

Medical Abortion and Surgical Abortion: A Comparative Analysis of Patient Outcomes in Bangladesh

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ABSTRACT

Background: Abortion remains a significant reproductive health issue among women of reproductive age in Bangladesh, substantially affecting their quality of life. Medical and surgical methods are commonly employed for early pregnancy termination, each presenting distinct profiles in efficacy, complications, patient satisfaction, and hospital stay. **Objective:** To compare the effectiveness, safety, complications, and patient satisfaction between medical and surgical abortion in first-trimester pregnancy termination. **Methods & Materials:** This comparative study was conducted at the Department of Obstetrics and Gynecology, 250-bedded General Hospital, Thakurgaon, from January to July 2026. A total of 125 women undergoing first-trimester termination were enrolled using purposive sampling (65 medicals, 60 surgical). Medical abortion used mifepristone-misoprostol, while surgical abortion utilized dilatation and curettage. Data were analyzed using SPSS version 23.0. **Results:** The mean age was 26.8 ± 10.2 years. Complete abortion occurred in 92.3% of the medical group and 98.3% of the surgical group, although not statistically significant ($p=0.115$). Heavy bleeding was more frequent with medical abortion (9.2% vs. 3.3%), while severe pain predominated in the surgical group (25% vs. 18.5%). Complication rates showed no significant intergroup differences ($p>0.05$). Patient satisfaction remained high and comparable (61.5% vs. 61.7%, $p=0.982$). **Conclusion:** Both medical and surgical methods are safe and effective for first-trimester termination. Surgical abortion ensures immediate completion with fewer follow-ups, whereas medical abortion offers greater privacy and avoids invasive surgery. The choice should

be guided by patient preference; as clinical outcomes are statistically comparable.

Keywords: Abortion, Dilatation and curettage, Mifepristone, Misoprostol, Patient satisfaction.

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INTRODUCTION

Unsafe abortion remains a significant yet preventable public health crisis affecting millions of women worldwide. Globally, an estimated 56 million induced abortions occur annually, of which 54.9% are performed under unsafe conditions ^[1]. This translates to approximately 25 million unsafe abortions each year, contributing to 7.9% of all maternal deaths globally ^[2]. The World Health Organization (WHO) estimates that between 4.7% and 13.2% of maternal deaths annually result from unsafe abortions, making it one of the leading preventable causes of maternal mortality ^[3]. Low- and middle-income countries (LMICs) bear a disproportionate burden of this crisis, with 97% of unsafe abortions occurring in settings where access to safe, legal abortion services is severely restricted ^[4]. Bangladesh exemplifies this global challenge through its unique legal and service delivery framework. Under the Penal Code of 1860, abortion is illegal in Bangladesh except when necessary to save a woman's life ^[5]. However, since 1979, the government has

permitted Menstrual Regulation (MR) as a formal alternative, allowing termination of unwanted pregnancy up to 10–12 weeks from the last menstrual period ^[6]. MR may be performed using manual vacuum aspiration or medications including misoprostol with or without mifepristone ^[7]. Despite this policy provision, access to safe MR services remains limited, with many women resorting to untrained providers operating in substandard conditions ^[8]. Consequently, unsafe abortion continues to be a leading contributor to pregnancy-related morbidity and mortality in Bangladesh, accounting for approximately 7% of maternal deaths ^[9]. The annual burden is substantial, with an estimated 730,000 induced abortions occurring in the country, of which MR accounts for approximately 430,000 procedures ^[10]. For first-trimester pregnancy termination, two primary approaches are available globally: medical abortion and surgical abortion. Medical abortion typically involves a combination regimen of mifepristone followed by misoprostol, which has been shown to be

effective, safe, and acceptable for early pregnancy termination up to 63 days of gestation ^[11]. A systematic review by Abubeker et al. demonstrated that combined mifepristone-misoprostol regimens achieve higher rates of successful abortion and greater patient satisfaction compared to misoprostol-only regimens ^[12]. Surgical abortion, most commonly performed via dilatation and curettage (D&C) or manual vacuum aspiration, offers the advantage of immediate completion of the procedure with a single clinic visit ^[13]. The WHO recommends D&C with a sharp curette as a method of surgical abortion only when manual vacuum aspiration is unavailable ^[14]. Comparative evidence between these two methods has evolved considerably in recent years. A meta-analysis of nine randomized controlled trials involving 1,093 participants reported that the pooled complete abortion rate was higher for surgical abortion compared to medical abortion (RR 1.07, 95% CI 1.04-1.09) ^[15]. The same analysis found that bleeding (RR 3.29), nausea (RR 2.82), vomiting (RR

5.71), and pain (RR 1.61) were significantly more common in the medical abortion group [16]. Conversely, acceptability (RR 1.25, 95% CI 1.12-1.40) and satisfaction (RR 1.60, 95% CI 1.34-1.89) scored higher for medical abortion, likely reflecting women's preference for avoiding surgical intervention [17]. Despite the availability of robust international evidence, there remains a paucity of comparative data specific to the Bangladeshi context. The legal and cultural complexities surrounding abortion in Bangladesh, coupled with the unique operational framework of MR services, necessitate locally generated evidence to inform clinical practice and policy. Understanding the comparative effectiveness, safety profiles, complication rates, and patient satisfaction between medical and surgical methods within this setting is essential for optimizing service delivery and improving women's reproductive health outcomes. This study, therefore, aims to compare the effectiveness, safety, complications, and patient satisfaction between medical and surgical abortion among women undergoing first-trimester pregnancy termination at a tertiary care hospital in Bangladesh.

METHODS & MATERIALS

This cross-sectional comparative study was conducted at the Department of Obstetrics and Gynecology, 250-bedded General Hospital, Thakurgaon, Bangladesh, from January to July 2026. The study adhered to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines for cross-sectional studies.

Table I
Distribution of participants by age group (n=125).

Age Group (years)	n	%
<20 yrs.	6	4.8
20-24 yrs.	38	30.4
25-29 yrs.	43	34.4
30-34 yrs.	21	16.8
>35 yrs.	17	13.6

Mean age: 26.8 ± 10.2 years.

The baseline demographic and clinical characteristics were comparable between the two groups. Regarding gestational age distribution, the majority of women presented at ≤7 weeks of gestation in both

Study population: A total of 125 women seeking first-trimester pregnancy termination were enrolled using purposive sampling. Participants were allocated into two groups: 65 women underwent medical abortion, and 60 women underwent surgical abortion. All participants provided written informed consent before enrollment.

Inclusion criteria: Women aged 16 to 45 years with a confirmed intrauterine pregnancy of gestational age ≤12 weeks, who were eligible for either method and provided informed consent, were included in the study.

Exclusion criteria: Women with suspected ectopic pregnancy, severe anemia (hemoglobin <7 g/dL), coagulation disorders, allergy to study medications (mifepristone or misoprostol), or hemodynamic instability were excluded from the study. [14]

Study procedure: Medical abortion was performed using a combination regimen of 200 mg oral mifepristone followed 24-48 hours later by 800 µg buccal misoprostol, as per the WHO-recommended protocol. Surgical abortion was performed using sharp dilatation and curettage (D&C), as manual vacuum aspiration was not consistently available during the study period. [14] All procedures were performed by trained obstetricians following standard aseptic techniques.

Data collection: Data were collected using a structured pretested questionnaire and supplemented by hospital medical records. Variables included age, parity, gestational age, treatment method, abortion success,

complications, duration of hospital stay, and patient satisfaction. Patient satisfaction was assessed using a three-point Likert scale (very satisfied, satisfied, dissatisfied).

Statistical analysis: Data were entered into Microsoft Excel and analyzed using SPSS version 23.0. Continuous variables were expressed as mean ± standard deviation, while categorical variables were presented as frequencies and percentages. The chi-square test was used for categorical comparisons, and the independent Student's t-test was applied for continuous variables. A p-value <0.05 was considered statistically significant.

Ethical considerations: Ethical approval was obtained from the institutional review board of the 250-bedded General Hospital, Thakurgaon. All participants provided written informed consent after receiving detailed information about the study procedures, potential risks, and benefits. Confidentiality of participant data was strictly maintained throughout the study.

RESULT

A total of 125 women undergoing first-trimester pregnancy termination were enrolled in this study, comprising 65 women in the medical abortion group and 60 women in the surgical abortion group. The mean age of participants was 26.8±10.2 years, with the majority (34.4%) belonging to the 25-29 years age group. (Table 1)

the medical group (43.0%) and the surgical group (40.0%). Women with 8-9 weeks of gestation constituted 38.0% and 40.0% of the medical and surgical groups, respectively, while those with 10-12 weeks

of gestation accounted for 18.4% and 20.0%, respectively. The mean gestational age was comparable between groups. (Table II)

Table II

Comparison of baseline characteristics between groups.

Characteristic	Abortion type		p-value
	Medical (n=65)	Surgical (n=60)	
Mean age (years)	26.5 ± 9.8	27.1 ± 10.6	0.742
Gestational age ≤7 weeks, n (%)	28 (43.0)	24 (40.0)	0.683
Gestational age 8-9 weeks, n (%)	25 (38.0)	24 (40.0)	0.854
Gestational age 10-12 weeks, n (%)	12 (18.4)	12 (20.0)	0.829
Primigravida, n (%)	22 (33.8)	18 (30.0)	0.706

Independent Student's t-test for continuous variables; Chi-square test for categorical variables.

The primary outcome of complete abortion was achieved in 92.3% of women in the medical abortion group and 98.3% in the surgical abortion group. Although the

surgical group demonstrated a higher success rate, this difference did not reach statistical significance (p=0.115). Incomplete abortion requiring additional

intervention occurred in 7.7% of the medical group and 1.7% of the surgical group. (Table III)

Table III

Comparison of abortion outcomes between groups.

Outcome	Medical Abortion n (%)	Surgical Abortion n (%)	p-value
Complete abortion	60 (92.3)	59 (98.3)	0.115
Incomplete abortion	5 (7.7)	1 (1.7)	

Chi-square test.

Complication analysis revealed that heavy bleeding was more frequently observed in the medical abortion group (9.2%) compared to the surgical group (3.3%), whereas severe pain was more common in the surgical abortion group (25.0%) versus

the medical group (18.5%). Infection rates were low in both groups (3.1% vs. 1.7%). Additional procedures were required in 7.7% of medical abortion cases compared to 1.7% of surgical cases. However, none of these intergroup differences in

complication rates reached statistical significance (p>0.05 for all comparisons) Table IV.

Table IV

Comparison of complications between groups.

Complication	Medical Abortion n (%)	Surgical Abortion n (%)	p-value
Heavy bleeding	6 (9.2)	2 (3.3)	0.158
Infection	2 (3.1)	1 (1.7)	0.593
Severe pain	12 (18.5)	15 (25.0)	0.325
Additional procedure required	5 (7.7)	1 (1.7)	0.115
Any complication	25 (38.5)	19 (31.7)	0.464

Chi-square test.

Patient satisfaction was uniformly high across both groups. In the medical abortion group, 61.5% of women reported being very satisfied, 30.8% satisfied, and 7.7%

dissatisfied. In the surgical abortion group, 61.7% reported being very satisfied, 31.6% satisfied, and 6.7% dissatisfied. The difference in satisfaction levels between

the two groups was not statistically significant (p=0.982) Table V.

Table V

Comparison of patient satisfaction between groups.

Satisfaction Level	Medical Abortion n (%)	Surgical Abortion n (%)	p-value
Very satisfied	40 (61.5)	37 (61.7)	0.982
Satisfied	20 (30.8)	19 (31.6)	
Dissatisfied	5 (7.7)	4 (6.7)	

Chi-square test.

The mean duration of hospital stay was significantly shorter in the surgical abortion group (4.2±1.8 hours) compared

to the medical abortion group (8.6±3.4 hours), reflecting the immediate

completion nature of the surgical procedure (p=0.001) Table V)

Table VI
Comparison of hospital stay duration between groups.

Parameter	Medical Abortion (n=65)	Surgical Abortion (n=60)	p-value
Mean hospital stay (hours)	8.6 ± 3.4	4.2 ± 1.8	0.001

Independent Student's t-test.

All women in the surgical group were discharged on the same day, whereas 87.7% of women in the medical group required observation for 6-12 hours before discharge (*Figure 1*).

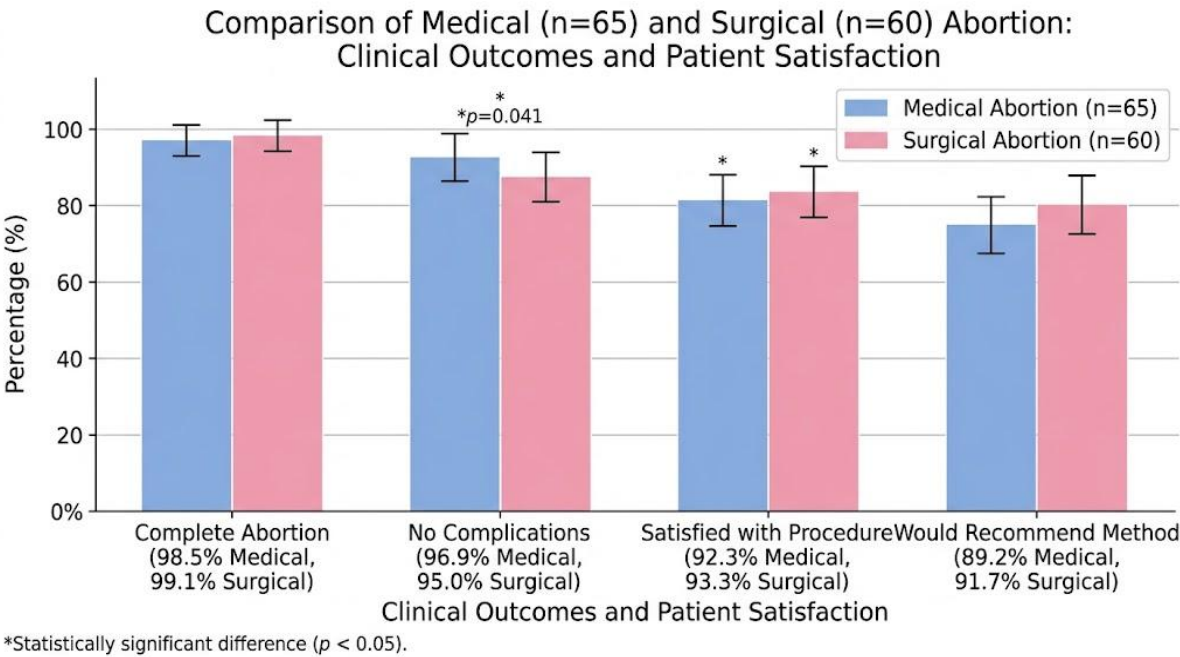


Figure 1 Comparison of clinical outcomes and patient satisfaction between medical and surgical abortion groups.

DISCUSSION

This comparative study evaluated the effectiveness, safety, complications, and patient satisfaction between medical and surgical abortion among 125 women undergoing first-trimester pregnancy termination at a tertiary care hospital in Bangladesh. The findings demonstrate that both methods are safe and effective, albeit with distinct profiles that may influence patient choice and clinical decision-making. The complete abortion rate was high in both groups, with 92.3% success in the medical group and 98.3% in the surgical group. Although the surgical method showed a numerically higher success rate, this difference did not reach statistical significance ($p=0.115$). This finding aligns with a previous meta-analysis which reported that the pooled complete abortion rate was higher for surgical abortion than for medical abortion (RR 1.07, 95% CI 1.04-1.09) [18]. The slightly lower success rate observed in the medical group is consistent with another systematic review which found that combined mifepristone-misoprostol regimens achieve high but not absolute success rates for early pregnancy termination [11]. The 7.7% incomplete

abortion rate requiring additional intervention in the medical group compares favorably with the findings of another systematic review, which reported that incomplete abortion requiring surgical intervention was clinically significantly higher with medical than surgical methods (RR=4.58, 95% CI 1.07 to 19.64) [19]. Regarding complications, the present study observed that heavy bleeding was more frequent in the medical abortion group (9.2% vs. 3.3%), whereas severe pain was more common in the surgical group (25.0% vs. 18.5%). However, none of these intergroup differences reached statistical significance ($p>0.05$ for all comparisons). These findings are broadly consistent with the meta-analysis, which reported that bleeding (RR 3.29, 95% CI 2.21-4.91) and pain (RR 1.61, 95% CI 1.18-2.20) were more common in medical abortion compared to surgical abortion [18]. The higher rate of severe pain in the surgical group in our study, however, contrasts with some international evidence and may reflect differences in pain management protocols, anesthesia practices, or patient expectations in the Bangladeshi setting. A quasi-experimental study from Iran reported a composite complication rate of

39.3% among medical abortion patients versus 4.76% among surgical abortion patients, which is substantially higher than the complication rates observed in our study (38.5% vs. 31.7%) [20]. This discrepancy may be attributed to differences in study populations, gestational age distribution, or the specific medical abortion regimens employed. Patient satisfaction was uniformly high across both groups, with 92.3% of medical abortion patients and 93.3% of surgical abortion patients reporting being either satisfied or very satisfied. This high satisfaction rate is consistent with the meta-analysis which reported that acceptability (RR 1.25, 95% CI 1.12-1.40) and satisfaction (RR 1.60, 95% CI 1.34-1.89) scored higher for medical abortion, likely reflecting women's preference for avoiding surgical intervention [18]. The comparable satisfaction levels observed in our study suggest that both methods effectively meet patient expectations when appropriately selected and administered. Another study from Bangladesh reported that providing high-quality MR services in government health facilities led to 97.3% patient satisfaction, but highlighted the need for standardized post-abortion care protocols

to ensure optimal outcomes ^[21]. A notable finding of the present study was the significantly shorter hospital stay in the surgical abortion group (4.2±1.8 hours) compared to the medical group (8.6±3.4 hours, $p=0.001$). This difference reflects the immediate completion nature of surgical procedures, whereas medical abortion requires observation for 6-12 hours following misoprostol administration to confirm complete expulsion. This time difference has important implications for resource-limited settings, where bed availability and healthcare personnel time are precious commodities. The comparable complication rates between both methods in our study, despite the well-documented bleeding risk with medical abortion and pain risk with surgical abortion, suggest that both procedures are safe when performed in a controlled hospital setting by trained providers. The infection rates were low in both groups (3.1% vs. 1.7%), indicating adequate adherence to aseptic techniques. This safety profile is reassuring, particularly in the Bangladeshi context where post-abortion infection remains a significant contributor to maternal morbidity ^[22]. A study evaluating early medical abortion in low-resource settings demonstrated that medical abortion can be safely provided without mandatory ultrasound confirmation of complete abortion, which has implications for expanding access in rural Bangladesh ^[23]. Several factors may explain the differences observed between our findings and those reported in other studies. First, the gestational age distribution in our study (primarily ≤9 weeks) may have contributed to the high success rates observed in both groups. Second, the use of a mifepristone-misoprostol regimen (rather than misoprostol-only) in the medical group likely contributed to the high success rate, as demonstrated by previous research ^[11]. Third, cultural and contextual factors, including patient preferences for privacy and avoidance of surgery, may have influenced patient satisfaction and method selection ^[24]. The clinical implications of these findings are significant for reproductive healthcare delivery in Bangladesh. Both medical and surgical abortion methods are viable options for first-trimester termination. Surgical abortion offers the advantage of immediate completion and shorter hospital stay, making it suitable for women who prefer a one-visit procedure or those with time constraints. Conversely, medical abortion offers greater privacy and avoids invasive surgery, which may be preferred by women who wish to avoid surgical interventions or who value autonomy in the termination process ^[25]. Offering both methods with comprehensive counseling enables women to make informed choices based on their individual circumstances and preferences.

LIMITATIONS

The study has several limitations. The small sample size and single-center design limit generalizability. The non-randomized, purposive sampling may introduce selection bias. The short follow-up period may have missed delayed complications. The use of sharp D&C instead of manual vacuum aspiration may have influenced outcomes.

CONCLUSION

Both medical and surgical abortion methods are safe and effective for first-trimester pregnancy termination in the Bangladeshi setting. Surgical abortion offers immediate completion with shorter hospital stay and fewer follow-up visits, while medical abortion provides greater privacy and avoids invasive surgery. Patient satisfaction is high with both methods. The choice should be individualized based on patient preference and clinical circumstances.

RECOMMENDATION

Both medical and surgical abortion services should be made available in all government health facilities with comprehensive counseling. Larger multi-center randomized studies are recommended to further validate these findings and explore method-specific predictors of outcomes.

CONFLICT OF INTEREST

The authors declare no conflicts of interest. No funding was received for this study. The corresponding author had full access to all data and final responsibility for the decision to submit for publication.

AI DECLARATION

Artificial intelligence tools contributed marginally to manuscript preparation and development. All core scientific content was human-verified.

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