Effectiveness of Paracervical Block versus Intravenous Morphine during Uterine Curettage: A Randomized Controlled Trial

Piyathida Thongrong MD*,
Phanida Jarruwale MD*, Prisana Panichkul MD*

** Department of Obstetrics and Gynecology, Phramongkutklao Hospital, Bangkok, Thailand*

Background: *Abnormal uterine bleeding is a common gynecologic problem. Fractional curettage, evacuation and curettage, and dilatation curettage are common gynecologic procedures for investigation and treatment of abnormal uterine bleeding. To perform all these procedures, anesthesia is needed but technique varies among hospitals. The standard procedure of uterine curettage was performed after paracervical block or intravenous morphine injection.*

Objective: *To compare pain scores during and after uterine curettage using intravenous morphine versus paracervical block.*

Material and Method: *A randomized controlled trial study was performed. Sixty-four patients with abnormal uterine bleeding and indication for curettage were enrolled in the present study. Simple randomized procedure was used to distribute the patients into two groups. Intravenous morphine was carried out in 32 patients as the group A while paracervical block was used in the other 32 patients of the group B before uterine curettage. The main outcome measurement was pain score, which assessed by Numerical rating scale ranging from 0-10.*

Results: *The median pain score during uterine curettage were 7.5 and 6 (p = 0.103), immediately after uterine curettage were 3 and 3 (p = 0.822) and 30 minutes after uterine curettage were 1 and 1 (p = 0.206) in the control and treatment group, respectively.*

Conclusion: *Pain scores in patients who received paracervical block were not statistically different from those who received intravenous morphine. Paracervical block could be used as another choice for pain relief during uterine curettage.*

Keywords: *Abnormal uterine bleeding, Paracervical block, Morphine*

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Abnormal uterine bleeding is a common gynecologic problem. The causes can be divided into two groups, pregnant related such as inevitable abortion, missed abortion, incomplete abortion and blighted ovum, and not-pregnant related such as endometrial hyperplasia, endometrial polyp and endometrial cancer[1,2]. Fractional curettage, evacuation, curettage and dilatation curettage are common gynecologic procedures for investigation and treatment of abnormal uterine bleeding. To perform all these procedures, anesthesia is needed but technique varies among hospitals. At Phramongkutklao Hospital, the authors usually use intravenous morphine.

Correspondence to:
Panichkul P, Department of Obstetrics and Gynecology, Phramongkutklao Hospital, Bangkok 10400, Thailand.
Phone: 08-7080-6659, 0-2354-7600 ext. 94061, Fax: 0-2354-9084
E-mail: boonsuki@gmail.com

Since intravenous morphine acts on the central nervous system, it may produce several adverse effects such as drowsiness and dizziness, respiratory depression, nausea and vomiting, urinary retention, ileus, constipation and pruritus. In addition, the patient also requires observation after drug administration[3].

The paracervical block has been used for minor gynecologic procedures since 1925. A local anesthetic drug such as lidocaine has been used effectively and safely with its rapid onset and sufficient duration of action for the procedure. It is also available and inexpensive[4]. Previous studies demonstrated that paracervical block was an anesthetic method for pain relief in uterine curettage with no side effect or few side effects[5-7].

The objective of the present study was to compare pain scores during and after uterine curettage between paracervical block and intravenous morphine.

Material and Method

The present study was a randomized controlled trial comparing paracervical block with lidocaine and intravenous morphine in uterine curettage. Before beginning the present study,the authors introduced all operators and assistance with details of the process and the curettage procedure with a standardized format. The present study was approved by the Institutional Review Board Royal Thai Army Medical Department, and informed consent was obtained from each volunteer at the beginning of the process. Between February 1 and September 30, 2008, the patients at the gynecologic unit of Phramongkutklao Hospital who had indication for uterine curettage were invited to participate in the present study. However, they would be excluded if they had abnormal uterine bleeding from coagulopathy, active liver or kidney disease, history of lidocaine or morphine allergy, and had pain relief by other anesthetic drug or technique before curettage.

Sixty-four patients undergoing uterine curettage were randomly allocated to receive one of the two techniques. Intravenous morphine was carried out in thirty-two patients as the group A while paracervical block was applied in thirty-two patients as the group B. The patient, the gynecologist performing the operation and nurse assistant knew the type of drug administered. The patients were treated according to the departmental routine. The visual analog scores from zero to ten was used to assess pain, 0 score referred to pain absent, while 10 score measured the most severe pain that patients had experienced. The patients were asked to define their pain scores before, during (recall information), immediately after curettage and then thirty minutes post curettage.

Paracervical block injections were done with a 23-gauge spinal needle at 3 and 9 o'clock of cervicovaginal reflection at an estimated depth of 1 cm by marker knot on the needle insertor. Total volume of 1% lidocaine without adrenaline given to each patient was 20 ml (10 ml at each site) and intermittent aspiration was performed before and during injection to ensure that paracervical blood vessels were not punctured. Oxygen and vasopressors were always available. The repeated injection was limited to 10 ml of 1% lidocaine so that the total dose of lidocaine did not exceed 300 mg[8]. The control group received 8 mg of morphine diluted in sterile water 10 ml was administered intravenously 5 minutes before uterine curettage.

The standard procedure of uterine curettage was performed after paracervical block or intravenous morphine injection. The endocervical canal and/or endometrial cavity was curetted. The cervical canal was dilated, if necessary, using Hegar dilator. A questionnaire was used to gather the data. Data recorded included age, weight, height, parity, history of curettage, history of drug allergy, blood pressure, pulse rate, respiratory rate, indication for uterine curettage, type of procedure, operative time, uterine cavity length, complications such as uterine perforation, hematoma, lidocaine toxicity, side effects of morphine such as drowsiness and dizziness, respiratory depression, nausea and vomiting, urinary retention, ileus, constipation, and pruritus.

The authors hypothesized that paracervical block had more anesthetic effect than intravenous morphine and should reduce pain scores by at least 35%[7]. Thus, 32 patients were required in each group to achieve a power of 80% at type I error of 0.05 (two-tailed test) and type II error of 0.2. Data were analyzed using the Statistical Package for Social Science 13.0 (SPSS Inc., Chicago, IL). The Mann-Whitney U test and repeated measures analysis of variance were used to compare continuous variables, Chi-square or Fisher exact test was used to analyze categorical data and mean $\pm$ standard deviation, median or percentage were used for descriptive data. $P < 0.05$ (two-tailed test) was considered significant.

Results

During the study period, 64 patients were enrolled with no drop out from the study. Patients in both groups were similar with respect to age, weight, height, parity, except history of uterine curettage (Table 1). Indications for uterine curettage were similar between two groups (Table 2). There was no significant difference in procedure characteristic, except type of uterine curettage (Table 3). Pain scores at each time point of assessment between two groups were similar over the course of the procedure ($p > 0.05$) (Table 4). There was no serious complication of curettage, dizziness occurred in 15.6% of the paracervical block group, which was only half of the morphine group (31.3%), but it was not statistically different ($p = 0.140$).

Discussion

The various procedures used during uterine curettage such as placement of tenaculum, traction of the cervix and dilatation of the cervical os, as well as curettage itself can cause discomfort. Pain sensation is_transmitted from the posterolateral aspect of the cervix to the lateral spinothalamic tracts of the spinal

Table 1. Patient characteristics

	Paracervical (n = 32)	IV morphine (n = 32)	p-value
Age (yr) (mean ± SD)	38.8 ± 10.1	42.7 ± 12.5	0.320
Weight (kg) (mean ± SD)	56.5 ± 7.7	58.7 ± 10.4	0.452
Height (cm) (mean ± SD)	156.3 ± 3.5	156.2 ± 6.0	0.938
Parity			0.743
0	2 (6.3%)	2 (6.3%)	
1	4 (12.5%)	7 (21.8%)	
2	15 (46.9%)	15 (46.9%)	
≥ 3	11 (34.3%)	8 (25.0%)	
Curettage history			0.025*
0	29 (90.6%)	22 (68.8%)	
1	1 (3.1%)	8 (25.0%)	
2	2 (6.3%)	1 (3.1%)	
3	0 (0%)	1 (3.1%)	

Data present as mean ± standard deviation or n (%)
* $p < 0.05$ was considered significant

Table 2. Indication for curettage

Indication for curettage	Paracervical (n = 32)	IV morphine (n = 32)	p-value
Perimenopausal bleeding	3 (9.4 %)	5 (15.6 %)	0.966
Post menopausal bleeding	2 (6.3 %)	3 (9.4 %)	
Abnormal uterine bleeding	8 (25.0 %)	7 (21.9 %)	
Incomplete abortion	4 (12.5 %)	5 (15.6 %)	
Blighted ovum	9 (28.1 %)	9 (28.1 %)	
Fetal demise	4 (12.5 %)	2 (6.3 %)	
Missed abortion	1 (3.1%)	1 (3.1 %)	
Endometrial polyp	1 (3.1%)	0 (0.0 %)	

Data present as n (%)
* $p < 0.05$ was considered significant

Table 3. Procedure characteristics

	Paracervical block (n = 32)	IV morphine (n = 32)	p-value
Procedure			
Dilatation and curettage	2 (6.3%)	9 (28.1%)	0.011*
Evacuation and curettage	17 (53.1%)	7 (21.9%)	
Fractional curettage	13 (40.6%)	16 (50.0%)	
Operative time (min) (mean ± SD)	16.7 ± 7.6	16.8 ± 7.6	0.948
Uterine sound (cm) (mean ± SD)			
Pre-curettage	8.3 ± 1.0	8.3 ± 1.9	0.866
Post-curettage	8.4 ± 1.1	8.4 ± 1.9	0.935

Data present as mean ± standard deviation or n (%)
* $p < 0.05$ was considered significant

Table 4. The pain scores

	Paracervical (n = 32)	IV morphine (n = 32)
Pre-curettage		
Median (min-max)	0 (0-2)	0 (0-6)
During curettage		
Median (min-max)	6 (0-10)	7.5 (0-10)
Immediate after curettage		
Median (min-max)	3 (0-10)	3 (0-10)
30 min post curettage		
Median (min-max)	1 (0-6)	1 (0-6)

Data present as median

Table 5. Side effects

Side effects	Paracervical (n = 32)	IV morphine (n = 32)	p-value
Dizziness	5 (15.6%)	10 (31.3%)	0.140
Drowsiness	0 (0.0%)	2 (6.3%)	0.492
Nausea & vomiting	1 (3.1%)	1 (3.1%)	1.000

Data present as n (%)

cord via sympathetic and parasympathetic pathways. Paracervical anesthesia blocks transmission of pain from the uterus at the level of the internal cervical os[8,9].

In the present study, pain scores in patients who received paracervical block were not statistically different from those using intravenous morphine. According to the result of Guida M[10], that studied operative hysteroscopy with local anesthesia or conscious sedation in 166 women with surgically treatable lesions associated with infertility or abnormal uterine bleeding which measured pain score at 15 and 60 minutes and at 24 hours after the procedure. There were no significant differences between local anesthesia and conscious sedation in terms of pain control during the procedure and in postoperative pain at different intervals. In the present study, pain scores in patients who received paracervical block was not statistically different from those using intravenous morphine, which may be explained by various influencing factors such as, the site of lidocaine injection, the depth of injection, time before beginning the procedure, or the type of uterine curettage. However, the operators' variability was reduced by standardizing technique before initiating the present study. Another possible explanation is a difficulty in assessment and comparing pain scores because of its subjective nature, which may be different individually. Anxiety may also influence pain perception. The reliability of the result in the present study might be affected by the unblinded randomized controlled trial because all the patients, the doctors, and the nurses knew the type of analgesic used. Therefore, this can can influence pain perception. Patients' drowsiness and conscious sedation effect of morphine may affect their pain perception and the difference from praracervical block that has no effect on conscious sedation.

There were different numbers of previous curettage between both groups that may affect patient's pain perception and the difference in type of curettage may not produce the same level of pain.

The adverse effects that occurred in less than 30% of the patients were mild. Hematoma and accidental intravenous lidocaine injection was not found in the present study. Fifteen percent of patients in the paracervical block group had dizziness, which was similar to the previous study of Buppasiri P[11], but different from the study of Lau WC[12], in which dizziness occurred in 31%.

Conclusion

Pain scores in patients who received paracervical block were not statistically different from those who received intravenous morphine. Paracervical block could be used as another choice for pain relief during uterine curettage.

Potential conflicts of interest

None.

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ประสิทธิภาพของการฉีดยาระงับปวดข้างคอมดลูกเปรียบเทียบกับการฉีดมอร์ฟีนทางหลอดเลือดดำระหว่างการขูดมดลูก: การศึกษาแบบสุ่ม

ปิยธิดา ทองรอง, พนิดา จารุเวฬ, ปริศนา พานิชกุล

ภูมิหลัง: *ภาวะเลือดออกผิดปกติจากโพรงมดลูกยังเป็นปัญหาที่สำคัญและพบบ่อยในสตรี การขูดมดลูกเป็นหัตถการที่กระทำบ่อยที่สุดในผู้ป่วยกลุ่มนี้ทั้ง fractional curettage, evacuation and curettage และ dilatation and curettage โดยมีวัตถุประสงค์เพื่อวินิจฉัยหาสาเหตุและ/หรือเพื่อรักษาภาวะเลือดออกผิดปกติจากโพรงมดลูก การระงับปวดระหว่างทำหัตถการ ในปัจจุบันส่วนใหญ่ใช้การฉีดมอร์ฟีนทางหลอดเลือดดำ (intravenous morphine) ส่วนการฉีดยาระงับปวดข้างคอมดลูก (paracervical block) ทำให้สามารถลดความเจ็บปวดในการทำหัตถการบริเวณปากมดลูกและภายในโพรงมดลูกได้เช่นกัน*

วัตถุประสงค์: *เพื่อเปรียบเทียบความเจ็บปวดและอาการข้างเคียงระหว่างและหลังการขูดมดลูกในผู้ป่วยที่ได้รับวิธีฉีดยาชาระงับปวดข้างคอมดลูก เปรียบเทียบกับการฉีดมอร์ฟีนทางหลอดเลือดดำ*

วัสดุและวิธีการ: *สตรีที่มีปัญหาเลือดออกผิดปกติจากโพรงมดลูกหรือแท้งบุตรที่ต้องได้รับการรักษาด้วยการขูดมดลูกโดยสุ่มตัวอย่างชนิด simple randomization เป็นกลุ่มที่ได้รับฉีดมอร์ฟีนทางหลอดเลือดดำ 32 ราย และกลุ่มที่ได้รับการฉีดยาชาระงับปวดข้างคอมดลูก 32 ราย ประเมินความเจ็บปวดโดยใช้ Numerical rating scale.*

ผลการศึกษา: *สตรีที่ได้รับการขูดมดลูกมีค่ามัธยฐานความเจ็บปวดในระหว่างการขูดมดลูกเท่ากับ 7.5 และ 6 (p = 0.103) หลังการขูดมดลูกเสร็จทันทีเท่ากับ 3 และ 3 (p = 0.822) 30 นาที หลังการขูดมดลูกเท่ากับ 1 และ 1 (p = 0.206) ในกลุ่มที่ได้รับการฉีดมอร์ฟีนทางหลอดเลือดดำ และกลุ่มที่ได้รับการฉีดยาชาระงับปวดข้างคอมดลูกตามลำดับ*

สรุป: *คะแนนความปวดระหว่างขูดมดลูกในผู้ป่วยที่ได้รับการฉีดยาชาระงับปวดข้างคอมดลูก ไม่แตกต่างจากผู้ป่วยที่ได้รับการฉีดมอร์ฟีนทางหลอดเลือดดำซึ่งอาจใช้เป็นทางหนึ่งสำหรับวิธีระงับปวดในการขูดมดลูกได้*