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Original Research Article

Mode of delivery and outcome of breech presentation: a prospective observational study in a tertiary centre

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ABSTRACT

Background: Breech presentation is the commonest malpresentation with the incidence of 3-4% at term. This study was done with the objective of studying the mode of delivery in breech presentation and to compare the maternal and fetal outcome in patients delivered vaginally to those delivered by cesarean section.

Methods: This prospective observational study was conducted in Vanivilas Hospital, affiliated to Bangalore Medical College and Research Institute, from June 2014 to May 2015. The study group included 509 patients with breech presentation who were studied with respect to their gestational age, birth weight, type of breech, mode of delivery, maternal and perinatal outcome.

Results: The incidence of breech presentation was 2.92% (509) among 17454 total deliveries with the incidence of 3.17% in primi and 2.73% in multies. 193 (38%) patients had vaginal breech delivery and 316 (62%) delivered by LSCS. Apgar score of less than 7 at 1 minute was seen with 21.42% of vaginally delivered fetuses and 9.09% of fetuses delivered by cesarean section. The perinatal mortality was 1.6% (8 cases) in vaginal group 0.8% (4 cases) in LSCS group. The short term maternal complications in LSCS group was 7.62% and in vaginal delivery group was 3.09%.

Conclusions: The short term maternal morbidity is higher in patients with cesarean section compared to those with vaginal breech delivery. Perinatal outcome is better in babies delivered by cesarean section. Still vaginal breech delivery can be an option for breech babies with proper selection and when conducted by a skilled obstetrician.

Keywords: Breech presentation, Mode of delivery, Vaginal breech delivery

INTRODUCTION

Breech presentation is a longitudinal fetal lie in which the fetal podalic pole consisting of the buttocks, feet or the knees is the leading pole. The incidence of breech presentation decreases with increasing gestational age. While 20-25% of fetuses under 28 weeks are breech, only 7-16% are breech at 32 weeks, with the incidence of breech being 3-4% at term.¹ Depending upon the varying amount of extension, different types of breech are classified as

1. Complete/Flexed breech
2. Incomplete breech
 - Frank/Extended breech
 - Footling breech
 - Kneeling breech

Clinically breech can be classified as uncomplicated breech and complicated breech when breech is associated with prematurity, placenta previa, contracted pelvis, twins etc. Causes of breech presentation are- prematurity,

altered intrauterine contour or volume like uterine anomalies, uterine leiomyomata, placental abnormalities, multiparity, extremes of amniotic fluid volume, fetal anomalies, multiple gestation.

Ultrasonographic examination in breech presentation helps us to know the type of breech, attitude of fetal head, nuchal arms and estimated fetal weight.

Different modes of delivery for breech presentation can be spontaneous breech delivery, assisted breech delivery, breech extraction and cesarean section. It is essential for clinicians to maintain the skills of vaginal breech delivery especially in a country like ours with limited access to operative delivery and in situations such as precipitous labour, second stage labour referrals, delivery of an anomalous or a dead fetus or mother's preference for vaginal birth. The vast majority of the morbidity and mortality associated with breech delivery is attributed to three factors-cord compression, occurrence of nuchal arms and difficulty in birth of the aftercoming head. Cesarean section for breech also requires skill and expertise as the problems of birth injury, traction on the fetal spine and difficulties of the after coming head still remain. Delivery of breech fetus at cesarean mirrors an assisted vaginal breech delivery.

To compare the outcome of planned vaginal delivery versus planned cesarean delivery in selected breech presentation pregnancies the Term Breech Trial was conducted. This trial interpreted that planned cesarean section is better than planned vaginal birth for the term fetus in breech presentation and serious maternal complications are similar between the two groups.²

With a policy of planned cesarean sections, for every additional 14 cesarean sections done, one baby will avoid death or a serious morbidity. However, the investigators of the trial, themselves reported in a follow up study that planned cesarean section was not associated with a reduction in the risk of death or neurodevelopmental delay in children at the age of two years.³ This study was conducted in a tertiary referral center, to study the mode of delivery in breech presentation and to compare the maternal and fetal outcome in patients delivered vaginally to those delivered by cesarean section.

METHODS

This clinical study was conducted in Vanivilas Hospital, affiliated to Bangalore Medical College and Research Institute from June 2014 to May 2015.

This is a prospective observational study. The study group included 509 patients with breech presentation among the 17454 patients who delivered in this hospital during the study period. Patients with singleton pregnancy with breech presentation with more than 28 weeks of gestation were included in the study.

Patients with multifetal gestation, compound presentation and those delivered by breech before 28 weeks of pregnancy were excluded from the study.

These patients were studied with respect to their gestational age, birth weight, type of breech, mode of delivery, maternal and perinatal outcome.

Detailed history was taken and examination was done for all the patients with emphasis on any associated complicating factors. This was followed by routine blood investigations and an ultrasound scan whenever feasible. Vaginal delivery was allowed in cases where there was reassuring CTG at admission, estimated fetal weight was not more than 3.5kgs, with no fetopelvic disproportion, no placenta praevia, frank or complete breech and in case of anomalous baby. The patients who were selected for vaginal delivery were carefully monitored and assisted breech delivery was conducted in the presence of a paediatrician with the resuscitation kit.

Cesarean section was carried out as an elective procedure or on an emergency basis in cases of fetopelvic disproportion, placenta praevia, fetal distress, previous cesarean section, footling breech, cord prolapse or cord presentation, failure to progress, oligohydramnios etc.

RESULTS

There were 17454 deliveries in Bangalore Medical College and research institute during the study period between June 2014 and May 2015. Out of these, 509 were breech deliveries. The incidence of breech presentation was 2.92%.

Maximum incidence was seen in the age group between 26-30 years and least incidence was in the age group below <20 years.

Table 1: Parity and number of cases.

Parity	No. of cases	%
Primi	236	46.27
Gravida 2	146	28.65
Gravida 3	88	17.25
Gravida 4	32	6.27
Gravida 5	8	1.56

Table 1 shows the distribution of breech presentation and the parity.

The incidence of breech presentation in primi was 3.17 % and in multigravida it was 2.73 %. Frank breech was the commonest type of breech presentation. Table 2 shows the types of breech presentation.

In primigravida, frank breech was more frequently seen accounting for 82.2% where as in multigravida, complete breech was more common being 55.47%. Footling is the least common in both but more seen in multigravida.

Table 2: Type of breech.

Type of breech	No. of cases	%
Complete	184	36.07
Frank	278	54.52
Footling	46	9.11
Kneeling	2	0.3

The incidence of breech presentation was higher before 37 weeks gestation which was 62.74% compared to after 37 weeks which was 37.26%.

Table 3: Complications and number of cases.

Complications	No. of cases
PIH	60
Eclampsia	18
Abruption	14
IUGR	40
Previous LSCS	60
Previous 2 LSCS	6
Oligohydramnios	46
Polyhydramnios	8
Placenta praevia	15
Anemia	20
PPROM	28
Chronic HTN	5
Seizure disorder	3
Thyroid disorder	4
GDM	15
Bronchial asthma	4
Previous myomectomy	2
Heart disease	5

About 48% of the cases were complicated by factors other than prematurity. In some cases, there were more than one complicating factors (Table 3).

Table 4: Uterine abnormality.

Uterine abnormality	No. of cases
Biocornuate	4
Unicornuate	18
Septate	8
Subseptate	8
Fibroid	12

50 cases had uterine abnormality giving an incidence of 9.8% (Table 4).

15 fetuses had congenital abnormality which included hydrocephalous, Dandy Walker malformation, spina bifida, achandrogenesis, osteogenesis imperfecta, renal agenesis and congenital dislocation of the hip.

The rate of congenital anomaly of fetus in this study was 3.13%. 193 (38%) patients had vaginal breech delivery and 316 (62%) delivered by LSCS.

LSCS was the most frequent mode of delivery in both primigravida and multigravida, but assisted breech deliveries were more common in multigravida. 24 (10.16%) primigravidae and 86 (31.5%) multigravidae had assisted breech deliveries.

Table 5: Indications for LSCS.

Indication	No. of cases
Patient's request	120
Fetopelvic disproportion	102
Cord prolapse / presentation	12
Oligohydramnios	28
Previous LSCS	56
Footling presentation	23
Supracervical fibroid	2
Placenta praevia	15
Previous 2 LSCS	5
Acute fetal distress	20
Eclampsia	12
Previous 4 th degree perineal tear	2
PPROM	20

The most common indications for LSCS were fetopelvic disproportion and patient's request. There was overlap of indication between many cases. Table 5 shows the indications for LSCS. 21.42% of vaginally delivered fetuses had an Apgar score less than 7 at one minute whereas only 9.09% of fetuses delivered by cesarean section had such low Apgar scores.

There were 94 admissions to neonatal unit. 21.64% (42) of vaginally delivered fetuses and 16.5% (52) of fetuses delivered by cesarean section were admitted in neonatal unit. Two babies which were delivered vaginally had fracture of femur.

Table 6: Cause of perinatal death.

Causes of Perinatal Death	No. of fetuses
Intrauterine fetal demise	22
Prematurity	3
Severe birth asphyxia	4
Bilateral Renal Agenesis	1
Dandy Walker Malformation	1
Sepsis	3

There were 34 perinatal deaths out of which 22 patients had intrauterine fetal demise at admission. The perinatal mortality rate in this study is 6.66%. Table 6 shows the causes of perinatal death. More perinatal deaths were seen in the fetuses less than 37 weeks gestations amounting to 82% of perinatal mortality.

Excluding the cases of IUFD at admission, the perinatal mortality was more among vaginally delivered patients which was 1.6% (8 cases) and it was 0.8% (4 cases) in patients delivered by LSCS. The number of complications in patients delivered by cesarean section

were more (7.59%) than vaginally delivered patients (3.1%). The overall maternal complication rate was 5.8% (Table 7).

Table 7: Maternal complications.

	Complications	No. of cases
Vaginal delivery	Cervical tear	3
	Atonic PPH	2
	Haematoma	1
Cesarean delivery	Febrile morbidity	12
	Wound gape	4
	Inverted T incision	4
	PPH	4

DISCUSSION

The maternal complications and fetal morbidity and mortality are higher in case of breech presentation compared to vertex presenting fetuses. The maternal and fetal outcomes of breech presenting fetuses in this observational study has been compared with other studies. The incidence of breech delivery was 2.92% comparable to the incidences found by Gilbert et al and Moodley et al which were 3% and 2.4% respectively.^{4,5} In the present study, the maximum incidence of breech was seen in the age group between 26 – 30 years which was 37.64% which correlated with the study by Han et al in Singapore showing an incidence of 36.2% in the same age group.⁶

The incidence of complete breech in our study was 36.07%, extended breech was 54.52%, and footling breech was 9.11% which was comparable with the Term Breech Trial.² In the present study, assisted vaginal breech delivery was the mode of delivery in 38% of cases and LSCS was done in 62%. The studies by Alarab et al, Moodley et al and Han et al have lower vaginal delivery rates compared to our study.⁵⁻⁷ Our hospital being a tertiary referral center, there are many breech presentation cases brought in active labour, who cannot be immediately taken for cesarean. 10.16% of primigravidae delivered vaginally whereas as 89.84% underwent cesarean section. The vaginal delivery rate in multigravidae was 3 times greater i.e. 31.5% and cesarean section rate was 68.62%.

The results of present study are comparable to the study by Alarab et al with a vaginal delivery rate of 15.50% and a cesarean section rate of 84.50% in primigravidae and a rate of vaginal delivery of 32.95% and cesarean rate of 67.05% in multigravidae.⁷

In present study, the Apgar score less than 7, was found more in vaginally delivered patients (21.4%). The same results were found in The Term Breech Trial, Alarab et al and Pradhan et al where Apgar score less than 7 were found more in vaginally delivered fetuses.^{2,7,8} The perinatal mortality rate in this study was 6.66%. Excluding the cases of intrauterine fetal demise perinatal

mortality rate is 2.46%. The Term Breech Trial had the perinatal mortality rate of 0.3% in countries with low perinatal mortality and 1.2% in countries with high perinatal mortality rate.² The perinatal mortality rate in the vaginally delivered group was 1.3% when compared to 0.3% in the planned cesarean group which was 1.6% and 0.82% respectively in our study. Hence the perinatal mortality was more in vaginal delivery group in comparison with cesarean group. The study by Gilbert et al and the study by Rietberg et al also showed similar results.^{4,9}

Table 8: Maternal complication rate with respect to mode of delivery in various studies.

Studies	Overall Rate	Maternal complication rate	
		Vaginal delivery	Cesarean section
Rauf et al	6%	12.5%	87.5%
Moodley et al	4.72%	9.1%	90.9%
Term breech trial	3.5%	49%	51%
Present study	5.8%	22.5%	77.5%

The maternal complication rate in our study was 5.8% which correlated with the study by Rauf et al, with a complication rate of 6% and by Moodley et al, with the rate of 4.72%.^{5,10}

In the Term Breech Trial, there was not much difference in the maternal morbidity between the two groups of planned vaginal delivery versus planned cesarean section (3.2% v/s 3.9%).² This observation tilted the guidelines in favour of elective cesarean section as the mode of delivery. Later studies by Moodley et al, Han et al and Rauf et al concluded that the maternal complications were more in cesarean delivery when compared to vaginal delivery which correlates well with the present study (Table 8).^{5,6,10}

CONCLUSION

Based on present study, it can be concluded that the maternal short-term morbidity was higher in patients who delivered by cesarean section compared to those who delivered vaginally. Fetal morbidity was lesser and Apgar scores better in babies delivered by cesarean section. Perinatal mortality was higher in babies delivered vaginally. Hence, we can conclude that vaginal delivery is not a completely safe option but can be considered as a safe route for breech babies as long as the selection criteria is fulfilled and delivery is conducted by a skilled obstetrician with intrapartum fetal monitoring.

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