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Efficacy and Safety of Intravaginal Misoprostol for Medical Termination of Pregnancy in the Mid-Trimester

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Abstract **Original Research Article**

Background: Medical termination of pregnancy (MTP) during the mid-trimester, typically between 13 and 24 weeks of gestation, presents significant challenges, particularly in low-resource settings like Bangladesh. Misoprostol, a prostaglandin E1 analogue, is widely used for mid-trimester abortions due to its efficacy, ease of administration, and affordability. However, its safety in women with a prior caesarean section remains a concern, especially regarding the risk of uterine rupture. This study assesses the efficacy and safety of intravaginal misoprostol for mid-trimester pregnancy termination in Bangladeshi women. ***Objective:*** To evaluate the efficacy and safety of intravaginal misoprostol for mid-trimester pregnancy termination in women with and without a prior caesarean section in Bangladesh. ***Methodology:*** This prospective study was conducted at a tertiary care hospital in Bangladesh from January 2019 to December 2022. A total of 200 women requiring mid-trimester MTP were enrolled, with 100 women having a prior caesarean section (study group) and 100 women without such a history (control group). Women were administered 400µg of intravaginal misoprostol every 6 hours for a maximum of five doses. The efficacy of complete abortion and the incidence of complications, including hemorrhage, infection, retained placenta, and uterine rupture, were recorded. ***Results:*** Both groups demonstrated high rates of successful mid-trimester terminations with no cases of uterine rupture. In the study group (previous caesarean), 2 women experienced severe hemorrhage, 3 had post-abortal infections, and 10 required management for retained placenta. In the control group, 3 women had severe hemorrhage, 5 had post-abortal infections, and 11 experienced retained placenta. No significant differences in complication rates were found between the two groups. ***Conclusion:*** Intravaginal misoprostol is effective and generally safe for mid-trimester pregnancy termination, even in women with a prior caesarean section. Although no uterine ruptures were observed in this study, further research with larger sample sizes and multicenter data is recommended to precisely assess the risk. Misoprostol remains a viable option in low-resource settings like Bangladesh, where surgical alternatives may be limited.

Keywords: Misoprostol, Fetal demise, Caesarean section.

INTRODUCTION

Medical termination of pregnancy (MTP) in the mid-trimester, typically between 13 to 24 weeks of gestation, presents unique challenges for both patients and healthcare providers. One of the most effective pharmacological agents used for this purpose is misoprostol, a synthetic prostaglandin E1 analogue. Intravaginal administration of misoprostol has gained widespread acceptance for fetal demise due to its high efficacy, cost-effectiveness, and relatively low side-effect profile. In countries like Bangladesh, where access to safe abortion care remains limited, evaluating the efficacy and safety of misoprostol is critical for improving maternal health outcomes [1-5].

Mid-trimester pregnancy termination is often necessary for a variety of reasons, including severe fetal anomalies, maternal health conditions, or delayed access to abortion services. Misoprostol offers a non-invasive alternative to surgical procedures, such as dilation and evacuation (D&E), which may not be available or feasible in many low-resource settings [6-9]. In Bangladesh, where the healthcare infrastructure faces several constraints, intravaginal misoprostol has

emerged as a valuable option, particularly in rural areas where access to skilled surgical care is limited.

Several studies have highlighted the effectiveness of misoprostol in inducing uterine contractions and promoting the expulsion of the fetus during the second trimester [10-13]. It is generally used either alone or in combination with mifepristone, another abortifacient, to enhance its efficacy. The success rate of misoprostol for complete abortion in the mid-trimester is high, typically ranging from 80% to 95%. However, the drug's safety profile and potential side effects, such as excessive bleeding, infection, or incomplete abortion, require careful consideration, particularly in settings where follow-up care may be inadequate [14-15].

In the context of Bangladesh, the safety of intravaginal misoprostol is a particularly pressing issue. While the drug is widely used, the healthcare system's limitations in managing complications, such as hemorrhage or infection, can pose significant risks to women. Additionally, there is a need for greater public awareness and training among healthcare providers to ensure that misoprostol is administered safely and effectively. Studies focused on the Bangladeshi population are necessary to provide localized data on the drug's outcomes, given the socio-cultural and healthcare access differences from other regions where most misoprostol research has been conducted.

OBJECTIVE

To Efficacy and Safety of Intravaginal Misoprostol for Medical Termination of Pregnancy in the Mid-Trimester.

METHODOLOGY

This study was conducted at a tertiary care hospital in Bangladesh from January 2019 to December 2022. A total of 200 patients requiring medical termination of pregnancy (MTP) in the second trimester due to medical, obstetrical, or missed abortion were included. The participants were divided into two groups: 100 women with a history of previous caesarean section (study group) and 100 women without such a history (control group).

Inclusion criteria for the study were patients with medical indications such as uncontrolled hypertension, diabetes mellitus, cardiac or renal diseases, obstetrical indications like severe oligohydramnios and anhydramnios, or missed abortion such as structural fetal anomalies, genetic disorders, and chromosomal abnormalities. Exclusion criteria included patients with known hypersensitivity to prostaglandins, those with bleeding disorders, previous uterine surgeries like myomectomy or surgeries for uterine malformations, and patients with overdistended uterus due to polyhydramnios or multiple pregnancies.

Eligible patients were admitted to the labor ward of the hospital. Upon admission, a comprehensive medical history was taken, followed by a thorough physical examination. Ultrasonography was performed to confirm gestational age, assess fetal viability, localize the placenta, and identify any uterine abnormalities. The study group consisted of women who had undergone a previous lower segment caesarean section, while the control group included women without a history of caesarean section. The control group was matched to the study group by maternal age and gestational age at the time of termination.

Pregnancies were terminated between 14 and 24 weeks of gestation using 400µg of intravaginal misoprostol. The dose was repeated every six hours, with a maximum of five doses administered. During the entire process, vigilant monitoring was conducted to track the progression of the abortion and to detect any potential complications. The study focused on several key complications, including severe hemorrhage requiring blood transfusion, post-abortal infections, retained placental tissue, and uterine rupture.

RESULTS

All of the caesareans had been performed at term. The median gestational age was 18 weeks (range: 14–24 weeks) in the study versus 19 weeks (range: 14–24 weeks) in the control group.

Table-1: Patients' characteristics in both groups

Patients' characteristics	**Previous C- section (*n*= 100)**	**No C-section (*n*= 100)**
Maternal age (years)	29(20-37)	28(21-36)
Previous C/S		
Pr. 1	95	
Pr.2	4	
Pr.3 or more	1	
Gestational age (weeks)	18(14-24)	19(14-24)
Indication for termination		
Fetal abnormalities	48	45
Oligohydramnios—preterm premature rupture of membranes	10	11
Fetal death/missed abortion	40	42
Maternal disease	2	2

The side effects of prostaglandins were predominantly gastrointestinal symptoms. Twenty patients (11 of the study and 9 of control) reported nausea, vomiting occurred in five women in the study and three in the control group and diarrhoea occurred in two women in each group. Moreover, 28 women (12 studies and 16 controls) experienced pyrexia between 38°C and 39°C.

Table 2: Complications in the two groups following termination of pregnancy with misoprostol

Complications	Previous C- section (*n*=100)	No C-section (*n*= 100)
Severe haemorrhage	2	3
Post-abortal infection	3	5
Retained placenta	10	11
Uterine rupture	0	0
Caesarean section	0	0

DISCUSSION

Our results clearly indicate that women with history of previous caesarean section can safely terminate their pregnancy in the second trimester by inducing vaginal birth. We achieved a 100% vaginal delivery rate, which is in accordance with a previous study13, reporting a 99.4% vaginal birth rate at term in women with a similar history. Another important finding of our study was that a previous caesarean delivery does not appear to increase the incidence of complications in women who undergo a pregnancy termination in the second trimester by induction of labour. However, much larger study would be needed to provide accurate assessment of the risk of uterine rupture.

Uterine rupture is the most serious complication in cases with a previous uterine scar and may occur either in the mid-trimester [14, 15] or in the third trimester [16]. We did not observe a uterine rupture in our both groups. We hypothesize that this may be due to the lower gestational age of our cases. The risk of rupture has been reported to be higher when oxytocin is associated with prostaglandins [17]. Atienza *et al.*, [18] reported one case of uterine rupture among 76 patients with a previous caesarean section managed with amnioinfusion of PGF2a. Another case of asymptomatic uterine rupture was also reported by Boulot *et al.*, [19] among 23 women with a history of caesarean section managed with a combination of mifepristone and gemeprost (PGE2).

CONCLUSION

We found that misoprostol is a safe drug for inducing labor in women with a prior caesarean section undergoing mid-trimester pregnancy termination. However, to more accurately estimate the risk of uterine rupture, a much larger case series is necessary, ideally using data collected at the national or multicenter level. Such an approach would allow for the exploration of confounding variables and provide a more precise estimate of the relative contribution of misoprostol to adverse outcomes.

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