# Combined Intrauterine Lignocaine Injection and Paracervical Block Gives More Pain Relief Than Either Method Alone in Dilatation and Curettage Procedure

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## ABSTRACT

**Background:** Endometrial samples are typically obtained by the gynecological procedure known as dilatation and curettage (D & C). Anesthesia is required for the surgery. Although paracervical blocks are frequently employed, the pain they cause is mild to moderate.

**Objective:** The aim of this study was to compare the efficacy of intrauterine instillation of lidocaine, paracervical block, and a combination of the two procedures for their ability to control intra- and post-operative pain during and after endometrial curettage.

**Patients and Methods:** This research was conducted in Ob/Gyn Departments of Menoufia University Hospital and Quesna Central Hospital. 90 women were scheduled for endometrial curettage were divided into three equal groups by random selection: Group 1 (n=30): Lidocaine 2% was administered intra-uterine. Group 2 (n=30): Received paracervical blockage. Group 3 (n=30): Received combined intrauterine lidocaine and paracervical block.

**Results:** The current study showed that mean VAS value of D and C time was statistically higher among lidocaine (4.9 ± 0.76) than in combined intrauterine lidocaine and paracervical block (3.93 ± 0.83). Mean VAS value of D and C time was statistically higher among paracervical block (4.6 ± 1.13) than in combined intrauterine lidocaine and paracervical block (3.93 ± 0.83). Five minutes after the procedure, pain was least after the combined technique (group 3) then after intrauterine lidocaine group (group 1) then after paracervical block (group 2), (VAS:2.6 ± 0.93, 2.9 ± 0.9 and 3.67 ± 0.96 respectively). **Conclusion:** Greater analgesia was provided by using intrauterine lidocaine in combination with paracervical block than by using either lidocaine or paracervical block alone.

**Keywords:** Paracervical block, Intrauterine lignocaine injection, Pain relief; Endometrial curettage, Cervical dilatation.

## INTRODUCTION:

The endometrium is sampled via dilatation and curettage (D & C). With adequate analgesia, can be done in outpatient setting. Regional anesthesia is used when the procedure is used in the clinic saving time, and in addition, reducing hospital occupation, cost and avoiding complications of general anesthesia [(1, 2)]. The majority of patients can bear minor discomfort during and after surgery as long as it is not life-threatening [(3)]. Pain scoring using visual analogue scale during the procedure is comparable to other popular outpatient procedures such as cervical punch biopsy, intrauterine device (IUD) insertion and hysteroscopy and the optimal method for pain control during such procedures is still unclear [(4)].

The aim of this study was to compare the efficacy of intrauterine instillation of lidocaine, paracervical block, and a combination of the two procedures for their ability to control intra and postoperative pain during and after endometrial curettage.

## PATIENTS AND METHODS

This prospective observational study was conducted at Department of Obstetrics and Gynecology, Menoufia University Hospital and Quesna Central Hospital between March 2021 and February 2022.

**Inclusion criteria:** All women planned for endometrial curettage for diagnostic and/or therapeutic purposes during the study period and fit according to American Society of Anesthesiologists (ASA) [(5)] class I and II were counselled and invited to participate in the study.

**Exclusion criteria:** Pregnant women, women with systemic illness, Active pelvic infection, sever uterine bleeding and women with known allergy to lidocaine were excluded from the study.

A computer-generated randomization software randomly assigned 90 women scheduled for endometrial curettage into three groups: group 1, group 2, and group 3, based on the type of anesthetic used; Group 1 (n=30) received a 2% uterine injection of lidocaine. Group 2 (n=30) received a paracervical block and Group 3 (n=30) got combined paracervical block as well as intrauterine lidocaine. Only one anesthesiologist prepared the experimental drugs. Endometrial curettage was performed by one gynecologist. The visual analogue scale (VAS) was used to record pain during at five and 30 minutes after the treatment. In lithotomy position, bimanual examination was carried out. The cervix was then exposed using a bivalve speculum. A single toothed vulsellum forceps were used to hold the cervical anterior lip. An endometrial cavity suction catheter (size 6 Fr) was used in group 1 and inserted 2–3 cm distal to the cervix into the endometrial cavity. 5 ml of 2 percent lidocaine solution was injected into the catheter and then clamped for 5 minutes to reduce backflow and allow the anaesthetic to take effect before the catheter was withdrawn. With a 22 G spinal needle, 5 ml of 1 percent lidocaine was administered at 1 centimeter depth at the 3 and 9 o'clock positions of the



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cervical vaginal reflection in group two utilizing the paracervical block technique. In group 3, a 22 G spinal needle was used to conduct the paracervical block technique, and 1 cm of lidocaine at a concentration of 1% was injected at the 3 and 9 o'clock positions of the cervicovaginal reflection and a suction catheter (size 6 Fr) was used to administer the intrauterine instillation immediately following a paracervical block with 5 ml of 2% lidocaine as in group I. Before attempting the procedure, the heart rates and blood pressure of the women were closely monitored (baseline monitoring), which was continued during the injection. After injection, monitoring was continued for pulse rate and blood pressure every 3 min in the first 15 min, and 15, 30, 60, and 120 min postoperatively.

All possible adverse effects (bradycardia, hypotension and convulsions, or arrhythmia) had been monitored and documented until the time of their release. To determine the degree of pain, a 10-centimeter visual analogue scale was used. The pain score was measured at five minutes and 30 minutes after the procedure. The quality of analgesia during surgery was rated on a scale of excellent, good, fair, and bad. It was a good (with only a few complaints from the patient) or a fair (with a few complaints requiring the use of additional analgesics) experience., fentanyl ≤1 µg/kg/dose), and poor (requiring analgesics, fentanyl ≥1 µg/kg/dose and hypnotics, propofol).

**Ethical consent:**

**Participants signed informed consent forms after receiving a comprehensive explanation of the study aims prior to the acceptance of both Menoufia University Hospital and Quesna General Hospital Ethical Committees. This work has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for studies involving humans.**

***Statistical analysis***

In order to analyze the data acquired, Statistical Package of Social Sciences (SPSS) version 20 was used to execute it on a computer. In order to convey the findings, tables and graphs were employed. The quantitative data was presented in the form of the mean, median, standard deviation, and confidence intervals. The information was presented using qualitative statistics such as frequency and percentage. The student's t test (T) was used to assess the data while dealing with quantitative independent variables. Pearson Chi-Square and Chi-Square for Linear Trend ($X^2$) were used to assess qualitatively independent data. As a rule of thumb, Fisher's exact test was employed when the predicted count was fewer than five in more than 20% of cells. Measurement on a regular basis. More than two normally distributed variables were compared using the ANOVA test. P value ≤ 0.05 was considered significant.

**RESULTS**

In terms of age, there was no statistically significant difference between the two groups analyzed, ASA physical status, menopausal status, BMI, previous vaginal birth or previous cervical operation among the groups (Table 1).

**Table (1):** Comparison between group 1, group 2 and group 3 regarding demographic characteristics

| | | | Group 1 | Group 2 | Group 3 | $X^2$ | F.test | P. value |
|---|---|---|---|---|---|---|---|---|
| **Age (years)** | **Mean ± SD** | | 35.30 ± 8.57 | 34.83 ± 8.46 | 34.67 ± 7.27 | | .049 | 0.952 |
| **ASA** | **I** | **No.** | 27 | 28 | 26 | .741 | | 0.690 |
| | | **%** | 90.0 % | 93.3% | 86.7% | | | |
| | **II** | **No.** | 3 | 2 | 4 | | | |
| | | **%** | 10.0% | 6.7% | 13.3% | | | |
| **Menopausal status** | **Postmenopausal** | **No.** | 5 | 3 | 5 | .719 | | 0.698 |
| | | **%** | 16.7% | 10.0% | 16.7% | | | |
| | **Premenopausal** | **No.** | 25 | 27 | 25 | | | |
| | | **%** | 83.3% | 90.0% | 93.3% | | | |
| **BMI ($kg/m^2$)** | | | 24.9±4.5 | 23.7±3.9 | 25.6±5.3 | | | 0.270 |
| **Previous vaginal birth** | | | 17 | 15 | 19 | | | 0.580 |
| **Previous cervical operation** | | | 1 | 0 | 2 | | | 0.350 |

P ≤ 0.05 is considered statistically significant ,p >0.05 is considered statistically non-significant, SD=standard deviation , $X^2$; chi-square test, F.test; Fisher's exact test, ASA; American Society of Anesthesiologists, BMI; body mass index.

There was no statistically significant difference between the studied groups regarding indications (Table 2).

**Table (2):** Comparison between group 1, group 2 and group 3 regarding indications for D & C

| | | | Group 1 | Group 2 | Group 3 | $X^2$ | P. value |
|---|---|---|---|---|---|---|---|
| **Indications** | **Abortion** | **No.** | 0 | 3 | 1 | 11.055 | 0.524 |
| | | **%** | 0.0% | 10.0% | 3.3% | | |
| | **GTD** | **No.** | 1 | 0 | 0 | | |
| | | **%** | 3.3% | .0% | .0% | | |
| | **Irregular bleeding** | **No.** | 11 | 11 | 9 | | |
| | | **%** | 36.7% | 36.7% | 30.0% | | |
| | **Menorrhagia** | **No.** | 9 | 8 | 12 | | |
| | | **%** | 30.0% | 26.7% | 40.0% | | |
| | **Polymenorrhia** | **No.** | 3 | 3 | 0 | | |
| | | **%** | 10.0% | 10.0% | .0% | | |
| | **Postmenopausal bleeding** | **No.** | 5 | 3 | 6 | | |
| | | **%** | 16.7% | 10.0% | 20.0% | | |
| | **Thick endometrium** | **No.** | 1 | 2 | 2 | | |
| | | **%** | 3.3% | 6.7% | 6.7% | | |

$P \leq 0.05$ is considered statistically significant, $p > 0.05$ is considered statistically non-significant, $X^{2;}$ chi-square test, F.test; Fishers exact test.

VAS differed significantly between groups. Group 1 and group 2 had no statistically significant differences in VAS during D and C. Mean value of VAS on D and C time was statistically higher among group 1 than in group 3.

Mean value of VAS on D and C time was higher among group 2 than in group 3 but not statistically significant. Mean value of VAS at 5 min after the procedure was statistically lower among group 1 than in group 2. Mean value of VAS at 5 min after the procedure was statistically higher among group 2 than in group 3. Mean value of VAS at 5 min after the procedure was not statistically different between group 1 and group 3

At 30 minutes following the surgery, there was no statistically significant change in VAS between group 1 and group 2 but the mean value of VAS at 30 min after the procedure was statistically higher among each of group 1and group 2 separately in relation to group 3 **(Table 3)**.

**Table (3):** Comparison between Group 1, Group 2 and Group 3 regarding VAS

| | | Group 1 | Group 2 | Group 3 | F.test | P. value | LSD |
|---|---|---|---|---|---|---|---|
| **VAS at the time of D and C** | **Mean ± SD** | 4.90± 0.759 | 4.60± 1.13 | 3.93± 0.828 | 8.662 | < 0.001 | P1=.210<br>P2=.000<br>P3=.006 |
| **VAS at 5 min after the procedure** | **Mean ± SD** | 2.93± 0.907 | 3.67± .959 | 2.60± 0.932 | 10.262 | < 0.001 | P1=.003<br>P2=.170<br>P3=.000 |
| **VAS at 30 min after the procedure** | **Mean ± SD** | 1.97± 0.890 | 2.23± 0.728 | 1.20± 0.714 | 14.136 | < 0.001 | P1=.190<br>P2=.000<br>P3=.000 |

$P \leq 0.05$ is considered statistically significant, $p > 0.05$ is considered statistically non-significant, SD=standard deviation, LSD; least significant difference P1= Group1 and Group 2, P2= Group 1 and Group3, P3= Group 2 and Group3

There was statistically significant difference between the studied groups regarding quality of intraoperative analgesia (Table 4).

**Table (4):** Comparison between group 1, group 2 and group 3 regarding quality of intraoperative analgesia

| | | | Group 1 | Group 2 | Group 3 | $X^2$ | P. value |
|---|---|---|---|---|---|---|---|
| **Quality of intraoperative analgesia** | **Excellent** | **No.** | 1 | 0 | 3 | 15.887 | 0.014 |
| | | **%** | 3.3% | 0.0% | 10.0% | | |
| | **Fair** | **No.** | 19 | 25 | 18 | | |
| | | **%** | 63.3% | 83.3% | 60.0% | | |
| | **Good** | **No.** | 3 | 1 | 8 | | |
| | | **%** | 10.0% | 3.3% | 26.7% | | |
| | **Poor** | **No.** | 7 | 4 | 1 | | |
| | | **%** | 23.3% | 13.3% | 3.3% | | |

P< 0.05 is considered statistically significant, p> 0.05 is considered statistically non-significant, $X^2$; chi-square test.

## DISCUSSION

The current study showed that mean value of VAS on D and C time was statistically higher among lidocaine than in combined intrauterine lidocaine and paracervical block. Mean value of VAS on D and C time was higher among paracervical block than in combined intrauterine lidocaine and paracervical block. Mean value of VAS at 5 min after the procedure was statistically lower among lidocaine than in paracervical block. Mean value of VAS at 5 min after the procedure was statistically higher among paracervical block than in combined intrauterine lidocaine and paracervical block. Mean value of VAS at 5 min after the procedure was higher but not statistically significant in lidocaine than in combined intrauterine lidocaine and paracervical block. It was statistically greater in paracervical block than in combined intrauterine lidocaine and paracervical block at 5 minutes following the surgery. Abnormal uterine bleeding then abortion were the commonest indications for D & C in the current study.

Ninety women scheduled for endometrial curettage were divided into three groups at random, each with a different type of anaesthetic: group L, group P, and group LP. Group L received lidocaine 2% injected into the uterine cavity (*n*=30). Paracervical block was administered to Group P (n=30). Intrauterine lidocaine (n=30) and paracervical block (n=10) were administered to Group LP. Using a visual analogue scale of 10 mm, the pain level was measured. A statistically significant rise in groups L and P was discovered in comparison with group LP. Intrauterine lidocaine combined with paracervical block provided adequate intraoperative and postoperative analgesia, while paracervical block or intrauterine lidocaine alone provided intraoperative analgesia that required the addition of intraoperative opioid analgesics and sometimes hypnotics and mostly required immediate postoperative analgesia immediately.

A Randomized controlled trial was undertaken on 84 women with irregular uterine bleeding who had fractional curettage. Paracervical block, NSAIDs, and intrauterine lignocaine or saline were given to all of the patients. A statistically significant difference between the two groups was discovered in terms of pain scores (5.36 ± 1.2 versus 6.81 ± 1.4, p < 0.001) [6].

**Rattanachaiyamont *et al.*** [7] conducted a double-blind, randomised, placebo-controlled experiment on 66 patients with abnormal uterine bleeding undergoing F/C with Sims curette. The results of our investigation are consistent with their findings. All patients were given a lignocaine or saline intrauterine infusion in addition to a paracervical block. They observed statistically significant difference in the pain profile between the two groups (pain score 2.3 vs. 4.7). Study by **Hu and colleagues** [8] demonstrated that intrauterine anaesthetic reduces discomfort during suction curettage in endometrial sample in women with endometriosis (pain score 2.1 vs. 4.2).

The current study agrees with the results of **Meenambiga and Haribaskar** [9] who found that combined intrauterine anaesthetic and paracervical block is more beneficial for pain alleviation during F/C compared to paracervical block alone.

For D & C done for abortions in the first trimester, **Edelman *et al.*** [10] found that injecting 4% lidocaine into the endometrial cavity following routine paracervical block considerably reduced discomfort compared to a placebo. Using intrauterine lidocaine as an anaesthetic, a 2006 study by **Guney *et al.*** [11] has shown that the removal of misplaced intrauterine devices might be effectively numbed by the drug. Eighty women were randomly allocated to receive 2 ml of 2% mepivacaine or saline, followed by a 5-minute wait before undergoing an office hysteroscopy and/or endometrial biopsy, according to **Cicinelli *et al.*** [12]**.** Women who had the mepivacaine infusion experienced a statistically significant decrease in discomfort. Vasovagal reaction was much more common (32.5%) in the placebo group, according to the study's findings.

Endometrial biopsy pain was reduced by 5 ml 2% mepivacaine injected into the uterus during hysteroscopy, according to the study by **Zupi *et al.*** [13]**.**

Intrauterine lidocaine was found to reduce pain in fractionated curettage by **Chanrachakul *et al.*** [14] without creating any side effects.

**Poornima and Panicker** [15] discovered that intramuscular sedation was less effective than ICB for pain alleviation during D & C. (P<0.001). When

compared to intramuscular sedation, the recovery time after ICB was quicker. ICB problems are quite rare if the treatment is done appropriately. It is also cost effective.

However, **Davies *et al.* [16]** found that lidocaine treatment during hysteroscopy considerably reduced pain only when the cervix was grasped, but not when the endometrial biopsy was performed. Because mezzo forceps was used during Pipelle biopsy, it appears that the cervix was not a factor in the trial, consequently, the combination of cervical spray of lidocaine and intrauterine injection of lidocaine did not result in higher pain alleviation. A paracervical block not only helped alleviate discomfort but also caused consequences such as hypotension and mortality **[17].**

According to **Sayed and Mohamed [18],** the heart rate was increased significantly in both the intrauterine lidocaine and paracervical block groups, which may indicate a more intense sympathetic response to the greater magnitude of the pain. In the current study, however, the combined technique did not make significant hemodynamic changes, which is consistent with the findings of this study.

This study indicated a statistically significant difference in the quality of intraoperative analgesia across the groups tested, which is in line with the findings of **Sayed and Mohamed [18].** On the analgesia front, group LP had statistically significant sufficient analgesia compared with the other groups.

The number of participants, close monitoring and the unified handling when giving anesthesia and performing surgery give points of strength to the study.

Inability to conduct a multicenter randomized trial constitutes unintended limitation.

## CONCLUSION

The combination of intrauterine lidocaine and paracervical block offered more analgesia during endometrial curettage than either intrauterine lidocaine or paracervical block alone.

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**Author contribution:** Authors contributed equally in the study.

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