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ORIGINAL ARTICLE

Effectiveness of Oral Versus Vaginal Administration of Misoprostol for the Termination of Pregnancy: A Cross-Sectional Study

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ABSTRACT

Aim: To assess the acceptability and effectiveness of oral versus vaginal administration of misoprostol to terminate the pregnancy in the first trimester.
Study design: A cross-sectional study
Place and Duration: This study was conducted at Dow University Hospital, Dow University of Health Sciences Karachi, Pakistan from August 2020 to August 2021
Methodology: The study included 120 women, out of which 52 women had taken misoprostol orally and in 68 women, the drug was introduced via vaginal route, 4 hours before the surgery, and data was collected including abdominal pain and vaginal bleeding by a questionnaire.
Results: No significant differences were observed in terms of cervical dilatation, however, bleeding was more in the vaginal group i.e. 42% when compared with the oral group in which 24% of women experienced bleeding. Similarly, 89% of women of the oral group were satisfied with the results whereas 75% of patients of the vaginal group were satisfied with the results.
Conclusion: Although the effectiveness of misoprostol is similar in both groups, more women of the oral group were satisfied and thus it could be chosen as an effective alternative to vaginal administration of misoprostol.
Keywords: Misoprostol, oral, vaginal, pregnancy

INTRODUCTION

World Health Organization defines abortion as the pregnancy termination before the fetus reaches 500gms in weight or if pregnancy is terminated before 20 gestational weeks. Usually, the method of choice for abortion is vacuum aspiration if pregnancy is terminated after the first trimester.[1] Cervix is made soft and dilated by using priming agents such as misoprostol which is the analog of prostaglandin E1, to avoid cervical injuries when the pregnancy is surgically terminated. Misoprostol was initially used to prevent peptic ulcers which are developed by prostaglandin synthetase inhibitors (NSAIDS) but are now widely being used as cervical priming agents by obstetricians.[2] Prostaglandins are modified long-chain fatty acids and used clinically for the medical termination of pregnancy of the first trimester and the main prostaglandins in clinical use are E1, E2, and F2α.

The analog E1 misoprostol is now used as the alternative to cervical priming, whereas the surgical procedures involved in mediating abortion include curettage and dilation, whereas vacuum aspiration can cause perforation of the uterus, cervical rupture and can lead to visceral injury which is why priming of the cervix with misoprostol is very important to terminate the pregnancy.[3] The tablets of misoprostol are present in the market as cytologue and zytotec. Misoprostol can be administered orally or via the vagina before the surgical termination. Misoprostol when vaginally administered is given four hours prior to the surgery and results in effective dilation with fewer side effects.[4] It is suggested that misoprostol selectively binds to EP2 and EP3 receptors of prostanoids and is very helpful in priming the cervix. However, oral administration of the drug is more acceptable among women. [5] The current study compares the acceptability, effectiveness, and side effects of the two routes of administration of misoprostol i.e. oral and vaginal for cervical priming for the termination of pregnancy in the first trimester.

METHODOLOGY

The current cross-sectional study was conducted in our hospital and consisted of 120 patients who were voluntarily opting the pregnancy termination by vacuum aspiration. Permission was taken from the ethical review committee of the institute. All patients had undergone a detailed obstetrical and physical examination along with obtaining their complete haemogram which had a level of hemoglobin, blood type, and blood group details. All the women gave consent for this study, and their gestational age was calculated by observing their last menstrual date which was confirmed by ultrasonography. Women who were allergic to misoprostol had medical disorders or had uterine surgery earlier were excluded from the study.

All the women were divided into vaginal and oral misoprostol administration groups and were either given 400µgm misoprostol orally or vaginally, 4 hours before vacuum aspiration. The data was then collected via a questionnaire and abdominal pain and vaginal bleeding were recorded. For abdominal pain, a scale of 0-3 was used, where 0 indicated no pain, 1 mild, 2 pain which required no analgesics, whereas 3 when analgesics were required to alleviate the pain. Similarly, for vaginal bleeding, 0 indicated no bleeding, 1 minimal bleeding, 2 bleeding like menstrual flow, and 3 indicated heavy bleeding. Pregnancy was terminated by inserting Karmans cannula which is 6-10 mm in diameter. Hegars dilators were used to measure the cervical dilatation and small dilators were first tried until a dilator was entered into the cervix without resistance. The mean and standard deviation was calculated for all the data. SPSS version 23 was used for data analysis.

RESULTS

The current study involved 120 women which were randomly grouped into oral misoprostol group which included 52 individuals and vaginal misoprostol including 70 women. Among the 70 women of the vaginal group, 2 women were excluded because they experienced bleeding due to vaginal administration. Table number 1 exhibits the demographic features of two groups which were almost similar. Similarly, cervix dilatation also didn't exhibit significant differences between the two groups as depicted in Table number 2.

It was also observed that 89% of patients of the oral misoprostol group were satisfied whereas 75% of patients of vaginal administration were satisfied with the results. The women of the vaginal group bleed more i.e. 42% whereas 24% of women bleed in the oral group. The questions included in the questionnaire were about the incidences of nausea, diarrhea, and vomiting, and the results didn't differ significantly between the groups. Patients who had fever and pain were also similar and no

major difference was observed as given in Table number 3. The patients who had experienced fever and pain were similar in number in both groups, and no major side effects were observed after administration. The bleeding duration after pregnancy termination was also similar in both groups and the oral misoprostol group had 5 days as median and the vaginal group had 6 days as a median.

Table 1: Demographic features of patients

Features	Vaginal (N=68)	Oral (N=52)	P-Value
BMI	22.34 ±3.30	22.21 ±2.96	0.834
Age in years	27.62± 5.0	26.76± 6.37	0.322
The gestational period in days	59.96± 7.18	58.86 ±12.64	0.586
Parity	3.01±0.98	2.59±1.30	0.078

Table 2: Outcomes of cervix dilatation in both groups

Outcomes	Vaginal (N=68)	Oral (N=52)	P-Value
Cervical dilatation	5.43	5.63	0.748
Women satisfied	50	46	0.055

Table 3: Side effects observed by patients

Side effects	Vaginal (N=68)	Oral (N=52)	P-Value
Preoperative vaginal bleeding	42%	24%	0.55
Abdominal pain	16%	5%	0.922
Vomiting	2.5%	5%	0.574

DISCUSSION

Misoprostol is a synthetic and stable analog of prostaglandin E1 and is widely used by gynecologists and obstetricians across the world. Prostaglandins have a market use of cervical priming before using the vacuum aspiration to terminate the first-trimester pregnancy.[6] It has been proved that misoprostol is more effective than placebo, [7] and has a somewhat similar effect as dinoprostone and gameprostone for cervical dilatation before an abortion.[8, 9]

We observed that women belonging to the oral administration group were more satisfied as compared to the vaginal group similarly our study also suggests that orally administrating misoprostol is an effective alternative to vaginally administrating it. Side effects were also similar in both groups. There are other studies conducted to assess the sublingual route as the alternative to the oral and vaginal route of administration. A study reported different routes of misoprostol and assessed the pharmacokinetics in women of Asia and it was observed that the women who were administered misoprostol via sublingual route exhibited peak serum levels when compared with the serum levels of women who were administered either orally or vaginally.[10] The same results were observed in another similar study and it can be concluded that sublingual administration is an effective option that can be picked up by women who want to avoid the vaginal administration of a drug.[11] However, the side effects are more in sublingual administration as compared to the vaginal or oral administration. The current study exhibited that oral administration of misoprostol and its vaginal administration have similar cervical dilatation and side effects.

CONCLUSION

The current study suggested that oral administration of misoprostol is equally effective to the vaginal administration of misoprostol to pre-induce cervical ripening. However, the women of the oral group were more satisfied and thus it could be an effective alternative for the women who want to avoid vaginal administration.

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Conflict of interest: None

Ethical approval: The study was ethically approved by the ethical review committee of the institute.

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