Comparison of Morphine Suppository and Diclofenac Suppository for Pain Management After Elective Caesarean Section

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Abstract- This study investigated efficacy and side effects of Morphine suppository for pain management after the first elective caesarean delivery in comparison to Diclofenac suppository. One hundred women aged 18-40 with term pregnancies undergoing elective caesarean section for the first time participated in this prospective project. Exclusion criteria included drug sensitivity, fetal malformations or defects, and complications during the cesarean operation. After same spinal anesthesia and same surgical techniques and in the recovery room patients consecutively received 100 mg diclofenac suppository or 10 mg morphine suppository. The pain severity was rated by "Numerical Rating Scale." There was not the difference between two groups in terms of basal information. Pain score was significantly different between two groups in the first 12 hours (5.66 ±1.36 in morphine group and 3.63±0.96 in diclofenac group) but not in the second 12 hour period. Considering pain scores every two hours in first 12 hours and every 4 hours in second 12 hours, morphine group had higher scores in comparison to diclofenac group. Also, the morphine group required pethidine injection sooner than the other group. The time giving first pethidine injection was 3.28±2.16 hours after operation in morphine group and 5.24±4.07 hours after operation (P<0.05). This study demonstrated that diclofenac suppository in comparison to morphine suppository decreased subjective pain scores in the first twenty-four hours after elective caesarean section which reached statistical significance in the first twelve hours. Although in diclofenac group, pethidine injection was prescribed significantly later.

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Introduction

Post-operative pain control, especially after cesarean section, is one of the concerns of an obstetrician surgeon. Beside the concern of doctor and patient about analgesia after each operation and early ambulation, the importance of post delivery maternal care given to the newborn along with breast feeding resulted in introducing pain control protocols with regard to available facilities in many maternity hospitals. Some technologies such as patient-controlled analgesia are expensive and not provided in many hospitals and may limit some women caring for their newborns. On the other hand considering the number of cesarean deliveries all over the world the importance of this topic will be well elucidated. There are opioids and non-steroidal anti-inflammatory drugs (NSAIDs) used frequently for pain treatment. Many doctors prefer NSAIDs to opioids due to their side effects like respiratory depression, hypotension, vomiting and some histamine releasing consequences, despite their rapid and potent effects (1).

There are some studies investigating the effect of diclofenac on post operative pain management, but there are differences in the route or dose of administration (2-7) or combination drug therapy with other analgesics (8,9). In three studies with small sample sizes; prescription of rectal diclofenac in comparison to placebo decreased post operative pain and the opioid consumption (10-12).

In reviewing available literature, we did not find any study investigating efficacy and side effects of the morphine suppository for pain relief after cesarean section, so this novel study aimed to find these results and compare morphine and diclofenac suppositories for pain management after elective caesarean section.

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Materials and Methods

This clinical trial was conducted at the Department of Obstetrics and Gynecology, Shariati Hospital, Tehran University of Medical Sciences (TUMS) during the year period of March 2012-April 2013. The proposal was in accordance with the Helsinki Declaration and was approved by the Ethics Committee of the university. All women signed their consents to enter the study and confidentiality of their information were protected.

In total, one hundred women aging 18-40 with term pregnancies undergoing elective cesarean section for the first time participated in the project. Exclusion criteria were sensitivity or intolerance to opioids or NSAIDs, systemic diseases such as asthma, peptic ulcer disease, coagulopathies, renal, respiratory and liver diseases, history of anorectal problems, fetal malformations or defects, complications during cesarean operation (bladder or intestinal injuries). If any patient refused to cooperate in any stage, she was excluded. The women have consecutively divided into two groups accordingly. The patients were blind to the study group they belonged. For every patient, a questionnaire was filled and basal demographic information, operation duration, and questions about pain scores (as the protocol), time and dosage of the pethidine ampoules required and drug complications were gathered.

All patients received same spinal anesthesia and same surgical incisions. In the recovery room patients received 100 mg diclofenac suppository (Behvazan Co., Iran) or 10 mg morphine suppository (Statex,Iran daru Co.,Iran) according to their randomization. The pain severity was rated by "Numerical Rating Scale." The time the suppository admitted was considered zero and the pain score was evaluated every 2 hours for the first 12 hours, and it was evaluated every 4 hours for the second 12 hours. The number 10 was the highest score (severe pain), and the number zero was the least number (no pain). Pain severity was documented by one investigator in order to decrease the probable bias. Any prescribed analgesic (intravenous pethidine) was exactly documented.

The gathered data were analysed by Statistical Package for the Social Sciences (SPSS) 18.0 for windows, SPSS Inc with the level of significance of 0.05. The normality of quantitative variables was checked. Quantitative data were compared with the independent T-test. Categorical variables were compared by chi square.

Results

The mean age of the women did not differ significantly; it was 26.8±5.13 in the morphine group and 31.12±5.08 in the diclofenac group. Body mass index was 30.56±4.77 kg/m^2 in morphine group and 29.57±4.83 kg/m^2 in the diclofenac group without any significant difference. Mean surgical duration in both groups was 45.00±6.00 minutes.

Pain score was significantly different between two groups in the first 12 hours (5.66±1.36 in morphine group and 3.63±0.96 in diclofenac group) but not in the second 12 hour period (Table 1).

Table 1. Comparison of morphine and diclofenac groups

Groups Comparison of variables	Morphine group	Diclofenac group	Morphine group
Pain score in first 12 hour post caesarean	5.66±1.36	3.63±0.96	<0.05
Pain score in second 12-hour post-cesarean	2.72±1.26	3.63±0.96	NS
Time of first pethidine injection (hours after caesarean)	3.28±2.16	5.24±4.07	<0.05
Amount of total pethidine received post operation (mg)	31.5±11.07	32.5±17.67	<0.05
First 12-hour pethidine consumption	31.5±11.07	30±15.97	
Second12 hour pethidine consumption	0	11.33±7	

Considering pain scores every two hours in first 12 hours and every 4 hours in second 12 hours, morphine group had higher scores in comparison to diclofenac group (Figure 1). Also, the morphine group required pethidine injection sooner than the other group. The time giving first pethidine injection was 3.28±2.16 hours after operation in morphine group and 5.24±4.07 hours after operation (P<0.05) (Table 1). There were 3 women (6%) in morphine group, and 8 women (16%) in diclofenac group did not receive any pethidine injection.

Drug complications like respiratory depression decreased the level of consciousness, vomiting, hypotension were not reported in either group. But nausea was reported in 2 women in morphine group and

a woman in diclofenac group. Urinary retention was reported in 3 women in morphine group and a woman in diclofenac group.

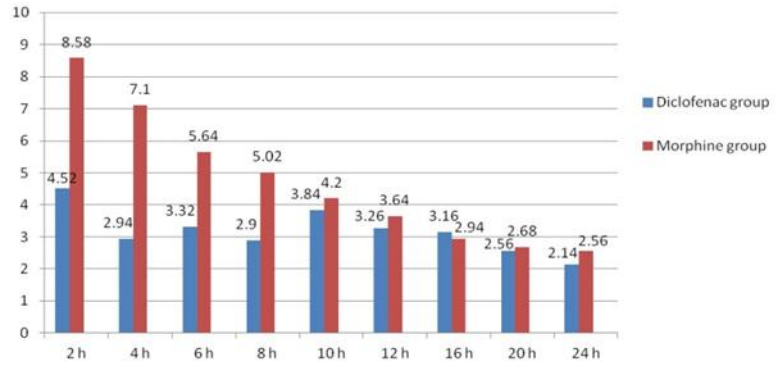

Figure 1. Pain scores in different hours of the first 24 hours post-operation in study groups

Discussion

This study demonstrated that diclofenac suppository in comparison to morphine suppository decreased subjective pain scores in the first twenty-four hours after elective cesarean section which reached statistical significance in the first twelve hours. Although in diclofenac group, pethidine injection initiation was significantly later.

This encouraged us to continue our department protocol to give postoperative diclofenac suppository to every new mother undergone cesarean section for pain relief.

There are few articles elucidating the effectiveness of diclofenac suppository for cesarean pain treatment which is in accordance with our daily medicine experience, but these valuable and placebo controlled studies are with limited sample sizes (10-12). Our study is based on a comparison of diclofenac with an opioid drug which believed to be more potent for pain relief. Comparable age and body mass index of our patients, route of drug administration, randomized clinical design, and implementing numerical scale by the same investigator are our positive point of view of our study. Reviewing the available literature we found some reports for cancer pain relief; however, we did not find any article evaluating the effects of rectal morphine on post-cesarean pain relief. It could be important information for gynecologists seeking an effective non-opioid, available and cheap drug without the need for intravenous injections and probably with lesser side effects during the first 12 hour period. The reason for the non-significant difference in the second 12 hour period may be interpreted by the decreased drugs´ effects with regard to their half-life and initiation of pethidine injections.

Another finding in the present study was that in morphine group, pethidine injections started sooner but in the second 12 hour period, there was no need for pethidine injections. This finding could not be interpreted by the drug length of effect. In our study, although nonsignificant but diclofenac complications were less than the other drug.

For an explanation of lower pain scores in diclofenac one may consider analgesic effect is supported by the anti inflammatory effect of diclofenac, but whether the latter effect will occur with a single 100 mg rectal administration and how much inflammation aggravates the post-operation pain, are questions not to be answered here.

Our study grouped the patients according to a consecutive basis (except the first patient who was randomized according to random numbers) which makes a flaw in the randomized clinical setting. Another limitation of the study is that it has been conducted in casarean operation cases and the results could not be generalized to other gynecologic surgeries. On the other hand, future researches could answer this question and report the best dosage and protocol in post-operation pain relief.

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