedan University of Medical Sciences were approved.

### 3.Findings:

The mean age of patients treated with acetaminophen and diclofenac suppository, respectively,  $5.92 \pm 28.30$  and  $5.48 \pm 28.26$  years. In the acetaminophen group (40.5% (17 prim gravidand in the diclofenac group 40.5% (17 people) is gravid 2. (40.5% (n = 17) of two groups of first births reported. In patients treated with acetaminophen, 21 patients (50%) first cesarean

and 21 (50%) had a Caesarean section a second time. In patients treated with diclofenac, 16 patients (equivalent to 38/1%) for the first time cesarean section, and 26 patients (equivalent to 61/9%) for the second time cesarean delivery

. According to the findings, age, gravity, parity, number of cesarean delivery between the two groups were not significantly different in the groups were similar in this respect. Before administration, in group treated with acetaminophen 40 patients (equivalent to 95.2%) have Score pain zero, one person (the equivalent of 2.4%) have a pain score of 1, and one (equivalent to 2.4%) had a pain score of 3. In the group treated with diclofenac, 40 patients (equivalent to 95.2%) with a rating of zero pain, one (equivalent to 2.4%) with grade 2 pain, and one (equivalent to 2.4%) had a grade 3 pain.

**Table 1:** Average pain using a scale VAS, in 24 hours

P value	Mean (SD)	Group
P <0.001	0.528 ±0.386	Intravenous acetaminophen
	1.27±2.131	Diclofenac suppository

According to the above table, 24-hour average pain, the acetaminophen group, significantly lower than the group treated with diclofenac. The mean and standard deviation of systolic and diastolic pressures before administering the drug acetaminophen, diclofenac and after that had no statistical significant difference ( $p > 0.05$ ). The mean heart rate was not significantly different between the two groups ( $p > 0.05$ ). But, mean arterial pressure during 24 hours after

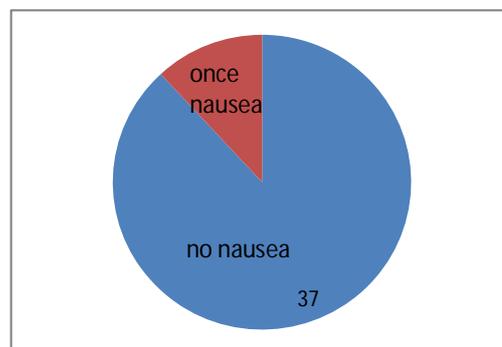
In the case of drugs for pain score to  $P=0.076$  value of the drug due to clear connection was found. In patients treated with acetaminophen, 38 (90.5%) with VAS zero, 2 (4.8%) of VAS against one, 1 (2.4%) of VAS = 2, 1 (2.4%) of VAS were equal third.

In contrast, in patients treated with diclofenac, 15 patients (35.7%) with VAS zero, 11 patients (26.2%) a VAS of 1, 10 patients (23.8%) with VAS = 2, 2 patients (4.8%) have equal VAS 3, 2 patients (4.8%) has also VAS VAS 4 and 2 to 5 were the last patient. It is about 24 hours after surgery with pain medication, according to P value  $<0.001$  and the amount of pain according to VAS scale in the acetaminophen group, clearly there has been less of patients treated with diclofenac. The mean and standard deviation of the Table (1) shown.

administration of intravenous diclofenac was increased compared to acetaminophen ( $P=0.006$ ). According to  $P=0.037$ , nausea and vomiting was significantly lower in the group treated with acetaminophen and significant differences between the groups (Figure 1), it said patient satisfaction, in the acetaminophen group were significantly higher than diclofenac  $P=0.017$  (Figure 2).



Scatter plot of nausea and vomiting in treatment with diclofenac



Scatter plot of nausea and vomiting in patients treated with acetaminophen

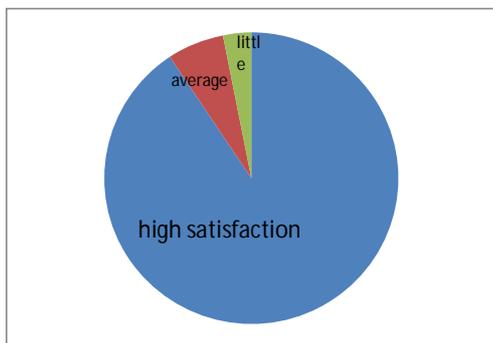


Chart satisfaction rate in patients treated with acetaminophen

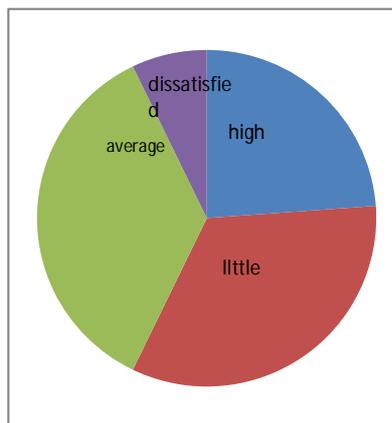


Chart satisfaction rate in patients treated with diclofenac

In the groups receiving acetaminophen 23.8% and in the second group 61.9%, 20 mg received pethidine in 24 hours and the difference between 2 groups was significant (P value < 0.001), patients treated with diclofenac significantly, get the acetaminophen group had a greater analgesic.

#### 4.DISCUSSION:

This study aimed to evaluate and compare the intravenous acetaminophen suppository diclofenac in reducing postoperative pain in patients undergoing elective cesarean section was performed under spinal anesthesia. Hyllested et al a comparative study of paracetamol and NSAID combination of both in surgery and Laparoscopic Cholecystectomy paid and concluded that paracetamol, because of fewer side effects and appropriate analgesia, a good alternative to NSAID are considered and its use is preferred in high-risk patients. However, for their combined use, further studies are needed (20). In this study, 24-hour average pain, the acetaminophen group, significantly more than the group treated with diclofenac, has been less, but unlike Laniro and Associates study, is not zero (22), perhaps because of it more extensive surgical procedure in our study is cesarean section. Laniro and colleagues in a study, a comparative study of one gram of oral acetaminophen, by combining a gram of acetaminophen and ibuprofen 600 mg, studied dental surgery and concluded that the combination of acetaminophen and ibuprofen patients had no

pain (22). In a study in 2008 by Munshankar and colleagues conducted a comparative study of acetaminophen and diclofenac suppository and the combination of both drugs, the reduction of post-cesarean pain and concluded. The combination of acetaminophen and diclofenac reduced morphine consumption by as much as 38% (17). The findings of this study indicate that the amount of analgesia, and patient satisfaction was high in the acetaminophen group acceptable manner. Making up more than 95 percent of patients expressed satisfaction have been high. Increasing patient satisfaction can cause pain and nausea and vomiting caused by intravenous acetaminophen is compared with diclofenac suppository. In a study in 2011, by Macario et al., As Literature review, the effects of acetaminophen in acute pain after surgery was shown that, intravenous acetaminophen, an effective analgesic, for a range of surgical procedures (12). In another study in 2011 by Adnan Assad and colleagues carried out. The effect of intravenous acetaminophen to placebo, in reducing pain after cesarean section has and has concluded intravenous acetaminophen. Effective treatment reduces the consumption of opioids, after cesarean section surgery (23). Patients treated with diclofenac significantly, more than the analgesic acetaminophen group had received, and in patients treated with intravenous acetaminophen, analgesic consumption was significantly reduced.

## 5.CONCLUSION:

Intravenous diclofenac and acetaminophen suppository control postoperative pain in patients undergoing elective cesarean section under spinal anesthesia was more effective and resulted in a significant increase in satisfaction level. It is suggested that instead of using diclofenac suppository which in some women routinely used in surgical wards - intravenous acetaminophen is used, which leads to pain and increased satisfaction will be improved, as well as a study in a larger size with more centers, as well as on emergency patients who underwent cesarean section will be performed.

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