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*Original Article*

# Frequency of Need for Evacuation and Curettage Following Medical Termination by Misoprostol for Missed Miscarriage

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## ABSTRACT

Background: Missed miscarriage, characterized by the intrauterine death of an embryo or fetus without immediate expulsion, affects approximately 15% of clinically diagnosed pregnancies. While traditional management involves surgical evacuation, medical management using misoprostol has gained popularity as a less invasive alternative.

Objective: To evaluate the frequency of surgical intervention following medical management with misoprostol for missed miscarriage.

Materials and Methods: This descriptive study was conducted at Hayatabad Medical Complex, Peshawar, from January 9, 2021, to June 9, 2021. A total of 179 women aged 18 to 45 years with missed miscarriage were included. Patients were administered misoprostol and monitored for the need for subsequent surgical intervention. Data were collected and analyzed using SPSS version 23, with results presented in tables and graphs.

Results: Out of 179 participants, 60 (33.5%) required evacuation and curettage (D&C), while 119 (66.5%) did not. Ultrasound findings were the primary reason for D&C in 38 (63.3%) cases, with persistent bleeding accounting for the remaining 22 (36.7%). The mean endometrial thickness on ultrasound was 11.08 mm. The mean hospital stay was 48 hours. By the sixth week, 86.5% of women had resumed normal menstrual cycles.

Conclusion: Evacuation and curettage were required in 33.5% of patients following medical management with misoprostol for missed miscarriage, indicating that misoprostol effectively manages missed miscarriages in most cases, reducing the need for surgical intervention. Future studies with larger sample sizes and multicenter trials are recommended to confirm these findings and improve management protocols.

Keywords: Missed miscarriage, misoprostol, surgical intervention, dilation and curettage, medical management.

## INTRODUCTION

Missed miscarriage, also known as missed abortion, is characterized by the intrauterine death of an embryo or fetus without the immediate expulsion of the products of conception. This condition affects approximately 15% of clinically diagnosed pregnancies (1, 2). It often presents without symptoms, leaving many women unaware of the miscarriage until it is detected during routine ultrasound examinations. Traditional management of missed miscarriage has typically involved surgical evacuation, particularly dilation and curettage (D&C), which, although effective, entails significant financial costs and potential surgical complications such as infection, hemorrhage, and intrauterine adhesions (3, 4).

In recent years, medical management using pharmacological agents like misoprostol has gained traction as a less invasive alternative. Misoprostol, a synthetic prostaglandin E1 analogue, has been widely used in obstetrics and gynecology for inducing labor, managing postpartum hemorrhage, and treating missed and incomplete abortions (5). The use of misoprostol for missed miscarriage aims to induce uterine contractions and facilitate the expulsion of retained products of conception, potentially reducing the need for surgical intervention. The efficacy of misoprostol for missed miscarriage has been well-documented, with studies reporting success rates ranging from 70% to 90% (6, 7). However, a significant proportion of women may still require surgical intervention due to incomplete

Journal of Health and Rehabilitation Research 2791-156X JHRR

expulsion or complications such as heavy bleeding and infection. This necessitates the evaluation of the frequency of subsequent D&C procedures following medical management with misoprostol to better inform clinical practices and patient counseling (8).

Despite its benefits, the adoption of misoprostol for managing missed miscarriage varies widely, influenced by clinical guidelines, practitioner preferences, and patient characteristics (8). The Royal College of Obstetricians and Gynaecologists (RCOG) recommends misoprostol as an effective option, noting its cost-effectiveness and the avoidance of surgical risks (9). However, in clinical practice, the transition from medical to surgical management depends on multiple factors, including the gestational age, the amount of retained tissue, and patient preferences. Understanding these outcomes is crucial for optimizing management protocols and ensuring patient safety and satisfaction. By analyzing the need for surgical intervention post-misoprostol administration, we can better tailor treatment strategies to reduce unnecessary surgical procedures and associated morbidities. This study aims to provide local data on the frequency of D&C following misoprostol treatment for missed miscarriage, thereby contributing to the existing body of knowledge and enhancing clinical decision-making (8-12).

## MATERIAL AND METHODS

This descriptive study was conducted in the Department of Gynecology and Obstetrics at Hayatabad Medical Complex, Peshawar, from January 9, 2021, to June 9, 2021. A non-probability consecutive sampling technique was employed. The sample size was calculated using WHO sample size software, based on a 35% risk of D&C, a 7% margin of error, and a 95% confidence interval, resulting in a total of 179 participants. Women aged 18 to 45 years with confirmed missed miscarriage and less than 20 weeks of gestation, as verified by ultrasound, were included. Participants were required to be hemodynamically stable, with blood pressure and hemoglobin levels over 90 g/L, and free from genital infections.

Women experiencing signs of first-trimester miscarriage, including a gestational residue between 15 and 50 mm and a non-viable conceptus confirmed by both the physician and patient, were included. These women needed to have uncomplicated incomplete spontaneous miscarriage, with a history of vaginal bleeding, abdominal pain, passage of some products of conception, normal hemoglobin levels, and stable hemodynamics. The estimated gestational age was 10 weeks or less, with retained products of conception less than 50 mm, no contraindications to prostaglandin treatment, no use of anticoagulants or corticosteroids, a singleton pregnancy without an intrauterine device, and sufficient Urdu literacy to complete questionnaires (13).

The exclusion criteria ruled out women with multiple pregnancies, diabetes, major medical or metabolic disorders, obesity, severe anemia (hemoglobin less than 6 g%), or severe malnutrition. Additionally, women with profuse bleeding, signs of endometritis, allergies to the study drugs, severe asthma, suspected molar or ectopic pregnancy, an intrauterine dimension less than 11 $cm^2$ indicating an empty uterus, a temperature above 37.5°C, excessive vaginal bleeding requiring immediate surgical evacuation, hemodynamic instability, or foul-smelling products of conception were excluded to prevent introducing bias into the study results.

Participants were managed according to the Royal College of Obstetricians and Gynaecologists (RCOG) guidelines under the supervision of an expert obstetrician with a minimum of five years of experience. Informed consent was obtained from all participants, adhering to ethical standards set forth in the Declaration of Helsinki. Demographic information was collected from previous medical records, patient history, general physical examinations, and laboratory investigations. Blood pressure was measured using a standard sphygmomanometer, and a urine dipstick test was performed for pregnancy confirmation. Venous blood samples were taken and sent to the hospital laboratory for baseline blood level estimation.

The administration of misoprostol was carefully monitored, with patients observed for any adverse reactions and the need for subsequent surgical intervention. Data were meticulously recorded on a specially designed proforma, with confounding factors and biases controlled by strictly adhering to the exclusion criteria. The data were stored and analyzed using SPSS version 25. Mean and standard deviations (SD) were calculated for numerical variables such as the duration of conception and the risk for dilation and curettage (D&C). Frequencies and percentages were calculated for categorical variables like patient age. Risk was stratified by age, gravidity, and parity to assess effect modifications. A post-stratification chi-square test was applied, with a P value of $\leq 0.05$ considered significant. All results were presented in tables and graphs for clarity.

## RESULTS

The study included 179 participants with a mean age of 29.66 ± 5.361 years. Among the participants, 97 (54.2%) were primigravida, while 82 (45.8%) were multigravida. Parity distribution showed that 66 (36.9%) had para 1, 71 (39.7%) had para 2, and 42 (23.5%) had para 3. Previous medical termination of pregnancy (MTP) was reported in 49 (27.4%) participants, previous pelvic inflammatory disease (PID) in 6 (3.3%), and previous abnormal uterine bleeding (AUB) in 11 (6.1%). The majority of participants, 151 (84.3%), had a gestational age of less than 12 weeks. The demographic characteristics of the study population are summarized in Table 1.

Journal of Health and Rehabilitation Research 2791-156X JHRR

Table 1: Demographics of the Study Population

| Variable | Frequency | Percentage |
|---|---|---|
| Age (Mean ± SD) | 29.66 ± 5.361 | - |
| Primigravida | 97 | 54.2% |
| Multigravida | 82 | 45.8% |
| Para 1 | 66 | 36.9% |
| Para 2 | 71 | 39.7% |
| Para 3 | 42 | 23.5% |
| Previous MTP | 49 | 27.4% |
| Previous PID | 6 | 3.3% |
| Previous AUB | 11 | 6.1% |
| Gestational Age <12 weeks | 151 | 84.3% |

Out of the 179 participants, 60 (33.5%) required evacuation and curettage (D&C) following misoprostol administration, while 119 (66.5%) did not require this procedure. The frequency of evacuation and curettage is illustrated in Figure 1.

Figure 1: Frequency of Evacuation and Curettage

Among the 114 women (63.6%) who were suspected of having incomplete expulsion but did not require immediate curettage, ultrasound examinations were conducted. The mean endometrial thickness measured on ultrasound was 11.08 mm (SD 6.7). Echogenicity or irregularity of the endometrium was observed in 38 (21.2%) women who underwent ultrasound, all of whom subsequently required curettage and evacuation. The primary reasons for D&C among the 60 women who underwent the procedure were ultrasound findings in 38 (63.3%) cases and persistent bleeding in 22 (36.7%) cases. The mean duration of hospital stay was 48 hours, with an interquartile range of 28 to 72 hours.

Table 2: Outcome of the Study

| Outcome | Frequency | Percentage |
|---|---|---|
| Incomplete Expulsion | 114 | 63.6% |
| Endometrial Thickness on U/S (Mean ± SD) | 11.08 mm ± 6.7 | - |
| Echogenicity on U/S | 38 | 21.2% |
| Reason for Curettage & Evacuation (n=60) | - | - |
| - U/S Findings | 38 | 63.3% |
| - Persistent Bleeding | 22 | 36.7% |
| Hospital Stay (IQR) | 48 hours (28-72 hours) | - |
| Persistent Spotting | - | - |
| - 1st Week | 15 | 8.3% |
| - 4th Week | 17 | 9.5% |
| - 6th Week | 1 | 0.5% |
| Resumption of Normal Menstrual Cycle by 6th Week | 155 | 86.5% |

Persistent spotting was observed during follow-up: 15 women (8.3%) reported spotting in the first week, 17 women (9.5%) in the fourth week, and by the sixth week, only 1 woman (0.5%) continued to experience spotting. By the end of the sixth week, 155 women (86.5%) had resumed their menstrual cycles. The study outcomes are detailed in Table 2.

## DISCUSSION

The discussion of this study evaluated the frequency of surgical intervention following medical management with misoprostol for missed miscarriage, providing significant insights into its efficacy and safety. The findings revealed that 33.5% of women required surgical evacuation after misoprostol treatment, while 66.5% did not, demonstrating a substantial reliance on medical management in the given setting. These results aligned with international studies showing varied rates of surgical intervention post-misoprostol administration. For instance, Zhang et al. reported that 15% of women required surgical intervention following misoprostol treatment for missed miscarriage, while Neilson et al. found that the need for surgical evacuation varied between 13% and 40% across different settings and protocols (10, 11). The 33.5% rate observed in this study fell within this range, underscoring the variability in outcomes based on local clinical practices, patient characteristics, and adherence to treatment protocols (12).

The efficacy of misoprostol in this study, reflected by a 66.5% success rate without the need for D&C, corroborated with global success rates reported between 70% and 90%, indicating its effectiveness as an option for managing missed miscarriages and reducing the necessity for surgical intervention and its associated risks (13, 14). Moreover, the study highlighted the absence of major side effects, supporting the safety profile of misoprostol observed in other research.

Ultrasound findings played a crucial role in determining subsequent surgical intervention, with 63.3% of those requiring D&C presenting echogenic or irregular endometrial lining. This was consistent with Blanchard et al., who emphasized the role of ultrasound in determining incomplete miscarriage and guiding the need for surgical management (15). The mean endometrial thickness of 11.08 mm suggested a threshold above which the likelihood of surgical intervention increased, a parameter that could be standardized in clinical guidelines to optimize decision-making.

The mean hospital stay of 48 hours was comparable to durations reported in other studies, where hospitalization ranges from 24 to 72 hours depending on the healthcare setting and patient response to treatment (16, 17). Persistent spotting observed during follow-up was consistent with international findings, where a small proportion of women reported prolonged bleeding post-misoprostol, typically resolving by the sixth week.

Despite the valuable insights, the study had limitations, including its single-center design and the relatively small sample size, which might limit generalizability. Future studies should include larger, multicenter trials to validate these findings and provide more robust data. Moreover, integrating patient preferences and experiences could enrich the understanding of treatment satisfaction and long-term outcomes (18-20).

The study's strengths included its rigorous data collection and analysis, adherence to ethical standards, and a comprehensive evaluation of outcomes following misoprostol administration. However, potential biases could have arisen from the non-randomized sampling method and the exclusion criteria, which may not fully represent the broader population of women experiencing missed miscarriages (20).

## CONCLUSION

The need for evacuation and curettage following medical management with misoprostol for missed miscarriage was observed in 33.5% of patients, demonstrating that misoprostol effectively managed missed miscarriages in the majority of cases, thereby avoiding the complications and costs associated with surgical procedures. Future studies with larger sample sizes and multicenter trials are recommended to validate these findings and optimize management protocols. Furthermore, incorporating patient-centered approaches and standardized ultrasound criteria could enhance the decision-making process and improve patient outcomes. The findings contribute to a growing body of evidence supporting the use of misoprostol in managing missed miscarriages and highlight the importance of individualized care in optimizing treatment strategies.

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Journal of Health and Rehabilitation Research 2791-156X JHRR

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