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Original Research Article

Misoprostol versus Suction Evacuation in the Management of Incomplete Abortion: A Comparative Analysis

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Abstract:

Introduction: Spontaneous incomplete abortion poses a significant challenge in obstetric care, requiring prompt and efficient management to ensure optimal patient outcomes. Vaginal misoprostol and suction evacuation are prominent strategies for achieving complete uterine evacuation, each offering unique advantages and considerations. While misoprostol provides a non-invasive option, suction evacuation remains vital, especially in urgent cases or when medical treatment is unsuitable. This study aims to compare the effectiveness of these modalities, offering valuable insights for tailored interventions in managing spontaneous incomplete abortion.

Material and Methods: This prospective comparative study, conducted at Shri M.P. Shah Government Medical College, Jamnagar, spanned 18 months from August 2022 to February 2024. Patients with intrauterine pregnancies of less than 12 weeks gestation, confirmed by ultrasonography or clinical assessment, and diagnosed with retained products of conception were included. A total of 240 eligible participants, 120 in each group, were recruited. Group 1 received vaginal misoprostol (800 mcg), while Group 2 underwent direct vaginal suction evacuation. Outcome measures included treatment success rates, patient satisfaction, and the presence of retained products of conception. Statistical analysis compared outcomes between groups, with significance set at $p < 0.05$.

Results: In comparing treatment outcomes, the Suction & Evacuation group exhibited a higher success rate (100% vs. 83.33%, p=0.002) and a lower mean for retained products of conception within 7 days (6.01 ± 0.49 mm vs. 7.93 ± 0.69 mm, p=0.0071) compared to the Misoprostol group. However, there were no statistically significant differences in patient satisfaction, patient recommendation to a friend, or tolerability of the treatment method between the two groups. Comparing side effects, Misoprostol led to significantly higher incidences of fever, chills, diarrhea, vomiting, and heavy bleeding compared to Suction & Evacuation ($p < 0.05$). However, cramps and dizziness were more common with Misoprostol, and cervical laceration occurred only in the Suction & Evacuation group. Notably, Misoprostol was associated with significantly higher pain scores than Suction & Evacuation ($p < 0.001$).

Conclusion: Our study highlights the effectiveness of both vaginal misoprostol and direct vaginal suction evacuation as treatment modalities for spontaneous incomplete abortion. While misoprostol presents a non-invasive option with advantages such as accessibility and avoidance of surgical procedures, suction evacuation offers rapid and definitive uterine evacuation, particularly in cases requiring immediate resolution or contraindications to medical treatment.

Keywords: Incomplete abortion, Misoprostol, Suction evacuation.

Introduction

Spontaneous incomplete abortion, marked by the partial expulsion of fetal tissue from the uterus, poses a significant challenge in obstetric care, impacting the health and well-being of many women. [1] Prompt and efficient management of this condition is imperative to prevent potential complications and ensure optimal patient outcomes. [2] Over recent years, the medical community has explored various strategies to achieve complete uterine evacuation, with vaginal misoprostol and suction evacuation emerging as prominent contenders. [3]

Misoprostol, a prostaglandin E1 analogue, offers a non-invasive approach to managing incomplete abortion by inducing uterine contractions and promoting the expulsion of retained products of conception. [4] Its use presents potential advantages such as accessibility, ease of administration, and avoidance of surgical procedures, making it an attractive option for patients and healthcare providers alike. [5] Conversely, suction evacuation, a well-established surgical technique, provides rapid and definitive uterine evacuation, often preferred in settings where immediate resolution is imperative or in cases of heavy bleeding or infection. While misoprostol offers a less invasive alternative, suction evacuation remains a cornerstone intervention, particularly in cases requiring expedited management or where medical treatment may be contraindicated. [6]

However, the comparative effectiveness of misoprostol versus suction evacuation remains a subject of interest and inquiry. Factors such as efficacy in achieving complete evacuation, safety profiles, patient preferences, and healthcare resource utilization warrant comprehensive evaluation. [7] By elucidating the disparities in treatment outcomes and patient experiences between these two modalities, this study aims to provide valuable insights for clinicians and healthcare providers, enabling them to make informed decisions and tailor interventions to the unique needs of women experiencing spontaneous incomplete abortion.

Material and Methods

This prospective comparative study was conducted at the Department of Obstetrics and Gynecology, Shri M.P. Shah Government Medical College, Jamnagar, over a duration of 18 months, spanning from August 2022 to February 2024. Patients eligible for inclusion presented with an intrauterine pregnancy of less than 12 weeks gestation, confirmed either by ultrasonography or clinical assessment. Diagnosis of retained products of conception was also necessary. Additionally, participants had to express willingness to undergo suction evacuation in the event of heavy bleeding during medical management. Patients with specific medical conditions were excluded from the study, including those with a history of previous uterine surgeries, ongoing infections, bleeding disorders, or contraindications to prostaglandin use, such as glaucoma, bronchial asthma, sickle cell disease, or severe hepatic disease.

A total of 240 eligible participants were recruited, with 120 patients allocated to each treatment group. Participants in Group 1 were administered treatment with vaginal misoprostol, at a dosage of 800 mcg, while those in Group 2 underwent direct vaginal suction evacuation to manage the incomplete abortion.

Outcome measures were assessed at specified intervals following treatment, encompassing treatment success rates, patient satisfaction levels, and the presence of retained products of conception post-treatment as primary outcomes. Secondary outcome measures evaluated the incidence of side effects and complications associated with each treatment modality.

Demographic and clinical data were collected at baseline, and statistical analysis was conducted to compare outcomes between the two treatment groups using appropriate tests, with significance set at $p < 0.05$.

Results

This study included 240 participants, evenly divided into the Misoprostol group (N=120) and the Suction & Evacuation group (N=120). Conducted over 18 months, participants received either vaginal misoprostol (800 mcg) or direct vaginal suction evacuation for incomplete abortion management. There were no statistically significant differences between the groups in terms of age, height, weight, body mass index (BMI), and gestational age ($p>0.05$). The distribution of primiparous and multiparous women, as well as those with a history of previous abortion, also showed no significant differences between the two groups ($p>0.05$).

Table 1: Demographic characteristics of the study population

Parameter	Misoprostol group (N=120)	Suction & Evacuation group (N=120)	P-value
Age (years)	25.5 ± 5.7	26.9 ± 4.8	0.7538
Height (cm)	158.7 ± 4.4	159.3 ± 4.5	0.2068
Weight (kg)	61.3 ± 14.3	63.1 ± 12.8	0.3845
Body mass index	24.9 ± 3.6	25.5 ± 3.2	0.3523
Gestational age (weeks)	8.2 ± 3.6	8.4 ± 2.4	0.3986
Primiparous {No. (%)}	09 (%)	12 (%)	0.4954
Multiparous {No. (%)}	21 (%)	39 (%)	0.5954
History of previous abortion	6 (%)	7 (%)	0.5456

In Group 1, the majority of participants fall within the 25-34 years age group (53.33%) and have a parity of >1 (70%), with the most common period of gestation being 10-12 weeks (60%). Conversely, in Group 2, participants are predominantly in the 15-24 years age group (56.66%) and have a parity of 0 (53.33%), while the distribution across period of gestation categories is more evenly spread.

Table 2: Distribution of patient according to age, parity, and period of gestation (n=120)

Variables	Group 1 n (%)	Group 2 n (%)
15-24 years group	52 (43.33%)	68 (56.66%)
25-34 years group	64 (53.33%)	52 (49.33%)
35-44 years group	4 (3.33%)	0
0 Parity	36 (30%)	64 (53.33%)
>1 Parity	84 (70%)	56 (46.66%)
Period of gestation (POG)		
6-8 weeks	8 (6.66%)	16 (13.33%)
8-10 weeks	40 (33.33%)	32 (26.66%)
10-12 weeks	72 (60%)	72 (60%)

In comparing side effects between the Misoprostol and Suction & Evacuation (S&E) groups, notable differences emerged. Misoprostol led to higher incidences of fever, chills, diarrhea, vomiting, and heavy bleeding compared to S&E, with statistical significance ($p < 0.05$ for fever, chills, diarrhea, and heavy bleeding; $p < 0.001$ for vomiting). Conversely, cramps and dizziness were more common with Misoprostol, but not statistically significant. Headache occurrence was similar between groups. Cervical laceration occurred exclusively in the S&E group. Interestingly, the pain score was notably higher in the Misoprostol group (76) compared to the S&E group (12), with a statistically significant difference ($p < 0.001$).

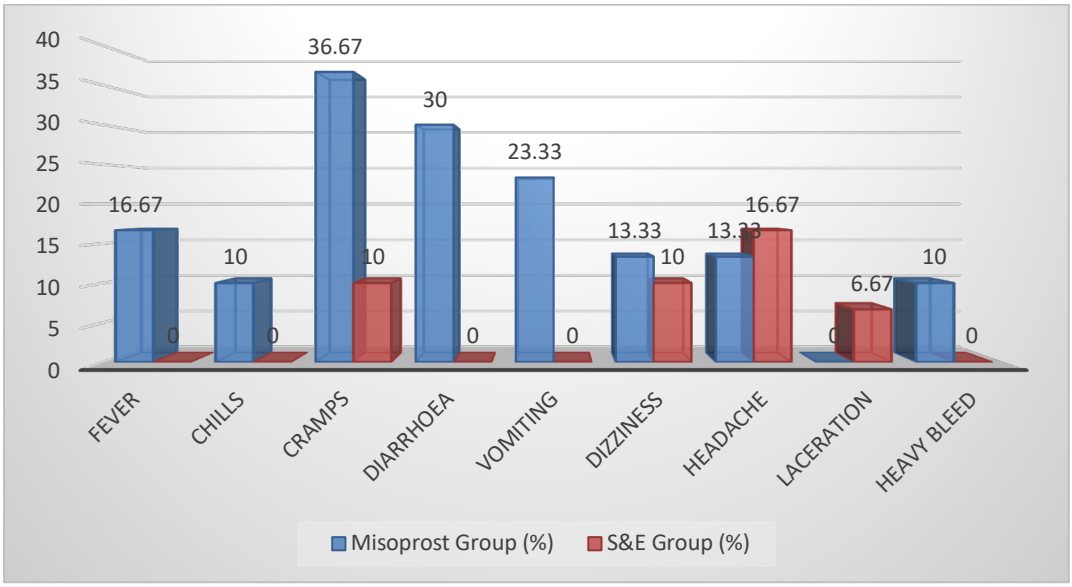

Figure 1: Side effects among study population

In comparing the Misoprostol group (N=120) with the S&E group (N=120), significant differences were observed. The S&E group exhibited a higher success rate of the treatment method (100% vs. 83.33%, p=0.002) and a lower mean for retained products of conception within 7 days (6.01 ± 0.49 mm vs. 7.93 ± 0.69 mm, p=0.0071). However, there were no statistically significant differences in patient method satisfaction (88.3% vs. 94.4%, p=0.2517), patient recommendation to a friend (77.5% vs. 84.2%, p=0.3939), or tolerability of the treatment method (85.2% vs. 88.2%, p=0.6458)

Table 3: Clinical outcomes of the study groups

	Misoprostol group (N=120) (%)	S&E group (N=120) (%)	p-value
Success of treatment method	100 (83.33%)	120 (100%)	0.002
Patient method satisfaction	106 (88.3%)	114 (94.4%)	0.2517
Patient recommendation to a friend of treatment	93 (77.5%)	101 (84.2%)	0.3939
Tolerability of treatment method	102 (85.2%)	106 (88.2%)	0.6458
Retained products of conception(mm) (within 7 days) [Mean±(SD)]	7.93 ± 0.69	6.01 ± 0.49	0.0071

Discussion

Miscarriage, a prevalent gynecological emergency, necessitates effective management strategies to ensure optimal patient outcomes. [8] Understanding the effectiveness and safety of different treatment modalities in managing incomplete abortion is crucial for improving clinical outcomes and ensuring patient well-being. [9] With spontaneous incomplete abortion being a common obstetric complication, the choice between treatment options such as Misoprostol and Suction & Evacuation (S&E) holds significant clinical implications.

Our study, comprising 240 participants evenly divided into Misoprostol and Suction & Evacuation (S&E) groups, explored the efficacy and safety of these approaches. Notably, our findings revealed no statistically significant differences in demographic characteristics between the groups, indicating a balanced participant distribution across age, parity, and gestational age. This aligns with previous research, supporting the notion that factors such as age and parity do not significantly impact the choice of management approach for incomplete abortion. [10,11]

In comparing the success rates of the treatment methods, our study demonstrated a higher success rate in the S&E group (100%) compared to the Misoprostol group (83.33%), a finding consistent with previous literature. Studies by Chen W [12] and Seervi et al. [13] have highlighted the effectiveness of vaginal misoprostol for cervical ripening, but success rates varied widely, ranging from 13% to 96%. The variability in success rates underscores the importance of considering individual patient factors and preferences when selecting the appropriate management approach.

Regarding side effects, our study found that misoprostol led to higher incidences of fever, chills, diarrhea, vomiting, and heavy bleeding compared to S&E, with statistically significant differences observed. This corroborates findings from previous studies, including those by Demetroulis C and McGee TM, which reported abdominal pain, nausea, vomiting, and vaginal bleeding as common side effects of misoprostol. [14] Conversely, surgical interventions such as manual vacuum aspiration (MVA) have been associated with fewer side effects and complications, as noted by Chaikof M and Cholkeri SA. [15]

In comparing our study findings with those of Shokry et al. [10] and Khaniya et al. [16], valuable insights emerge regarding the effectiveness and safety of different treatment modalities for spontaneous incomplete abortion. Shokry et al.10 found misoprostol to be comparable in effectiveness to direct vaginal surgical evacuation, similar to our study's observations. However, they reported higher success rates in the surgical evacuation group, aligning with our finding of a higher success rate in the S&E group. Conversely, Khaniya et al. [16] found similar complete uterine evacuation rates between misoprostol and manual vacuum aspiration (MVA) groups, with slightly higher success rates in the MVA group. These discrepancies in success rates across studies may stem from various factors such as limited ultrasound use and differences in the duration of follow-up. [17,18]

Moreover, managing side effects and providing adequate analgesia are crucial components in optimizing patient care and treatment outcomes, as emphasized by various studies. [19,20] This underscores the need for comprehensive patient-centered care and the importance of balancing treatment effectiveness with minimizing side effects and ensuring patient comfort. Furthermore, our study echoes the importance emphasized by other research in considering patient demographics, such as age and gestational period, in managing incomplete abortion cases.

Our study has several limitations, including its single-center design, short follow-up period, and retrospective nature. Additionally, individual patient characteristics and preferences may have influenced treatment outcomes, underscoring the need for larger, multicenter, prospective studies to validate our findings and address these limitations.

Conclusion

In conclusion, our study underscores the effectiveness of both vaginal misoprostol 800 mcg and direct vaginal surgical evacuation as treatment modalities for spontaneous incomplete abortion. However, patient demographics, particularly age and gestational period, emerge as critical factors

influencing management decisions. While vaginal misoprostol offers a non-invasive alternative, it is associated with a higher incidence of side effects compared to direct vaginal surgical evacuation. Despite this, high patient satisfaction was observed in both treatment groups, with similar percentages of patients willing to recommend the method to a friend. Therefore, the choice between misoprostol and surgical evacuation should be individualized based on patient preferences and the availability of healthcare resources.

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