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CLINICAL STATUS OF MIDTRIMESTER TERMINATION IN SEVERE PREECLAMPSIA

Dr. Bichitra Rani Dey*[1], Dr. Suchitra Nath[2], Dr. Madhabi Lata Saha[3], Dr. Banani Bhowmik[4], Dr. Bibha Rani Dey[5]

[1]RMO, Upazila Health Complex, Sarishabari, Jamalpur, Bangladesh.
[2]Medical Officer, Ghatail Health Complex, Tangail, Bangladesh.
[3]Assistant Professor, (Gynaecology and Obstetrics), Supernumerary, Sherpur 250 beded District Sadar Hospital, Sherpur, Bangladesh.
[4]Junior Consultant, Upazila Health Complex, Ghatail, Tangail, Bangladesh.
[5]Lecturer, Anatomy, Sir Salimullah Medical College, Dhaka, Bangladesh.

***Corresponding Author: Dr. Bichitra Rani Dey**

RMO, Upazila Health Complex, Sarishabari, Jamalpur, Bangladesh.

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ABSTRACT

Background: Severe preeclampsia is a life-threatening hypertensive disorder of pregnancy that may necessitate midtrimester termination to prevent maternal and fetal complications. Pharmacological induction using misoprostol, with or without prior mifepristone, is commonly employed, but evidence on comparative efficacy in this high-risk population remains limited. **Objective:** To assess the assess the clinical Status of midtrimester termination in severe preeclampsia. **Methods:** This hospital-based comparative prospective study was conducted at the Department of Obstetrics and Gynecology, Dhaka Medical College Hospital, from July to December 2021. A total of 84 women between 20 and 28 weeks of gestation with severe preeclampsia requiring termination were enrolled and randomly assigned to Group A (combined mifepristone and misoprostol, n = 42) or Group B (misoprostol alone, n = 42). Group A received 200 mg oral mifepristone followed 24 hours later by 100–400 mcg vaginal misoprostol every three hours until complete expulsion. Group B received the same misoprostol regimen without mifepristone pre-treatment. Primary outcome was induction-to-abortion interval; secondary outcomes included induction failure, total drug dose, and maternal complications. Data were analyzed using SPSS v23.0, with $p < 0.05$ considered statistically significant. **Results:** Baseline characteristics, including age, occupation, parity, and gestational age, were comparable between groups. Successful abortion was achieved in 97.6% of Group A and 92.9% of Group B, with induction failure rates of 2.4% and 7.1%, respectively ($p = 0.305$). No statistically significant differences were observed in demographic variables or induction outcomes between the groups. **Conclusion:** Both combined mifepristone and misoprostol and misoprostol alone are effective for midtrimester termination in women with severe preeclampsia, with high success rates and low failure. Pre-treatment with mifepristone shows a modest advantage in success and may be considered a safe and effective option in this high-risk population.

KEYWORDS: Severe preeclampsia, midtrimester termination, mifepristone, misoprostol.

INTRODUCTION

Preeclampsia is a multisystem hypertensive disorder of pregnancy characterized by new-onset hypertension and proteinuria or end-organ dysfunction after 20 weeks of gestation. Severe preeclampsia poses a significant risk to both maternal and fetal health, manifesting as markedly elevated blood pressure, thrombocytopenia, hepatic or renal dysfunction, neurological symptoms, or fetal growth restriction.[1-3] Globally, preeclampsia remains one of the leading causes of maternal morbidity and mortality, particularly in low- and middle-income countries where access to timely and comprehensive

obstetric care may be limited. In such cases, prompt recognition and management are critical to preventing life-threatening complications such as eclampsia, stroke, or multi-organ failure.[4]

Midtrimester termination of pregnancy, defined as ending pregnancy between 13 and 28 weeks of gestation, becomes a necessary intervention in cases of severe preeclampsia when the maternal condition deteriorates despite optimal medical management. This clinical decision is often challenging, as it requires balancing maternal safety with fetal viability considerations.[5-6] The midtrimester period poses unique physiological challenges; the uteroplacental unit is well established, and vascular changes are significant, which can complicate both pharmacological induction and surgical methods of termination.[7] Effective and timely termination in this context is essential to prevent maternal decompensation while minimizing procedural complications.

Pharmacological induction using agents such as misoprostol, a prostaglandin E1 analogue, has been widely used due to its uterotonic properties, ease of administration, and cost-effectiveness. Mifepristone, a progesterone receptor antagonist, can be combined with misoprostol to enhance cervical ripening and uterine contractility, potentially reducing the induction-to-expulsion interval. Several studies have suggested that the combination of mifepristone and misoprostol may be more effective than misoprostol alone in terms of efficacy, total drug doses required, and reduction of maternal complications.[8-9] Understanding the clinical performance of these regimens is particularly important in women with severe preeclampsia, who are at higher risk of hemodynamic instability and other complications during midtrimester termination.

Maternal complications during midtrimester termination in severe preeclampsia include hemorrhage, uterine rupture, need for surgical intervention, and adverse hemodynamic events. Additionally, the altered coagulation profile, end-organ involvement, and high blood pressure associated with severe preeclampsia increase the complexity of care. Careful monitoring of blood pressure, fluid balance, and laboratory parameters is critical throughout the induction process.[10-11] The choice of induction agent, dosing regimen, and route of administration must be individualized to optimize maternal safety and procedural success.

Despite advances in obstetric care, there is limited consensus on the most effective and safest approach for midtrimester termination in women with severe preeclampsia. Existing studies are often limited by small sample sizes, heterogeneity in protocols, and varying definitions of maternal outcomes. Evidence-based evaluation of induction methods, including the effectiveness of mifepristone-misoprostol combination versus misoprostol alone, can provide guidance for clinicians in selecting the optimal regimen, improving maternal outcomes, and minimizing complications.[11-12]

In light of these challenges, examining the clinical status of midtrimester termination in severe preeclampsia is essential for informing best practices. Understanding patient characteristics, procedural outcomes, induction efficiency, and complication rates helps guide safe, evidence-based management. Such insights are crucial in tertiary care settings where high-risk pregnancies are managed, and timely intervention is necessary to reduce maternal morbidity and mortality while ensuring procedural effectiveness.

OBJECTIVE

To assess the Clinical Status of Midtrimester Termination in Severe Preeclampsia.

METHODOLOGY

A hospital-based comparative prospective study was carried out in the Department of Obstetrics and Gynecology at Dhaka Medical College Hospital over a six-month period from July 2021 to December 2021. The study included women between 20 and 28 weeks of gestation diagnosed with preeclampsia with severe features, for whom termination of pregnancy was indicated to prevent maternal and fetal complications. The gestational lower limit of 20 weeks was chosen because preeclampsia is defined as occurring after this period.

The required sample size was determined using Cochran's formula, taking a 5% level of significance, 5% precision, and an estimated prevalence of preeclampsia of 2.8% in developing countries. Based on this calculation, a minimum of 42 participants per group was required, resulting in a total of 84 patients. Participants were recruited using purposive sampling from hospital admissions during the study period. Each participant, or their guardian, randomly selected a sealed envelope marked either A or B, which assigned them to one of the two groups: group A received combined mifepristone and misoprostol, while group B received misoprostol alone.

Women aged 20–28 weeks with preeclampsia with severe features requiring termination and who provided written informed consent were included. Patients were excluded if they had an inevitable or incomplete abortion, coagulopathy, renal disease, systemic lupus erythematosus, hypersensitivity to the study drugs, multiple uterine scars, placenta previa, or disseminated intravascular coagulation. Preeclampsia with severe features was defined according to ACOG guidelines, which include systolic blood pressure ≥160 mmHg, diastolic blood pressure ≥110 mmHg, thrombocytopenia, elevated liver transaminases, severe right upper quadrant pain, progressive renal insufficiency, or unexplained new-onset headache.

Participants in the combination group received a single oral dose of 200 mg mifepristone, followed 24 hours later by 100–400 mcg of vaginal misoprostol administered every three hours until complete expulsion of the fetus and placenta. The misoprostol-only group received the same misoprostol regimen without prior mifepristone. The primary outcome measured was the induction-to-abortion interval. Secondary outcomes included total drug doses required, estimated blood loss, retained products necessitating surgical intervention, uterine rupture or tears, use of additional uterotonics, side effects, and the need for blood transfusion.

Data collection involved structured interviews, clinical evaluation, review of laboratory investigations, and active participation of the research team. Follow-up assessments were performed according to a pre-specified schedule. Data were entered and analyzed using SPSS version 23.0. Continuous variables were expressed as means, while categorical variables were presented as frequencies and percentages. Comparisons between groups were made using unpaired t-tests for continuous variables and Chi-square tests for categorical variables, with a p-value <0.05 considered statistically significant.

Ethical considerations were strictly observed throughout the study. No procedures beyond routine clinical care were performed, and no sensitive questions were posed. Participants and their guardians were fully informed that refusal to participate or withdrawal at any point would not affect medical care. Written informed consent was obtained from all participants and their legal guardians. The study received approval from the Ethical Review Committee of Dhaka Medical College, and departmental permission was obtained prior to commencement of data collection.

RESULTS

A total of 84 women with severe preeclampsia requiring midtrimester termination of pregnancy were enrolled in the study, with 42 patients assigned to Group A (combined mifepristone and misoprostol) and 42 patients to Group B (misoprostol alone). The age distribution was comparable between the two groups, with the majority aged 21–30 years (Group A: 54.8%, Group B: 47.6%) and a mean age of 25.9 ± 6.38 years in Group A and 26.8 ± 8.23 years in Group B (p = 0.578, not significant).

Table 1: Distribution of the study patients according to age (n=84).

Age group (years)	Group A (n=42)		Group B (n=42)		P value
	n	%	n	%	
≤20	5	11.9	6	14.3	
21-30	23	54.8	20	47.6	
31-40	14	33.3	16	38.1	
Mean ± SD	25.9±6.38		26.8±8.23		0.578ns

In this study, Group A (n = 42), who received combined mifepristone and misoprostol, and Group B (n = 42), who received misoprostol alone, were compared in terms of occupation. The majority of participants in both groups were housewives, comprising 78.6% in Group A and 73.8% in Group B. Participants employed in service accounted for 16.7% of Group A and 14.3% of Group B, while those in other occupations represented 4.8% in Group A and 11.9% in Group B. The difference in occupational distribution between the two groups was not statistically significant (P = 0.350).

Table-2: Distribution of the study patients according to occupation (n=84)

Occupation	Group A (n=42)		Group B (n=42)		P value
	n	%	n	%	
Housewife	33	78.6%	31	73.8%	
Service	7	16.7%	6	14.3%	0.350^{ns}
Others	2	4.8%	5	11.9%	

ns = not significant
P value reached from Chi square test

In this study, Group A (n = 42), who received combined mifepristone and misoprostol, and Group B (n = 42), who received misoprostol alone, were compared according to parity. In Group A, 17 participants (40.5%) were primiparous and 25 (59.5%) were multiparous, whereas in Group B, 20 participants (47.6%) were primiparous and 22 (52.4%) were multiparous. There was no statistically significant difference in parity distribution between the two groups (P = 0.509).

Table 3: Distribution of the study patients according to parity (n=84).

Parity	Group A (n=42)		Group B (n=42)		P value
	n	%	n	%	
Primiparous	17	40.5%	20	47.6%	0.509^{ns}
Multiparous	25	59.5%	22	52.4%	

ns = not significant
P value reached from Chi square test

The mean period of gestation among participants in Group A (n = 42), who received combined mifepristone and misoprostol, was 24.9 ± 2.0 weeks, while in Group B (n = 42), who received misoprostol alone, it was 25.1 ± 1.9 weeks. There was no statistically significant difference in gestational age between the two groups (P = 0.639).

Table 4: Distribution of the study patients according to gestational weeks (n=84).

	GroupA (n=42)	Group B (n=42)	P value
	mean ± SD	mean ± SD	
Period of gestation (in weeks)	24.9 ± 2.0	25.1 ± 1.9	0.639[ns]

ns = not significant
P value reached from unpaired t-test

Induction failure was low in both groups, with only 2.4% (1/42) of patients in the combination group (Group A) and 7.1% (3/42) in the misoprostol-only group (Group B) experiencing failure. The majority of patients achieved successful abortion—97.6% in Group A and 92.9% in Group B. Although the combination group showed a slightly lower failure rate, the difference was not statistically significant (p = 0.305).

Table-5: Distribution of the study patients according to Induction failure (n=84)

Induction Failure	Group A (n=42)		Group B (n=42)		P value
	n	%	n	%	
Yes	1	2.4%	3	7.1%	0.305[ns]
No	41	97.6%	39	92.9%	

ns = not significant

DISCUSSION

This study evaluated 84 women with severe preeclampsia requiring midtrimester termination of pregnancy, comparing the efficacy of combined mifepristone and misoprostol (Group A, n = 42) with misoprostol alone (Group B, n = 42). The demographic characteristics, including age, occupation, parity, and gestational age, were comparable between the two groups, suggesting a balanced baseline for evaluating treatment outcomes. The majority of participants were aged 21–30 years, with a mean age of 25.9 ± 6.38 years in Group A and 26.8 ± 8.23 years in Group B, which aligns with other studies indicating that midtrimester termination is more common among younger reproductive-age women. Similar demographic trends have been reported by other study who found that women undergoing medical termination in the midtrimester are often multiparous and predominantly housewives.[11]

In terms of occupation, most participants were housewives in both groups (78.6% in Group A and 73.8% in Group B), with a small proportion engaged in service or other occupations. This distribution reflects the socio-demographic characteristics of the study population and is consistent with findings who reported that midtrimester termination is largely observed among homemakers in developing countries, likely due to limited access to healthcare resources and delayed antenatal visits.[12]

Parity distribution was also comparable, with 40.5% primiparous and 59.5% multiparous in Group A, versus 47.6% primiparous and 52.4% multiparous in Group B. Multiparous women were slightly more predominant in the combination group, similar to observations in studies where parity did not significantly influence the success of medical induction but was useful in counseling regarding the expected duration and response to induction agents.[13]

The mean gestational age at termination was 24.9 ± 2.0 weeks in Group A and 25.1 ± 1.9 weeks in Group B, with no statistically significant difference. These findings are consistent with previous studies which indicated that midtrimester terminations in preeclamptic patients generally occur around 24–26 weeks,[14] and gestational age does not significantly affect the efficacy of combined versus single-agent regimens.

Regarding induction outcomes, the overall failure rate was low in both groups, with only 2.4% in the combination group and 7.1% in the misoprostol-only group experiencing induction failure. While the combination therapy demonstrated a slightly higher success rate (97.6% vs. 92.9%), the difference was not statistically significant (p = 0.305). These results support previous findings by who reported that pre-treatment with mifepristone enhances the efficacy of misoprostol, reduces induction-to-abortion interval, and slightly lowers failure rates, although the absolute difference may not always reach statistical significance in smaller sample sizes.[15]

CONCLUSION

Based on the results of this study, it can be concluded that both combined mifepristone and misoprostol and misoprostol alone are effective for midtrimester termination in women with severe preeclampsia, with high overall success rates (97.6% vs. 92.9%) and low induction failure. Although the combination regimen showed a slightly higher success and lower failure rate, the difference was not statistically significant. Demographic factors, including age, occupation, parity, and gestational age, were comparable between the groups, indicating that the observed outcomes are attributable to the treatment regimens rather than baseline characteristics. Overall, pre-treatment with mifepristone appears to offer a modest advantage and can be considered a safe and effective option in this patient population.

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