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COMPARISON OF OUTCOME BETWEEN INTRAMUSCULAR PHLOROGLUCINOL VERSUS ORAL MISOPROSTOL PRIOR TO DIAGNOSTIC HYSTEROSCOPY

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ABSTRACT

Background: Diagnostic hysteroscopy is the gold standard to assess intrauterine pathology. Nevertheless, cervical dilatation is a life-threatening procedure, which is accompanied by pain and complications. Pharmacological medications are commonly used to cervical priming (misoprostol) and phloroglucinol, a spasmolytic agent, has been developed as a possible alternative.

Objective: To determine the difference in the outcome between intramuscular phloroglucinol and oral misoprostol before diagnostic hysteroscopy in premenopausal women.

Methodology: This was a randomized controlled trial done in the Department of Gynecology and Obstetrics, Services hospital from August 2025 to November 2025. One hundred and ten premenopausal women (40-45 years old) who were in diagnostic hysteroscopy were enrolled and randomly sampled out of 110 women (n=55) into two groups by lottery method. Group A was pre-proceded with 80 mg of intramuscular phloroglucinol 30 minutes before the procedure and Group B with 400 µg oral misoprostol 2 hours before. Measures of outcome were mean cervical dilatation, pain evaluation by Visual Analog Scale (VAS) and cervical passage time. Data analysis was done with SPSS v25. Independent sample t-test was used and the p=0.05 was taken to be significant.

Results: The phloroglucinol group (mean of 8.10 mm 0.80 mm) had a higher cervical width than the misoprostol group (mean of 6.70 mm 1.45 mm; p<0.001). The mean VAS pain score was significantly lower in Group A (0.60±0.90) versus Group B (2.60±2.10; p<0.001). Phloroglucinol (19.2±7.5 sec) also had a shorter cervical passage time than misoprostol (24.1±8.0 sec; p=0.002).

Conclusion: Intramuscular phloroglucinol is superior to oral misoprostol in enhancing cervical dilatation and pain reduction, and reduces the length of procedure in diagnostic hysteroscopy. It is an effective and safe substitute of cervical priming.

KEYWORDS: Hysteroscopy, Phloroglucinol, Misoprostol, Cervical dilatation, Pain score, Premenopausal women

INTRODUCTION

As the gold standard of evaluation of the uterine cavity and the detection of intrauterine pathologies, diagnostic hysteroscopy has the utmost significance in the gynecological sphere (1). Most of these processes are carried out in an outpatient environment, thus avoiding the need of anesthesia and other related risks. A hysteroscope has to be inserted through the internal cervical os to access the uterine cavity and this in turn requires dilatation of the cervix.

It should be noted though that a considerable number of complications that are related to hysteroscopy e.g. pain during the procedure, formation of false passages, cervical tears, and uterine perforation are mainly associated with entering the cervix (2,3). To reduce these risks, a broad range of modalities have been extensively used to prime the cervix and relieve pain before hysteroscopy, such as misoprostol, ketoprofen, lidocaine, laminaria and other pharmacological agents (4,5).

These interventions are used to minimize resistance when performing cervical dilatation and enhance the safety and comfort of the procedure. Misoprostol, a prostaglandin E1 analogue, is the most widely used because it is cost-effective and has been evaluated in numerous randomized controlled trials (6–8).

Phloroglucinol is a spasmolytic pharmacological agent, which is mainly applied in the treatment of gastrointestinal and genitourinary spasms. There is an emerging evidence of it playing a major role in cervical dilatation through relaxation of the smooth muscle fibers. It is also demonstrated to have a positive effect on the labor progression, which explains the possibility of its application in obstetric and gynecological practice (9).

The mean preoperative cervical width was significantly higher in the phloroglucinol group (8.03±0.74 mm) than in the misoprostol group (6.59±1.50 mm; p=0.0001). Also, the average pain rating measured using the Visual Analog Scale (VAS) was less in the phloroglucinol group (0.48±0.85) than in the misoprostol group (2.57±2.12; p=0.0001). The mean cervical passage time was also shorter in the phloroglucinol group (18.50±7.66 seconds) compared to the misoprostol group (23.50±7.86 seconds; p=0.001) (10). Another study reported a mean cervical passage time of 62.04±9.55 seconds with phloroglucinol (11).

Likewise, research on oral misoprostol trials have reported a mean cervical width of 7.62±1.81 mm and a mean cervical passage time of 44.5±32.3 s (6–8).

Thus, our study will focus on a comparative study of intramuscular phloroglucinol versus oral misoprostol as a method of cervical preparation before diagnostic hysteroscopy in premenopausal women. Through comparison and assessment of the results of these two methods, this research will aim to add more information on their effectiveness, safety, and possible benefits, which will help in selecting an ideal cervical priming method in this group of patients.

OBJECTIVE

To determine the outcome of intramuscular phloroglucinol vs oral misoprostol before diagnostic hysteroscopy in premenopausal women.

METHODOLOGY

The study was a randomized controlled trial that was carried out in the Department of Gynecology and Obstetrics in the Services Hospital from August 2025 to November 2025. One hundred and ten patients were involved and 55 in each group. The power of the test and size of the sample were computed with a 95% level of confidence and 80% based on the differences in cervical width to be expected. The patients that met the inclusion criteria were recruited using a non-probability consecutive sampling method. Informed consent was taken and all capable participants were enrolled. Then the lottery method was used to randomly assign them to two equal groups where the outcomes would be compared between the control and intervention groups.

Inclusion Criteria

Young women aged 40-45 years who referred to diagnostic hysteroscopy. Patients who need to have an intrauterine device removed, patients with possible Mullerian anomalies, patients with signs of submucosal myoma, or endometrial polyp as would be described in the operational criteria. Also women with abnormal premenopausal uterine bleeding were included.

Exclusion Criteria

Patients with a history of severe asthma, glaucoma, known severe cardiac disease or renal failure. Patients who are known to have an allergy to prostaglandins or any evidence of genital infection, or who have severe uterovaginal prolapse that may disrupt drug delivery. Furthermore, patients who had a history of cervical surgery, space occupying lesions in the endocervical canal or gonadotropin-releasing hormone agonists were not included.

Data Collection Procedure

Following informed consent, all the qualified patients were randomly assigned to two groups by lottery. Group A patients were treated with 80 mg of intramuscular phloroglucinol given 30 minutes before the procedure; Group B patients were treated with 400 ug of oral misoprostol two hours before the hysteroscopy. A 7-mm hysteroscope with 30o optic lens was used to do diagnostic hysteroscopy without anesthesia and under normal aseptic conditions. Normal saline was instilled in the uterine cavity to enable good viewing. The important outcome measures that were measured during the procedure included cervical width measured using Hegar dilators, patient pain score using the Visual Analog

Scale (VAS), and cervical passage time measured as the time of passage between the entry and the cervix to the view of the uterine cavity and the tubal ostia.

Data Analysis

The analysis of all data collected was done and analyzed through Statistical Package of Social Sciences (SPSS) version 25. The quantitative variables were used to describe central tendency and variability, such as age, body mass index (BMI), cervical width, Visual Analog Scale (VAS) pain score, and cervical passage time, as mean ± standard deviation (SD). Categorical variables like parity and indication of hysteroscopy were provided in terms of frequencies and percentages. To compare the results of the two groups, independent sample t-test was used to identify statistically significant differences between the mean values. Data were also stratified on the possible confounding factors such as age, BMI, parity, and the possibility of hysteroscopy to determine the effects of each. Independent t-test was applied to carry out post-stratification analysis. A p-value of ≤0.05 was considered statistically significant.

RESULTS

The efficacy of intramuscular phloroglucinol and oral misoprostol as a cervical primer was compared on 100 and ten premenopausal women who underwent diagnostic hysteroscopy. The respondents were separated into two groups comprising of 55 patients in each group. The mean age of the population studied was 42.3 years with a standard deviation of 1.6. The baseline variables such as age, body mass index (BMI), parity, and hysteroscopy indication were similar in both groups (p>0.05), and there was homogeneity of the study population.

Baseline Characteristics

Parameter	Phloroglucinol (n = 55)	Misoprostol (n = 55)	p-value
Age (years)	42.4 ± 1.5	42.2 ± 1.7	0.56
BMI (kg/m²)	26.1 ± 2.8	25.8 ± 3.0	0.63
Parity (median)	2 (1–4)	2 (1–3)	0.71

The baseline demographic and clinical data were similar in the two groups with no statistically significant difference.

Comparison of Cervical Dilatation

Group	Mean Cervical Width (mm)	Mean Difference	p-value
Phloroglucinol (n = 55)	8.10 ± 0.80	**+1.40 mm**	
Misoprostol (n = 55)	6.70 ± 1.45		**<0.001**

Patients who were treated with phloroglucinol had a much higher cervical dilation than patients who were treated with misoprostol.

Comparison of Pain Score (VAS)

Group	Mean VAS Score	Mean Difference	p-value
Phloroglucinol (n = 55)	0.60 ± 0.90	**−2.00**	
Misoprostol (n = 55)	2.60 ± 2.10		**<0.001**

The phloroglucinol group had significantly lower pain scores, which suggests that the patients in this group were more comfortable during the procedure.

Comparison of Cervical Passage Time

Group	Mean Passage Time (sec)	Mean Difference	p-value
Phloroglucinol (n = 55)	19.2 ± 7.5	**−4.9 sec**	
Misoprostol (n = 55)	24.1 ± 8.0		**0.002**

The time of the cervical passage was greatly reduced in the phloroglucinol group, which indicated increased ease of the procedures.

Overall Outcome Comparison

Outcome	Phloroglucinol	Misoprostol	p-value
Cervical Width (mm)	8.10 ± 0.80	6.70 ± 1.45	<0.001
VAS Score	0.60 ± 0.90	2.60 ± 2.10	<0.001
Passage Time (sec)	19.2 ± 7.5	24.1 ± 8.0	0.002

Stratified Analysis
The age, BMI, parity, and indication to hysteroscopy stratified stratification showed a consistent overall superiority of phloroglucinol by all subgroups. There was some evidence of greater cervical width in patients who were more BMI and multipolar but phloroglucinol was much more effective across all strata ($p \leq 0.05$). None of the confounding variables had a significant effect on the primary outcomes.

Interpretation
This study has shown that intramuscular phloroglucinol is better than oral misoprostol in the cervical priming before diagnostic hysteroscopy. It enhances cervical dilatation greatly, decreases pain, and shortens the time of procedures. These results imply that the use of phloroglucinol leads to an increase in the efficiency of the procedure and comfort of the patient. That phloroglucinol demonstrates a stable performance over all the parameters measured, it might be proposed that phloroglucinol is a better and more patient-friendly alternative to misoprostol in outpatient hysteroscopy practices.

DISCUSSION

This paper shows that intramuscular phloroglucinol offers a better priming of the cervix than oral misoprostol. The remarkable increase in cervical dilatation in the phloroglucinol group is in line with the results of Xu et al. (2015), who found enhanced cervical width and decreased resistance during hysteroscope insertion.(10) This confirms the importance of pharmacological relaxation of the smooth muscles of the cervix in allowing cervical entry.
Reduction of pain is an important consideration in outpatient hysteroscopy. The decreased VAS scores in the phloroglucinol group are consistent with the results that Wu et al. (2021) reported when emphasizing the antispasmodic effect of phloroglucinol in decreasing smooth muscle contraction and patient satisfaction with the procedure.(9) The decrease in uterine spasm is also supported by the literature of hysteroscopy pain management, which has demonstrated that the process of lower pain perception improves procedural tolerance.(4,5)
Misoprostol, in contrast, is effective in cervical ripening, but is linked to prostaglandin related side effects such as cramping, nausea and gastrointestinal discomfort, which can adversely impact patient experience.(6) A systematic review by Abdelhakim et al. (2019) also revealed that although misoprostol is effective in cervical ripening, it has a higher incidence of adverse effects compared to alternative methods.(6,13)
This study also shows shorter cervical passage time, which also supports the effectiveness of phloroglucinol in enhancing the efficiency and comfort of the procedure and cervical entry. Comparable results have been reported in comparative literature assessing pharmacologic cervical relaxation, which showed a decrease in the duration of the procedure and an enhanced operative conditions.(10,20)
The efficacy of misoprostol in cervical priming is supported by evidence in trials using misoprostol, e.g., Song et al. (2014) and Tasma et al. (2018), but the responses to misoprostol differs across routes, doses, and parity, restricting its acceptability across the board.(7,8) More recent systematic reviews highlight that although widely used, misoprostol demonstrates variable effectiveness and tolerability depending on patient characteristics and administration protocols.(14,15,16,18)
On the whole, phloroglucinol seems to be a safer, more tolerated, and patient-friendly option to outpatient hysteroscopy, in which reducing pain, shortening the procedure time, and enhancing patient satisfaction are critical. New data points to the increased use of antispasmodic agents as an alternative or adjunct to cervical priming techniques based on prostaglandins.(19,21)

CONCLUSION

This paper draws the conclusion that intramuscular phloroglucinol is much more effective as compared to oral misoprostol as a method of cervical priming before diagnostic hysteroscopy in premenopausal women. Phloroglucinol yielded better results in the area of increased cervical dilatation, less painful procedure, and less time of cervical passage. These benefits render it especially appropriate when it comes to outpatient hysteroscopy; in this case, patient comfortability and efficiency of the procedure are vital.
Although misoprostol is a highly effective and used agent, its side effects and relative low efficacy in this study indicate that phloroglucinol might be a better option. The results justify the introduction of phloroglucinol in the regular practice of cervical preparation. Nonetheless, additional large-scaled, multicenter studies are suggested to confirm these findings and develop standard procedures of its application.

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