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ORIGINAL ARTICLE

Misoprostol Versus Isosorbide Mononitrate for Induction of Missed Abortion in The First Trimester

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ABSTRACT

Background: Misoprostol and Isosorbide Mononitrate have emerged as potential options for inducing medical abortions and promoting cervical ripening, with Misoprostol being a prostaglandin E1 analogue known for its effectiveness in various obstetric applications, and Isosorbide Mononitrate showing promise in this context. The present study aimed to compare the effects of vaginal misoprostol versus isosorbide mononitrate on cervical ripening in induction for first-trimester missed abortion.**Methods:**This prospective randomized interventional study was carried out on 58 patients with missed abortions divided into two groups: Group A, comprised 29 patients who received vaginal misoprostol (800 µg every 8 hours, 2400mg per day), and Group B, consisting of 29 patients who received 80 mg isosorbide mononitrate vaginally, repeatable every 6 to 12 hours if needed, up to 320mg per day. Induction to abortion interval, abortion timing, in addition to side effects were evaluated among the two studied groups.**Results:**The mean induction to abortion interval in Group A was significantly less than in Group B (17.25 ± 2.41 hours vs. 27.7 ± 1.77 hours). Significantly more patients in Group A experienced successful abortions within 24 hours (68.97%) and 48 hours (89.66%) compared to Group B (31.03% and 65.52%, respectively). Non-statistically significant differences were found in nausea (Group A: 34.4%, Group B: 37.9%), vomiting (Group A: 6.8%, Group B: 10.3%), diarrhea, abdominal pain, dizziness, severity, and duration of bleeding. However, Group A exhibited significantly less headache (17.2% vs. 68.8%), hypotension (6.8% vs. 68.8%), and fever (17.2% vs. 20.6%).**Conclusion:**Misoprostol demonstrated superiority in several key aspects. It aided in the significantly higher rate of complete abortions, achieved a faster induction to abortion interval, and resulted in more successful abortions within 24 and 48 hours of administration. Additionally, Misoprostol exhibited less side effect profile, with fewer instances of headache and hypotension.

Keywords: Misoprostol, Isosorbide Mononitrate, Missed Abortion, First trimester.

INTRODUCTION

Infants born with a weight of less than 500 g or pregnancies that spontaneously terminate before 20 weeks of gestation are considered a missed abortion. Based on estimations made by the American College of Obstetricians and Gynecologists (ACOG), it is the leading cause of miscarriage. Abortion is among the most prevalent problems that can arise during pregnancy. Retaining pregnancy materials in the uterus for days or weeks after the fetus's demise is known as a missed abortion, and it happens in 15% to 20% of clinically confirmed pregnancies.[1].The treatment of missed abortions has included a range of medicinal and surgical options. Vacuum aspiration, dilatation, and curettage are surgical procedures. However, medicinal techniques are typically preferred over surgical abortion methods due to their low cost and lack of risk associated with anesthesia [2]. An abortion can be induced with a variety of medications. The prostaglandin E1 analogue misoprostol is

one such medicine. There are two ways to take this medication: orally and vaginally [3].With few side effects, a strong uterotonic action, low cost, room temperature stability, and easy administration, misoprostol is a great choice. All four of these administration methods—oral, vaginal, rectal, and sublingual—produce good absorption. Shivering, fever, nausea, vomiting, and diarrhea are some side effects of misoprostol [4].

First-trimester abortions with isosorbide mononitrate, a nitric oxide donor, are safe, effective (with a 99% efficacy rate), and can be done anywhere from 5 to 13 weeks into the pregnancy. They also help the cervical smooth muscles relax during pregnancy's early and late stages [5].Isosorbide mononitrate (IMN) is a medication that primarily treats angina pectoris by lowering blood pressure by vasodilation of the blood vessels. It is safe and effective to self-administer IMN to induce abortions and ripen the cervical mucosa [5].

As a cervical ripening agent for abortion induction, Farzupor *et al*. [6] assessed its safety and effectiveness. Despite the authors' claims that isosorbide mononitrate is safe for usage, we failed to observe any statistically significant improvement in cervical ripening outcomes compared to a placebo.The present work aimed to compare the effects of vaginal misoprostol versus isosorbide mononitrate on cervical ripening in induction for first-trimester missed abortion.

METHODS

In this prospective randomized interventional controlled clinical study, which lasted from March 2023 to October 2023, 58 patients who had experienced a missed abortion and were referred for the evacuation of retained products of conception were included. The patients were recruited from the Obstetrics & Gynecology Department at the Faculty of Medicine at Zagazig University Hospital.

Inclusion criteria:Pregnant females aged from 18 to 36 years who had the first trimester missed abortion, with no maternal disorders such as heart disease, hypotension, asthma, cancer, thromboembolism, renal failure, or liver disease, with no contraindications to misoprostol or isosorbide mononitrate, with no evidence of cervical change, and those who had ultrasound proof of a gestation sac and an embryo that was not viable.

Exclusion criteria:Patients who had preceding attempts for terminating the pregnancy, who had any medical diseases such as heart, renal, liver, diabetes, and blood diseases, uterine tumors, any contraindications to misoprostol or isosorbide mononitrate, and patients experiencing abnormal vaginal bleeding or discharge while undergoing treatment.

Sample size:58 patients who had experienced a missed abortion and were referred for the evacuation of retained products of conception were included.The patients were split into two equal groups using simple randomization based on a computer-generated random sequence. Group A "Misoprostol" (Cytotec) (n=29): received vaginal misoprostol (800 µg every 8 hours 2400mg per day). Group-B " isosorbide mononitrate "(Mono Mack)(n=29): received (80 mg isosorbide mononitrate vaginal, repeat the drug every 6 to 12 hours if needed up to 320mg per day)[7].

Data Collection and Procedures:

All cases who met the inclusion criteria were subjected to the following: Full history taking with special emphasis on obstetric history including parity, mode of delivery and menstrual history. A general examination included vital data (e.g., Blood pressure, pulse, and temperature). An abdominal examination included fundal height and abdominal and pelvic grips. Fetal viability, biometry, and the location of the placenta were all evaluated by ultrasound. We performed standard laboratory tests, including a complete blood count, blood group, Rh, and coagulation profile.

During this procedure, vital signs, symptoms, and adverse effects were recorded at baseline and then every 6 hours until finishing therapy, assuring the patient's health and hemodynamic stability before administering more medication. The time of the tablet's 1st,2nd, 3rd, and 4th doses was noted, and the induction ripening interval was recorded. Evaluation of cervix (dilatation, length, consistency, and position) with every drug dose. Evaluation of the following adverse effects: With every dose of every medicine, we checked for the presence of headaches, hypotension, abdominal pain, pelvic discomfort, backaches, nausea, dizziness, vomiting, and dizziness. If there was no change in the cervical anatomy, the remaining embryos were surgically removed. Treatment was deemed unsuccessful in the absence of cervical change following the fourth dose of medicine or 72 hours.

Before the intervention, participants were asked to fill out a questionnaire about their symptoms. We noticed several symptoms, including a headache, nausea, vomiting, backache, pelvic pain, and abdominal pain. If there was no cervical change, heavy bleeding, or abortion after 72 hours, surgical evacuation of retained products of conception was done by curettage. Patients were asked for documentation of the following: Time of occurrence of pain, time of occurrence of vaginal bleeding or passing of tissues, and the occurrence of side effects (nausea, vomiting, shivering, hyperpyrexia, colic, etc.…). On the 3rd day, an ultrasound was done to exclude incomplete abortion, with a remnant inside the uterus measuring 2 cm or greater; the patient was deemed to have undergone an incomplete abortion, necessitating evacuation.In the case of induction failure, we performed dilation and curettage (D&C) in the operating room, according to Qiu *et al*. [8].

Technique/treatment of D&C:

A dorsal lithotomy posture was adopted for the patient. Next, while the patient was under general anesthesia, a bimanual examination was carried out to determine the size and position of the uterus. The vagina was inserted using a bivalve or weighted speculum. The anterior lip of the cervix was grasped with the tenaculum, and the non-dominant hand was utilized to pull towards the introitus. To decrease the likelihood of uterine perforation, traction was used to stabilize the uterus and minimize the cervicouterine angle. Unless the uterus was not palpable on the initial bimanual examination, the operation did not benefit from routinely using uterine sound to determine cavity length.

The procedure began with the smallest accommodating dilator dilating the cervix. Subsequently, the dilator size was increased progressively. An exterior and internal os were both traversed by the dilator. To avoid uterine perforation, the dilator was held with light pressure using just two fingers of the dominant hand. The quantity of tissue that needed to be removed and the size of the selected curette dictated the extent of dilation. After the endocervical canal had been sufficiently dilated, the metal curette was inserted into the endometrial cavity and carefully moved toward the uterine fundus.

To minimize cervical injury, the curette was placed on the uterine walls and drawn from the fundus to the cervix while remaining inside the uterine cavity throughout the evacuation. To cover the entire uterine cavity, the curette was turned 360 degrees and passed vertically from the fundus to the level of the internal os repeatedly.

A gritty texture indicated complete removal of the pregnancy. If a gritty texture was present, but bleeding was seen, it was

considered bimanual massage to treat possible uterine atony, retention of products, or uterine or cervical injury. The ultrasound provided a safety measure to prevent injury in patients with an abnormal endometrial cavity or when cervical dilation was difficult, according to Cohen *et al*. [9].

Primary outcomes included the number of patients that have a complete abortion, the expulsion interval, and failure of expulsion if there is no response after 72 hours. Secondary outcomes included measuring the duration of bleeding and amount, the occurrence of side effects, and the need for emergency evacuation.

Ethical and administrative considerations: Patients were asked to sign an informed consent form. Each patient was given an explanation of the study's goal and a secret code number. The research was conducted under the World Medical Association's Code of Ethics (Helsinki Declaration) for human research. This study was carried out after the approval of the Institutional Review Board (IRB) (#9466/26-3-2023).

STATISTICAL ANALYSIS

A statistical analysis was performed on the data using IIBM SPSS, version 20.0. (IBM Corporation, Armonk, New York). Percentages and numbers were utilized to convey qualitative data. The qualitative characteristics were compared between the groups using a chi-square test. If one or more predicted cells were less than 5, the Fisher exact test was utilized rather than the chi-square test. To compare the two groups concerning the quantitative variable in parameters (SD<50 percent mean), an unpaired t-test was employed.

RESULTS

Table (1) showed that there were no significant differences between the studied groups regarding demographic data and personal characteristics (p >0.05).

As regards the type of abortion, within the isosorbide mononitrate group, there were statistically significant differences between the two groups; complete Abortion was higher in Group (A), while E&C was higher in Group (B) (p=0.028) (Table 2).

The mean induction to abortion interval (in hours) in group A was significantly less than in group B (17.25 ± 2.41 hours) versus (27.7 ± 1.77) (P<0.001) (Table 3).

Table (4) showed that the number of successful abortions within 24 hours after the initial dose administration was significantly higher in group A 20 (68.97%) than in group B 9 (31.03%), with P value=0.004, which is statistically significant. However, patient abortion within 48 hours after the initial dose of administration was 26 (89.66%) in group A versus 19 (65.52%) in group B, with P value=0.028, which was statistically significant.

Significant differences were found between the two groups regarding headache and hypotension, with a higher incidence in group (B) (p=0.001 for each). There were non-significant differences between the two groups regarding nausea, vomiting, diarrhea, abdominal pain, fever, dizziness, severity, and duration of bleeding (Table 5). While no significant differences were found between the two groups as regards Hb and HCT after treatment (Table 6).

Table (1): Shows comparison between the two groups as regard demographic characteristics.

Studied group / Variables	**MisoprostolGroup** (A) N=29	**IsosorbideGroup** (B) N=29	**P.value**	
Age ($\overline{X}$ ±S.D) (years)	28 ±5	28 ± 6	0.974	NS
Parity	3.02 ± 1.09	4.45 ± 1.0	0.974	NS
GA ($\overline{X}$ ±S.D)(weeks)	8 ±3	8 ±3	0.356	NS
BMI ($kg/m^{2)}$ mean±SD	26.9±2.5	27.8±2.4	0.869	NS
Previous abortion (N &%)	15(51.7%)	18(62. 1%)	0.974	NS

X = mean S.D = Standard deviation GA = gestational age n = number of cases
NS: no significantN=sample size BMI = Body mass index

Table (2): Comparison of type of abortion in studied groups.

Variables	**MisoprostolGroup** (A) N=29	**IsosorbideGroup** (B) N=29	**P.value**.	
Complete Abortion (n&%)	26 (89.66%)	19 (65.52%)	٠,٠٢٨	S
Incomplete Abortion (E&C) (n&%)	3 (10.34%)	10 (34.48%)		

S: significant

Table (3): Comparison in mean induction to abortion interval, in studied groups.

Variables	**MisoprostolGroup** (A) N=29	**Isosorbide Group** (B) N=29	**P.value.**	
Induction to abortion period ($\overline{X}$ ±S.D) (hours)	17.25 ± 2.41	27.7 ± 1.77	0.001	S

Table (4): Comparison of abortion within 48 Hours, in studied groups.

Variables	**MisoprostolGroup** (A) N=29	**IsosorbideGroup** (B) N=29	**P.value**.	
Abortion within 24 hours (n&%)	20 (68.97%)	9 (31.03%)	0.004	S
Abortion Within 48 hours (n&%)	26 (89.66%)	19 (65.52%)	٠,٠٢٨	S
E @c	3 (10.34%)	10 (34.48%)		

Table 5: The frequency of side effects in studied groups.

Variables	**MisoprostolGroup** (A) N=29	**IsosorbideGroup** (B) N=29	**P.value**.	
Nausea (n&%)	10 (34.4)	11 (37.9)	0.710	NS
Vomiting (n&%)	2 (6.8)	3 (10.3)	0.626	NS
Headache (n&%)	5 (17.2)	20 (68.8)	0.001	S
Diarrhea(n&%) in	2 (6.8)	3 (10.3)	0.626	NS
Abdominal pain (n&%)	10 (34.4)	16 (55)	0.113	NS
Hypotension	2 (6.8)	20 (68.8)	0.001	S
Fever (n&%)	5 (17.2)	6 (20.6)	0.915	NS
dizziness (n&%)	11 (37.9)	10 (34.4)	0.71	NS
Severity of bleeding(n&%) **Less than MP** **Equal to MP** **More than MP**	 8(27.5) 11(37.9) 10(34.4)	 6(20.6) 11(37.9) 12(41.12)	 0.630 0.6 0.710	NS
Duration of bleeding(n&%) **Within few hours** **Within one day** **More than one day**	 9(31.03) 11(37.9) 9(31.03)	 8(27.5) 9(31.03) 12(41.3)	 0.765 0.871 0.921	NS

Table 6: Hb and HCT between studied groups before and after treatment.

Variables	**Misoprostol Group** (A) N=29	**Isosorbide Group** (B) N=29	**P.value**	
Hb before($\overline{X}$ ±S.D)	10.31 ± 1.22	10.75 ± 1.25	0.97	NS
Hb after ($\overline{X}$ ±S.D)	9.07 ± 1.24	9.01 ± 1.25	0.87	NS
HCT before ($\overline{X}$ ±S.D)	33.88±2.3	33.77±2.8	0.92	NS
HCT after ($\overline{X}$ ±S.D)	33.10±3.7	32.69±2.8	0.73	NS

HB: hemoglobinHCT: hematocrit

DISCUSSION

Misoprostol, which is a prostaglandin E1 analogue, has gained prominence as an effective medication for inducing medical abortions, managing postpartum hemorrhage, and facilitating cervical ripening. Its mechanism of action involves uterine contractions and cervical ripening, which makes it a suitable candidate for missed abortion management [10,11]. In contrast, Isosorbide Mononitrate, a vasodilator primarily used for cardiovascular conditions, has also shown promise in its capacity to promote cervical ripening. Its use in missed abortion is less well-established but warrants investigation [12].

The choice between these two medications has significant implications for both healthcare providers and patients. It influences the safety and effectiveness of the

procedure, as well as the patient's overall experience. The need for a comprehensive understanding of the comparative effectiveness, safety profiles, and associated outcomes of Misoprostol and Isosorbide Mononitrate in the context of missed abortion management is evident [13].

The present study resultsas regards demographic data showed no statistically significant differences between the Misoprostol Group (mean age: 28 years) and the Isosorbide Group (mean age: 28 years) in terms of age ($p = 0.974$), parity (Misoprostol: 3.02 vs. Isosorbide: 4.45, $p = 0.974$), gestational age (Misoprostol: 8 weeks vs. Isosorbide: 8 weeks, $p = 0.356$), BMI (Misoprostol: 26.9 kg/m² vs. Isosorbide: 27.8 kg/m², $p = 0.869$), and the history of previous abortion (Misoprostol: 51.7% vs. Isosorbide: 62.1%, $p = 0.974$). These results indicate that the two groups were well-matched regarding demographic characteristics.

The comparable mean age in both groups (28 years) suggests that missed abortion can affect women across a broad age range. Age may not be a primary factor in the occurrence of missed abortion, but other factors, such as genetics or underlying health conditions, could be more relevant [14].The average gestational age of 8 weeks was due to the early routine first-trimester ultrasound monitoring. With a high mean BMI falling into the overweight range, there was an increased risk of pregnancy complications and hormonal imbalances. Additionally, the high percentage of participants with a history of previous abortion indicates a potential association between prior abortion and a slightly elevated risk of subsequently missed abortion, which might be influenced by factors such as uterine scarring in abortions, especially if they involved surgical procedures like dilatation and curettage (D&C), Cervical Incompetence, underlying health conditions, and emotional stress [15,16].

These results were supported by Saxena *et al*. [17] who attempted to establish a comparison between the effectiveness of misoprostol alone and misoprostol combined with isosorbide mononitrate in shortening the time it takes to induce abortion and end a pregnancy. They conducted a randomized study with Group A receiving misoprostol alone and Group B receiving misoprostol and isosorbide nitrate. The clinical characteristics of both groups were compared, showing no significant differences in age (Group A: 27±5.66 years, Group B: 26.37±5.63 years, $p = 0.64$), nullipara status (Group A: 14, Group B: 15, $p = 0.81$), multipara status (Group A: 22, Group B: 20, $p = 0.81$), and gestational age (Group A: 15.91±2.27 weeks, Group B: 16.68±2.33 weeks, $p = 0.16$). This indicates that the two groups were well-matched in terms of clinical characteristics.

Concerning the type of abortion achieved in both groups. The results revealed a significant difference ($p = 0.028$) between the two groups. The Misoprostol group exhibited a higher rate of complete abortions (89.66%) compared to the Isosorbide group (65.52%). This suggests that Misoprostol is more effective in inducing complete abortions in the first trimester compared to Isosorbide Mononitrate.Moreover, we evaluated the number of successful abortions within 24 and 48 hours after the initial dose administration in both groups. The Misoprostol group displayed a significantly higher rate of successful abortions within 24 hours (68.97%) compared to the Isosorbide group (31.03%) ($p = 0.004$). Additionally, the rate of successful abortions within 48 hours was

significantly higher in the Misoprostol group (89.66%) than in the Isosorbide group (65.52%) (p = 0.028). These results establish that Misoprostol is more effective in achieving faster abortion induction within 24 and 48 hours compared to Isosorbide Mononitrate.

These results were consistent with Soliman[18] who performed research comparing the efficacy of isosorbide mononitrate (IMN), misoprostol, and combination treatment in preparing the cervix for term induction of labor. Their findings showed a significant difference in successful induction, defined as achieving vaginal delivery within 24 hours of initiating cervical ripening, among the treatment groups. The success rate for the misoprostol group was 60%; for the combined therapy group, it was 62.1%; and for the IMN group, it was 27.7%, which is significantly lower (P <0.0001). These results suggest that both misoprostol and combination therapy are more effective in achieving successful induction within the specified time frame compared to IMN alone.Also, Atalla [19] aimed to evaluate the ripening of the cervical mucosa in second-trimester abortions with misoprostol and Isosorbide mononitrate (IMN) and to compare their safety and effectiveness. The results indicated a statistically significant difference between the two groups concerning the number of women who had abortions within the first 24 hours (P value = 0.028). This suggests that when Isosorbide Mononitrate is added to misoprostol, it increases the likelihood of a successful abortion induction within the initial 24-hour period. This outcome underscores the potential of combined treatment to expedite the abortion process and enhance its success rate in the second trimester.Also, these results were consistent with Moustafa *et al*. [20] findings indicating that the use of Misoprostol for cervical ripening was associated with a significantly higher success rate (66%) compared to Isosorbide Mononitrate (IMN), where only 31% of cases achieved successful ripening. Based on these results, misoprostol might be better for promoting cervical softening during the first trimester.

However, these results were inconsistent with Makhlouf *et al*. [21], who highlighted that following the implementation of a supplementary procedure, the nitric oxide (glyceryl trinitrate) induced group achieved a 100% complete abortion rate. The results may have been impacted by the fact that this investigation did not utilize the oxytocin drip, the supplementary technique. Also, these results were inconsistent with David and Chen. [22] evaluated IMN and misoprostol as vaginal tablets for cervical priming in cases of missed abortions in the first trimester. IMN was determined to be just as effective as Misoprostol. The difference in results compared to ours is likely due to the small sample size in David and Chen's study (30 women with missed abortions), which can increase variability and hinder the detection of significant differences. Our larger sample size provided more statistical power to identify variations in Isosorbide Mononitrate (IMN) versus misoprostol efficacy, potentially explaining the inconsistencies.

In this study, we analyzed the mean duration of complete expulsion, measured in hours, for both groups. The Misoprostol group demonstrated a significantly shorter induction to abortion period (17.25 hours) compared to the Isosorbide group (27.7 hours) (p = 0.001). These findings indicate that Misoprostol is more effective in inducing abortion within a shorter time frame than Isosorbide

Mononitrate. Misoprostol induces abortion faster, which may be due to its direct action on uterine muscles, leading to quicker contractions. In contrast, Isosorbide may induce muscle relaxation, potentially delaying abortion.The study by Hidalgo *et al*. [23] supported the evidence by reporting a mean duration of complete expulsion of 4.47±2.042 hours with Misoprostol, significantly shorter than Isosorbide Mononitrate, with a mean duration of 8.03±2.833 hours (P<0.05). These results also corroborate our findings, emphasizing the efficiency of Misoprostol in reducing the duration of complete expulsion.However, these results were inconsistent with Al-Saffar and Marouf. [24] findings indicated that the mean duration of complete expulsion was 8.4±3.2 hours with Misoprostol, slightly longer than Nitric oxide donors (glyceryl trinitrate) at 7.6±4.2 hours. However, the difference was statistically insignificant (P<0.05). This difference in the specific nitric oxide donor utilized in the studies could explain the variation compared to our results.

In this study, we examined the frequency of side effects experienced by patients in both groups. Most side effects showed non-significant statistical differences between the groups, except for two notable exceptions. The Misoprostol group had a significantly lower incidence of headache (p = 0.001) and hypotension (p = 0.001) compared to the Isosorbide group. This suggests that Misoprostol is more effective in minimizing the occurrence of headache and hypotension as side effects, making it a more favorable option in terms of side effect profile.The discrepancies in side effects between the Misoprostol and Isosorbide groups can be attributed to their unique modes of action. Misoprostol primarily impacts the smooth muscles of the uterus. Its specific uterine action may lead to fewer systemic effects, thus lowering the likelihood of headaches. Conversely, Isosorbide mononitrateinduces vasodilation by relaxing various smooth muscles, including those in blood vessels, potentially causing a reduction in blood pressure and an increased susceptibility to hypotension. Furthermore, variations in drug sensitivity among individuals within the patient population might also contribute to the differing profiles of side effects observed in the study [25].In the study by Souizi *et al*. [26], a comparison was made between vaginal misoprostol and isosorbide dinitrate (ISDN) for cervical preparation and labor duration. The results revealed a significant difference in the incidence of side effects among the groups. Specifically, the misoprostol group reported no side effects, while the ISDN group had a 6.3% incidence, and the p-value was highly significant at <0.001. Headaches were experienced by 12 individuals in the ISDN group, dizziness by 2, and tachycardia by five from a total of 96 participants.Also, these results were consistent with Collingham *et al*. [27] prospective randomized trial, including 78 women who received misoprostol, while another 78 received misoprostol with isosorbide mononitrate. Both groups exhibited similar side effects, except those women receiving isosorbide mononitrate, reported more frequent headaches.

Limitations:

This study had some limitations. First, it had a relatively small sample size, which could limit the generalizability of our findings to larger populations. Secondly, our study focused on specific aspects of medication effectiveness and side effects and did not delve into other potential factors that could

influence treatment outcomes. The study duration was also limited, and longer-term effects or complications could not be fully assessed. Further research with larger and more diverse samples, longer follow-up periods, and consideration of additional variables is warranted to provide a more comprehensive understanding of the comparative effectiveness and safety of Misoprostol and Isosorbide Mononitrate for the induction of missed abortion in the first trimester.

CONCLUSION

In this study comparing the effectiveness of Misoprostol and Isosorbide Mononitrate for the induction of missed abortion in the first trimester, we found that Misoprostol demonstrated superiority in several key aspects. It aided in the significantly higher rate of complete abortions, achieved a faster induction to abortion interval, and resulted in more successful abortions within 24 and 48 hours of administration. Additionally, Misoprostol exhibited less side effect profile, with fewer instances of headache and hypotension. While both medications had a similar impact on hemoglobin and hematocrit levels, these findings collectively suggest that Misoprostol is a more effective option for the induction of missed abortion in the first trimester, with potential benefits in terms of safety and efficacy.

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