

Cervical Preparation before Diagnostic and Operative Hysteroscopy

Naglaa Mohamed Hussein; Mona Al Sayed Elkafrawy and Doaa Mahmoud Effat

Obstetrics and Gynecology Department, Faculty of Medicine (Girls), Al Azhar University, Cairo, Egypt
drsaaad53@yahoo.com

Abstract: Background: Misoprostol is very effective and approved in cervical ripening in pregnant uterus so we study its effect on non pregnant uterus to facilitate hysteroscopic dilatation and curettage (D&C) and decrease its complications. **Objectives:** The aim of this study is to evaluate the role of misoprostol in ripening the cervix before diagnostic or operative hysteroscopic procedure in non pregnant women. **Patients and Methods:** This study was an observational prospective study. It conducted on 150 patients non pregnant who scheduled for an operative hysteroscopy or diagnostic hysteroscopy. The studied groups were divided into three groups, (group A) 50 patients who received misoprostol before diagnostic hysteroscopy, (group B) 50 patients who received misoprostol before operative hysteroscopy, and (group C), as a control group 50 patients all of them did not receive misoprostol, they divided into 25 patients were performing diagnostic hysteroscopy and 25 patients were performing operative hysteroscopy. Four hundred (400) mcg of misoprostol was taken vaginally 6 hours before the surgery. Then statistically analysis were done to compare the patients received misoprostol and those who did not receive misoprostol regarding the needs of cervical dilatation and complications. **Results:** This study shows that the incidence of patients who needed cervical dilatation in group C (diagnostic hysteroscopy in patient not prepared by misoprostol) to group A were 40% to 10% respectively with significant P value (0.005). While in operative hysteroscopy the incidence of cases needed cervical dilatation in group C (not prepared by misoprostol) to group B were 76% versus to 28% with highly significant p value (0.000). Also this study shows that an increase in the incidence of complications in patients not prepared by misoprostol than in patients prepared by misoprostol in operative or diagnostic hysteroscopy where the incidence was 36% and 40% respectively, such as pain, bleeding and cervical tears. **Conclusion:** preoperative vaginal application of misoprostol before gynecological procedures facilitates the cervical dilatation. Also decreases the cervical complications during and after hysteroscopy.

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1. Introduction

Misoprostol is extensively used in obstetrics and has been proved to be very effective as cervical softening agent in termination of pregnancy⁽¹⁾. However, similar beneficial effect of misoprostol on the non pregnant uterus, that will facilitate gynecological procedures that require cervical dilatation such as endometrial biopsy hysteroscopy, chromotubulation.

Further the complications, related to this procedure such as excessive pain, cervical injury may be reduced. Thus most of gynecological procedures may be performed without general anesthesia which will lead to decrease hospital stay and reduce the cost of the procedure⁽²⁾.

In postmenopausal women with abnormal uterine bleeding, hysteroscopy with endometrial biopsy shows a high diagnostic accuracy in diagnosing endometrial cancer or hyperplasia⁽³⁾, whereas premenopausal infertile patients with recurrent IVF failures may experience substantial benefits in terms of increased pregnancy rate⁽⁴⁾. However, despite the high efficacy of the procedure in the above mentioned settings, both as

a diagnostic or therapeutic tools, hysteroscopy may be associated with certain complications⁽⁵⁾. Although the incidence of these complications is low ~ 1-1.5%, almost 50% of them are related to insertion of the hysteroscope or due to dilatation of cervical canal⁽⁶⁾. Several modalities for cervical ripening prior to hysteroscopy have been adapted. The prostaglandin analogue of misoprostol is the agent used most often for cervical preparation before hysteroscopy and has been tested⁽⁷⁾. The rationale behind the use of misoprostol prior to hysteroscopy is that successfully ripens the cervix either when given for medical abortion during the first or second trimester of pregnancy⁽⁸⁾, or when used for labor induction⁽⁹⁾. Consequently, given its high efficacy in dilating the cervix in non pregnant women one could hypothesize that misoprostol would also facilitates dilatation in women undergoing hysteroscopy⁽¹⁰⁾.

Hysteroscopic surgery may not require cervical ripening in practice however some women who are nulliparous, menopausal, and have a history of cesarean deliveries are at greatest risk of cervical stenosis, so dilatation of the cervix is the most difficult

aspect in such patients where it may cause bleeding, cervical tears, creation of false tracts, or uterine perforation⁽¹¹⁾. These complications can be greatly reduced if the cervix is ripened before the procedure, misoprostol induces enzymatic changes that promote collagen break down thus result in cervical softening⁽¹²⁾.

This study aimed to evaluate the role of misoprostol in ripening the cervix before diagnostic or operative hysteroscopic procedure in non pregnant women.

Patients and Methods

This study was conducted on 150 women, attending the department of obstetrics and gynecology at Al-Zahraa University Hospital from September 2012 to September 2013.

Inclusion criteria: Any patient scheduled for operative or diagnostic hysteroscopy as abnormal uterine bleeding, infertility, uterine or cervical polyps, and missed intrauterine devices, etc.

Exclusion criteria: allergy or contraindication to prostaglandins e.g. (patients suffering from glaucoma, bronchial asthma or cardiovascular diseases), severe genital tract infection, and cervical conization or excision where there is a high risk for cervical laceration in such patients. In the other hand suspected cervical malignancy due to hysteroscopy may carry risk of spreading of malignant cells through uterine cavity, as well as increasing the risk for excessive bleeding from cervical lesions.

All subjects were randomly assigned to 3 groups. Group A (50 women who received misoprostol before diagnostic hysteroscopy), group B (50 women who received misoprostol before operative hysteroscopy) and group C (50 women who didn't receive misoprostol before either operative or diagnostic hysteroscopy) which divided into two subgroups each one includes 25 patients. Written informed consent was taken from all participants.

History was taken as personal history, obstetric history, menstrual history, history of the present complaint such as bleeding and infertility, past history of previous operations: e.g. gynecological surgery or C.S. Then examination was done as general examination, abdominal examination, vaginal examination to assess cervical length, position, and consistency. Also routine investigations were taken preoperative and pelvic imaging by transvaginal ultrasound (TVU) was done for all participants.

2. Methods

Misoprostol was taken in a dose of 400 mcg (2 tablets of misoprostol), and inserted by the doctors deep in the posterior fornix 6–8 hours before surgery. The diagnostic hysteroscopy used in this study was

Karl Storz with a 5 mm diameter in diagnostic hysteroscopy and 7mm diameter in operative hysteroscopy, using distention media of a low viscosity fluid as saline It is 0.09% sodium chloride available in sterile bags of 500 ml. The operation was done under complete aseptic conditions. Hager dilator (No. 5) used in diagnostic and (No. 8) used in operative hysteroscopy was inserted gently into the internal cervical os before anesthesia to exclude the effect of anesthesia on cervical dilatation and then examine the cervix for needing dilatation or not.

The anesthesia was used in this procedure spinal, general anesthesia, or with para cervical nerve block.

Examination under general anesthesia was done to determine the size and direction of the uterus. A speculum was inserted in the vagina and multiple toothed volsellum was applied at the anterior lip of the cervix to facilitate insertion of the hysteroscopy, hysteroscope was inserted gently before any attempt of cervical dilatation as the distension medium (saline) may open the internal cervical os (I.C.O), otherwise cervical dilatation is needed to allow insertion of hysteroscope, as the hysteroscope was advanced into the cervical canal, the endo cervix can be easily examined; while the walls and fundus of the uterus, were examined by rotating the scope. Then it was withdrawn under direct vision at the end of the procedure.

Then the data were analyzed and assess the complications of misoprostol as (pain, bleeding, nausea, diarrhea, vomiting, chills, etc), the ease of introduction of hysteroscopy and number of patients who needed cervical dilatation. After the operation, the patients were monitored for a minimum 24 hours after hysteroscopy, any adverse outcome related to cervical dilatation was recorded (e.g.: bleeding, laceration of the cervix, creation of false tracts, or uterine perforation), then collected data were statistically analyzed.

3. Results

Patients of the studied groups were comparable in relation to age, parity and mode of delivery as follow, the mean age in groups A, B, and group C were 40.1, 43.31 and 41.40 years respectively with no statistically significant p value (0.591), and 12.7% of all cases were nullipara (19 cases) while 87.3% (131 cases) multipara with no statistically significant p value (0.456) (table 1).

Due to increase incidence of cesarean section in most of all society, the incidence of cesarean section among the studied groups 35.22% compared to 64.88 % spontaneous vaginal delivery (table 2). From the results it was evident that the cervical status at the beginning of surgical procedures and admit the telescope of the hysteroscopy without needing for

cervical dilatation in group A and B 90% and 72% respectively (table 3).

The requirement of further cervical dilatation were studied in this study and shows that 10% of patients in group A compared to 40 % in group C (diagnostic hysteroscopy) and 28% in group B compared to 76% in group C (operative hysteroscopy) needs cervical dilatation before the diagnostic or operative hysteroscopy respectively and this had statistically significant p value (0.005) (tables 4,5). The rate of side effects of misoprostol among group A and

B such as pain, uterine bleeding and diarrhea were 20%, 21% and 4% respectively (table 6). The misoprostol supplementation prior to hysteroscopy resulted in a significantly lower rate of complications due to cervical dilatation as bleeding, cervical tears and false passage than control group (not prepared by misoprostol) as no complications compared to 40% complications in diagnostic hysteroscopy and 4%complications compared to 68%in operative hysteroscopy in cases not prepared by misoprostol (tables 7,8).

Table (1): Demographic data of all subjects as regard age (years) and parity.

	Age	Group A (DH) with misoprostol N=50	Group B (OH) with misoprostol N=50	Group C control group N=50		P-value
Age	Range	25-85y	22-77y	22-85y	22-85y	0.591
	Mean	40.1	43.31	41.40	41.40	
	±SD	15.84	17.297	=13.850	13.850	
Parity	Nulliparous	4(8%)	7(14%)	4(16%)	4(16%)	0.456
	Multipara	46(92%)	43(86%)	21(84%)	21(84%)	

OH: Operative hysteroscopy

DH: Diagnostic hysteroscopy

Table (2): Demographic data of all subjects as regard mode of delivery (M.O.D).

	MOD		Group A (DH) with misoprostol N=46	Group B (OH) with misoprostol N=43	Group C control group N=42	Total n=131*
	SVD	Count	25	28	32	85
		Percent	54.34%	65.12%	76.19%	64.88%
	CS	Count	21	15	10	46
		Percent	45.65%	34.88%	23.81%	35.22%

* Total number 131 due to 19 women nulliparous and infertile

Table (3): The efficacy of misoprostol among group A and group B.

Need of cervical dilatation		Group A: (DH) with misoprostol N=50	Group B: (OH) with misoprostol N=50
No	Count	45	36
	Percent	90%	72%
Yes	Count	5	14
	Percent	10%	28%

Table (4): Comparison between group A and control group (performing diagnostic hysteroscopy) as regards the efficacy of misoprostol.

Need of cervical dilatation (success rate of misoprostol)		Group A (DH) with misoprostol N=50	Control group without misoprostol N=25	Chi-square test	
				X ²	p-value
No	No.	45	15	9.375	0.002 (significant)
	%	90%	60%		
Yes	No.	5	10		
	%	10%	40%		

Table (5): Comparison between group B and control group (performing operative hysteroscopy) as regards the efficacy of misoprostol.

Need of dilatation (success rate of misoprostol)		Group B (OH) with misoprostol N=50	Control group without misoprostol N=25	Chi-square test	
				X ²	P-value
No	No.	36	6	15.584	0.000 (highly significant)
	%	72.0%	24%		
Yes	No.	14	19		
	%	28.0%	76%		

Table (6): Side effects of misoprostol among the studied groups.

Side effects of misoprostol		Group A (DH) with misoprostol N=50	Group B (OH) with misoprostol N=50	Total N=100	Chi-square test	
					X ²	P-value
Postoperative pain	Count	6	14	20	4.000	0.045
	Percent	12%	28%	20%		
Uterine bleeding	Count	10	11	21	0.06	0.806
	Percent	20%	22%	21%		
Diarrhea	Count	0	4	4	4.167	0.041
	Percent	0%	8%	4%		

Table (7): Complications related to cervical dilatation among group A and control group performing diagnostic hysteroscopy.

Complications of cervical dilatation	Group A (DH) with misoprostol N=50	Control group (DH) without misoprostol N=25	Chi-square test	
			X ²	P value
Postoperative pain	Zero	6(24%)	13.043	0.001
Uterine bleeding	Zero	4 (16%)	8.451	0.004 (significant)
Cervical tears	Zero	Zero	NA	NA
Total complications of cervical dilatation	Zero	10(40%)	23.077	0.000 (significant)

Table (8): Complications of cervical dilatation between group B and control group performing operative hysteroscopy.

Complications of cervical dilatation in patients who needed cervical dilatation	Group B (OH) with misoprostol N=50	Control group (OH) without misoprostol N=25	Chi-square test	
			X ²	P value
Pain	2 (4%)	8 (32%)	11.308	0.001 (insignificant)
Bleeding	Zero	8 (32%)	17.91	0.000 (significant)
Cervical tears	Zero	1 (4%)	2.027	0.154 (insignificant)
Total complications of cervical dilatation	2 (4%)	17 (68%)	8.036	0.005 (significant)

4. Discussion

Over the past decades hysteroscopy become important diagnostic tool for intrauterine abnormalities. It permits a panoramic view of uterine cavity and increases the accuracy of management of many uterine bleeding disorders⁽¹³⁾. Discomfort and complications due to cervical dilatation despite local anesthesia precise the technique are serious problem in

those women. Cervical narrowing or stenosis that is a frequently encountered conditions during these procedures is a major cause of these of undesired effect⁽⁴⁾.

This study shows that the mean age of the studied groups A, B, and C 40.1, 43.3 and 41.4 years respectively with no statistically significant p value (0.591). 12.7% of the studied groups were nullipara and

88% multipara (table 1), 64.88% of them delivered by S.V.D and 35.12% delivered by C.S (cesarean section) with no significant p value (table 2).

When compare the patients needed cervical dilatation in group C (diagnostic hysteroscopy) to group A, 40% to 10% needed dilatation with significant p value (0.008) (table 4). While in operative hysteroscopy the patients needed cervical dilatation in group C to group B, 76% versus 28% with significant P value (0.000) (table 5). This means that the use of misoprostol before either diagnostic or operative hysteroscopy significantly decrease the need for cervical dilatation. This agrees with a double-blind controlled study trial performed to assess the effectiveness of oral misoprostol as a cervical ripening agent before operative hysteroscopy: two hundred four patients received either placebo or 400 mcg misoprostol 12 to 24 hours preoperative. The misoprostol groups demonstrated a significant increased eases of cervical dilatation ($P=0.008$)⁽¹⁵⁾. **Bartly et al.**, were recorded a study at Husieni hospital in Tornoto, Canada: Two hundred patients were approached to enter the study. Patients were randomly allocated to either treatment or placebo groups. The dose of misoprostol was 400 mcg, given orally 12 to 24 hours before surgery, there was significant ease cervical dilatation between 2 groups with P value 0.008⁽¹⁷⁾.

The complications of misoprostol were analyzed in this study 12% of group (A) complaining of pain and 20% complaining of uterine bleeding while in group (B), 28% complaining of pain, 22% uterine bleeding and 8% complaining of diarrhea. This agree with Jackie, et al. who demonstrated that the adverse effects in the treatment groups with misoprostol which were diarrhea, crumps and bleeding 28%, 27% and 26% respectively.

Also, **Preuthipan and Herebutyer** reported that the adverse effects observed in his study as abdominal crumps, bleeding, diarrhea and fever (36%, 19%, 4% and 10% respectively) in cases treated with misoprostol versus to control group (P value was 0.018)⁽¹⁷⁾, but improved rabidly by analgesic and antiemetic drugs. The complications from hysteroscopic procedure as pain, uterine bleeding, cervical tears or false passage when compare group A and control diagnostic hysteroscopy group in group C no complications were found in group A while 10 cases (40%) in group C complicated by cervical tear, pain and bleeding (table 7) this agrees with **Famugide et al.** who documented that the complications encountered during hysteroscopy as cervical tears bleeding or false passage can be reduced if the cervix is ripened before the procedure⁽¹⁸⁾. In operative hysteroscopy this study was reported that the complications among group C and B were 68% versus 4% complications respectively with

significant p value (0.046) (table 8). The significant difference in the complications between the studied groups supports the use of misoprostol before either diagnostic or operative hysteroscopy. Follow up of the studied groups after 7 to 10 days and after one month none of these patient had any complications.

Conclusion

The vaginal application of misoprostol before either operative or diagnostic hysteroscopy in gynecological procedure in non pregnant women significantly decreases the needs for cervical dilatation. The complications from hysteroscopic procedure as pain or uterine bleeding, cervical tears or false passage decreases in the cases that treated with misoprostol (400 mcg) before the procedure either in diagnostic or operative hysteroscopy.

Recommendations

The findings of this study suggest the use of misoprostol before the diagnostic or operative hysteroscopy due to decrease the need of cervical dilatation during the procedure and decrease hystrosopic complications such as cervical tears, cervical bleeding, pain, and false passage.

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