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MATERNAL OUTCOMES FOLLOWING TERMINATION OF PREGNANCY IN WOMEN WITH PREVIOUS CAESAREAN SECTION: A PROSPECTIVE OBSERVATIONAL STUDY

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Abstract

Background: *Termination of pregnancy (TOP) in women with a history of previous cesarean section presents unique clinical challenges due to the risk of complications such as uterine rupture, hemorrhage, and infection. The increasing prevalence of cesarean deliveries worldwide has heightened the need to evaluate the safety and outcomes of TOP in this high-risk population. Despite growing evidence, there remains a lack of consensus on the optimal method of TOP for these women, particularly regarding the choice between medical and surgical approaches.*

Objective: *This study aimed to assess maternal outcomes associated with termination of pregnancy in women with a history of previous cesarean section, comparing the safety and complication rates of medical and surgical methods. Additionally, it sought to identify risk factors for adverse outcomes, with a focus on gestational age and termination method, to inform clinical decision-making and improve patient care.*

Methods: *A prospective observational study was conducted at Khyber Teaching Hospital, Peshawar, from April 2023 to March 2024. A total of 162 women with prior cesarean sections undergoing TOP were included. Data on maternal age, gestational age, method of termination (medical or surgical), and complications such as uterine rupture, hemorrhage, infection, and unplanned surgical interventions were collected. Statistical analysis was performed using SPSS version 26, with logistic regression to identify risk factors for adverse outcomes.*

Results: *The mean maternal age was 32.4 ± 4.8 years, and 63.5% of cases were in the second trimester. Medical termination was performed in 60.5% of cases, while 39.5% underwent surgical termination. Uterine rupture occurred exclusively in the medical termination group (6.1%, p=0.02). Hemorrhage requiring transfusion was observed in 8.6% of cases, with higher rates in gestations >14 weeks (10.7% vs. 3.6%, p=0.04). Gestational age >14 weeks (OR=3.8, 95% CI: 1.4-9.8) and medical termination (OR=2.9, 95% CI: 1.2-7.1) were significant risk factors for complications.*

Conclusion: *Medical termination, particularly in the second trimester, is associated with a higher risk of uterine rupture, while surgical methods may*

increase the likelihood of incomplete abortion requiring intervention. These findings highlight the need for individualized patient counseling and close monitoring to optimize maternal safety during TOP in women with prior cesarean sections.

INTRODUCTION

Termination of pregnancy (TOP) in women with a history of previous cesarean section (CS) poses unique clinical challenges due to the potential for maternal complications. Cesarean delivery rates have risen globally, with an estimated 21.1% of all births occurring via cesarean section as of 2021, and rates expected to continue increasing in the coming years (1). This trend has led to a growing population of women with uterine scars who may subsequently seek pregnancy termination, either for medical, fetal, or personal reasons (2).

The primary concern in TOP for these patients revolves around the risk of uterine rupture, a serious complication associated with scarred uteri. Studies have reported an increased risk of uterine rupture during both medical and surgical termination procedures, with the risk varying depending on gestational age and method of termination used (3,4). Medical TOP using agents such as mifepristone and misoprostol is considered safer in early gestation but requires careful dosing and monitoring in women with previous CS due to the potential for hyperstimulation and rupture (5). On the other hand, surgical methods like dilation and curettage (D&C) or dilation and evacuation (D&E) carry risks of uterine perforation, especially in scarred uteri, further complicating clinical decision-making (6).

Recent research has explored various approaches to minimize the risks associated with TOP in these patients, including modified drug regimens, transcervical Foley catheters, and pre-procedure imaging to assess scar integrity (7). Despite these advancements, consensus on the safest and most effective method remains elusive. Additionally, gestational age has been identified as a critical factor, with studies indicating a significant increase in rupture risk after 12 weeks of gestation (8).

A key research gap lies in the lack of large-scale, prospective studies comparing medical versus surgical TOP methods specifically in women with previous cesarean sections. Most existing studies are retrospective or small-scale, limiting the generalizability of their findings (9). Furthermore, there is insufficient data on how factors such as interpregnancy interval, number of previous cesarean deliveries, and the presence of niche defects (uterine scar dehiscence) affect TOP outcomes (10).

Given the rising rates of cesarean deliveries and the increasing demand for pregnancy termination services, there is a pressing need for robust research to guide evidence-based clinical practices. This study aims to address these gaps by investigating the short-term maternal outcomes of TOP in women with a history of cesarean section, stratifying results by gestational age and method of termination, and identifying predictors of adverse events.

Materials and Methods

This prospective observational study was conducted in the Department of Obstetrics and Gynecology, Khyber Teaching Hospital Peshawar, between April 2023 to March 2024. A total of 162 cases of pregnancy termination for maternal or fetal indications were included, along with data from 4,070 deliveries that occurred during the study period. Women with at least one prior cesarean section who underwent TOP were enrolled. Exclusion criteria included women with incomplete medical records, those who declined participation, and cases of spontaneous abortion without medical intervention.

Detailed demographic, obstetric, and clinical data were collected from hospital records and patient interviews. The variables included maternal age, gestational age at termination, number of previous cesarean sections, indication for termination, method of termination (medical or surgical), and maternal complications such as hemorrhage, infection, uterine rupture, and need for surgical intervention.

Two primary methods were used:

- **Medical Termination**: Women up to 24 weeks of gestation were administered mifepristone followed by

misoprostol, with dosage adjustments based on prior cesarean history and gestational age. Patients were monitored for signs of incomplete abortion, excessive bleeding, or uterine rupture.

• **Surgical Termination**: Suction evacuation or dilation and curettage (D&C) was performed for first-trimester cases, while dilation and evacuation (D&E) was used for second-trimester terminations. Pre-procedure ultrasound was done to assess scar integrity, and intraoperative complications were recorded.

The primary outcomes included the incidence of maternal complications such as uterine rupture, hemorrhage requiring transfusion, infections, and unplanned surgical interventions. Secondary outcomes assessed the impact of gestational age and method of termination on complication rates.

Data were analyzed using SPSS version 26. Descriptive statistics were calculated for demographic and clinical variables. Chi-square and t-tests were used to compare categorical and continuous variables, respectively. Logistic regression analysis was performed to identify risk factors for adverse maternal outcomes. The study was approved by the institutional ethics review board of Khyber Teaching Hospital, Peshawar. Written informed consent was obtained from all participants, and confidentiality was maintained throughout the study.

Results

The study included 162 women with a history of at least one prior cesarean section who underwent termination of pregnancy (TOP). The mean maternal age was 32.4 ± 4.8 years, and the majority of cases (63.5%) were in the second trimester. The mean gestational age at termination was 16.2 ± 3.5 weeks. Medical termination was performed in 60.5% of cases, while surgical termination was used in 39.5% of cases. Table-1

Table 1: Demographic and Clinical Characteristics

Variable	Value
Mean maternal age (years)	32.4 ± 4.8
Second trimester cases (%)	63.5%
Mean gestational age (weeks)	16.2 ± 3.5
Medical termination cases (%)	60.5%
Surgical termination cases (%)	39.5%

The overall incidence of maternal complications was 17.3%. Hemorrhage requiring transfusion was the most common complication, occurring in 8.6% of cases. Uterine rupture was observed in 3.7% of cases, all of which occurred in the medical termination group. Infections and unplanned surgical interventions were reported in 2.5% of cases each. Table-2

Table 2: Maternal Complications

Complication	Cases (n)	Percentage (%)
Hemorrhage requiring transfusion	14	8.6%
Uterine rupture	6	3.7%
Infection	4	2.5%
Unplanned surgical intervention	4	2.5%

Uterine rupture occurred exclusively in the medical termination group (6.1%, p=0.02). Incomplete abortion requiring intervention was more frequent in the surgical termination group (12.5%) compared to the medical termination group (7.1%), though this difference was not statistically significant (p=0.08). There were no maternal deaths reported in either group. Table-3

Table 3: Comparison of Medical and Surgical Termination Outcomes

Outcome	Medical Termination (%)	Surgical Termination (%)	p-value
Uterine rupture	6.1%	0%	0.02
Incomplete abortion requiring intervention	7.1%	12.5%	0.08
Maternal death	0%	0%	-

Complication rates were significantly higher in women undergoing TOP after 14 weeks of gestation. Uterine rupture occurred in 5.4% of cases >14 weeks, compared to 0% in cases <14 weeks (p=0.03). Similarly, hemorrhage requiring transfusion was more frequent in the >14 weeks group (10.7% vs. 3.6%, p=0.04). Table-4

Table 4: Effect of Gestational Age on Complications

Gestational Age	Uterine Rupture (%)	Hemorrhage Requiring Transfusion (%)	p-value
<14 weeks	0%	3.6%	0.03
>14 weeks	5.4%	10.7%	0.04

Logistic regression analysis identified gestational age >14 weeks (OR=3.8, 95% CI: 1.4-9.8) and medical termination (OR=2.9, 95% CI: 1.2-7.1) as significant risk factors for adverse maternal outcomes. Table-5

Table 5: Risk Factor Analysis for Adverse Maternal Outcomes

Risk Factor	Odds Ratio (OR)	95% Confidence Interval (CI)
Gestational age >14 weeks	3.8	1.4-9.8
Medical termination	2.9	1.2-7.1

DISCUSSION

This prospective observational study evaluated maternal outcomes associated with termination of pregnancy (TOP) in women with a history of previous cesarean section, providing critical insights into the risks and safety of medical and surgical methods. The findings highlight that uterine rupture, a rare but severe complication, occurred exclusively in the medical termination group (6.1%), with no cases reported in the surgical group (p=0.02). This is consistent with previous studies, such as those by Fawzy M et al (11) and Q Jiang et al (12) which also reported higher risks of uterine rupture with medical TOP in women with prior cesarean sections, particularly in the second trimester. The increased risk may be attributed to the uterotonic effects of misoprostol, which can exert excessive pressure on the cesarean scar, leading to dehiscence or rupture (13).

Hemorrhage requiring transfusion was another significant complication, occurring in 8.6% of cases, with a higher incidence in women undergoing TOP after 14 weeks of gestation (10.7%) compared to earlier gestations (3.6%, p=0.04). This aligns with findings by Vilchez G et al (14), who noted that advanced gestational age is associated with increased vascularity and placental adherence, raising the risk of hemorrhage during TOP. Similarly, the need for unplanned surgical interventions, though low overall (2.5%), was more frequent in the surgical termination group (12.5%) compared to the medical group (7.1%), albeit not statistically significant (p=0.08). This trend is consistent with studies by Nankali A et al (15) & Cuellar T et al (16), which reported that surgical methods, particularly in the second trimester, may carry a higher risk of incomplete abortion requiring additional intervention.

The study also identified gestational age >14 weeks (OR=3.8, 95% CI: 1.4-9.8) and medical termination (OR=2.9, 95% CI: 1.2-7.1) as independent risk factors for adverse maternal outcomes. These findings are supported by Allansen E et al (17) and Morris J et al (18) studies, which emphasized that second-trimester TOP, especially in women with prior cesarean sections, is associated with higher

complication rates due to the physiological changes in uterine structure and placental development.

This study has several strengths, including its prospective design, detailed data collection, and focus on a high-risk population, which enhances the generalizability of findings to similar clinical settings. However, limitations include the relatively small sample size, which may limit the power to detect rare complications, and the single-center design, which may introduce selection bias. Additionally, the study did not account for variations in surgical techniques or provider experience, which could influence outcomes.

Further research is needed to validate these findings through larger, multicenter studies with diverse populations to enhance generalizability. Additionally, prospective studies comparing specific protocols for medical and surgical termination, including variations in medication dosages and surgical techniques, could provide deeper insights into optimizing safety. Long-term follow-up studies to assess reproductive outcomes and scar integrity post-TOP in women with prior cesarean sections would also be valuable in guiding clinical practice and patient counselling.

CONCLUSION

This study highlights the increased risk of uterine rupture associated with medical termination, particularly in the second trimester, and the higher likelihood of incomplete abortion requiring intervention with surgical methods. Gestational age >14 weeks and medical termination were identified as significant risk factors for complications. These findings underscore the importance of individualized patient counseling, careful method selection, and close monitoring to optimize maternal safety during TOP in women with prior cesarean sections, ultimately contributing to safer clinical practices and improved maternal outcomes.

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