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# COMPARISON OF EFFICACY AND SAFETY OF MISOPROSTOL FOR TERMINATION OF PREGNANCY IN SECOND TRIMESTER IN SCARRED AND UNSCARRED UTERUS

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## Abstract

***Introduction:*** *According to a review of trials, there is insufficient data regarding the safety and efficacy of misoprostol in termination of pregnancy throughout the second trimester, both with and without uterine scarring. Thus, further study is required in this area. Comparing the effectiveness and safety of misoprostol in scarred versus unscarred uteri for termination of pregnancy in the second trimester was the rationale behind the current investigation. For both scarred and unscarred uteruses, this would assist build trust in a medication that is safe, effective, well-tolerated, and very cost-effective for midtrimester termination of pregnancy.*

***Materials & Methods:*** *From February 2025 to June 2025, 120 patients who needed to have their pregnancies terminated in the second trimester (13–26 weeks) for maternal reasons, fetal congenital abnormalities, or intrauterine death were gathered for the study via the Allied Hospital's outdoor or emergency department in Faisalabad. Total 50 women with scarred uteruses were assigned to group A, while seventy women with unscarred uteruses were assigned to group B. Participants with a history of three or four cesarean sections, acute asthma, heart conditions, or low-lying placentas were not allowed to participate in the study. Per vaginal dose of 400 micrograms of misoprostol every 3 hourly till expulsion was given to each patient. Patients were monitored for uterine contractions and the discharge of fetal material. In cases when the result of conception failed to eject despite an open cervical OS, a syntocinon infusion was initiated to enhance expulsion. In order to detect scar dehiscence or rupture in individuals with scarred uteruses, the maternal pulse and uterine contractility were tracked. Patients who were unable to terminate with this procedure were switched to a different TOP technique.*

***Results:*** *According to the current study's findings, misoprostol was effective in ending pregnancies in roughly 77.50% of cases, with no discernible difference between the two groups (68.0% in group A and 84.29% in group B). One patient in group A experienced uterine rupture, but none of the patients in group B did. The two groups' levels of excessive bleeding differed significantly. Group A consisted of 10 patients (20%) and Group B had 4 individuals (5.71%). Eleven patients (22.0%) in group A and five (7.14%) in group B required surgical intervention.*

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***Conclusion:*** *In preschoolers aged 1 to 5, we concluded that open ureteric surgery is safer and more successful than endoscopic double J stents for the reimplantation of primary obstructive megaureters.*

## INTRODUCTION

Pregnancy termination is the medical or surgical elimination of a pregnancy before the fetus is viable.[1] Ten to fifteen percent of all induced abortions are midtrimester terminations. It is performed to treat pregnancy-related illnesses, fetal congenital defects, and fetal death in utero (IUFD).[2] The need for quick second trimester termination has grown due to the early identification of fatal structural and chromosomal disorders as well as IUFD. When an unfavorable cervix is present, TOP in the second trimester is a serious issue and is frequently drawn out and tiresome.[3] The best technique for T.O.P. in the second trimester after a previous cesarean delivery is unclear. Although evacuation and curettage include some dangers, including the possibility of hemorrhage, infection, uterine perforation, and cervical damage, both procedures of termination have been proven to be successful. With intra-amniotic hypertonic saline solution and urea, these dangers include consumptive coagulopathy, myometrial necrosis, septic shock, heart failure, water intoxication, and hyperosmolar crisis.[4] Over the past 20 years, the treatment of second trimester TOP has changed due to the advent of mifepristone and prostaglandin analogs. Mifepristone is costly and unavailable in Pakistan and many other nations.[5] PGE2 and PGF2 were once often used for TOP, but their high cost and refrigeration requirements prevent them from being employed in impoverished nations like Pakistan.[6] Recently, misoprostol, a synthetic E I methyl analogue of prostaglandin and an ulcer-healing medication, has drawn interest for medical T.O.P. in the second trimester.[7] It has a shorter induction to expulsion interval, is stable at ambient temperature, and is reasonably priced. It also doesn't need to be refrigerated for storage.[8] It comes in tablet form and can be administered orally, sublingually, rectally, or vaginally. Compared to the oral route, the vaginal approach is more successful.[9,10] According to a review of trials, there is insufficient data regarding the safety and efficacy of misoprostol in T.O.P. throughout the second trimester, both with and without uterine scarring. Thus, further study is required in this area. Comparing the effectiveness and safety of misoprostol in scarred versus unscarred uteri for T.O.P. in the second trimester was the rationale behind the current investigation. For both scarred and unscarred uteruses, this would assist build trust in a medication that is safe, effective, well-tolerated, and very cost-effective for midtrimester T.O.P.

## METHODOLOGY:

From February 2025 to June 2025, 120 patients who needed to have their pregnancies terminated in the second trimester (13–26 weeks) for maternal reasons, fetal congenital abnormalities, or intrauterine death were gathered for the study via the Allied Hospital's outdoor or emergency department in Faisalabad. Total 50 women with scarred uteruses were assigned to group A, while seventy women with unscarred uteruses were assigned to group B. Participants with a history of three or four cesarean sections, acute asthma, heart conditions, or low-lying placentas were not allowed to participate in the study. Patients were informed of the risks and benefits before their informed consent was obtained. A comprehensive obstetric and general physical examination was performed upon admission, together with a detailed history of the patient. Every patient received per vaginal dose of 400 micrograms of misoprostol every 3 hourly till expulsion, and the condition of the cervix was evaluated by vaginal examination either at the start of uterine contractions or prior to the insertion of the subsequent dose. Following four dosages, patients were monitored for uterine contractions and the discharge of fetal material. In cases when the result of conception failed to eject despite an open cervical OS, a syntocinon infusion was initiated to enhance expulsion. In order to detect scar dehiscence or rupture in individuals with

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scarred uteruses, the maternal pulse and uterine contractility were tracked. Side effects and maternal problems, such as severe bleeding that necessitated a blood transfusion, fever exceeding 38 degrees Celsius, nausea, vomiting, and diarrhea, were noted. If the placenta and fetus were discharged within 48 hours of the initial misoprostol dose being inserted and the cervical OS was gradually dilation, the termination was deemed effective. Clinical evaluation of termination completion included vaginal examination to determine cervical OS status, abortus examination, and bleeding and pain assessment. Patients who were unable to terminate with this procedure were switched to a different TOP technique. On a specially created proforma, observations about the effectiveness and the time between induction and expulsion within 48 hours were noted.

SPSS version 25 was used to analyze the data. The mean ± SD was computed for a number of numerical variables, including age, parity, gestational age, and number of cesarean sections. Frequencies and percentages were computed for categorical characteristics, such as the requirement for surgery, uterine rupture, severe bleeding, successful termination, and indication for termination. The safety and effectiveness of the two groups were evaluated using the chi-square test; a P value of less than 0.05 was considered significant.

**RESULTS:**

The study's participants ranged in age from 18 to 45, with a mean age of 27.51 ± 4.31 years. The average age of the women in groups A and B was 27.68 ± 4.05 and 27.39 ± 4.84 years, respectively. Group A and Group B had mean gestational ages of 15.44 ± 1.90 weeks and 15.39 ± 1.92 weeks, respectively. 3.39 ± 1.16 was the mean parity. Table V displays the distribution of the various variables.

According to the current study's findings, misoprostol was effective in ending pregnancies in roughly 77.50% of cases, with no discernible difference between the two groups (68.0% in group A and 84.29% in group B) according to table II. According to Table III, the unscarred group's mean induction to abortion interval was 6.23 ± 1.88 hours, while the scarred group's was 8.76 ± 3.14 hours. Table IV lists maternal problems and adverse effects related to the drug's safety. One patient in group A experienced uterine rupture, but none of the patients in group B did. The two groups' levels of excessive bleeding differed significantly. Group A consisted of 10 patients (20%) and Group B had 4 individuals (5.71%). Eleven patients (22.0%) in group A and five (7.14%) in group B required surgical intervention.

**Table-I: Distribution of different variables (n=120).**

| | | Group A (n=50) | Group B (n=70) |
|---|---|---|---|
| | | Number (%) | Number (%) |
| **Age (years)** | **18-30** | 21 (42.0%) | 33 (47.14%) |
| | **31-45** | 29 (58.0%) | 37 (52.86%) |
| **Gestational age (weeks)** | **13-19** | 23 (46.0%) | 31 (44.29%) |
| | **20-26** | 27 (54.0%) | 39 (55.71%) |
| **Parity** | **≤3** | 22 (44.0%) | 41 (58.57%) |
| | **>3** | 28 (56.0%) | 29 (41.43%) |
| **Indication** | **Maternal** | 31 (62.0%) | 49 (70.0%) |
| | **Fetal** | 19 (38.0%) | 21 (30.0%) |

**Table-II: Comparison of efficacy (n=120).**

| | Group A (n=50) | | Group B (n=70) | | P-value |
|---|---|---|---|---|---|
| | Yes | No | Yes | No | |
| **EFFICACY** | 34 (68.0%) | 14 (32.0%) | 59 (84.29%) | 11 (15.71%) | **0.079** |

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**Table III: Comparison of induction to abortion interval between unscarred and scarred group.**

| | Group A (n=50) | Group B (n=70) | p-value |
|---|---|---|---|
| | Mean ± SD | Mean ± SD | |
| **Induction to abortion interval (hours)** | 8.76 ± 3.14 | 6.23 ± 1.88 | **0.0001** |

**Table-IV: Comparison of safety (n=120).**

| | Group A (n=50) | | Group B (n=70) | | P-value |
|---|---|---|---|---|---|
| | Yes | No | Yes | No | |
| **Uterine rupture** | 01 (2.0%) | 49 (98.0%) | 00 (0.0%) | 70 (100.0%) | **0.235** |
| **Excessive bleeding** | 10 (20.0%) | 40 (80.0%) | 04 (5.71%) | 66 (94.29%) | **0.016** |
| **Need for Surgical intervention** | 11 (22.0%) | 39 (78.0%) | 05 (7.14%) | 65 (92.86%) | **0.018** |

## DISCUSSION:

Modern obstetric practice has seen a steady rise in the number of caesarean sections performed as well as an increase in midtrimester abortions performed due to early ultrasound diagnosis of fetal abnormalities. Since unsupervised midtrimester abortions are typically linked to 3-5 times higher maternal morbidity and mortality than abortions in the first trimester, this has sparked concerns about the safety and efficacy of inducing second trimester terminations in patients who have previously had caesarean sections.[11]

A synthetic prostaglandin (PGE1) analog called misoprostol has completely changed the success rate of midtrimester abortions. Very positive outcomes are obtained when pharmacological and mechanical techniques are used in the form of intracervical Foley's catheter and misoprostol combo. Uterine rupture linked to misoprostol use does not seem to occur as frequently as it does at term[12] in women who have had prior caesarean sections when they induce abortions in the second trimester. Additionally, people without uterine scars have been documented to experience uterine rupture during induced midtrimester abortions.[13]

The majority of women in both groups in our study were between the ages of 31 and 45, which was similar to the findings of Holla R et al.[14], who reported a mean age of 27.96±5.41 years. According to the study by Fathalla MM et al.[15], the average age was 25.9 years. Compared to the study by Maninder K et al., which found 30% of the cases in the same age group, 45.0% of the cases in the current study were in the 18–30 age range. Compared to a study by Maninder K et al. that found 18.75% of cases were older than 30, our study found that 55.0% of cases were older than 30.

In all groups, the majority of patients in this study were third and fourth gravid (37.42%). This was similar to the Veena et al.[16] study, in which 53% of the women were third gravid or older. Similar to the study by Veena et al.[17], which found that 23.8% of cases were primigravidae, 22.58% of patients were primigravida. Compared to 28% of patients in the same research, 40.00% of patients had second gravidae.

While 56% of the patients in the study by BalaSubramanian SR et al.[18] were in the 13–16 week age group, 45.0% of the patients in the current study were in the 13–19 week gestational age range. Comparable to the work by Rezk MA et al[19], which found that the average induction to abortion interval was 7.5±1.25 hours, the mean induction to abortion interval in the current study was 6.23 ± 1.88 hours for the unscarred group and 8.76 ± 3.14 hours for the scarred group. A similar 7-hour gap between induction and abortion was also observed in the study by Balasubramanian SR et al.[17] A comparable induction abortion interval of 7.9 hours was also reported by Desai et al.

According to the current study's findings, misoprostol was effective in ending pregnancies in roughly 77.50% of cases, with no discernible difference between the two groups (68.0% in group A and 84.29% in group B). This is

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similar to the research conducted by Sharma N et al. and Patel U et al. Nevertheless, four women (3.85%) in Group B and three women (5.77%) in Group A were unable to terminate their pregnancy within 48 hours. In the group with a prior uterine scar, 11.53% of patients experienced severe abdominal discomfort, 9.62% experienced fever with chills and rigors, 7.69% experienced nausea and vomiting, and 9.62% experienced diarrhea. This is similar to a research by Mohamed Rezk et al.[18] that found that 13% of a similar study group experienced fever with chills and rigors, and 4% experienced vomiting. Group B experienced vomiting in 4.84% of patients, fever with chills and rigors in 8.74% of cases, and severe stomach pain in 9.71% of cases. But according to the study by Balasubramanian SR et al.[17], vomiting happened in 4% of instances and severe abdominal pain in 28% of cases.

Similar to the study by Mohamed Rezk et al.[18] there was no case report of an unscarred group from uterine rupture in our investigation. Complete avulsion of the cervix from the lower part of the uterus is a rare side effect of intravaginal misoprostol, according to Sajjan et al.[19] Only one patient (0.97%) without prior uterine scarring experienced cervical laceration, compared to three (5.77%) with prior cesarean scarring. Cervical dystocia in these patients who have had prior cesarean sections may be more closely related to this indication. Additionally, individuals with prior cesarean scars who experienced future hemorrhage had a slightly greater incidence of incomplete abortions, requiring surgical evacuation. A decreased chance of an abortion within 24 hours was substantially correlated with nulliparity, a shorter gestational age (<14 weeks), a longer interpregnancy interval (>22 months), and a lower Bishop score prior to insertion (<2). This contrasted well with the findings of the study conducted by Ali MK et al.

According to a 2017 FIGO publication on their updated guidelines for misoprostol, misoprostol is safe and effective for induced midtrimester abortions in women who have had a caesarean section or other transmural uterine scars. Research indicates that the risk of uterine rupture is less than 0.3% (95% CI 0.08-1.67%), a hysterectomy is 0%, and a transfusion requirement is 0.2%. Our research and conclusions align with these recommendations. However, Pluchon and Winer[20] advise using misoprostol on a scarred uterus with caution and lowering the dosage. A lower dosage of 100µg has been suggested by Cloquer et al.[21] for patients who have had a prior cesarean scar.

The current study did have several drawbacks, though. The results may have been impacted by the complications that the women who had prior uterine surgery, those who had a longer interpregnancy period, and the nullipara experienced. These complications were inseparable from the complications resulting from the procedures used to induce the abortion. Additionally, there is not enough information available on the danger of having more than three previous cesarean deliveries or previous classical caesarean deliveries.

## CONCLUSION:

In both scarred and unscarred uteruses, vaginal misoprostol is a safe and efficient way to end a pregnancy in the second trimester. It is linked to an extremely low incidence of adverse consequences. Larger studies should be conducted to confirm the safety and effectiveness of a drug that is inexpensive and has no storage problems, particularly for developing tropical nations like Pakistan where PGE2 is very costly and has significant storage problems because it requires cold chain maintenance, and Mifepristone, an antiprogestational agent, is not readily available.

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