

Obstetric and Perinatal Outcomes in Term Singleton Malpresentations: A Prospective AnalysisPramoda Kumar Sahoo^{1*}, Manas Ranjan Behera², Deepa Sethy³, K B subudhi⁴¹Assistant Professor, Dept. of O & G, SCB Medical College & Hospital, Cuttack, India²PDF in MIGS, Department of O & G, AIIMS, Bhubaneswar, India³Assistant Professor, Dept of O & G, SCB Medical College & Hospital, Cuttack, India⁴Professor, Dept. of O & G, MKCG Medical College & Hospital, Berhampur, India

Received: 17-08-2023 / Revised: 13-09-2023 / Accepted: 07-10-2023

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Conflict of interest: Nil

Abstract

Background: Malpresentations in obstetrics refer to any fetal presentation other than vertex, including breech, shoulder, face, brow, and compound. The management of malpresentation remains controversial, and there is a need to evaluate obstetric outcomes in term singleton malpresentation to optimize perinatal outcomes while preserving the art of conducting vaginal breech deliveries.

Methods: The study was a prospective observational study conducted in the Department of Obstetrics & Gynaecology at MKCG Medical College & Hospital, Berhampur, from October 2015 to September 2017. The study included 276 term singleton malpresentations out of 17,997 deliveries during the two-year study period, with an incidence of 1.6%. Data on obstetric outcomes, including perinatal mortality, stillbirth, neonatal death, and APGAR scores, were collected and analysed. The study compared outcomes between vaginal deliveries and cesarean section deliveries, focusing on the risks of low APGAR scores and soft tissue damage in different malpresentations.

Results: The study analyzed 276 term singleton malpresentations, with breech presentations being the most common (81.1%). Most cases were delivered via cesarean section (69.6%), with emergency cesarean sections accounting for 43.2%. In vaginal deliveries, breech presentations were the most common (91.6%). The perinatal mortality rate was 11.9%, with stillbirth and neonatal death accounting for 9.4% and 2.6%, respectively. Vaginal deliveries had a higher risk of low APGAR scores, with compelling indications being the largest factor contributing to perinatal mortality.

Conclusion: The present study revealed that most malpresentation cases are cesarean, with breech presentations being the most common. Vaginal deliveries in term breech malpresentations have a higher risk of low APGAR scores, with brow and shoulder presentations having the highest rates.

Keywords: Term singleton malpresentations, APGAR scores, Vaginal deliveries, Cesarean section deliveries, Obstetric outcomes, Perinatal outcomes.

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Introduction

The lowermost region of the foetus that presents to the pelvis and lower uterine segment is referred to as presentation. Vaginal examination, rather than abdominal palpation, provides a more specific diagnosis [1]. The foetus presents by the head in most near-term deliveries, with the best fit into the lower pelvis in the occiput-anterior position. In a few cases, the head is excessively deflexed, allowing the brow or face to be visible. By the vertex, more than 95% of foetuses at term are in labour. Malpresentations refer to all foetal presentations other than the vertex, which include breech,

shoulder, face, brow, and compound presentations [2].

A good presentation and posture during the early stages of labour is one in which the baby's head enters the maternal pelvis with the occiput oriented towards the sidewalls or some point between it and the symphysis pubis. Unfortunately, in some women, either the presentation or the position is abnormal, which can lead to difficulties that necessitate specific management and, in some cases, surgical treatment [3].

Malpresentations pose an elevated risk to both the mother and the foetus, exacerbated when the mother is left alone or is supervised throughout labour by unskilled individuals. Malpresentations are major causes of blocked and protracted labour [4].

In many cases, the management of any malpresentations remains controversial. The most common type of malpresentation is breech [5]. Vaginal breech delivery is becoming increasingly uncommon, with most nations following a caesarean section policy for term breech delivery [6]. However, effective vaginal breech birth can be achieved with good case selection and adequate antenatal and intrapartum care [7]. Breech birth, regardless of mode of delivery, has a higher frequency of poor perinatal outcomes [8]. Postpartum haemorrhage, trapping of the aftercoming head, and severe perinatal outcomes, including low APGAR scores, neonatal hospitalisation, and perinatal mortality [9], are all risks linked with term breech births.

In most cases, the specific causes of malpresentations are unknown. Contracted pelvis, cephalopelvic disproportion, huge baby, polyhydramnios, multifetal pregnancy, pre-term labour, foetal, uterine, or pelvic malformations, and other reasons are possible [10]. The management of the term breech is very controversial and varies greatly between institutions and even between clinicians within the same institution. Performing a caesarean delivery is frequently based on personal experience or a fear of litigation [11]. Because of this, present study of obstetric outcomes in term singleton malpresentations was conducted to optimize the perinatal outcome while keeping the art of conducting and training vaginal breech deliveries alive.

Materials and Methods

This prospective observational study was performed at the Department of Obstetrics & Gynaecology, MKCG Medical College & Hospital, Berhampur, from October 2015 to September 2017.

Inclusion criteria

The study included patients with term (37-42 weeks) pregnancy, singleton malpresentations, normal placental site and liquor.

Exclusion criteria

Patients with pre-term (<37 weeks) and post-term (>42 weeks) pregnancy, multiple pregnancies, abnormal placental site and liquor, previous cesarean section, fetal growth restriction, having pregnancies with obstetric complications like PET, eclampsia, etc and medical disorders like cardiovascular, renal, hepatic, haematological, immunological, endocrine diseases etc were excluded from the study.

Methods

The study included 276 term singleton malpresentations out of 17,997 deliveries during the two-year study period. The patients were evaluated regarding gestational age, birth weight, types of malpresentations, mode of delivery, maternal and perinatal outcomes. All patients had a detailed history obtained and an examination performed, emphasizing any associated complicating factors. Standard blood tests followed this and, if possible, an ultrasound scan. After extensive clinical evaluations, the cases were treated with various types of therapy. A trial of vaginal birth was offered after an assessment of the pelvis and determination of the foetal weight, as well as considering the patient's medical and obstetric history. For the necessary indications, elective and emergency caesarean sections were performed.

In the trial of vaginal delivery, the fetal heart rate and progress of labour were monitored, and assisted breech delivery was performed if the baby was breech. After delivery, the babies were attended by paediatricians, and the APGAR scores at 1 min and 5 min were calculated. Fetal outcomes were assessed in terms of APGAR score and perinatal mortality. Apgar scores < 7 were considered low APGAR in both 1 min and 5 min.

All the mothers and newborns were followed up for seven days in the postnatal period. Maternal and perinatal outcomes were analysed. The main fetal outcomes examined in this study were stillbirth and very low APGAR scores. The study also compared outcomes between vaginal deliveries and caesarean section deliveries, focusing on the risks of low APGAR scores and soft tissue damage in different malpresentations.

Ethical approval

The Human Ethical Committee of the Department of Obstetrics & Gynaecology, MKCG Medical College & Hospital, Berhampur, approved the above study. Written informed consent was taken from all the patients before the study.

Results

The study included 276 cases (1.6%) of malpresentations and 17721 cases (98.4%) of vertex presentations out of 17,997 deliveries. Out of all the cases of malpresentations, the breech presentation had the highest (81.1%) rate of occurrence and the least being compound presentations (2.5%) (Table 1). Vaginal delivery was done in 84 cases (30.4%), while caesarean section was done in 192 cases (69.6%). Out of all the cases of caesarean sections (CS), elective CS was done in 26.4% of cases and emergency CS was done in 43.2% of cases

Table 1: Types of malpresentations

Malpresentations	Number	Percentage
Breech	224	81.1
Complete	84	30.4
Incomplete	140	50.7
Frank	118	42.8
Footling	22	7.9
Knee	0	0
Face	19	6.9
Brow	9	3.3
Shoulder	17	6.2
Compound	7	2.5
Total	276	100

Observations of the mode of delivery in different term singleton malpresentations revealed that out of all breech presentations, 34.4% of cases had undergone vaginal delivery, 29.5% had undergone planned CS and 36.1% had undergone emergency CS. In face presentations, 21.1% had undergone vaginal deliveries and 78.9% had undergone emergency CS. 100% of all brow cases had undergone emergency CS. In shoulder presentations, 41.2% had elective CS & 58.8% had emergency CS. In compound presentations, 42.8% have undergone vaginal delivery and 57.2% have undergone emergency CS (Figure 1).

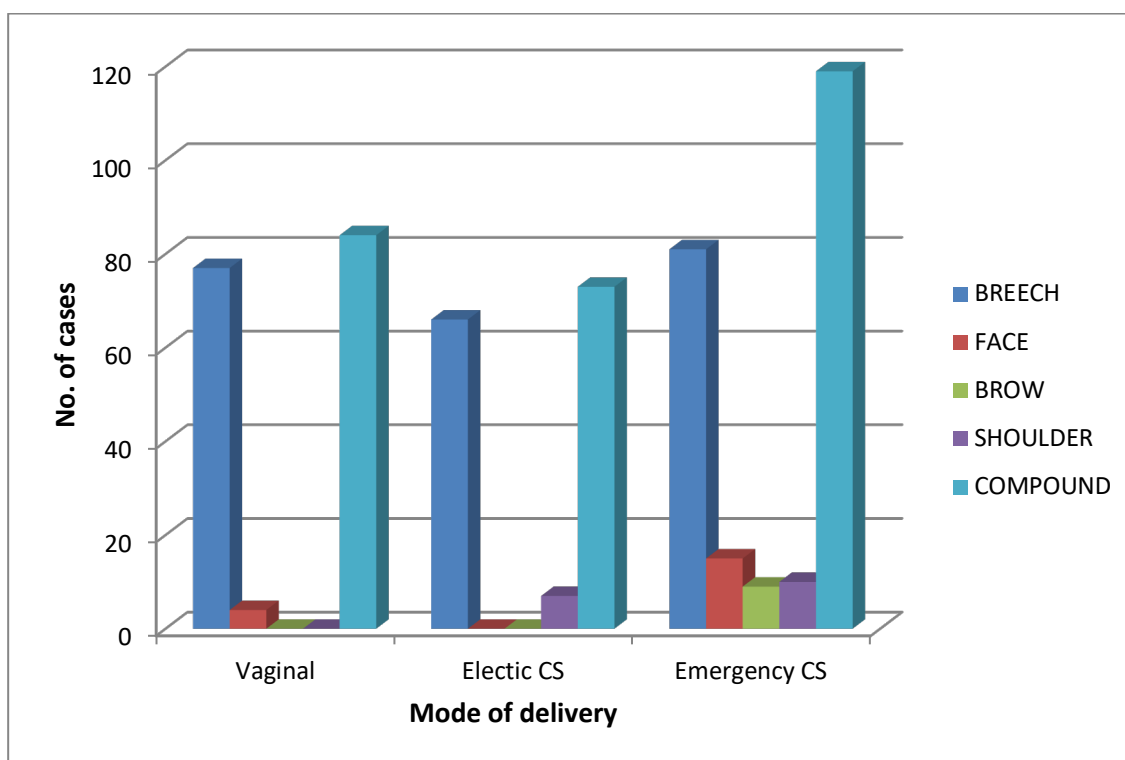


Figure 1: Mode of delivery in different term singleton malpresentations

Indications of elective CS for breech presentations were fetopelvic disproportion (28.8%), contracted pelvis (10.9%), on maternal request (19.2%), BOH (16.4%), hyperextension of head (9.6%) and elderly primi (5.5%). However, the indications for shoulder presentations were contracted pelvis (5.5%), BOH (2.7%) and elderly primi (1.4%) (Figure 2). The indications of emergency CS in breech were fetal distress (21.8%), non-progress of labor (15.9%), cord prolapsed (6.7%), footling (18.5%) & obstructed labour (5.1%). For face presentation,

indications were fetal distress (2.5%), non-progress of labor (1.7%), mento-posterior (5.9%) & obstructed labour (2.5%). The indications of emergency CS in the brow were persistent brow (5.1%) & obstructed labour (2.5%). Furthermore, in shoulder presentation, the indications were fetal distress (2.5%), cord prolapse (1.7%), obstructed labour (2.5%) & hand prolapsed (1.7%). Moreover, compound presentations showed indications of fetal distress (0.8%), non-progress of labour (1.7%) and hand prolapsed (0.8%) (Figure 3).

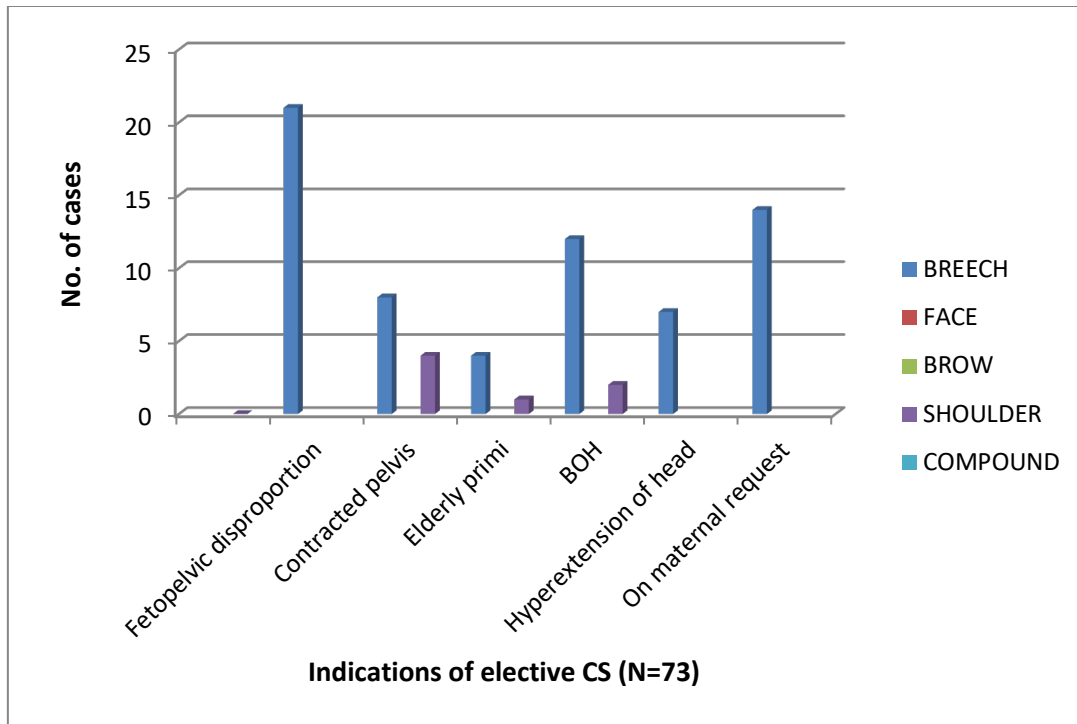


Figure 2: Indications of elective CS in term singleton malpresentations

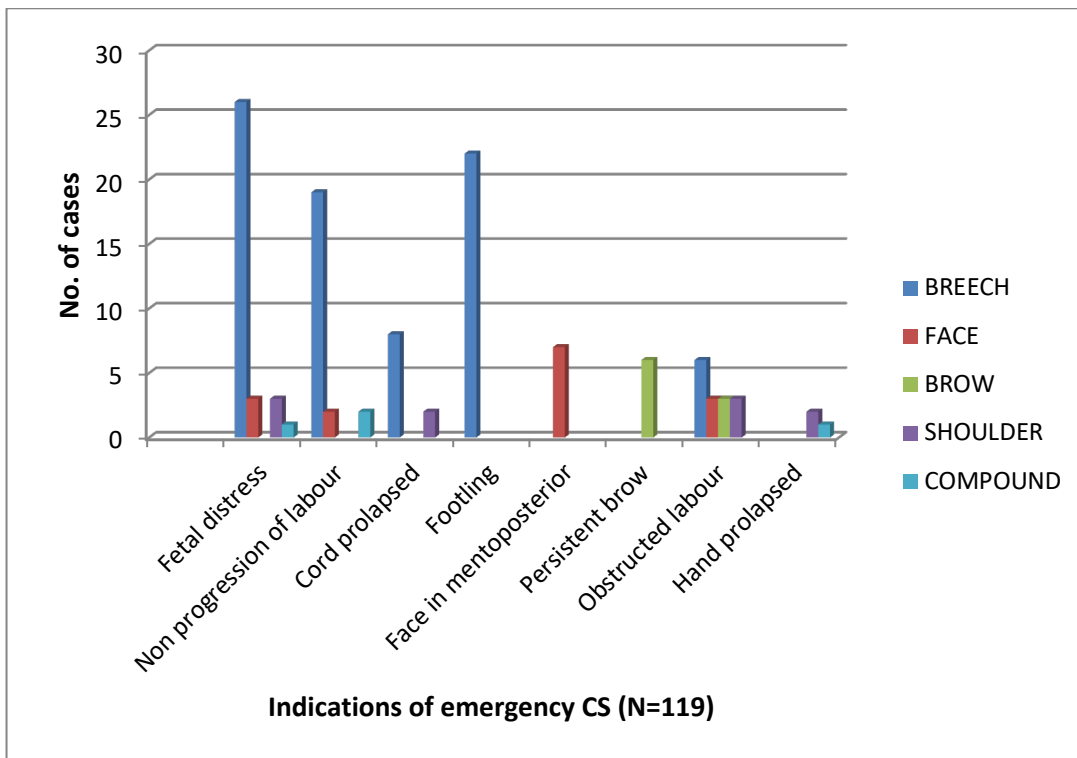


Figure 3: Indications of emergency CS in term singleton malpresentations

Malpresentations with compelling indications were the largest factor contributing to perinatal mortality. Out of all the malpresentation cases of malpresentations, total perinatal mortality was observed in 11.9%. However, stillbirth, neonatal death and corrected perinatal mortality were observed in 9.4%, 2.5% and 3.3% cases, respectively. The overall incidence of perinatal

outcome in term singleton malpresentation was indicated in Table 2. Low APGAR (1min) <7 was found in 16.3% of cases, including breech 12.3%, face 1.1%, brow 1.1%, shoulder 1.4% & compound 0.4%. Low APGAR (5mins) <7 was found in 5.3% of cases, including breech 3.9%, brow 0.7% & shoulder 0.7%.

Table 2: Overall incidence of perinatal outcomes in term singleton malpresentation

N=276	Breech % (no.)		Face % (no.)		Brow % (no.)		Shoulder % (no.)		Compound % (no.)		Total % (no.)
	vaginal	CS	vaginal	CS	vaginal	CS	vaginal	CS	vaginal	CS	
APGAR (1min) <7	7.2 (20)	5.1 (14)	1.1 (3)	0	0	1.1 (3)	0	1.4 (4)	0	0.4 (1)	16.3(45)
APGAR (5mins) <7	1.4 (4)	2.5 (7)	0	0	0	0.7 (2)	0	0.7 (2)	0	0	5.3(15)
Perinatal mortality	7.2 (20)	2.5 (7)	1.1 (3)	0	0	0.7 (2)	0	0.4 (1)	0	0	11.9 (33)
Neonatal mortality	1.1 (3)	1.1 (3)	0.3 (1)	0	0	0	0	0	0	0	2.5 (7)

It was observed from Table 3 that out of all vaginal deliveries, 23.8% of cases led to low APGAR <7 at 1 min in the case of breech and 3.5% in face deliveries. Only 4.7% of cases of vaginal deliveries

led to low APGAR <7 at 5 mins in breech presentation. The corrected perinatal mortality was 5.8% out of all vaginal-delivered patients. Neonatal mortality was only 3.5% out of all vaginal deliveries.

Table 3: Perinatal outcomes in vaginal deliveries of term singleton malpresentations

Perinatal outcomes in vaginal deliveries (N=84)	Breech (%)	Face (%)	Brow (%)	Shoulder (%)	Compound (%)
APGAR (1min) <7	23.8	3.5	0	0	0
APGAR (5mins) <7	4.7	0	0	0	0
Corrected perinatal mortality	4.7	1.1	0	0	0
Neonatal mortality	3.5	0	0	0	0

In caesarean deliveries, low APGAR <7 at 1 min was found in 11.3% of cases, which included 7.2%, 1.5% and 2.1% in breech, brow, and shoulder presentations, respectively. Low APGAR <7 at 5 mins was found in 5.8% of cases, including 3.6%, 1.1% and 1.1% in breech, brow and shoulder

presentations, respectively. There was corrected perinatal mortality of 2% out of all CS deliveries and 1.5% in breech and 0.5% in brow presentation. The neonatal mortality rate was 1.5% in breech (Table 4).

Table 4: Perinatal outcomes in caesarean deliveries of term singleton malpresentations

Perinatal outcomes in caesarean deliveries (N=192)	Breech (%)	Face (%)	Brow (%)	Shoulder (%)	Compound (%)	Total (%)
APGAR (1 min) <7	7.2	0	1.5	2.1	0.5	11.3
APGAR (5 min) <7	3.6	0	1.1	1.1	0	5.8
Corrected perinatal	1.5	0	0.5	0	0	2
Neonatal mortality	1.5	0	0	0	0	1.5

Figure 4 depicted that the perinatal outcomes in different malpresentations with APGAR score <7 at 1 min was highest in brow and shoulder presentations (33.3% & 23.5%), respectively as compared to face, breech and compound

presentations (15.8%, 15.1% & 14.2%). Soft tissue damage was highest among face deliveries (21.1%) followed by brow (11.1%) and breech (4.1%) deliveries.

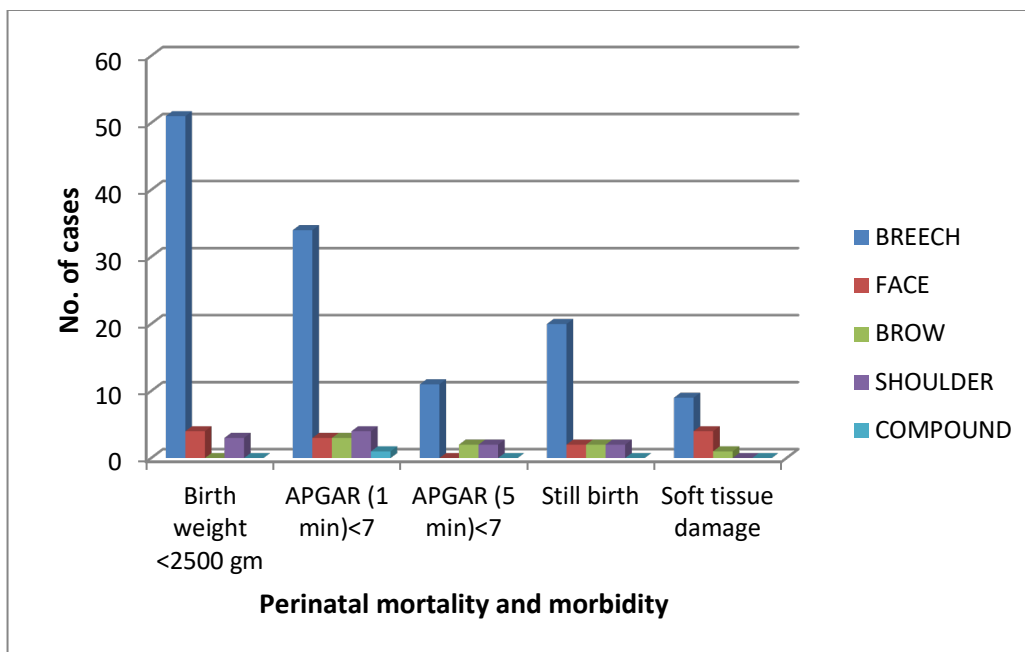


Figure 4: Perinatal mortality and morbidity in different malpresentations

The results of maternal complications in term singleton malpresentation showed that impending ruptures were found more in brow, shoulder, and face (11.1%, 5.9% and 5.3%) than breech (1.8%). Postpartum hemorrhage (PPH) was more in brow

(11.1%) than other malpresentations. Uterine incision extension was found 11.1% of brow, 5.9% of the shoulder, 5.3% of the face and 1.3% of breech presentations (Figure 5).

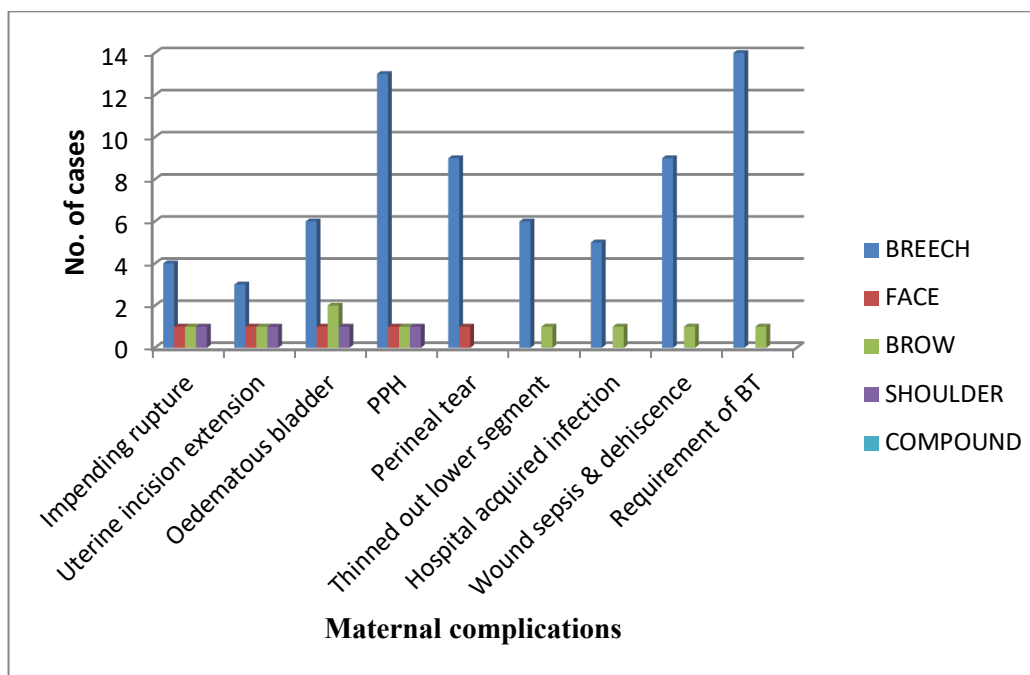


Figure 5: The maternal complications in term singleton malpresentation

The study was performed for over 2 yrs. Out of 17997 deliveries, the incidence of malpresentation was 1.6%. However, in other studies, the incidences were slightly low at 0.05% [12] and 0.10% [10]. But, in the study performed by [13], it was observed to be higher (4.87%).

In the present study, the higher number of presentations was breech (81.1%), out of which

frank breech was the maximum (50.7%), followed by complete breech (30.4%) and footling breech (7.9%). The previous study reported that frank, complete and footling breech incidences were 55.5%, 34.7% & 8.7% respectively [14]. Similar findings were reported in another study with incidences of 54.52%, 36.07% and 9.11% respectively [15].

Present findings showed that most malpresentation cases were delivered by caesarean section (69.6%) with emergency CS of (43.2%) and vaginal deliveries were conducted in 30.4% of cases. These results correlate well with the other study, where incidences of caesarean section and vaginal deliveries were 66.7% and 33.3% out of all term malpresentations [12].

The most common indication of elective CS in breech was fetopelvic disproportion (28.8%) followed by maternal request (19.2%), BOH (16.4%), contracted pelvis (10.9%) and elderly primi (5.5%). In contrast to the study by Singh *et al.*, the indications of elective CS in breech were prev. CS (7.2%), fetopelvic disproportion (4.2%), oligohydramnios (3.4%), contracted pelvis (1.5%), placenta previa (1.5%), BOH (0.8%) and post maturity (0.8%) [14]. In addition, Kerning *et al.*, reported the commonest indications as fetopelvic disproportion (23.5%) followed by maternal request (20.2%), which were similar to our study [15].

The common indications of emergency CS in breech were fetal distress (21.8%), footling (18.5%), non-progress of labour (15.9%), cord prolapse (6.7%) and obstructed labour (5.1%). These findings were like a previous study, which reported the indications as fetal distress (16.5%), footling (11%), cord prolapsed (5.1%) and PROM (5.1%) [16]. The study also agreed with the previous studies [15, 17].

In the present study, out % of all face deliveries, 21.1% had undergone vaginal deliveries and 78.9% had undergone emergency CS. 100% of all brow cases had undergone emergency CS. In shoulder presentations, 41.2% had elective CS and 58.8% had emergency CS. In compound presentations 42.8% have undergone vaginal delivery and 57.2% have undergone emergency CS. In face presentation, similar findings were observed in other study where 66.7% underwent CS and 33.3% had vaginal deliveries [12]. In Brow presentation, similar results were observed with 100% caesarean rate [10]. Total perinatal mortality was 11.9%, out of which stillbirth was 9.4%, neonatal death was 2.5% and corrected perinatal mortality rate was 3.3%. These results correlate with the other studies with a perinatal mortality rate of 12.2% [12] and 14.6% [10].

In our investigation, out of all malpresentations, 16.3% of foetuses had APGAR score <7 at 1 min and 5.3% had APGAR <7 at 5 mins. This agreed with the previous study (15.2%) [12]. In addition, out of all vaginal deliveries, 23.8% of cases led to low APGAR <7 at 1 min in case of breech and 3.5% in face deliveries. However, only 4.7% cases of vaginal deliveries led to low APGAR <7 at 5 mins in breech presentation. These findings were similar to the study reported by Wasim *et al.*, [18]. The corrected perinatal mortality was 5.8% out of all vaginal-delivered patients. In contrast, neonatal

mortality was observed in only 3.5% of cases. These observations were in agreement with the study reported by [19].

Out of all caesarean deliveries, low APGAR <7 at 1 min was found in 11.3% of cases, which included 7.2%, 1.5% and 2.1% in breech, brow and shoulder presentations, respectively. Low APGAR <7 at 5 mins was observed in 5.8% of cases, which included 3.6%, 1.1% and 1.1% in breech, brow and shoulder presentations, respectively. These results were similar to the report obtained in other studies [18, 20].

The present study reported that the perinatal mortality rate in the vaginally delivered group was 1.6% when compared to the planned caesarean group (0.82%). These findings were similar to the study reported by [15]. Soft tissue damage was observed highest among face deliveries (21.1%). A similar result was observed in the study reported by Shaffer *et al.* [21].

The maternal complications like impending rupture, PPH, uterine incision extension, edematous bladder were more in brow and shoulder presentations than in breech and compound presentations. These results were in agreement with the other study [12].

Limitations

The study is limited to a single hospital and may not represent the broader population or healthcare settings. The study period is limited to two years, which may not capture long-term trends or variations in obstetric outcomes. The study does not provide detailed information on the specific interventions or techniques used during vaginal breech deliveries, which could impact outcomes.

Conclusion

The study concluded that most malpresentation cases were delivered by cesarean section, with breech presentations being the most common. Vaginal deliveries in term breech malpresentations had a higher risk of low APGAR scores (<7) at 1 minute and 5 minutes compared to cesarean deliveries. Brow and shoulder presentations had the highest rates of low APGAR scores at 1 minute, while face presentations had the highest rates of soft tissue damage. The study reported a total perinatal mortality rate of 11.9%, with stillbirth accounting for 9.4% and neonatal death accounting for 2.6%. Malpresentations with compelling indications were identified as a significant factor contributing to perinatal mortality. Furthermore, to facilitate early referral to higher facilities for expert services, healthcare staff should be educated on malpresentation diagnosis and identification of etiological variables. For better fetomaternal outcomes, delivery in malpresentations should be scheduled at sites with competence in a vaginal birth, appropriate intrapartum monitoring, and caesarean section capabilities.

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