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Local anesthesia for pain control during diagnostic hysteroscopy

Ali A. Bendary*, Ibrahim I Souidan
Department of Obstetrics and Gynecology, Benha University, Al Qalyubia Governorate, Egypt

SUMMARY

AUTHORS' CONTRIBUTION: (A) Study Design · **(B)** Data Collection . **(C)** Statistical Analysis · **(D)** Data Interpretation · **(E)** Manuscript Preparation · **(F)** Literature Search · **(G)** No Fund Collection

Background: Many doctors prefer doing hysteroscopically guided procedures on conscious patients so an effective topical anesthetic, as Lidocaine-prilocaine cream, can be used.

Aim: The purpose of this study was to study the effectiveness of EMLA cream and placebo in reducing pain during hysteroscopy.

Methods: By applying a thick coating of 5 grammes of lidocaine-prilocaine cream to the cervix, in one group and placebo (gel) in another group before hysteroscopy. The researcher measured pain before inserting the hysteroscope, throughout the surgery, during withdrawal, and after the procedure. Women were asked to rate the anesthesia they had received overall and if they would choose to use it again if the surgery were to be redone.

Results: The VAS (Visual Analog Scale) scores of patients in the control group were statistically significantly higher than those in the EMLA group.

Conclusion: This study has shown that using EMLA cream as a local anesthetic for office hysteroscopy is a successful and simple procedure.

Keywords: Diagnostic hysteroscopy; Local anesthesia; Pain

Address for correspondence:

Ali A. Bendary
Department of Obstetrics and Gynecology, Benha University, Al Qalyubia Governorate, Egypt
E-mail: eladwar@hotmail.com

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INTRODUCTION

Hysteroscopy, provides a thorough analysis of the endometrium's outer layer. However, it is often only used to treat lesions that were found using less intrusive methods [1]. It is crucial for performing minimally invasive intrauterine therapeutic procedures such as metroplasty, lysis of adhesions, removal of foreign substances, and excision of polyps and submucous myomas. It plays a crucial role in the method for examining the uterus in women who have irregular uterine bleeding, infertility, or recurrent abortions [2].

Investigating the effectiveness of local anesthetic cream for lowering pain during diagnostic hysteroscopy is crucial because pain is one of the most significant elements that affect patient satisfaction throughout the operation [3].

Common uses for the topical anesthetic cream lidocaine-prilocaine (EMLA) include minor gynecologic, dermatologic, and pediatric procedures. The effective analgesia typically lasts between fifteen and twenty minutes, with an onset time of five to ten minutes. On healthy skin, however, the cream should be applied for at least an hour to achieve effective cutaneous analgesia [4].

A visual analogue scale with a 10-cm line can be used to measure the effectiveness of EMLA cream on the uterine cervix in lowering pain during hysteroscopy can be done using visual analogue scale. There was a 10-cm line scaled from 0 to 10 (where 0 represents no discomfort and 10 represents extreme pain). During the procedure, women are asked to vocally specify the number that best describes their level of pain [5].

AIM OF THE WORK

This study's objective is to assess how well the EMLA anesthetic cream reduces discomfort during diagnostic hysteroscopy.

PATIENTS AND METHODS

The trial was controlled, prospective, randomized, and non-blinded. 170 patients were involved in the trial, which was conducted between November 2020 and April 2022.

Patients

The study was Prospective, randomized, non-blinded, controlled study done during the period between November 2020 and April 2022. Study included 170

patients. Consent was obtained from all patients who agreed to participate in the study. The study was approved by the Research Ethical Committee (REC) of Faculty of Medicine, Benha University, RC 24-11-2022.

The inclusion criteria:

1. Age more than 18 years old going for office hysteroscopy due to:
   - Infertility
   - Recurrent pregnancy loss
   - Hypomenorrhea
   - Endometrial polyps
   - Intrauterine foreign bodies
   - Submucous myomas
   - Abnormal uterine bleeding
2. Not taking analgesics 6 h before the procedure.
3. Absence of sedative use 24 h before the procedure.

The exclusion criteria:

1. Pregnancy.
2. Gynecological cancer.
3. Gynecological infection.
4. Hypersensitivity to local anesthetics.
5. Patients on anti-arrhythmic drugs due to possibility of drug interaction.

Methods:

After identifying the patient fulfilling the criteria of the study, participants were divided into two groups by simple computerized randomization with a 1:1 allocation ratio.

Each patient was subjected to

- Full history taking which involved:
- Examination

Hysteroscopy procedure:

A bivalve speculum was introduced; the cervix was exposed. The cervix, fornicies, and vagina were cleansed with 10% povidine iodine and then swabbed dry. 5 grammes of the EMLA cream in 85 patient and 3ml of ultrasonic gel in 85 patients was applied up the endocervical canal and ectocervix. The bivalve speculum was removed and the patient was left for l0 minutes before carrying out a hysteroscopy. With as little stress as possible, the hysteroscope was cautiously inserted inside the cervical canal and advanced to the internal os and subsequently the uterine cavity. Once the cavity was entered, the uterine cavity underwent a thorough inspection and evaluation. The doctor and patient were able to examine the image since the hysteroscope was attached to a colorful television display monitor.

The hysteroscope was slowly withdrawn into the cervical canal at the end of the surgery.

Collection of data: During the procedure the researcher followed the patient`s facial expressions and accordingly a score was given for the pain intensity during different parts of the procedure, (introduction of hysteroscopy, during the procedure, on withdrawal and after procedure), by using visual analogue scale (VAS)

After finishing the procedure every patient was interviewed privately by the researcher and three separate issues were evaluated.

1. Pain experienced during the procedure; the patients were asked to give a number from zero to ten for their perception of pain during the procedure.

   (0=no pain, 10=horrible pain that cannot be tolerated)

2. Acceptability of the cream used after the procedure; the patients were asked to give a number from zero to ten for their satisfaction from the cream used.

(0=totally unacceptable, 10=totally acceptable)

3. Preference of the cream used if the procedure to be repeated; the patients were asked to give a number from zero to ten for their preference of reusing the cream if the procedure to be repeated.

(0=absolutely not preferred, 10=absolutely preferred)

Statistical analysis

Data were checked, entered and analyzed using SPSS version 23 for data processing.

RESULTS

According to **Tab. 1.** there is no statistically significant variation in the demographic criteria between the analyzed groups. In terms of hysteroscopy indications, **Tab. 2.** demonstrates that there is no statistically significant difference between the control and EMLA groups. However, **Tab. 3.** demonstrates that there is a statistically significant difference between the control and EMLA groups in terms of pain severity, with a significant reduction in pain with the use of EMLA cream. **Tab. 4.** demonstrates that there is a statistically significant difference in pain perception between the control and EMLA groups, which is significantly reduced with the use of EMLA cream. **Tab. 5.** demonstrates that there is a statistically significant difference in the acceptance of the cream used and preference for reusing the cream if the procedure is repeated between the EMLA and control groups.

DISCUSSION

Hysteroscopy provides a more thorough inspection of the uterine cavity and endometrial surface. However, it is often only used to treat lesions that were found using less intrusive methods [6].

Tab. 1. Demographic criteria of the studied groups.

Variable	EMLA	Control	Test	P
Age (years) mean ± SD (range)	30.8 ± 7.5 (18-50)	30.5 ± 7.3 (18-52)	T=0.5	0.6
BMI mean ± SD (range)	26.2 ± 2.5 (20.6-30)	25.9 ± 2.2 (21-30)	T=0.4	0.7
Parity N (%)				
Nulliparous	46 (54.2%)	37 (39.8%)	χ^2=1.8	0.9
Multiparus	39 (45.8%)	48 (60.2%)		
Previous abortion				
N (%)	39 (45.8%)	32 (34.5%)	χ^2=2.7	0.1

Tab. 2. Comparison between the control and EMLA groups in indications of hysteroscopy.

Variable	EMLA N (%)		Control N (%)		Test χ^2	P
1ry infertility	40	47.05	36	38.4	1.8	0.6
2nd infertility	20	23.55	33	34.2		
Post menstrual bleeding	00	0.00	2	1.4		
Menorrhagia	17	20	6	21.1		
Missed IUCD	5	4.2	2	1.4		
Metrorrhagia	00	0.00	2	1.4		
Oligomenorrhea	1	0.7	2	1.4		
Secondary amenorrhea	2	1.4	2	1.4		

Tab. 3. Comparison between the control and EMLA groups in severity of pain according to visual analogue scale (VAS).

VAS	EMLA N=85	Control N=85	Test χ^2	P
No pain (0-2)	25 26.8	00 0.00	3.45	0.0001**
Mild pain (3-4)	32 (43.7%)	00(0.00%)		
Moderate pain (5-8)	28 (29.6%)	55 (58.1%)		
Severe pain (9-10)	00 (0.00%)	30 (41.9%)		
* * p-value <0.001 is highly significant				

Tab. 4. Comparison between the control and EMLA groups in pain reception during different parts of the procedure of hysteroscopy regarding VAS.

Variables	EMLA group (N=85)	Control group (N=85)	T. test	P
During insertion mean ± SD (range)	6.7 ± 0.6 (5–8)	9.2 ± 0.8 (8–10)	3.5	0.001*
During the procedure mean ± SD (range)	3.8 ± 0.6 (3–4)	7.8 ± 1.0 (5–9)	4.1	0.001*
During withdrawal mean ± SD (range)	2.5 ± 0.5 (0 –4)	5.9 ± 0.6 (3–8)	3.7	0.001*
After the procedure mean ± SD (range)	1.4 ± 0.7 (0–2)	3.3 ± 0.7 (3–4)	2.5	0.03*

Tab. 5. Comparison between the EMLA and control groups in acceptability of the cream used and preference of reusing the cream if the procedure to be repeated.

Variable	EMLA	Control	T.test	P
Acceptability mean ± SD	7.9 ± 0.5	4.6 ± 0.5	2.4	0.007*
Preference mean ± SD	8.6 ± 0.4	5.7 ± 0.5	2.6	0.002*

In this study we investigated the use of 3 ml of EMLA cream applied to uterine cervix in 85 patients and 3 ml of ultrasound gel (placebo) in 85 patients and A 10-cm VAS was used to gauge how painful the treatment was both during and right after. The findings showed that EMLA cream is helpful in easing discomfort during the procedure. A 10-cm VAS was used to measure the level of discomfort during and immediately after the surgery. The findings showed that EMLA cream is helpful in minimizing discomfort during hysteroscopy. Hysteroscopy technique: (p value 0.0001 indicates a statically significant difference between control and EMLA groups in pain severity with highly decrease in pain severity with application of EMLA cream.

This result was in agreement with:

Arnau B, et al., They used a prospective randomized, non-blinded, controlled trial with 92 subsequent patients

to examine the effectiveness of EMLA cream administered to the cervix for pain reduction during diagnostic or surgical hysteroscopy. 10 minutes before to hysteroscopy, patients were randomly assigned to receive 3 mL of either 3 mL of ultrasonic gel (placebo) or 3 mL of EMLA cream. A 10-cm VAS was used to gauge pain intensity right away after the surgery. In the EMLA group, there was less pain. In the EMLA group compared to the control group, there were significantly fewer women who wanted to stop the operation. (p = 0.013) [7].

Zullo F, et. al., performed a study to compare the outcomes of three different types of topical anesthesia used during office hysteroscopy.: group (A) prilocaine plus lidocaine cream (EMLA cream), group (B) lidocaine spray, and group (C) a control group made up of all hysteroscopies carried out during the same period without anesthesia. The end conclusion was that topical anesthesia reduced pain during hysteroscopy more effectively than lidocaine spray and EMLA cream [8].

In a prospective, randomized, unblinded trial by Stigliano, et al., EMLA cream was compared to lidocaine and nothing as a control. The EMLA group experienced much less discomfort than the lidocaine and control groups at any stage of the operation [9].

Soriano, et. al., they employed a 2.7mm flexible hysteroscope to evaluate the effectiveness of lidocaine aerosol spray and EMLA cream in randomized double-blind placebo-controlled research. According to their findings, the EMLA group's mean pain score was lower than that of the lidocaine spray group [10].

Ahmad G, et al. revealed a positive benefit of EMLA cream during and within 30 min after hysteroscopy in a systematic review and meta-analysis for Pain reduction in office gynecology [11].

Liberty G, et al. looked on hysterosalpingography's use of EMLA cream. Our procedure was different from Liberty, et al in.'s terms of the sites of administration and the length of application because we believed that 10 minutes was the ideal amount of time for achieving the highest possible level of analgesia. We wrongly believed that inserting the hysteroscope through the endocervical os would be the most difficult phase because cervical clutching has been reported as the most painful part of doing hysterosalpingography. As a result, we administered the analgesic through the cervical canal using a vaginoscopic technique [12].

But this study disagrees with:

Cooper NA, et al., they concluded that applying a topical anesthetic did not diminish the discomfort during outpatient hysteroscopy after examining a number of local anesthetic approaches for pain control [13].

Lau, et al. conducted a double-blind, placebo-controlled study to assess the anesthetic efficacy of 5ml of 2% lignocaine or EMLA cream. They concluded that since there were no appreciable alterations in the mean pain scores, local anesthetic injections during hysteroscopy did not reduce pain or prevent vasovagal episodes. The decreased mean pain scores during multiple hysteroscopy phases, including cervical entrance and uterine evaluation, have shown the anesthetic efficiency of topically applied EMLA cream in this study, in contrast [3].

CONCLUSION

This study has shown that the use of EMLA cream as a local anesthetic for office hysteroscopy is efficient, extremely satisfactory, and simple to apply.

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