International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Ramya SP et al. Int J Reprod Contracept Obstet Gynecol. 2023 Mar;12(3):737-742
www.ijrcog.org
pISSN 2320-1770 | eISSN 2320-1789

DOI: https://dx.doi.org/10.18203/2320-1770.ijrcog20230548

Original Research Article

A comparative study of efficacy of two different regimens of vaginal misoprostol in first trimester termination of pregnancy in a tertiary care hospital

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Received: 25 January 2023
Accepted: 14 February 2023

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ABSTRACT

Background: Misoprostol has been authorised as an effective medication for termination of pregnancy at different gestations, cervical ripening, labour inducing in term pregnancy, and possibly therapy of postpartum haemorrhage in the last two decades. Objectives were to compare the efficacy of two different regimens of vaginal misoprostol in first trimester termination of pregnancy.
Methods: This was a randomized controlled trial conducted among 50 women in the reproductive age group with single live intrauterine gestation less than 12 weeks. All patients including both groups received mifepristone 200 mg oral administration as day 1 followed by group A received misoprostol 800 mg stat after 36 hours of mifepristone and group B received misoprostol 400 mg stat after 36 hours of mifepristone followed by 200 mg at 6 hourly 2 doses.
Results: The mean age of the study participants was 26.48±3.77 and 24.72±3.33 in group A and B respectively. The 20% and 16% in group A had repeat dose and dilatation and curettage (D and C) done whereas only 8% had D and C done in group B. There was no significant difference between the prevalence side effects between the groups. Group B showed higher dissatisfaction than group A. The 36% and 8% of the study participants in group A and B respectively had incomplete abortion.
Conclusions: Multidose regimen is found to be more effective in the first trimester termination of pregnancy than the single dose regimen.

Keywords: Misoprostol, Medical termination of pregnancy, First trimester abortion, Mifepristone, D and C

INTRODUCTION

Unsafe abortion causes illness and mortality that may be prevented; according to estimates, 22,800 women of reproductive age die each year in the world.[1] Medical termination of pregnancy (MTP), a crucial reproductive health treatment, provides a legal and secure alternative for women seeking abortions in the first and second trimesters of pregnancy.[2,3] Due to poor coverage of facility-based services and the fact that many abortions take place outside of a facility setting, statistics collected by the Indian government on the number of abortions conducted in facilities are known to grossly underestimate the prevalence of abortion.[4] In certain studies, women in India are questioned about their experiences having the abortions, however it is well recognised that asking women directly leads to the significant underreporting due to the stigma.[5-7]

The passage of an amendment to the MTP act in 2002, which permitted medication abortion up to 7 weeks' gestation, and a subsequent amendment in 2003, which permitted certified abortion providers to administer medication abortion drugs beyond a registered facility as long as emergency facilities have been available, have helped to steadily improve access to abortion since the

early 2000s.[8,9] Medical institutions continue to provide surgical abortion treatments and still some women continue to self-induce using risky techniques.[10] To ensure that everyone has access to comprehensive treatment, the new MTP (Amendment) act 2021 broadens access to safe and legal abortion services on therapeutic, eugenic, humanitarian, and social grounds.[11]

Despite being an "off label usage" misoprostol is a PGEI analogue (15-deoxy, 16-hydroxy, 16-methyl PGE1) that is widely used to end pregnancies since it is efficient, affordable, has a long shelf life (2 years) at room temperature, and doesn't need the use of needles. In comparison to PGE2 analogues, it also exhibits less adverse effects.[12-14] Both on its own and in conjunction with other drugs like mifepristone, misoprostol has become an essential part of these regimens. The most efficient and quick treatment is a combination of mifepristone and misoprostol.[15] Mifepristone is costly and widely unavailable, however. Because it is less costly and stable at room temperature, misoprostol is being used more often. Oral, vaginal, sublingual, buccal, and rectal absorption methods are all available. Misoprostol was first used orally to induce medical abortions. Vaginal administration has been shown in several clinical studies to be more efficient than oral delivery.[16] There is ambiguous data that suggests vaginal absorption is inconsistent.[17] Sublingual misoprostol has recently been investigated for use in medical abortion.

Pharmacokinetic research has shown that sublingual administration has the maximum bioavailability and may reach the peak concentration in the shortest amount of time.[18] Sublingual misoprostol is successful in first trimester medical abortion, according to earlier research.[19,20] It was possible to have a medical abortion in the second trimester, according to pilot research.[21] Research revealed that lesser dosages, such as 200 mcg, were obviously less effective and that doses greater than 400 mcg did not substantially enhance the effectiveness but generated more negative effects.[22]

Aim

Aim of the study was to compare the efficacy of two different regimens of vaginal misoprostol in first trimester termination of pregnancy.

Objectives

Primary objective

Primary objective was to find out the effectiveness of misoprostol as safe option for women seeking first trimester abortion.

Secondary objective

Secondary objective was to demonstrate the effectiveness and safety of misoprostol, without the need for post expulsion suction curettage, with no mortality and no or minimal morbidity.

METHODS

Study designs

This was a randomized controlled trial

Study setting

This study was conducted in the department of OBGY in a tertiary care hospital, Kancheepuram.

Study population

Women in the reproductive age group.

Study duration

This study was conducted for 18 months.

Inclusion criteria

Women aged 18-35 years with single live intrauterine gestation less than 12 weeks were included in the current study.

Exclusion criteria

Women with parity more than 3**,** Unmarried pregnancy, no previous surgery, heavy smokers (smoking more than 10 cigarettes per day), suspected or proven ectopic pregnancy, inevitable/ incomplete/ missed abortion, allergy or intolerance to misoprostol, previous history of medical disorders like cardiac disease/ diabetes/ asthma/epilepsy/psychiatric disorder, history/ evidence of thromboembolism, any previous attempts at terminating the present pregnancy, coagulation disorders, uncontrolled hypertension, severe liver disease / chronic adrenal failure and anaemia with Hb <8 gm% were excluded from the study.

Sample size

Sample size calculation based on the previous study, mean and SD of group A receiving misoprostol 800mcg and group B receiving 400 mcg misoprostol stat followed by 200 mcg at 6th hourly two doses.[23] The values are 1.21±0.49 and 5.64±1.84 using 5 % level of significance and 80% power, the total sample size is 25 in each group including 10% non-response error

Procedure

After institutional ethical committee approval antenatal women who attended obstetric OPD in a tertiary care hospital of Kancheepuram district who were within 12 weeks of gestation and who wanted the pregnancy to be

terminated was taken up for the study and they was randomly divided into group A and group B of 50 AN mother each by computer generated list of random numbers. Thorough history and examination was done and the AN mother underwent the specific investigations like ultra sound to confirm the gestation age and HB to rule out the anemia, along with other routine investigations like blood grouping and typing, complete blood count, random blood sugar, bleeding time clotting time, urine routine and culture sensitivity, serology-HIV, HCV, Hbsag, VDRL was done to exclude the risk factors.

All patients including both groups received mifepristone 200 mg oral administration as day 1 followed by group A received misoprostol 800 mcg stat after 36 hours of mifepristone and group B received misoprostol 400 mcg stat after 36 hours of mifepristone followed by 200 mcg at 6 hourly two doses and was monitored for bleeding PV using pad counts. Two weeks later check scan was done to see if there are any retained products of conception. Any other side effects were also noted.

Ethical consideration

Before the research got started, authorization from the institutional ethical committee was sought. The fact that the information gathered for this survey will only be utilised for research was made clear to the participants. The ability to leave the research at any moment without consequence was made clear to the participants. Throughout each stage of the study, the confidentiality of the information collected from the registered participants was maintained. During the intervention period, all necessary medical treatment was given to research participants who needed it.

Statistical analysis

Before entering the data into the Microsoft excel spread sheet, the acquired information was verified for accuracy. The validity of the data was assessed on a regular basis. The data were analysed using the Statistical Package for social sciences (SPSS IBM) 21 programme. Utilizing frequency, percentage, mean, and standard deviation, the quantitative data was represented. The Chi square test, Mann Whitney U test, and Kruskal Wallis test were used to assess if the variables were connected. A p=0.05 or less was considered significant in these tests.

RESULTS

The mean age of the study participants was 26.48±3.77 and 24.72±3.33 in group A and B respectively. There was no significant difference between the groups. None of the study participants had past history of previous LSCS, MTP, hysterotomy and none of the patients had pallor. The mean BMI was 24.52±1.29 and 24±1.38 respectively in group A and B (p=0.193). The 12% and 8% in group A and B respectively had irregular menstruation (p=0.705).

Table 1: Profile of the study participants.

Variables	Group A		Group B		P value
	N	%	N	%	
Parity					
Primi	9	36	8	32	0.765
Multi	16	64	17	68	
Occupation					
Farmer	1	4	2	8	0.945
Home maker	9	36	7	28	
House keeping	4	16	2	8	
IT professional	4	16	4	16	
Professional	2	8	2	8	
Restaurant cleaner	2	8	2	8	
Shop keeper	2	8	4	16	
Tailor	1	4	1	4	
Religion					
Christian	2	8	3	12	0.894
Hindu	21	84	20	80	
Muslim	2	8	2	8	
Socioeconomic status					
Low	9	36	5	20	0.081
Middle	12	48	15	60	
Upper lower	4	16	5	20	
Marital status					
Married	22	88	22	88	0.717
Single	1	4	2	8	
Widowed	2	8	1	4	

The mean hemoglobin was 11.32±1.24 and 11.52±1.08 respectively in group A and B (p=0.559). The mean random blood sugar was 152.48±4.93 and 153.88±8.1 respectively in group A and B (p=0.606).

Table 2: Investigation findings among the study participants.

Variables	Group A		Group B		P value
	N	%	N	%	
Urine routine					
Normal	23	92	23	92	1.000
Pus cells +	2	8	2	8	
Urine culture					
E. coli	2	8	1	4	0.513
Staphylococcus	0	0	1	4	
N/A	23	92	23	92	
Ultrasound findings (Weeks)					
SLIUG of < 8	2	8	17	68	<0.001
SLIUG of 9	5	20	4	16	
SLIUG of 10	4	16	4	16	
SLIUG of 11	4	16	0	0	
SLIUG of 12	10	40	0	0	

The indication for termination among all the study participants was due to unwanted pregnancy.

Table 3: Regimen followed in both the groups.

Groups	Frequency	Percentage (%)
Group A		
Single dose	16	64
Repeat dose	5	20
D and C	4	16
Group B		
Multiple dose	23	92
D and C	2	8

There was no significant difference between the prevalence of fever and nausea between the groups. The 8% had fever and 8% had nausea in both the groups. The 36% and 8% had retained product of conception in group A and B respectively (p=0.041)

Table 4: Success among the study participants.

Results	Group A		Group B		P value
	N	%	N	%	
Complete	16	64	23	92	0.041
Incomplete	9	36	2	8	

Table 5: Satisfaction among the study participants.

Satisfaction	Group A		Group B		P value
	N	%	N	%	
Satisfied	22	88	19	76	0.269
Dissatisfied	3	12	6	24	

DISCUSSION

The present study has shown that the mean age of the study participants was 26.48±3.77 and 24.72±3.33 in group A and B respectively. There was no significant difference between the groups. Majority of the study participants in both the group were multigravida. There was no significant difference between the groups. Similarly in a study done by Chen et al there was no significant difference in the age group.[24]

In the present study, the mean BMI was 24.52±1.29 and 24±1.38 respectively in group A and B. There was no significant difference between the groups. There was no significant difference between the haemoglobin and random blood sugar between groups. This is in accordance with study done by Ngai et al and Tang et al.[20,25]

The present study has shown that 20% and 16% in group A had repeat dose and D and C done whereas only 8% had D and C done in group B. In a study done by van Bogaert and Sedibe it shown that A total of 189 patients (69.2%) reacted to the misoprostol regimen after only 1 dose, whereas 84 patients (30.8%) required more than 1 dose.[26]

On assessing the side effects in the present study, it was shown that there was no significant difference between the prevalence of fever and nausea between the groups. 8% had fever and 8% had nausea in both the groups. In a study done by Brouns et al it was shown that the incidence of adverse symptoms include nausea, retching, vomiting, fever, headaches, and diarrhoea was not significantly different across the groups.[27] This is in accordance with the study done by Dalenda et al it was shown that incidences of fever, diarrhoea, chills, nausea, vomiting, and bleeding similar in both groups and did not vary significantly.[28]

On assessing the satisfaction in the present study, group B showed higher dissatisfaction than group A. (24% vs 12%). In a study done Hamoda et al it was shown that only 28% of the study participants were not satisfied with the vaginal misoprostol administration.[29]

The 36% and 8% of the study participants in group A and B respectively had incomplete abortion. The prevalence of incomplete abortion, and thereby the need for repeat dose and D and C was significantly higher among group A than B. Similarly, in research conducted by van Bogaert and Sedibe 10.2% of patients who received a typical misoprostol dose of 400 mcg orally and 800 mcg vaginally daily had D and C done.[26] Bugalho et al compared 200 micrograms with 400 micrograms of vaginal misoprostol for a total of four doses every 12 hours and found a success rate of 46% for the 5-7-week group and 45% for the 8-11-week group receiving 200 microgram and 55% for the 5-7-week group and 67% for the 8-11-week group receiving 400 micrograms. Crenin and Vittinghoff tested 800 micrograms of misoprostol up to a maximum total dosage of 1600 micrograms vaginally 24 hours apart in pregnancies less than or equal to 56 days gestation and found a 47% success rate.[31]

Koopersmith and Mishell studied four different misoprostol-only regimens vaginally, using 200 micrograms every eight hours with a 50% success rate, and another regimen using 400 micrograms initially followed by 200 micrograms every eight hours up to a total maximum dose of 1400 micrograms with a 100% success rate.[32] Singh et al found that an initial dosage of 800 micrograms of vaginal misoprostol and a subsequent dose of 400 micrograms repeated every three hours for a maximum of three doses resulted in success rates ranging from 84.7% to 96%.[33]

CONCLUSION

Misoprostol is a non-invasive, effective medical method for first trimester MTP. In present study, success rate was higher among those who had multidose regimen than those with single dose regimen. In conclusion, the findings of the present study reports that multidose misoprostol regimen seem to be more appropriate and effective in 1st trimester pregnancy termination.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Ramya SP, Gopalan U. A comparative study of efficacy of two different regimens of vaginal misoprostol in first trimester termination of pregnancy in a tertiary care hospital. Int J Reprod Contracept Obstet Gynecol 2023;12:737-42.