

DOI: <http://dx.doi.org/10.18203/2320-1770.ijrcog20203314>

Original Research Article

Evaluating the factors influencing perinatal outcome in breech presentation

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Received: 28 May 2020

Accepted: 03 July 2020

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ABSTRACT

Background: The objective of this study was to analyse the current obstetric practice regarding breech presentation, document the incidence, perinatal outcome and the factors influencing perinatal outcome in breech deliveries.

Methods: It was a retrospective observational study including 252 cases of breech presentation during January 2018 to December 2019 in a tertiary teaching institute in Vidarbha region of Maharashtra.

Results: Total number of breech deliveries 252 (incidence is 2.5%). Caesarean section for breech presentation 95 (37.6%). With vaginal deliveries the Apgar score at 5 min below 7 were among 48 out of 157 breech deliveries whereas with LSCS it was only amongst 7 out of 95 deliveries. The maximum percentage of perinatal mortality is seen with birth weight below 2000 gm. Maximum mortality is seen prior to 32 weeks and in babies who delivered by vaginal route. Respiratory distress with prematurity and severe birth asphyxia are the common causes of perinatal deaths. Total 32 (12.69%) babies were transferred to NICU. 20.38% of the total vaginal breech deliveries and 5.26% of the total LSCS were transferred to NICU. Out of total 32 NICU admissions 22 are for the preterm babies and babies with birth weight below 2000 gm.

Conclusions: The perinatal outcome does not depend only on the mode of delivery, it is also affected by the weight of the baby, its maturity, associated congenital anomalies, equipped neonatal intensive care unit and also substantially on the expertise of the obstetrician and the neonatologist.

Keywords: Apgar score, Breech, Birth weight, Mode of delivery, Perinatal outcome, Preterm

INTRODUCTION

About 3-4% of all pregnancies reach term with a fetus in the breech presentation.¹ Fetal abnormality, prematurity, abnormal amniotic fluid volumes and low-lying placenta are all the risk factors for breech presentation.

The major contributing factors in relation to perinatal mortality was prematurity and low birth weight.

The percentage of breech deliveries decreases with advancing gestational age from 22-25% of births prior to 28 weeks' gestation to 7-15% of births at 32 weeks' gestation to 3-4% of births at term.¹

Controversy exists among clinicians regarding the mode of delivery for babies in a breech presentation at term with vaginal breech delivery becoming less common following the publication of the Term Breech trial in 2000.²

In spite of various improvements in methods of diagnosis, antenatal care, newer and safer anaesthetic agents and techniques of delivery, breech presentation is always at a greater risk than cephalic presentation with respect to perinatal morbidity and mortality.

In primigravida this problem is compounded by the fact that the foetus is traversing through an untested pelvis.

ACOG recommendations beyond 2006 have indicated that the decision regarding the mode of delivery should consider patients' wishes and the experience of the provider, because some follow-up studies revealed no differences in maternal or neonatal outcomes between planned caesarean and vaginal delivery groups.³⁻⁶ It is necessary to give the parents not only a live baby but also a child both physically and mentally healthy.

With astonishing growth of medicolegal responsibilities, the breech presentation always puts the obstetrician in dilemma regarding the decision between vaginal delivery and caesarean section. Furthermore, with increasing awareness, smaller family norms, obstetricians favour an abdominal delivery in a breech presentation the intention being primarily to reduce the perinatal morbidity and mortality. Perinatal outcome in breech delivery is affected by other factors also like prematurity, low birth weight, congenital anomalies. Taking all these factors into consideration a retrospective study of the current obstetric practice regarding breech presentation and the other factors affecting the perinatal outcome in breech deliveries presenting at the time of labour was carried out.

METHODS

It was a retrospective observational study. The study includes 252 cases of breech presentation during January 2018 to December 2019 in a tertiary teaching institute in Vidarbha region of Maharashtra.

- Patients who underwent breech delivery either vaginal or cesarean section during the period January 2018 to December 2019 were included in the study.
- The data was collected in pre-designed proforma.
- A detailed medical and obstetric history was elicited.
- General examination was done and pelvis was assessed.
- USG to rule out congenital anomalies was done if possible.
- Correlation of foetal outcome to the mode of delivery, and to the length of 2nd stage of labour was made.
- Most of the fetuses were allowed to deliver spontaneously up to the umbilical cord and then assistance was given to deliver arms and head. After coming head was delivered by suprapubic pressure and or Mauriceau Smellie Veit man oeuvre. Occasionally forceps were used for aftercoming head of breech.
- All the data regarding APGAR score at 1 and 5 mins, fetal injuries during birth and congenital malformation were recorded and documentation was done.

Inclusion criteria

- All registered and unregistered patients who underwent breech delivery either vaginal or

caesarean section during the period January 2018 to December 2019 have been included.

Exclusion criteria

- Cases with macerated still birth and absent foetal heart sounds on admission have been excluded.

Management of delivery

- To allow spontaneous labour to start and vaginal delivery to occur.
- Elective Caesarean Section

Types of vaginal delivery

Spontaneous breech delivery

The baby is expelled entirely spontaneously without any traction or manipulation other than support to the baby. This form of delivery is rare in term fetus.

Assisted breech delivery

The infant is spontaneously delivered as far as the umbilicus but remainder of the body is delivered by assistance given by obstetrician.

Total breech extraction

The entire body of the baby is extracted by the obstetrician.

Indications for caesarean section in breech presentation

- Large baby
 - a. EBW >3.8 kg by clinical examinations and USG
 - b. BPD >9.5 by USG.
- Footling breech
- Preterm breech
- Hyperextended head
- Placenta previa
- Contracted borderline or abnormal pelvis
- Chronic fetal distress, IUGR
- Cord prolapses
- Gravida with poor obstetric history e.g. a difficult delivery or damaged baby.
- Elderly primi, H/o infertility or request for caesarean delivery.

RESULTS

Total number of deliveries in the study year January 2018 to December 2019: 9938. Total number of breech deliveries 252 incidence is 2.5%.

Incidence of caesarean section in breech presentation 95 (37.6%).

Table 1: Mode of delivery versus Apgar score.

Apgar score at 5 min	Vaginal delivery	LSCS
7-10	109 (69.4%)	88 (92.6%)
4-6	25 (15.9%)	5 (5.2%)
1-3	23 (14.6%)	2 (2.1%)
Total	157 (100%)	95 (100%)

With vaginal deliveries the Apgar score at 5 min below 7 were among 48 breech deliveries whereas with LSCS it was only amongst 7 deliveries. Perinatal mortality was marginally higher in the multiparous patients most of them delivered vaginally.

Table 4 shows the association of birth weight with the perinatal outcome. The maximum percentage of perinatal mortality is seen with birth weight below 2000 gm.

Maximum neonatal deaths occurred in babies below 2000 gm who underwent vaginal breech delivery.

Table 2: Parity versus perinatal mortality.

Parity	Total number of patients	Perinatal death	% mortality
Primi	94	12	12.76%
Multi	158	25	15.82%
Total	252	37	14.68%

Table 3: Birth weight versus perinatal mortality.

Birth weight (grams)	Fresh still birth	Neonatal death	Total (%)	No. of breech deliveries	% of breech deliveries
<1000	2	3	5 (14.2%)	5	100%
1000-1500	6	9	15 (37.1%)	28	53.57%
1500-2000	2	6	8 (22.8%)	30	26.66%
2000-2500	1	3	4 (11.4%)	75	5.33%
2500-3000	1	2	3 (8.5%)	106	2.83%
3000-3500	0	2	2 (5.7%)	8	25%
Total	12	25	37 (100%)	252	14.68%

Table 4: Neonatal death versus route of delivery.

Birth weight (grams)	Total number of cases	Total no. of LSCS	Neonatal deaths in LSCS	Total no. of vaginal deliveries	Neonatal deaths in vaginal deliveries
<1000	5	0	0 (0%)	5	3 (12%)
1000-1500	28	1	0 (0%)	27	7 (28%)
1500-2000	30	12	2 (8%)	18	6 (24%)
2000-2500	75	28	1 (4%)	47	2 (8%)
2500-3000	106	48	0 (0%)	58	2 (8%)
3000-3500	8	6	0 (0%)	2	2 (8%)
Total	252	95	3 (12%)	157	22 (88%)

Table 5: Perinatal mortality versus period of gestation.

Period of gestation	No. of cases	Fresh still birth	Neonatal death	Total (fresh still birth + neonatal death)
<28 weeks	5	2	3	5 (100%)
28-32 weeks	35	7	11	18 (51.42%)
32-36 weeks	102	2	9	11 (10.78%)
36-40 weeks	98	1	2	3 (03.06%)
>40 weeks	12	0	0	0 (0%)
Total	252	12	25	37 (14.68%)

Maximum mortality is seen prior to 32 weeks and in babies who delivered by vaginal route. Though preterm breech is an indicator for caesarean section, 32 were delivered vaginally in study institute taking into account poor salvageability of <1500 gm in study neonatal intensive care unit. Respiratory distress with prematurity

and severe birth asphyxia are the common causes of perinatal deaths. Congenital anomalies were detected in 5 (1.98%) of this study cases. So, an ultrasound obstetrics is mandatory prior to caesarean section to rule out congenital anomalies. In this study 75% of patients were scanned.

Table 6: Etiology of perinatal deaths.

Etiology	No. of deaths	Incidence
Respiratory distress with prematurity	11	44%
Severe birth asphyxia	6	24%
Meconium aspiration syndrome	4	16%
Sepsis	3	12%
Intraventricular haemorrhage	1	4%
Total	25	100%

Table 7: Congenital anomalies in breech babies.

Congenital anomalies	Number of babies	Percentage of total (252)
Anencephaly	2	0.79%
Hydrocephalus	1	0.39%
Cleft lip	1	0.39%
Spina bifida	1	0.39%
Total	5	1.98%

Both the cases of brachial plexus injury occurred in case of vaginal breech delivery and they recovered completely. Intraventricular hemorrhage occurred in one baby with birth weight >3000 gm during vaginal delivery who had difficulty in delivery of aftercoming head, this baby did not survive the perinatal period.

Total 32 (12.69%) babies were transferred to NICU. 20.38% of the total vaginal breech deliveries and 5.26% of the total LSCS were transferred to NICU. Out of total 32 NICU admissions 22 are for the preterm babies and babies with birth weight below 2000 gm.

Table 8: Birth injuries.

Birth injuries	Number of babies
Brachial plexus injuries	2
Fracture femur	1
Intraventricular hemorrhage	1
Fracture clavicle	0
ERBS palsy	0
Total	4

Table 9: Weight of baby versus fetal morbidity in terms of transfer to neonatal intensive care unit (NICU).

Weight (gm)	Total no. of LSCS	NICU transfer amongst LSCS	Total no. of vaginal deliveries	NICU transfer amongst vaginal deliveries	% of total breech deliveries
<1000	0	0	5	3	3 (1.19%)
1000-1500	1	1	27	10	11(4.36%)
1500-2000	12	2	18	6	8 (3.17%)
2000-2500	28	2	47	3	5 (1.98%)
2500-3000	48	0	58	3	3 (1.19%)
3000-3500	6	0	2	2	2 (0.79%)
Total	95	5 (5.26%)	157	27 (20.38%)	32 (12.69%)

DISCUSSION

With vaginal deliveries the Apgar scores were poor. 30.5% of the vaginal breech deliveries had Apgar score less than 7 whereas it was only 7.3% with caesarean section (Table 1). Most of them occurred with low birth weight <1500 gm or with weight >3500 gm. Short term neonatal outcome definitely seems better in the LSCS babies even with low birth weight or high birth weight. In a study, of the live births among the vaginal breech deliveries, 51.2% had 1-minute Apgar score of <7.⁷ Perinatal mortality was marginally higher in the multiparous patients as most of them delivered vaginally (Table 2).

All fresh still births occurred during vaginal delivery and the causes being entrapment of the head, severe birth asphyxia and intraventricular haemorrhage (Table 8). Congenital anomalies were detected in 5 (1.98%) of this study cases (Table 7).

In a study at Norway, NNM was 0.9 per 1000 in vaginal breech delivery compared with 0.3 per 1000 in vaginal cephalic delivery, and 0.8 per 1000 in those actually born by caesarean delivery (CD) in breech. Compared with planned cephalic delivery, planned vaginal breech delivery was associated with excess risk for NNM (OR 2.4; 95% CI 1.2 to 4.9), while the OR associated with planned breech CD was 1.6 (95% CI 0.7 to 3.7).⁸

In the present study, mortality in vaginal breech delivery cannot be compared to caesarean group with same baby weight as no LSCS was done for babies <1000 gm only 1 LSCS done for babies with birth weight between 1000 - 1500 gm considering poor salvageability of <1500 gm in study neonatal intensive care unit (Table 4).

Preterm birth is associated with a high frequency of breech presentation, which increases with decreasing gestational age.⁹ In a study, neonates with planned vaginal delivery and planned caesarean delivery did not differ in survival (93.0 versus 95.7%, $p=0.14$). No association between planned caesarean delivery and improved outcomes for preterm breech singletons born at 26-34 weeks of gestation after preterm labour or preterm pre-labour rupture of membranes was found.¹⁰

In the present series, 58% of the babies were preterm i.e. <37 weeks period of gestation. Maximum mortality is seen prior to 32 weeks (Table 5). There were 23 perinatal deaths among 40 breech deliveries prior to 32 weeks of gestation (Table 5). A premature breech delivery in addition to other problems posed the possibility of head entrapment due to relatively large size of the head, which comes last after the small body has slipped through an incompletely dilated cervix. Death due to respiratory distress is seen in most of the babies with birth weight <1500 gm (Table 3 and 6). Also, death due to severe birth asphyxia following head entrapment was seen in most babies with weight less than 2000 gm. Death due to meconium aspiration was seen in term breech with 2500 to 3500 gm weight. More preterm babies following vaginal delivery were transferred to neonatal intensive care unit (Table 9). Out of 32 babies 16 required endotracheal intubation. All of the birth injuries observed occurred in case of vaginal breech delivery, thus indicating clearly the fetal morbidity associated with it.

CONCLUSION

A vaginal breech delivery does not necessarily mean successful outcome. A judicious decision of delivering the breech presentation vaginally depends on many factors like patients age, type of breech, expected fetal weight, progress of labour, adequacy of pelvis, skill of the obstetrician, facilities of operative deliveries. But the perinatal outcome does not depend only on the mode of delivery, it is also affected by the weight of the baby, its maturity, associated congenital anomalies, equipped neonatal intensive care unit and also substantially on the expertise of the obstetrician and the neonatologist. The route of delivery should be discussed with women. There must be balance between neonatal outcomes and the higher risks of maternal morbidity associated with caesarean section performed especially at lower gestational age.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Raut D, Tadru S, Patil B, Koranne P. Evaluating the factors influencing perinatal outcome in breech presentation. *Int J Reprod Contracept Obstet Gynecol* 2020;9:3308-12.