Original Article

Medical Versus Surgical Management In Early Pregnancy Failure

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ABSTRACT:

Background: *Misoprostol is increasingly used to manage early pregnancy loss, including incomplete abortion, blighted ovum, missed abortion, and inevitable abortion during the first trimester. It offers a simple, non-invasive, and widely acceptable alternative to traditional surgical methods. While surgical management reduces hospital stay and overall costs, misoprostol provides an effective, patient-friendly option.*

Objective: *To assess the efficacy and safety of misoprostol for uterine evacuation in early pregnancy loss and compare the results with surgical methods.*

Materials and Methods: *This prospective randomized study was conducted on 30 patients at the Department of Obstetrics and Gynecology, CMH RAMU, Cox's Bazar, from June 2021 to July 2022. Fifteen patients received misoprostol, and 15 underwent surgical management.*

Results: *Of the 15 women treated with misoprostol, 13 (86%) had complete expulsion within 24 hours, and 14 (90%) within seven days. Treatment failed in 1 patient (6.6%), requiring surgical evacuation. Among responders, 98% were satisfied and stated they would use misoprostol again if needed.*

Conclusion: *Misoprostol is an effective, affordable, and non-invasive alternative to surgery, with a success rate of approximately 90% and manageable side effects. It should be prioritized over surgical methods for eligible patients.*

Key Words:
Early pregnancy failure, misoprostol, surgical treatment.

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Introduction

Early pregnancy failure refers to the loss of pregnancy in the first trimester (before 12 weeks) through conditions like blighted ovum, incomplete abortion, missed abortion, or inevitable abortion. Spontaneous pregnancy loss affects 8–20% of pregnancies, with 80% occurring before 12 weeks.[1] Approximately one in four women experiences early pregnancy loss during their lifetime.[2] Advances in sensitive pregnancy tests and ultrasound have increased the diagnosis of miscarriages.[3] Uterine evacuation by aspiration curettage has long been the gold standard for managing early pregnancy loss. However, studies suggest that misoprostol, a medical alternative, is effective and safe.[4,5]

Surgical evacuation under anesthesia carries risks, including uterine perforation, intrauterine adhesion, cervical trauma, infection, infertility, pelvic pain, and ectopic pregnancy.[6,7] In 2005, Zhang et al.[8] demonstrated in a randomized clinical trial that misoprostol is an acceptable alternative to surgical treatment for early pregnancy loss, offering comparable effectiveness, safety, and acceptability. Medical treatment with misoprostol has advantages over surgical methods. It can be administered in outpatient settings, avoids anesthesia, reduces costs,[9,10,11] and is chemically a synthetic prostaglandin analogue with a short half-life (20–40 minutes). Misoprostol is primarily excreted through the renal system (80%) and fecal route (15%).[12] Vaginal administration improves success rates and minimizes side effects.

Initially approved by the FDA to prevent NSAID-induced gastric ulcers,[13] misoprostol is now widely used for pregnancy loss due to its affordability, stability at room temperature, and ease of transportation. It softens

the cervix and induces uterine contractions for the expulsion of uterine contents.[15] Side effects include abdominal cramping, vaginal bleeding, fever, nausea, vomiting, diarrhea, and dizziness, which vary in severity and duration. The study aims to evaluate the efficacy, safety, and acceptability of misoprostol compared to surgical methods for managing early pregnancy loss, reducing surgical interventions and associated risks.

Materials and Methods

This prospective randomized study was conducted on 30 patients at the Department of Obstetrics and Gynecology, Combined Military Hospital, Ramu, Cox's Bazar, from February 2021 to July 2022. Patients were randomized based on their preference after receiving a thorough explanation of two methods of uterine evacuation: medical management using misoprostol and surgical management via evacuation and curettage. The inclusion criteria for the study were women with missed abortion at <12 weeks gestation, incomplete abortion at <12 weeks gestation with minimal vaginal bleeding, and blighted ovum confirmed by ultrasonography. Exclusion criteria included incomplete abortion at >12 weeks, incomplete abortion associated with excessive bleeding, underlying medical conditions such as cardiac, renal, hepatic, respiratory, or adrenal diseases, anemia with hemoglobin levels <8 g/dL, allergies to prostaglandins or NSAIDs, and cases of induced abortion. A total of 30 women with first-trimester pregnancy loss were randomly assigned to receive either 800 micrograms of misoprostol vaginally or undergo surgical evacuation and curettage. Gestational age was determined based on the first day of the last menstrual period and confirmed using trans-abdominal ultrasonography. Each patient underwent a detailed medical history review and a physical examination conducted by the principal investigator. Baseline investigations, including hemoglobin levels, blood sugar, and ABO grouping with Rh typing, were performed, and all relevant clinical and demographic data were recorded in a structured collection sheet. The study aimed to evaluate and compare the efficacy, safety, and patient satisfaction of both management methods for early pregnancy loss.

Methods of medical evacuation

Upon hospital admission, patients selected for medical management received 800 micrograms of misoprostol, inserted vaginally into the posterior fornix via digital application. The time interval between misoprostol administration and the expulsion of the products of conception was recorded. If expulsion occurred after the first dose, trans-abdominal ultrasonography was performed to confirm completeness. If expulsion did not occur within 24 hours, a second dose of misoprostol was administered in the same manner. Patients were advised to undergo follow-up ultrasonography after seven days to assess for complete expulsion, with surgical evacuation performed in cases of incomplete expulsion. For patients opting for surgical management, uterine evacuation was performed via dilation, evacuation, and curettage. All women were instructed to return for a follow-up visit on the 15th day, during which they completed a data collection sheet documenting the duration and intensity of bleeding, pain levels, side effects (e.g., fever, diarrhea, headache), and their overall acceptance of the treatment. Surgical management was deemed a failure if a second intervention was required due to abnormal vaginal bleeding or signs of retained products of conception. Comprehensive data for each participant were recorded on pre-designed data collection sheets, compiled into a master chart, and analyzed using scientific calculators and statistical software such as SPSS. Percentages were calculated for proportions, and statistical significance was assessed using the Chi-square test, with a p-value <0.05 considered significant. Results were presented in the form of tables and charts to facilitate clear interpretation.

Results

Among the 15 women who received medical treatment, 40% were aged 20 years or younger, 20% were para-1, and 55% had a gestational age between 9–12 weeks. In the surgical treatment group, 24% were aged 20 years or younger, 40% were para-2, and 64% had a gestational age of 9–12 weeks. Women receiving medical treatment for early pregnancy loss included 46% with incomplete abortion, 20% with missed abortion, 13% with inevitable abortion, and 20% with anembryonic gestation. In the surgical treatment group, the breakdown was 26% missed abortion, 26% incomplete abortion, 13% inevitable abortion, and 33% anembryonic gestation. Most women (86%) in the medical treatment group did not require a blood transfusion, while 13% needed one unit of blood. In the surgical group, 26% required a blood transfusion. The difference in blood transfusion requirements between the two groups was not statistically significant (p>0.05).

Hospital stay duration also varied between the groups;

66% of women in the medical treatment group were discharged within 1–2 days, while 46% of those in the surgical group required hospitalization for more than three days. This difference was also not statistically significant (p>0.05). Regarding side effects, 26% of women in the medical group experienced vaginal bleeding, 20% reported lower abdominal pain, and 6% had fever. In the surgical group, 33% had vaginal bleeding, 13% reported lower abdominal pain, and 6% had fever, with no statistically significant difference between the groups (p>0.05).

Complete evacuation after the first dose of misoprostol occurred in 66% of cases, while 33.3% remained incomplete. Following the administration of a second dose, 25% achieved complete evacuation, and 6.6% still required surgical intervention due to incomplete expulsion. In most cases, expulsion occurred within 12 hours of misoprostol administration, with 20% occurring between 12–24 hours, 6% taking longer than 24 hours, and 6% not responding to misoprostol at all. Overall, 80% of women accepted medical treatment, compared to 53% who preferred surgical treatment, though the difference in acceptance rates was not statistically significant (p>0.05). These findings highlight the comparable efficacy and safety of both methods, with a majority of patients experiencing satisfactory outcomes in both groups.

Table-I: Obstetric history of respondents (n=30)

Characteristics		Treatment groups		p-value
		Medical (n=15)	Surgical (n=15)	
Age	≤20	6(40%)	4(26%)	0.91
	21-25	3(20%)	5(33%)	
	26-30	4(26%)	5(33%)	
	31-35	1(6%)	1(6%)	
	>35	1(6%)	0(0%)	
Parity	0	3(20%)	4(26.6%)	0.672
	1	6(40%)	3(20%)	
	2	4(26%)	6(40%)	
	>2	2(13.3%)	2(13.3%)	
Gestational age (weeks)	≤6	2(13.3%)	0(0%)	0.798
	7-8	5(33.3%)	6(40%)	
	9-12	8(53%)	9(60%)	
Cause of pregnancy loss	Missed abortion	3(20%)	4(26.6%)	0.691
	Incomplete abortion	7(46.6%)	4(26.6%)	
	Inevitable abortion	2(13.3%)	2(13.3%)	
	Anembryonic gestation	3(20%)	5(33.3%)	

Table-II: Distribution of respondents by blood transfusion, hospital stay, complications and compliance (n=30)

Characteristics		Treatment groups		p-value
		Medical (n=15)	Surgical (n=15)	
Blood transfusion (unit)	Nil	13(86.6%)	11(73.3%)	0.361
	1	2(13.3%)	4(26.6%)	
	≥2	0(0%)	0(0%)	
Hospital stay (days)	2-3	10(66.6%)	8(53.3%)	0.456
	≥3	5(33.3%)	7(46.6%)	
Complication	PV bleeding	3(20%)	5(33.3%)	0.857
	LA pain	3(20%)	2(13.3%)	
	Fever	1(6%)	1(6%)	
	Nil	8(53.3%)	7(46.6%)	
Compliance by respondents	Accepted	12(80%)	8(53.3%)	0.1211
	Not Accepted	3(20%)	7(46.6%)	

Table-III: Distribution of respondents by treatment response and time required after Misoprostol insertion (n=15)

Characteristics		Frequency	Percentage
Treatment response of Misoprostol	Complete evacuation after 1st dose	10	66.6%
	Incomplete evacuation after 1st dose	5	33.3%
	Complete evacuation after 2nd dose	4	26.6%
	Needs surgical evacuation	1	6.6%
Time required for expulsion of product of conception	<6 hours	2	13.3%
	6-12 days	8	53.3%
	12-24 hours	3	20%
	2-7 days	1	6.6%
	Not evacuated	1	6.6%

Discussion

Medical management of early pregnancy loss with misoprostol is gaining popularity. Our study used 800 µg of vaginal misoprostol, repeated after 24 hours if needed, achieving a 93.2% success rate by day 7. Side effects were minimal and tolerable, with low infection and pelvic pain risks. Most women found the treatment acceptable. Previous studies have reported varied success

rates (13%–100%) for misoprostol, influenced by sample size, pregnancy loss type, dosage, and success criteria.[6] In a 1997 study, Herebutya and Presertwawat reported 17.1% success using 200 µg misoprostol.[17] Our study showed 66% expulsion within 6–12 hours and 73% within 12–24 hours after a single dose of 800 µg. Similarly, Zhang et al. (2005) achieved 84% success by day 3 with two 800 µg doses 48 hours apart.[8] Other studies, like Zalanyi's, reported an 88% success rate with 200 µg doses repeated every 4 hours (up to 4 doses).[18] Creinin et al. achieved 88% success with two 800 µg doses 24 hours apart,[9] and Begum R et al. reported 94% success with 400 µg doses every 6 hours (maximum of 3 doses).[20] Our regimen required fewer applications, with most women discharged within 1–3 days.

While surgical evacuation has a higher success rate (98%), misoprostol had higher patient satisfaction (80% vs. 53%) due to lower costs, reduced hospital stays, and fewer side effects. Misoprostol also facilitated easier surgical evacuation when needed by softening and dilating the cervix. Our study found that women with incomplete or inevit abortion responded better to a single dose, but a second dose ensured high success for other cases. Further research is needed to identify the lowest effective dose for all subtypes of pregnancy loss.

Conclusion

For the treatment of missing, incomplete, or anembryonic abortions, this randomized control trial showed that 800 micrograms given intravaginally was effective and safe.If we want to know if this treatment is feasible on an outpatient basis, we need larger trials.

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References

1. Sifakis S, Angelakis E, Vardaki E et al. High-dose Misoprostol used in outpatient management of first trimester spontaneous abortion. Arch Gynecol Obstet. 2005; 272: 183-6
2. Alberman E. Spontaneous abortion: Epidenology. In: Stabile 1 ; Grudzinskas – G, Chard T eds. Spontaneous abortion: Diagnosis and treatment. London: Sprier-Verlag. 1992: 19-20
3. Demetroulis C, Saridogan E, Kunde DAA et al. A prospection randomized trial comparing medical and surgical treatment for early pregnancy failure. Hum Reprod. 2001; 16(2):365-9
4. Trinder J, Brocklehurst P, Porter R et al. Management of miscarriage: Expectant, medical, or surgical? Results of randomized controlled trial. BMJ. 2006; 332:1235-40
5. Graziosi GCM, Mol BWJ, Reuwer PJH et al. Misoprostol versus curettage in women with early pregnancy failure after initial expectant management: A randomized trial. Hum Repord. 2004;19:1894-9.
6. Creinin MD. Randomized comparison of efficacy, acceptability and cost of medical versus surgical abortion. Contraception.2000;62:117-24.
7. Hertig At . Livingstone RG; Spontaneous, threatened and habitual abortion. pathogenesis and treatment N Engl Med.1994;230:797-806.
8. Gang j ,Gilles JM, Branhat K et al. A comparison of medical management with Misoprostol and surgical management for early pregnancy failure. N Eng J Med.2005;353:761-9.
9. Bagrtee JS, Khullar V, Regan L et al .A randomized controlled trail comparing medical expectant management of first trimester miscarriage. Human reproduction.2004;19:266-271.
10. Xia W ,She S, Lam T ,Medical versus surgical abortion methoeds for pregnancy in china: A cost minimization analysis . Gynaecol Obstet Invest.2011:72:257-63.
11. You JHS , Chung TKH .Expectant ,medical or surgical treatment for spontaneous abortion in frist trimester of pregnancy: A cost analysis .Hum Repord.2005;20:2873-8.
12. RauschM, LorchS, chung k et al . A cost-effectiveness analysis of surgical versus medical management of early pregnancy loss. fertil steril.2012;97:355-60.
13. Pang MW ,Lee TS, Chung TK .incomplete miscarriage :A randomized controlled trail comparing oral with vaginal misoprostol for medical evacuation. Hum Repord.2001:16(11):2283-87.
14. Bagratee JS , Khullar V ,ReganL et al .A randomized controlled trail comparing medical and expectant management of first trimester miscarriage. Human Reproduction .2001:266-71.
15. Jang J, Gllies JM , barnhart K ET al. A comparision of medical MANAGEMENT WITH MISOPROSTOL AND SURGICAL MANAGEMENT FOR EARLY PREGNANCY FAILURE.N Engl J Med.353:761-9.
16. Baird DT. Mode of action of medical methoeds of abortion.J Am Med Womens Assoc (1972).2000;55(3suppl):121-6.
17. Herabutya Y and Prasertwawat PO .misoprostol in the management of missed abortion. Int J GYnaecol Obstet.1997;56:263-6.
18. Zalanyi S. Vaginal misoprostol alone is effective in the treatment of missed abortion.BR J Obstet GYnacol.1998:105 (9):1026-8.
19. Creinin MD Moyer R ,Guido R. misoprostol for medical evacuation of early pregnancy failure.Obstet Gynacol.1997;89(5pt1):768-72.
20. Begum R,Baurua S, Nahar S. misoprostol for missed abortion. Bangladesh. J Obstet Gynaecol.2004;19(2):61-5.