fortune Journals

Research Article

OBSTETRICS AND GYNECOLOGY RESEARCH

ISSN: 2637-4560

Complications and Reasons for Failure in Labor Induction in Pre-Eclampsia & Eclampsia: A Focus on Fetal Distress and Prolonged First Stage

Shovana Talukder[1*], Md. Mojib Uddin[2], Ajoy Biswas[3], Shilpi Saha[4], Md. Abul Kalam Azad[5]

Abstract

Introduction: Fetal distress is a critical complication during labor induction, often leading to the need for emergency interventions and significantly impacting delivery outcomes. Additionally, prolonged stages of labor can complicate the induction process, further increasing the risks for both mother and baby. This study focuses on the complications and reasons for failure in labor induction among pre-eclamptic and eclamptic patients.

Methods: This observational cross-sectional study was carried out in the Department of Gynaecology & Obstetrics at Dhaka Medical College Hospital, Dhaka, from July 2015 to December 2015. Patients of Pre-eclampsia and /or eclampsia who attended the Eclampsia Ward in the Department of Gynaecology and Obstetrics at Dhaka Medical College & Hospital, Dhaka were taken as the study population as per inclusion criteria. A total number of 100 patients presented with pre-eclampsia and / or eclampsia fulfilled the selection criteria and were taken as study subjects by purposive sampling method. Different statistical methods were adopted for data analysis. Statistical analysis was performed by using Statistical Packages for Social Sciences (SPSS-19).

Result: 20% of patients did not attend any ante-natal checkups, while 42% attended irregularly, and 38% maintained regular checkups. This lack of consistent ante-natal care may contribute to complications during labor, and 20% of patients experienced fetal distress. Among the reasons for induction failure, fetal distress was identified in 17% of cases, and 5% of patients faced prolonged first stage of labor.

Conclusion: 20% of the patients experienced fetal distress, and it was identified as the primary reason for induction failure in 17% of cases. Additionally, 5% of patients experienced a prolonged first stage of labor, contributing to the overall failure of induction. These findings emphasize the need for careful monitoring and early intervention in labor induction for high-risk pregnancies to minimize complications such as fetal distress and prolonged labor.

Keywords: Pre-Eclampsia; Eclampsia; Fetal Distress; Prolonged First Stage

Introduction

Preeclampsia is a condition characterized by widespread vascular endothelial dysfunction and vasospasm, typically occurring after 20 weeks of gestation and potentially presenting up to 4-6 weeks postpartum. Severe

Affiliation:

[1]Assistant Professor, Department of Obstetrics and Gynaecology, Medical Colleges for Women and Hospital (MCWH), Dhaka, Bangladesh

[2]Associate Professor, Department of Pharmacology, Rajshahi Medical College, Rajshahi, Bangladesh

[3]Assistant Professor, Lava Diagnostic Center, Sadar Road, Barishal, Bangladesh

[4]Associate professor, Department of Obstetrics and Gynaecology, Medical Colleges for Women and Hospital (MCWH), Dhaka, Bangladesh

[5]Assistant Professor, Department of Medicine, Rangpur Medical College, Rangpur, Bangladesh

***Corresponding author:**
Dr. Shovana Talukder, Assistant Professor, Department of Obstetrics and Gynaecology, Medical Colleges for Women and Hospital (MCWH), Dhaka, Bangladesh.

Citation: Shovana Talukder, Md. Mojib Uddin, Ajoy Biswas, Shilpi Saha, Md. Abul Kalam Azad. Complications and Reasons for Failure in Labor Induction in Pre-Eclampsia & Eclampsia: A Focus on Fetal Distress and Prolonged First Stage. Obstetrics and Gynecology Research. 8 (2025): 110-114.

Received: July 15, 2025
Accepted: July 21, 2025
Published: July 28, 2025

Talukder S, et al., Obstet Gynecol Res 2025
DOI:10.26502/ogr0186

hypertension in preeclampsia is defined by a diastolic blood pressure of ≥110 mm Hg or a systolic blood pressure of ≥170 mm Hg on two separate occasions, along with significant proteinuria (at least 1 g/liter), which constitutes severe preeclampsia [1]. If a pregnant woman with preeclampsia experiences seizures or coma, the condition is classified as eclampsia. Globally, the incidence of preeclampsia is estimated to affect 5-14% of all pregnancies [2]. In Bangladesh, the incidence of eclampsia is notably high at 7.9%, not including cases of preeclampsia, based on a house-to-house survey [3]. According to the RCOG guidelines, when severe preeclampsia or eclampsia is diagnosed after 34 weeks of gestation, delivery is the most appropriate course of action [4]. The choice of delivery method depends on the severity of the disease and the likelihood of successful labor induction. Labor induction, an intervention used to artificially initiate uterine contractions leading to cervical dilation and effacement, can result in birth. However, the main challenges during induction are ineffective labor and excessive uterine activity, which may lead to fetal and maternal distress [5]. Prostaglandin analogs, such as misoprostol, dinoprostone, and carboprost, are commonly used for labor induction and augmentation. Among these, misoprostol is preferred due to its affordability, ease of storage at room temperature, and minimal systemic side effects. WHO guidelines recommend the use of misoprostol for labor induction in cases of severe preeclampsia or eclampsia when the cervix is unfavorable [5]. Misoprostol, a synthetic analog of prostaglandin E1 (PGE1), promotes uterine contractions and cervical ripening, unlike oxytocin, which only induces myometrial contractions. Misoprostol is considered safe, cost-effective, and effective in causing cervical ripening [6]. It is rapidly absorbed regardless of the route of administration. Studies have shown that administering misoprostol before oxytocin infusion reduces the need for oxytocin, indicating a synergistic effect between the two. A study conducted in a Turkish hospital compared the efficacy and complications of intravaginal misoprostol administration followed by oxytocin infusion versus oxytocin infusion alone for labor induction. The results showed that intravaginal administration of 50 mg misoprostol before starting oxytocin infusion was a more effective method for labor induction than oxytocin infusion alone [6]. Another trial investigated the efficacy and complications of intravaginal misoprostol versus oxytocin infusion for labor induction in pregnancies complicated by toxemia. The study revealed that 94% of patients in the misoprostol group and 80% in the oxytocin group were in labor within 12 hours ($P < 0.05$). The researchers concluded that intravaginal misoprostol is a safe, effective, and affordable method for labor induction in cases of severe preeclampsia and eclampsia [7]. Nahar et al., [8] conducted a prospective observational study in 135 severe pre-eclampsia and eclampsia patients. The only maternal complications were hyperstimulation which occurred in 6.8 and 5.1% of cases, respectively. This study aimed to analyze complications and reasons for failure in labor induction in pre-eclampsia & eclampsia.

Methods

This observational cross-sectional study was carried out in the Department of Gynaecology & Obstetrics at Dhaka Medical College Hospital, Dhaka, from July 2015 to December 2015. Patients of Pre-eclampsia and /or eclampsia who attended the Eclampsia Ward in the Department of Gynaecology and Obstetrics at Dhaka Medical College & Hospital, Dhaka were taken as the study population as per inclusion criteria. A total number of 100 patients presented with pre-eclampsia and / or eclampsia fulfilled the selection criteria and were taken as study subjects by purposive sampling method. 50 mcg of misoprostol was provided orally every 6 hours in these studies was 20 mcg. When the cervix became 4 cm dilated oxytocin was provided. Computer-based statistical analyses were carried out with appropriate techniques and systems. All data were recorded systematically in preformed data collection form (questionnaire) and quantitative data were expressed as mean and standard deviation and qualitative data were expressed as frequency distribution and percentage. Different statistical methods were adopted for data analysis. Statistical analysis was performed by using window-based computer software devised with Statistical Packages for Social Sciences (SPSS-19) (SPSS Inc, Chicago, IL, USA). A 95% confidence limit was taken. The summarized data was interpreted accordingly and was then presented in the form of tables. Informed written consent was taken from the patients. Ethical clearance was taken by the ethics committee of Dhaka Medical College Hospital.

Inclusion criteria

All eligible women with

- A pregnancy at >34 weeks of gestation
- With severe pre-eclampsia and eclampsia
- With an unfavorable cervix.
- Single gestation,
- Cephalic presentation

Exclusion criteria

- Previous uterine surgery,
- Placenta Previa or placental abruption,
- Genital infection with herpes simplex virus,
- Multiple gestations,
- Abnormal heart rate patterns,

Citation: Shovana Talukder, Md. Mojib Uddin, Ajoy Biswas, Shilpi Saha, Md. Abul Kalam Azad. Complications and Reasons for Failure in Labor Induction in Pre-Eclampsia & Eclampsia: A Focus on Fetal Distress and Prolonged First Stage. Obstetrics and Gynecology Research. 8 (2025): 110-114.

Talukder S, et al., Obstet Gynecol Res 2025
DOI:10.26502/ogr0186

- Abnormal end-diastolic velocity in the umbilical artery,
- Expected cephalopelvic disproportion,
- Premature rupture of the membranes,
- Active labor and other maternal or fetal conditions that would preclude labor induction.
- Gestational age <34 weeks

Results

Table 1: Distribution of patients according to age (N=100).

Age (years)	n	%
≤20	16	16.0
21 - 25	49	49.0
26 - 30	30	30.0
>30	5	5.0
Total	100	100.0
Mean ± SD	24.48 ± 3.63	
Range (Min-Max)	18 – 35	

Table 1 shows the distribution of patients according to age. Most of the patients (79.0%) were in the age group 21 – 30 years. Sixteen patients were below or equal to 20 years old and only 5 patients were more than 30 years old.

Table 2: Distribution of patients according to monthly family income (N=100).

Monthly family income (Taka)	n	%
>20,000	31	31.0
5,000 - 20,000	39	39.0
<5,000	30	30.0
Total	100	100.0

Table 2 shows the monthly family income of the patients. Maximum 39.0% of patients' family income was from 5,000 to 20,000 Taka, 31.0% had more than 20,000 Taka and 30.0% had less than 5000 Taka.

Table 3: Distribution of patients according to educational status (n=100).

Educational status	n	%
Illiterate	20	20.0
Primary	25	25.0
Secondary	26	26.0
Higher Secondary	18	18.0
Graduate and above	11	11.0
Total	100	100.0

Table 3 shows the distribution of patients according to educational status. Twenty percent of patients were illiterate, and 25.0% of patients were primarily educated. Almost half of the patients were either illiterate or poorly literate.

Table 4 shows the distribution of patients according to ante-natal checkup. Twenty percent of patients never visited for ante-natal checkups, 42.0% visited irregularly and 38.0% visited regularly for ante-natal checkups.

Table 4: Distribution of patients according to ante-natal checkup (N=100)

Ante-natal checkup	n	%
No (0 visit)	20	20.0
Regular (4 visits)	38	38.0
Irregular (<4 visit)	42	42.0
Total	100	100.0

Table 5 shows the distribution of patients according to complication and reason for failure. Twenty percent of patients had fetal distress. Apart from fetal distress 5.0% of patients had prolonged 1st stage.

Table 5: Distribution of patients according to complication and reason for failure (N=100)

Variables	n	%
Complication (fetal distress)	20	20.0
Reason of failure		
Fetal distress	17	17.0
Prolonged 1st stage	5	5.0

Discussion

Eclampsia and pre-eclampsia are recognized as major contributors to maternal and neonatal mortality worldwide. These conditions are associated with significant risks of maternal and fetal morbidity and mortality, particularly in cases of severe pre-eclampsia. While the only definitive treatment is delivery, the timing and mode of delivery remain challenging, especially when the cervix is unfavorable, which is often the case in these high-risk pregnancies. For women with severe pre-eclampsia, particularly after 34 weeks of gestation, the decision to induce labor versus opting for cesarean delivery remains controversial. The process of labor induction is complex due to the heightened risks of maternal and fetal complications, necessitating effective cervical ripening agents and close monitoring. Preeclampsia complicates 5-8% of pregnancies [9], and severe preeclampsia is responsible for an important proportion of fetal and maternal morbidity and mortality [10]. Delivery remains the only definite treatment. There is a general agreement to

Citation: Shovana Talukder, Md. Mojib Uddin, Ajoy Biswas, Shilpi Saha, Md. Abul Kalam Azad. Complications and Reasons for Failure in Labor Induction in Pre-Eclampsia & Eclampsia: A Focus on Fetal Distress and Prolonged First Stage. Obstetrics and Gynecology Research. 8 (2025): 110-114.

Talukder S, et al., Obstet Gynecol Res 2025
DOI:10.26502/ogr0186

terminate the pregnancy when maternal or fetal conditions are deteriorated, or once 34 weeks gestation is reached [10]. However, the mode of delivery after 34 weeks in women with severe preeclampsia with unfavorable cervix remains a controversial issue in obstetrics [11]. The induction of labor is difficult and risky because these patients are often far from term and mostly have unfavorable cervix [12]. So, cervical ripening and labor induction are especially important in hypertensive pregnancy. This cross-sectional observational study was carried out on 100 pre-eclampsia & eclamptic patients. Most of them (79.0%) were in the age group 21 – 30 years. Sixteen patients (16.0%) were below or equal to 20 years old and only 5 patients (5.0%) were more than 30 years old. The mean age was 24.48 ± 3.63 within the range of 18 – 35 years. Khan et al. [13] found a majority of the cases belonged to the 21-30 years age group in their respective study. Regarding complications and reason for failure, 20.0% of patients had fetal distress. Apart from fetal distress 5.0% of patients had prolonged 1st stage. Fetal distress was 16.0% in the study of Frass et al. [14]. Regarding fetal outcome, 81.0% of mothers gave live birth and 9.0% gave stillbirth. Of 81 live births, 49.0% were normal, 19.0% were asphyxiated, 15.0% were admitted in NICU and 8.0% were asphyxiated and admitted into NICU. IUD was the reason for all stillbirth. Seventy-seven percent of deliveries were vaginal, 22.0% in caesarean section, and 1 by forceps. Nahar et al. [8] found vaginal delivery in 80.5% of cases, and cesarean section was performed in 20.6% of severe pre-eclampsia and eclampsia patients who were provided Misoprostol and 35% of cases of Misoprostol along with Oxytocin. The vaginal delivery was achieved in 69.6% in the study of Frass et al. [14] where only Misoprostol was used for induction. The Caesarean delivery rate was 17.3% in the oxytocin group and 8.7% in the misoprostol group [15].

Limitations of The Study

The study was conducted in a single hospital with a small sample size. So, the results may not represent the whole community.

Conclusion

20% of the patients experienced fetal distress, and it was identified as the primary reason for induction failure in 17% of cases. Additionally, 5% of patients experienced a prolonged first stage of labor, contributing to the overall failure of induction. These findings emphasize the need for careful monitoring and early intervention in labor induction for high-risk pregnancies to minimize complications such as fetal distress and prolonged labor.

Recommendation

It is recommended that close fetal monitoring be prioritized during labor induction in pre-eclamptic and eclamptic patients, as fetal distress is a significant cause of complications and induction failure. Early identification and intervention in cases of fetal distress or prolonged first stage of labor can help improve maternal and neonatal outcomes. Additionally, individualized labor management strategies should be considered to reduce the risks associated with induction failure in this high-risk population.

Funding: No funding sources

Conflict of interest: None declared

References

1. National Collaborating Centre for Women's and Children's Health/National Institute for Health and Clinical Excellence (NCCWCH/NICE). Induction of labor. London (UK): National Institute for Health and Clinical Excellence (NICE); 2008 Jul. 32 p. (Clinical guideline; no. 70).
2. Roberts JM, Pearson G, Cutler J, et al. Summary of the NHLBI Working group on research on hypertension during pregnancy. Hypertension 41 (2003): 437-445.
3. Begum MR, Begum A, Quadir A, et al. Eclampsia: still a problem in Bangladesh, MedGenMed, 2004; 6 (2004): 52-54.
4. Royal College of Obstetricians and Gynaecologists. Evidence-based Clinical Guideline No. 10(A). London: RCOG Press; (2006).
5. WHO Recommendations for Induction of Labour. Geneva: World Health Organization; (2011).
6. Balci O, Mahmoud AS, Acar A, et al. Comparison of induction of labor with vaginal misoprostol plus oxytocin versus oxytocin alone in term primigravidae. J Matern Fetal Neonatal Med 24 (2011): 1084-1087.
7. Sahin HG, Sahin HA, Kocer M. Induction of labor in toxemia with misoprostol. Acta Obstet Gynecol Scand 81 (2002): 252-257
8. Nahar S, Rasul CH, Sayed A, et al. Utility of misoprostol for labor induction in severe pre-eclampsia and eclampsia. J Obstet Gynaecol Res 30 (2004): 349-353.
9. Kim LH, Cheng YW, Delany S, et al. Is preeclampsia associated with an increased risk of cesarean delivery if labor is induced? J Matern Fetal Med 23 (2010): 383-388.
10. Haddad B, Sibai BM. Expectant management of severe preeclampsia: proper candidates and pregnancy outcome. Clin Obstet Gynecol 48 (2005): 430-440.
11. Liu CM, Cheng PJ, Chang SD. Maternal complications and perinatal outcomes associated with gestational hypertension and severe preeclampsia in Taiwanese

women. J Formos Med Assoc 107 (2008): 129-138.

12. Taner CE, Hakverdi AU: Hygroscopic cervical dilators in ec- lampsia. Int J Gynecol Obstet, 41 (1993): 283-284.

13. Khan S, Aleem NT, Hasna AU, et al. A clinical study on risk- factors and feto-maternal outcome of pre-eclampsia in Bangladesh. JBSA 26 (2013): 39-44

14. Frass KA, Shuaib AA, Al-Harazi AH. Misoprostol for induction of labor in women with severe preeclampsia at or near term. Saudi Med J 32 (2011): 679-684

15. Bugalho A, Bique C, Machungo F, et al. A Comparative Study of Vaginal Misoprostol and Intravenous Oxytocin for Induction of Labour. Gynecol Obstet Invest 39 (1995): 252-256.

Citation: Shovana Talukder, Md. Mojib Uddin, Ajoy Biswas, Shilpi Saha, Md. Abul Kalam Azad. Complications and Reasons for Failure in Labor Induction in Pre-Eclampsia & Eclampsia: A Focus on Fetal Distress and Prolonged First Stage. Obstetrics and Gynecology Research. 8 (2025): 110-114.