

## Comparing Outcomes of Medical and Surgical Management of Incomplete Abortions among Tertiary Centre Admissions

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### Abstract:

**Aim:** This study aimed to compare the outcomes of medical and surgical management approaches for first-trimester incomplete abortion in women admitted to a tertiary care center.**Methodology:** Participants (n=200) were randomized into surgical (Manual Vacuum Aspiration- MVA) and medical (misoprostol) arms. Inclusion criteria focused on women with first-trimester incomplete abortion and hemodynamic stability. Exclusion criteria involved evidence of infection and structural uterine abnormalities.**Results:** This study revealed successful evacuation in 87% (n=100) (surgical) and 79% (n=100) (medical) arms. Primary failure occurred in 10% (n=20), predominantly in the medical arm (medical arm: 70% (n=14) vs. surgical arm: 30% (n=6)). Surgical intervention led to a substantial 22.4% decrease in the likelihood of primary failure compared to the use of medical management (p=0.03). Medical management exhibited longer hospital stays (p=0.02) and increased bleeding duration. Mild pain was reported more in the medical arm, while severe pain was more prevalent in the surgical arm. Secondary outcomes showed that fever, chills, and nausea were more common in the medical arm, but self-limiting. In the medical group, patient satisfaction revealed 49% expressing high satisfaction and 25% expressing somewhat satisfaction, while in the surgical group, 43% reported somewhat dissatisfaction and 16% reported very dissatisfaction.**Conclusion:** This study highlights the superior effectiveness of surgical management compared to medical approaches in addressing first-trimester incomplete abortion. It elucidates notable distinctions in efficacy, patient experiences, and satisfaction between the two methods. The findings contribute vital insights for informed clinical decision-making in tertiary care settings.**Keywords:** First-trimester, incomplete abortion, tertiary care center, Manual Vacuum Aspiration, misoprostolThis is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

### Introduction

Incomplete abortion, characterized by the retention of products of conception within the uterus, represents a common and challenging condition encountered in early pregnancy [1]. The management of first-trimester incomplete abortion is a critical aspect of women's reproductive healthcare, and the choice between medical and surgical interventions plays a pivotal role in determining patient outcomes [1]. The purpose of this introduction is to thoroughly examine the current scientific literature, comparing the outcomes of medical and surgical management for first-trimester incomplete abortion in women admitted to tertiary care centres.

Incomplete abortion poses a noteworthy concern during the initial trimester, frequently linked with complications like infection, haemorrhage, and psychological distress for affected women. The

global incidence of incomplete abortion remains substantial, with an estimated 10-15% of all recognized pregnancies ending in spontaneous abortion, the majority of which occur during the first trimester [1, 2]. This highlights the clinical relevance of understanding and optimizing the management of incomplete abortion to ensure the well-being of women.

Medical management of incomplete abortion commonly involves the use of prostaglandin analogs, particularly misoprostol, a synthetic prostaglandin E1 analogue. Misoprostol is known for its uterotonic properties, promoting uterine contractions, and facilitating the expulsion of retained products of conception [3]. Numerous studies have investigated the efficacy and safety of misoprostol in managing first-trimester incomplete abortion, reporting high success rates ranging from

80% to 95% [4, 5]. This non-invasive approach is often preferred due to its lower cost, outpatient feasibility, and reduced need for surgical interventions.

Surgical interventions, such as Manual Vacuum Aspiration (MVA) or curettage, have been traditional methods for managing incomplete abortion. MVA involves the use of a handheld syringe to create suction, facilitating the removal of retained products of conception [6]. Curettage, on the other hand, involves scraping the uterine lining to evacuate the contents [7]. While these procedures have been widely employed and demonstrated efficacy, concerns have been raised regarding their invasiveness, potential for complications, and the need for specialized settings, such as operating rooms, which may contribute to increased healthcare costs.

A growing body of literature has sought to compare the outcomes of medical and surgical management of first-trimester incomplete abortion. A systematic review and meta-analysis by Smith et al. [8] indicated that both medical and surgical interventions were effective in resolving incomplete abortion, with similar success rates. However, medical management was associated with a higher likelihood of requiring additional interventions, such as repeat doses of misoprostol or surgical evacuation, potentially influencing the overall cost-effectiveness of the approach.

Safety considerations are paramount in the choice between medical and surgical management. While medical management is generally well-tolerated, side effects such as nausea, vomiting, and diarrhoea have been reported [9]. Surgical interventions, while effective, may pose risks such as infection, uterine perforation, or injury to surrounding structures [10]. Understanding the safety profiles of these interventions is crucial for guiding clinical decision-making and ensuring optimal patient outcomes.

Beyond clinical effectiveness and safety, patient preferences and satisfaction play a pivotal role in the selection of management strategies. Studies have explored women's experiences with both medical and surgical interventions, highlighting the need for shared decision-making between healthcare providers and patients [11, 12]. Factors such as pain perception, convenience, and emotional well-being contribute to the overall satisfaction of women undergoing these interventions.

Therefore, a study was undertaken to assess and compare the results of medical and surgical management strategies for first-trimester incomplete abortion in women admitted to tertiary care centers. By assessing efficacy, safety, patient satisfaction, and cost-effectiveness, this research seeks to provide evidence-based insights that can inform clinical decision-making in specialized healthcare settings,

ultimately contributing to the improvement of patient care and the optimization of resources in the management of first-trimester incomplete abortion.

### Methodology

**Study Design:** This was an open-labeled prospective randomized clinical trial conducted at SNMMCH in Dhanbad, Jharkhand, India.

*Study participants and randomization:* Participants were randomized into two arms: surgical and medical management. The surgical arm underwent MVA, while the medical arm received misoprostol. Both groups were followed up for 48 hours for outcomes, and various parameters were assessed, including efficacy, safety, and patient satisfaction.

**Outcomes:** The primary outcomes assessed encompassed confirmation of complete uterine evacuation within 48 hours, as ascertained through a combination of medical history, physical examination, and ultrasound scans. Secondary outcomes encompassed bleeding duration, infections, pain levels, hospital stay, and complications.

*Inclusion criteria:* The study enrolled women meeting specific inclusion criteria, primarily those with first-trimester incomplete abortion and haemodynamic stability. Extensive education and counseling were provided, and written consent was obtained.

**Exclusion Criteria:** Exclusion criteria encompassed women with evidence of infection, indicated by symptoms like fever, headache, nausea, abnormal vaginal discharge, dysuria, and urinary frequency, coupled with physical signs such as body temperature below 36°C or above 38°C, pulse rate exceeding 100 beats per minute, and respiratory rate surpassing 20 respirations per minute. Additionally, those with structural uterine abnormalities and those with recent uterine scars less than 18 months old or two or more previous scars were excluded from the study.

**Sample size:** The determination of the sample size was focused on detecting an 8.5% disparity in efficacy between surgical and medical approaches, requiring a total of 200 women. To prevent bias, simple randomization was employed, and data were gathered using questionnaires, laboratory request forms, and ultrasound reports. Initial characteristics were evaluated through univariate analysis. The study design-maintained comparability between groups, and rigorous procedures were overseen to adhere to the protocol. Weekly meetings were conducted to address any errors, and IBM SPSS Statistics version 23.0 was utilized for the statistical analysis.

This comprehensive methodology provided a robust framework for the comparison of outcomes in the

medical versus surgical management of first-trimester incomplete abortion in a tertiary care setting.

### Results

The study enrolled 200 participants, with 100 participants in each group, and observed no loss to follow-up. In terms of comparative effectiveness, successful evacuation of the uterus occurred in 87%

of the surgical arm (n=100) (MVA) and 79% of the medical arm (n=100) (misoprostol). Among the 200 participants enrolled in both management arms, 10% (n=20) experienced primary failure. Of those who encountered primary failure, 70% (n=14) were in the medical arm, while 30% (n=6) were in the surgical arm (Table 1).

**Table 1: Assessment of the efficacy of medical and surgical approaches in managing incomplete abortion during the first trimester among hospitalized women**

Intervention	Primary failure occurred	p-value
Medical	70%	-
Surgical	30%	0.046

Surgical intervention resulted in a notable 22.4% decrease in the risk of primary failure compared to medical management (p=0.03). Medical management resulted in a lengthier average hospital stay. (p=0.02). Duration of bleeding favoured surgical management, with statistically significant differences in bleeding for less than 5 hours (n=91 surgical, n=45 medical) and bleeding for 5-11 hours (n=3 surgical, n=31 medical). In the medical group, 66 patients reported mild pain compared to 8

patients in the surgical group (p<0.002). Conversely, severe pain was reported by 78 patients in the surgical group and 7 patients in the medical group (p<0.002) (Table 2). Although fever, chills, and nausea were more prevalent in the medical group, they were self-limiting, requiring no intervention. Notably, only one participant exhibited evidence of infection, and none reported trauma to the genitourinary tract.

**Table 2: Comparison of secondary outcomes in women admitted for first-trimester incomplete abortion with medical versus surgical management**

Secondary outcomes			
Variable	Medical group	Surgical group	p-value
Average duration of hospitalization (standard derivative)	0.45	0.06	0.04
Period of bleeding after initiating treatment (n)			
≤5 hours	45	91	0.0004
5-11 hours	31	3	0.04
>11 hours	24	6	0.36
Pain level (n)			
Mild pain	66	8	<0.002
Moderate pain	27	14	0.68
Severe pain	7	78	<0.002

In terms of satisfaction, 49% of medical arm participants were very satisfied, while 25% were somewhat satisfied. In the surgical arm, 43% were somewhat dissatisfied, and 16% were very dissatisfied (Table 3). However, these differences were not statistically significant.

**Table 3: Comparative assessment of satisfaction levels among women undergoing management for first-trimester incomplete abortion upon admission**

Satisfaction	Medical (%)	Surgical (%)	p-value
Very satisfied	49	4	0.05
Somewhat satisfied	25	37	0.69
Somewhat dissatisfied	21	43	0.03
Very dissatisfied	5	16	0.62

### Discussion

The management of first-trimester incomplete abortion poses a critical dilemma for healthcare providers, necessitating a nuanced understanding of

the outcomes associated with medical and surgical interventions. This discussion aims to delve into the existing scientific literature, exploring key findings

and insights regarding the outcomes of medical versus surgical management of first-trimester incomplete abortion among women admitted at tertiary care centres.

The comparison of efficacy between medical and surgical management is crucial for guiding clinical decisions. Studies have consistently reported high success rates for both medical and surgical interventions. For instance, a systematic review by Tang et al. demonstrated success rates ranging from 80% to 95% for medical management with misoprostol, highlighting its effectiveness in resolving first-trimester incomplete abortion [3]. Similarly, surgical interventions, such as MVA and curettage, have exhibited comparable success rates [3, 7].

One notable aspect influencing the choice between medical and surgical management is the potential need for additional interventions. While medical management with misoprostol is associated with high success rates, some studies have indicated a higher likelihood of requiring repeat doses or additional surgical evacuation compared to the surgical approach [8].

Safety considerations are paramount in determining the most appropriate management strategy. Medical management with misoprostol is generally well-tolerated, with side effects such as nausea and diarrhoea reported in some cases [9]. On the other hand, surgical interventions, particularly curettage, may carry a risk of complications such as uterine perforation or infection [10]. Understanding the safety profiles is essential for tailoring interventions to individual patient needs and minimizing potential risks.

The economic aspect of medical versus surgical management is a critical factor in resource allocation within healthcare systems. While medical management is often considered cost-effective due to its outpatient nature and reduced need for specialized settings [12], the potential for additional interventions may impact the overall cost-effectiveness. Surgical interventions may involve higher upfront costs associated with operating room use but could result in fewer subsequent interventions, thereby balancing the economic considerations [11].

Patient preferences and satisfaction are integral components of reproductive healthcare decision-making. A study by Grossman et al. emphasized the importance of involving women in the decision-making process and considering their preferences when choosing between medical and surgical management [11]. Factors such as pain perception, convenience, and emotional well-being contribute to overall patient satisfaction, underscoring the need for a patient-centred approach in managing first-trimester incomplete abortion.

Tertiary care centres, being specialized institutions, play a crucial role in managing complex cases. The choice between medical and surgical management in these settings should consider the expertise available, facilities for monitoring, and the potential need for additional interventions. Ensuring that healthcare providers in tertiary centres are well-versed in both medical and surgical management approaches is essential for offering comprehensive and patient-centred care [1].

### Conclusion

In conclusion, this study establishes the superiority of surgical over medical management for first-trimester incomplete abortion in tertiary care. While patient satisfaction nuances exist, the findings provide valuable insights for refining clinical approaches and optimizing resources in specialized healthcare settings.

This research contributes valuable insights into tailoring management strategies for first-trimester incomplete abortion in tertiary care, optimizing patient outcomes, and streamlining resource allocation. Overall, this study serves as a pivotal step towards refining clinical practices and enhancing the overall quality of care for women experiencing first-trimester incomplete abortion in specialized healthcare settings.

### Future Directions and Research Gaps

While the existing literature provides valuable insights, there are still areas that warrant further investigation. Long-term outcomes, including reproductive health and subsequent pregnancy outcomes, should be a focus of future research. We recommend prioritizing surgical management for first-trimester incomplete abortion in tertiary care, given its superior effectiveness and shorter hospital stay compared to medical intervention.

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