

A STUDY ON THE PROPORTION OF MALPRESENTATION AND ITS INFLUENCE ON MODE OF DELIVERY AND FETO-MATERNAL OUTCOMES IN ALL PREGNANT WOMEN IN THIRD TRIMESTER AT A TERTIARY CARE CENTRE

Obstetrics & Gynaecology

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ABSTRACT

Background: Malpresentation is an important obstetric complication associated with increased maternal and neonatal morbidity. Early identification and appropriate management are essential to optimize outcomes, particularly in tertiary care settings where high-risk pregnancies are commonly referred. **Objectives:** To determine the proportion of fetal malpresentation, evaluate its influence on the mode of delivery, and assess associated feto-maternal outcomes in all pregnant women in third trimester in a tertiary care centre. **Materials and Methods:** This retrospective observational study was conducted in the Department of Obstetrics and Gynaecology at a tertiary care teaching hospital in South India. Women aged >18 years with gestational age ≥28 weeks who delivered with fetal malpresentation between July 2024 and March 2025 were included. Data regarding type of malpresentation, mode of delivery, maternal complications, neonatal outcomes, and etiological factors were retrieved from labour room records and analysed descriptively. **Results:** Out of 557 deliveries, malpresentation was observed in 45 cases (8.1%). Breech presentation was the most common malpresentation (36 cases), followed by transverse lie and compound presentation. Caesarean section was the predominant mode of delivery (32 cases). Prematurity was the most frequent etiological factor associated with malpresentation. Neonatal complications included preterm birth, respiratory distress, low Apgar scores at 1 minute, and NICU admission; however, most neonates demonstrated satisfactory improvement by 5 minutes. Maternal complications such as postpartum haemorrhage and postoperative morbidity were more common in operative deliveries, though serious adverse outcomes were infrequent. **Conclusion:** Malpresentation significantly influences the mode of delivery and is associated with increased operative intervention and neonatal morbidity. Early antenatal diagnosis, timely referral, and appropriate management in a tertiary care setting are crucial for achieving favourable fetomaternal outcomes.

KEYWORDS

Fetal Presentation, Breech Presentation, Cesarean Section, Pregnancy Complications, Perinatal Outcome

INTRODUCTION:

Fetal presentation refers to the part of the fetus that occupies the lower pole of the uterus and overlies the pelvic inlet, being the part that first engages and is delivered during labour. The normal fetal presentation is the vertex presentation, in which the fetal head is well flexed and the occiput is the leading part; this occurs in about 95% of term pregnancies and is associated with the most favourable maternal and perinatal outcomes because the smallest diameter of the fetal head presents. Any presentation other than vertex is considered abnormal and is termed a malpresentation. Abnormal fetal presentations include breech presentation, where the buttocks or feet present first; face presentation, in which the fetal head is completely extended and the face is the presenting part; brow presentation, characterized by partial extension of the fetal head and shoulder presentation associated with a transverse lie.

Any fetal presentation other than vertex is classified as a malpresentation and includes breech, face, brow, shoulder, and compound presentations. Malpresentations are reported to occur in approximately 5% of all term deliveries and are associated with a significantly increased risk of maternal and fetal morbidity and mortality.

Maternal complications linked to malpresentation include prelabour rupture of membranes, cord prolapse, a higher likelihood of instrumental delivery and caesarean section, obstructed labour, uterine rupture, and an overall increase in maternal morbidity and mortality. Fetal complications commonly associated with malpresentation include a low 5-minute Apgar score, meconium aspiration, hypoxic-ischemic encephalopathy, and birth trauma [1, 2]

Malpresentation of the fetus is associated with significant risks to both the mother and the fetus because abnormal alignment interferes with the normal mechanism of labour. Foetal risks include prolonged and obstructed labour, which can result in hypoxia, birth asphyxia, and subsequent neurological injury. Cord prolapse is more frequent in malpresentations, particularly breech and shoulder presentations, leading to acute compromise of fetal oxygenation. Traumatic injuries such as intracranial haemorrhage, fractures, brachial plexus injury, and soft-tissue trauma may occur due to difficult manipulations or operative deliveries. Prematurity and low birth weight further worsen

outcomes, and in neglected cases, intrauterine fetal demise or early neonatal mortality may occur due to sustained hypoxia or trauma.

Maternal risks in malpresentation primarily arise from prolonged or obstructed labour and the need for operative interventions. These include uterine exhaustion, increased incidence of instrumental or caesarean delivery, and a higher risk of postpartum haemorrhage due to uterine atony or trauma. Soft-tissue injuries to the cervix, vagina, and perineum are more common, especially when difficult vaginal deliveries are attempted. There is also an increased risk of uterine rupture in neglected transverse lie or obstructed labour. Postpartum infections, longer hospital stay, and psychological stress are additional maternal morbidities associated with malpresentation. Clinical observations suggest that malpresentations are more frequently encountered in primiparous women, who also appear to have a higher risk of requiring operative delivery when compared with multiparous women [3].

In view of these adverse outcomes, the present study was undertaken to identify the etiological factors associated with malpresentation and to assess its impact on maternal and fetal morbidity and mortality. The primary objective of the study is to identify the proportion of malpresentations, mode of delivery and it's feto-maternal outcome in a tertiary care center.

MATERIALS AND METHODS:

This retrospective observational study was conducted in the labour room of the Department of Obstetrics and Gynaecology at a tertiary care teaching medical college and Hospital, Bangalore, South India. The study included women who delivered fetuses with malpresentation during the study period from 01 July 2024 to 20 March 2025. All eligible cases were identified from labour room records. The inclusion criteria were maternal age greater than 18 years and a period of gestation exceeding 28 weeks. Patients with incomplete records were excluded from the analysis.

Relevant clinical data were retrieved from medical records and analysed systematically. Variables studied included the type of fetal malpresentation, mode of delivery, and maternal and neonatal outcomes. Maternal characteristics such as age, parity, gestational age, and obstetric complications, as well as neonatal parameters including

birth weight, Apgar scores, need for neonatal intensive care, and perinatal outcome, were evaluated. The collected data were analysed to assess the association between different types of malpresentation, mode of delivery, and corresponding maternal and neonatal outcomes

RESULTS:

A total of 557 deliveries were analysed during the study period. The distribution according to fetal presentation showed that cephalic presentation was the most common (512 cases), followed by breech presentation (36 cases), transverse lie (8 cases), and compound presentation (1 case).

Table 1: Distribution of fetal presentation

Variable	Number (n)
Cephalic presentation	512
Breech presentation	36
Transverse lie	8
Compound presentation	1

Table 2: Distribution of Parity

Variable	Number
Primigravida	15
Multiparous	28
Grand multiparous	0

With respect to the mode of delivery, caesarean section was the predominant mode (32 cases), while 16 women delivered vaginally. Perinatal outcome analysis revealed 551 live births, 4 intrauterine fetal deaths, 1 stillbirth, and 1 early neonatal death. Table 1 & Table 2.

Table 3: Mode of delivery and perinatal outcome

Variable	Number (n)
Vaginal delivery	13
Caesarean section	32
Live birth	551
Intrauterine fetal death	4
Stillbirth	1
Early neonatal death	1

Neonatal outcome analysis showed 22 preterm neonates, 28 cases of respiratory distress, 12 neonates with no immediate cry at birth, and 20 neonates requiring NICU admission. Table 3 & 4.

Table 4: Neonatal outcome

Outcome	Number
Preterm	22
Respiratory distress	28
No immediate cry	12
NICU admission	20

Table 5: Maternal complications

Complication	Number (n)
Postpartum haemorrhage	9
Blood transfusion	5
Uterine rupture	1
Puerperal sepsis	2
Postpartum fever	12
Post-LSCS wound sepsis	2

Prematurity was the most common etiological factor associated with malpresentation (22 cases), followed by twin gestation, cord around the neck, hypertensive disorders of pregnancy, and diabetes mellitus. Table 5

Table 6: Etiological factors associated with malpresentation

Etiological factor	Number (n)
Prematurity	22
Twin gestation	8
Cord around neck	7
Gestational hypertension	6
Gestational diabetes mellitus	6
Bicornuate uterus	3
Contracted pelvis	2
Oligohydramnios	2

Anhydramnios	1
Polyhydramnios	1
Subseptate uterus	1
Cervical insufficiency	1
Fetal anomaly	1
Placental abruption	1

Overall, malpresentations were associated with higher caesarean section rates, significant maternal morbidity, and increased neonatal complications, emphasizing the need for early diagnosis and appropriate obstetric management.

The study population showed that most neonates had a birth weight between 1.5–2.5 kg and 2.5–4 kg, with fewer babies weighing less than 1.5 kg and very few exceeding 4 kg, indicating a predominance of normal to low-normal birth weights. Maternal age distribution revealed that the majority of pregnant women were in the 21–25 and 26–30 year age groups, followed by a smaller proportion in the 31–35 year range, while teenage pregnancies and pregnancies beyond 35 years were relatively uncommon. Table 6

Assessment of neonatal condition using Apgar scores demonstrated that at 1 minute, most neonates had scores of 7/10, followed by 6/10, suggesting mild initial adaptation difficulty in some newborns, with very few having severely low scores. By 5 minutes, there was a clear improvement in Apgar scores, with the majority of neonates achieving scores of 8/10 and 9/10, and only a small number remaining in the lower score categories as depicted in Figure 1. Overall, these findings indicate favourable maternal age distribution, predominantly adequate birth weights, and good neonatal outcomes with significant improvement in neonatal condition by 5 minutes after birth.

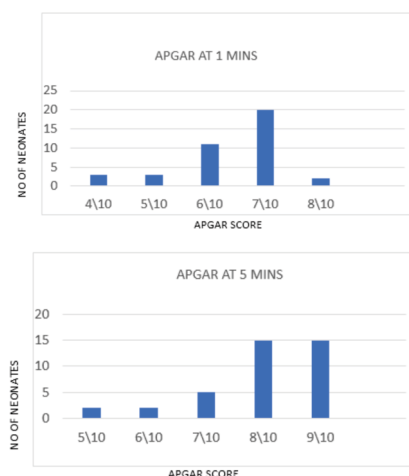


Figure 1: Apgar scores at 1 minute and 5 minutes

DISCUSSION:

The present study was conducted to evaluate the proportion of malpresentations, the mode of delivery, and the associated fetomaternal outcomes in all pregnant women in their third trimester at a tertiary care setting. Although cephalic presentation constituted the majority of cases, malpresentations such as breech, transverse, and compound presentations were observed in a notable proportion, consistent with hospital-based data from referral centres. Population-level studies indicate that malpresentations occur in approximately 3–5% of term pregnancies, with higher proportions reported in tertiary care hospitals due to referral bias and increased prevalence of high-risk pregnancies.⁴

Breech presentation was the most common malpresentation identified in the present study. Recent large cohort analyses have shown that breech presentation is independently associated with increased obstetric intervention, particularly caesarean section, owing to concerns regarding perinatal morbidity. Peeva et al. reported significantly higher caesarean section rates in breech pregnancies, reflecting current obstetric practice aimed at reducing neonatal complications.⁵ Similar observations have been reported in both hospital-based and community cohorts, reinforcing the association between malpresentation and operative delivery.⁶

In the present study, caesarean section was the predominant mode of delivery among malpresentations. This finding is in agreement with contemporary evidence demonstrating that planned caesarean delivery in breech and transverse presentations is associated with lower risks of low 5-minute Apgar scores, birth trauma, and NICU admission compared with vaginal delivery, particularly in tertiary care settings.⁷⁻⁹ The preference for caesarean section in such cases reflects efforts to optimize neonatal outcomes while balancing maternal risk.

Neonatal outcomes in this cohort showed that most infants achieved satisfactory Apgar scores by 5 minutes, despite lower scores at 1 minute in a subset of neonates. This improvement aligns with evidence suggesting that the 5-minute Apgar score is a more reliable indicator of neonatal adaptation and short-term morbidity than the 1-minute score. Cnattingius et al. demonstrated a strong association between low 5-minute Apgar scores and increased neonatal mortality, particularly among preterm infants.¹⁰

Prematurity emerged as a major contributor to adverse neonatal outcomes, including low Apgar scores and increased NICU admissions. Recent studies consistently report prematurity as a key determinant of neonatal morbidity, often coexisting with malpresentation and maternal comorbidities.¹¹⁻¹³ Duncan et al. further demonstrated that birth weight and 5-minute Apgar score were strong predictors of severe neonatal outcomes in high-risk pregnancies, supporting their relevance in assessing fetal outcome in malpresentation.¹⁴

Maternal complications observed in this study included postpartum haemorrhage, fever, and the need for blood transfusion, which were more frequent among women undergoing caesarean delivery. Contemporary literature indicates that caesarean section, particularly when performed for malpresentation or as an emergency procedure, is associated with increased maternal morbidity compared with vaginal delivery.¹⁵ However, the overall maternal complication rates in this study were comparable with those reported in other tertiary care cohorts, suggesting that timely intervention and availability of comprehensive obstetric services can reduce severe maternal adverse outcomes.¹⁶

Several etiological factors associated with malpresentation were identified, including prematurity, hypertensive disorders of pregnancy, gestational diabetes mellitus, uterine anomalies, multiple gestation, and cord around the neck. These findings are consistent with recent evidence identifying such conditions as important contributors to abnormal fetal lie and presentation.¹⁷⁻¹⁹ Early identification of these risk factors allows for appropriate antenatal surveillance and delivery planning, thereby improving fetomaternal outcomes.

Overall, the findings of this study indicate that malpresentation significantly influences the mode of delivery and is associated with increased operative intervention. Nevertheless, when managed in a tertiary care centre with adequate facilities and expertise, favourable neonatal outcomes can be achieved and maternal morbidity maintained within acceptable limits.

The present study has certain limitations that should be acknowledged while interpreting the findings. First, the retrospective design relied on the accuracy and completeness of hospital records, which may have resulted in missing or unrecorded variables influencing fetomaternal outcomes. Second, as the study was conducted in a single tertiary care referral centre, the observed prevalence of malpresentation and the high rate of caesarean section may reflect referral bias and may not be generalizable to primary or community-level healthcare settings. Third, long-term neonatal outcomes could not be assessed, as the analysis was limited to immediate perinatal outcomes and early neonatal period. Additionally, the study did not stratify outcomes based on planned versus emergency caesarean section or attempted versus successful external cephalic version, which may have provided further insights into management strategies. Despite these limitations, the large study duration and comprehensive evaluation of maternal and neonatal parameters provide valuable information on the impact of malpresentation in a tertiary care setting.

Breech malpresentation was observed more frequently among primigravida women, while other types of malpresentation were more commonly encountered in multigravidas. No significant association was found between the type of malpresentation and fetal gender, and

neonatal outcomes were primarily influenced by factors such as gestational age, birth weight, and mode of delivery rather than fetal sex. Management strategies focused on timely antenatal diagnosis and appropriate correction of malpresentation, including the use of external cephalic version in selected cases at term. Evidence supports that planned caesarean section in breech presentation is associated with improved short-term neonatal outcomes; however, vaginal breech delivery continues to have a role in carefully selected cases such as preterm breech presentations and second twins, particularly in tertiary care centre with skilled obstetric expertise. Early antenatal registration, regular follow-up, and delivery in well-equipped hospitals play a crucial role in optimizing both maternal and fetal outcomes. With appropriate intrapartum management, malpresentation can be associated with favourable fetomaternal outcomes.

CONCLUSION:

Malpresentation remains an important obstetric problem with a significant impact on the mode of delivery and fetomaternal outcomes. Breech presentation was the most common malpresentation in this study, and caesarean section was the predominant mode of delivery. Prematurity was the most frequent etiological factor and a major determinant of adverse neonatal outcomes. Although some neonates had low Apgar scores at 1 minute, most showed satisfactory improvement by 5 minutes. Maternal morbidity was more commonly associated with operative delivery, though severe complications were limited with timely care. Breech presentation was more frequent in primigravida's, while other malpresentations were common in multigravidas. Neonatal outcomes were influenced mainly by gestational age, birth weight, and mode of delivery rather than fetal gender. Early antenatal registration, timely diagnosis, and appropriate management in a tertiary care setting are essential for achieving favourable fetomaternal outcomes.

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