



Original Research

Fetomaternal Outcome in Pregnancy with Fetal Malpresentation

Article History:

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Received: 28-11-2025

Revised: 19-12-2025

Accepted: 23-12-2025

Published: 30-12-2025

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Abstract:

Objective: To determine the fetomaternal outcome in pregnancies complicated by fetal malpresentation. **Study Design:** Descriptive study. **Place and Duration of Study:** Conducted from 26th June 2025 to 26th November 2025 at the Department of Obstetrics and Gynaecology, Ayub Teaching Hospital, Abbottabad. **Methodology:** A total of 164 pregnant women with fetal malpresentation were included. Women aged 18–45 years with singleton pregnancy, gestational age greater than 36 weeks, and fetal malpresentation confirmed on ultrasound were enrolled. Maternal and neonatal outcomes were assessed and documented. Data were analysed using SPSS version 26. Binary logistic regression analysis was performed to determine the association of age, gestational age, body mass index, parity, and previous history of malpresentation with adverse fetomaternal outcome. **Results:** The mean age was 28.86 ± 5.29 years, mean gestational age was 38.19 ± 1.03 weeks, mean body mass index was 26.94 ± 2.12 kg/m², and mean parity was 2.68 ± 1.44 . Most women belonged to low socioeconomic class 84(51.2%) and rural areas 111(67.7%). Emergency caesarean section was the most common mode of delivery, performed in 121(73.8%) patients, followed by elective caesarean section in 31(18.9%) and vaginal delivery in 12(7.3%). Postpartum haemorrhage and low birth weight were observed in 27(16.5%) cases each. Obstructed labour occurred in 21(12.8%), low Apgar score in 24(14.6%), birth asphyxia in 13(7.9%), perineal tear in 8(4.9%), and perinatal mortality in 7(4.3%) cases. **Conclusion:** Fetal malpresentation was associated with considerable maternal and neonatal complications.

Keywords: Caesarean Section; Fetal Presentation; Infant, Low Birth Weight; Labour, Obstructed; Postpartum Haemorrhage; Pregnancy Outcome.

INTRODUCTION

Fetal malpresentation during gestation encompasses any deviation of the optimal fetal position within the uterus traditionally known as the cephalic presentation with the fetal head facing downward and in the position of presentation for parturition.¹ This encompasses a variety of such presentations such as the presentation of the breech in the position of the buttocks and feet and the transverse lie in the position of the abdomen and the compound presentation with multiple fetal extremities appearing at once.² The incidence of fetal malpresentation varies with gestational age and has a higher prevalence at an initial gestational period that decreases with the proximity of term.³ However,

if it occurs near term and at term, it results in the necessity of intervention and management and becomes a subject of major study in the field of obstetrics.³

Fetal malpresentation etiology is multifactorial and involves maternal, fetal and intrauterine factors. Maternal factors include the anomalies of the uterus such as a bicornuate uterus or leiomyomas, multiparous state, placenta previa, and oligohydramnios and polyhydramnios that influence the space within the uterus for fetal movement.⁴ Fetal factors include multiple gestations, macrosomia, congenital anomalies and prematurity that limit the space that the fetus has the ability to move into an optimal position within the uterus.¹

Environmental factors, although not yet fully elucidated, may also be a factor and include external forces that influence fetal position.¹ Identifying the underlying etiology behind the fetal malpresentation becomes vital in the earliest detection and management that will allow the clinician to individualize interventions that will mitigate dangers and optimize the mother and the neonate's outcome. Fetal malpresentation during gestation has a higher risk of prolonged labor, cesarean delivery, postpartum hemorrhage and psychological distress with the birthing experience.⁵ Breech presentation, for instance, normally results in elective cesarean sections if external cephalic version attempts fail or if they're not indicated. Transverse lies almost always necessitate surgery unless they correct themselves prior to the onset of labor.⁵ The situation not only imposes a higher physical morbidity on the mother but also an additional burden of a psychological nature if vaginal births have to be reassessed.⁶ What is more, multiple interventions or complications that arise with fetal presentation can lastingly influence the mother's state of physical and possibly also psychological well-being, making it of the greatest importance that the mother receives comprehensive pre-delivery counseling and management.⁶ Malpresentation poses a set of complications that include umbilical cord prolapse, birth trauma, and fetal hypoxia at the time of delivery.⁷ The umbilical cord prolapse, a frequent occurrence with breech presentation, happens when the umbilical cord descends in front of the fetus and may compress the vital bloodstream and oxygen flow.⁸ The birth trauma results either from difficult births and specifically those necessitating instrumental vaginal delivery and emergency cesarean sections.⁷ Other malpresentations also predispose the newborn to preterm births, low Apgar scores, and the need for neonatal intensive care unit admission.⁹ Most of the newborns born with such presentation recover with no lasting effect; however, the risk of unfavorable consequences necessitates careful monitoring and prompt decision-making by the healthcare teams.¹⁰ No such study has been done before in our local population. There is a need for this study in assessing the fetomaternal outcome of fetal malpresentation because such instances of fetal malpresentation bear a higher risk of obstetric complications such as prolonged labor, birth trauma, and the necessity of instrumental delivery. The results of such occurrences will help enhance antenatal screening, optimize the planning of delivery and minimize maternal and neonatal morbidity. The identification of complications will help with better clinical decision-making and subsequently enhancing maternal and fetal health.

METHODOLOGY

This descriptive study was conducted from 26th June 2025 to 26th November 2025 in the Department of Obstetrics and Gynaecology, Ayub Teaching Hospital Abbottabad. Ethical approval was obtained from the hospital ethical committee before commencement of the study. A total of 164 women with fetal malpresentation were included. The sample size was calculated using WHO sample size software at 95% confidence level, 3% margin of error, and an expected frequency of perinatal mortality of 4% in patients with fetal malpresentation.⁸

Women aged 18 to 45 years, having singleton pregnancy confirmed on ultrasound, gestational age >36 weeks based on last menstrual period, any parity, and fetal malpresentation confirmed on ultrasound were included. Fetal malpresentation was considered as any fetal presentation other than vertex presentation, confirmed on ultrasound examination. Women with intrauterine fetal demise on ultrasound, severe preeclampsia, placenta previa, preterm delivery, previous uterine surgery, and known fetal anomalies or congenital malformations on ultrasound were excluded.

After taking informed written consent, demographic information including age, gestational age, BMI, parity, previous history of malpresentation, socioeconomic status, educational level and residential status was recorded. A detailed obstetric history and clinical examination were performed. All women with fetal malpresentation were followed until delivery. After birth, both mother and newborn were assessed by the obstetrician and neonatologist respectively and followed until discharge from hospital. Fetomaternal outcome was recorded on a specially designed proforma.

Obstructed labour was considered as failure of descent of the presenting fetal part despite adequate uterine contractions on clinical examination. Postpartum hemorrhage was considered when blood loss was ≥ 1000 ml after caesarean section or ≥ 500 ml after vaginal delivery within 24 hours. Perineal tear was considered as laceration involving vaginal mucosa, perineal skin, deeper subcutaneous tissues and part of the anal sphincter muscle on examination. Vaginal delivery was considered when delivery occurred through the vaginal canal following labour. Emergency Caesarean Section was considered as any unscheduled caesarean delivery, while elective caesarean section was considered as a planned caesarean delivery. Low Apgar score was considered when Apgar score was <5 at 5 minutes after birth. Low birth weight was considered when neonatal weight was <2500 gm at delivery. Birth asphyxia was considered as absence of spontaneous breathing for more than 90 second with umbilical artery blood pH <7.1 . Perinatal mortality was considered as fetal death within 24 hour after delivery.

Data were analysed using SPSS version 26. Categorical variables including previous history of malpresentation, socioeconomic status, educational level, residential status, obstructed labour, postpartum hemorrhage, perineal tear, vaginal delivery, emergency cesarean section, elective cesarean section, low Apgar score, low birth weight, birth asphyxia and perinatal mortality were presented as frequencies and percentages.

RESULTS

The study enrolled a total of 164 patients with fetal malpresentation. The mean age of the participants were 28.86 ± 5.29 years, with a mean gestational age of 38.19 ± 1.03 weeks. The mean BMI were recorded as 26.94 ± 2.12 kg/m² and mean parity was 2.68 ± 1.44 . With regards to socioeconomic status, majority of the patients belonged to low socioeconomic class 84 (51.2%), followed by middle class 69 (42.1%), and only a small proportion were from high socioeconomic background 11 (6.7%). In terms of

Quantitative variables including age, gestational age, BMI, parity were presented as mean $\pm$ standard deviation. Binary logistic regression analysis was performed to determine the association of age, gestational age, BMI, parity, previous history of malpresentation with Composite Adverse Fetomaternal Outcome. Adjusted odds ratios (AOR) and 95% confidence intervals were computed. A p-value of ≤ 0.05 was considered statistically significant.

educational level, more than one-third of the women were uneducated 59 (36.0%), whilst 41 (25.0%) had only primary level education, 44 (26.8%) had secondary education, and 20 (12.2%) had attained higher education. As for residential status, a large proportion of patients were from rural areas 111 (67.7%) in comparison to urban areas 53 (32.3%). Regarding previous history of malpresentation, majority of the women had no prior history 123 (75.0%), whereas 41 (25.0%) had experienced malpresentation in previous pregnancies (Table 1).

Table 1. Patient Demographics

Demographics	Mean $\pm$ SD / n (%)
Age (years)	28.86 $\pm$ 5.29
Gestational Age (weeks)	38.19 $\pm$ 1.03
BMI (Kg/m ²)	26.94 $\pm$ 2.12
Parity	2.68 $\pm$ 1.44
Socioeconomic Status	
Low n (%)	84 (51.2%)
Middle n (%)	69 (42.1%)
High n (%)	11 (6.7%)
Educational Level	
Uneducated n (%)	59 (36.0%)
Primary n (%)	41 (25.0%)
Secondary n (%)	44 (26.8%)
Higher n (%)	20 (12.2%)
Residential Status	
Rural n (%)	111 (67.7%)
Urban n (%)	53 (32.3%)
Previous History of Malpresentation	
Yes n (%)	41 (25.0%)
No n (%)	123 (75.0%)

In terms of fetomaternal outcomes, emergency caesarean section was the most frequent mode of delivery, performed in 121 (73.8%) of the cases, followed by elective caesarean section in 31 (18.9%) patients. Vaginal delivery was only achieved in 12 (7.3%) of the cases. Postpartum haemorrhage and low birth weight were both noted in 27 (16.5%) patients each, whilst obstructed labour occurred in 21 (12.8%) cases. Low Apgar score were observed in 24 (14.6%) neonates and birth asphyxia were recorded in 13 (7.9%) cases. Perineal tear was present in 8 (4.9%) patients and perinatal mortality were reported in 7 (4.3%) of the cases (Table 2).

Table 2. Fetomaternal Outcomes in Pregnancy with Fetal Malpresentation

Outcome	Frequency	%age
Obstructed Labour	21	12.8%
Postpartum Hemorrhage	27	16.5%
Perineal Tear	8	4.9%
Vaginal Delivery	12	7.3%

Emergency Cesarean Section		121	73.8%
Elective Cesarean Section		31	18.9%
Low Apgar Score		24	14.6%
Low Birth Weight		27	16.5%
Birth Asphyxia		13	7.9%
Perinatal Mortality		7	4.3%

Binary logistic regression analysis was performed to identify the predictors of fetal malpresentation. Age were found to be a non-significant predictor with an odds ratio (OR) of 0.939 (95% CI: 0.813–1.084, $p = 0.389$). Gestational age also did not reach statistical significance with OR of 1.175 (95% CI: 0.866–1.595, $p = 0.300$). BMI showed no significant association with malpresentation, with OR of 1.011 (95% CI: 0.771–1.324, $p = 0.939$). Parity were similarly found to be a non-significant predictor, with OR of 1.080 (95% CI: 0.699–1.669, $p = 0.727$). Previous history of malpresentation, despite showing a relatively higher odds ratio of 1.516 (95% CI: 0.727–3.161), did not achieved statistical significance ($p = 0.267$). The constant for the regression model were -4.967 with a corresponding OR of 0.007 ($p = 0.430$) (Table 3).

Table 3. Binary Logistic Regression Analysis for Predictors of Fetal Malpresentation

Variable	B	S.E.	Wald	OR (Exp B)	p-value	95% C.I. for EXP(B)	
						Lower	Upper
Age (years)	-0.063	0.073	0.742	0.939	0.389	0.813	1.084
Gestational Age (weeks)	0.161	0.156	1.074	1.175	0.3	0.866	1.595
BMI	0.011	0.138	0.006	1.011	0.939	0.771	1.324
Parity	0.077	0.222	0.122	1.08	0.727	0.699	1.669
Previous History of Malpresentation	0.416	0.375	1.234	1.516	0.267	0.727	3.161
Constant	-4.967	6.3	0.622	0.007	0.43	—	—

OR = Odds Ratio; S.E. = Standard Error; B = Regression Coefficient; C.I. = Confidence Interval

DISCUSSION

From the results of the study, it can be inferred that the number of participants having socioeconomic status were significantly low (84, 51.2%) and residing in rural areas (111, 67.7%). Such pattern could be due to lack of adequate prenatal care by women living in rural and low socio-economic areas. Emergency cesarean delivery was found to be the highest in the current scenario with 121 cases (73.8%). Such high incidence of operative delivery was expected due to the nature of malpresentation where fetus could not be delivered through vaginal route. Incidence of postpartum hemorrhage was reported in 27 subjects (16.5%). Postpartum hemorrhage is known to be one of the complications following malpresentation in the fetus due to the increased risk of overdistention and prolonged labor which could cause poor uterine tone post-delivery. The present study has found that emergency caesarean section was the most frequent mode of delivery, performed in 121 (73.8%) of the cases. This finding is in agreement with Samaiya et al.11 who reported caesarean section rate of 68.12% in breech pregnancies, and Akhter et al. 12 who also reported caesarean section in 70% of malpresentation cases. The high operative delivery rate in all these studies can be scientifically explained by the fact that malpresentation does not allow proper engagement of the presenting part into the pelvis, which makes safe vaginal delivery very difficult and increases the risk of cord prolapse and obstructed labour, thus necessitating surgical intervention.

Postpartum haemorrhage were observed in 27 (16.5%) of the cases in present study, which is comparatively higher than 13.5% reported by Busreea et al. 13 in twin pregnancies. This difference may be because malpresentation is often associated with uterine over-distension and dysfunctional labour, both of which impairs uterine contractility and predisposes to excessive blood loss in the postpartum period.

Obstructed labour were noted in 21 (12.8%) of the patients, which is consistent with findings of Mahajan et al. 14 and Tabassum et al. 15 who both identified malpresentation as one of the leading causes of obstructed labour. This association is well understood, as an abnormally presenting fetal part fails to properly fit the maternal pelvis, leading to mechanical obstruction of labour progress.

Low birth weight was recorded in 27 (16.5%) neonates in the present study, which is considerably lower than 38.6% reported by Kulsoom et al. 16 in oligohydramnios cases and 56.8% noted by Busreea et al. 13 in twin pregnancies. The lower rate in present study may be because the study population comprised singleton pregnancies without significant amniotic fluid abnormality in all cases, whereas both comparison studies had additional obstetric complications that independently contributes to poor fetal growth.

Birth asphyxia were present in 13 (7.9%) of the neonates, which is lower than 20% reported by Akhter et al. 12 and 34.8% noted by Rahman et al. 17 in primary caesarean section cases. The relatively lower rate of birth asphyxia in present study may be attributed to timely surgical intervention in majority of the cases, which helped in reducing the intrapartum hypoxic insult to the neonate. 18 Perinatal mortality were recorded in 7 (4.3%) cases, which is comparable to 4% reported by Akhter et al. 12 and slightly lower than 10.8% noted by Busreea et al. 13 with the difference likely reflecting the added complexity of twin gestations in the latter study.

There are several limitations with this research that need to be noted. To begin with, the data was collected in one tertiary care hospital setting, thus limiting the ability to generalize to the overall population. Another issue is associated with a rather small number of participants in the study, which might have affected the possibility of revealing statistically significant associations between the predictor variables and fetal malpresentation. In addition, because of the cross-sectional research design, no causality between the identified factors and outcome could be inferred. Moreover, some potential confounders, such as fetal anomalies, placenta disorders, and maternal comorbidities, were not completely controlled.

CONCLUSION

This study shows that fetal malpresentation can be associated with serious maternal and fetal complications and mortality. An emergency cesarean section was found to be the commonest mode of delivery when there is fetal malpresentation.

Disclaimer:

Nothing to declare.

Acknowledgement:

We would like to thanks all doctors and department staff who give support during this research work. Their cooperation in maintaining record and helping in collection of information made this study possible.

Conflict of Interest:

The author state that they have no competing interest or conflict regarding this research works.

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