

# To Study Maternal and Neonatal Outcomes in Breech Delivery

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**Abstract:** *Breech is the malpresentation in which podalic pole presents at pelvic inlet and its incidence is 3-4%. Frank breech, complete breech and footling or incomplete breech are the types of breech presentation. Factors responsible for breech presentation include prematurity, uterine abnormalities, foetal abnormalities and multiple gestations. Specifically, following one breech delivery, the recurrence rate for a second pregnancy with breech presentation was nearly 10 percent, and that for a subsequent third pregnancy was 27 percent. Perinatal mortality is increased 2-4 fold with breech presentation irrespective of the mode of delivery. Perinatal mortality for breech presentation at term is about 4-5% for vaginal delivery and 2-4% for caesarean section. The higher perinatal mortality and morbidity associated with breech presentation is mainly due to prematurity, congenital malformation, birth asphyxia and trauma. The management of breech presentation is External Cephalic Version (ECV), planned caesarean section and vaginal breech delivery. ECV may reduce the number of breech presentations and caesarean section, while caesarean section has a higher maternal morbidity in terms of febrile illness and increased duration of hospital stay with small risk of perinatal mortality. Three types of breech deliveries are- spontaneous breech delivery, assisted breech delivery and breech extraction.*

**Keywords:** Breech, Footling, External cephalic version, Febrile illness, Birth trauma

## 1. Introduction

Breech is the most common malpresentation in which the lie is longitudinal and podalic pole presents at the pelvic inlet. Breech presentation occurs in 3-4% of all deliveries.<sup>1</sup> There are three types of breech presentation- frank breech (most common, 50-70%), complete breech (5-10%) and footling or incomplete breech (10-30). Factors responsible for breech presentation include prematurity, uterine abnormalities, fetal abnormalities and multiple gestations. The incidence of breech presentation decreases from about 20% at 28 weeks of gestation to 3-4% at term<sup>2</sup>, as most babies turn spontaneously to the cephalic presentation. This appears to be an active process in which a normally formed and active baby adopts the position of 'best fit' in a normal intrauterine space. Persistent breech presentation may be associated with abnormalities of the baby, the amniotic fluid volume, the placental localization or the uterine anomalies.<sup>3,4</sup>

Abnormalities are observed in 17% of preterm deliveries that have breech presentation and in 9% of term gestations with breech presentation. Perinatal mortality is increased 2-4 fold with breech presentation irrespective of the mode of delivery.<sup>5</sup> Perinatal mortality for breech presentation at term is about 4-5% for vaginal delivery and 2-4% for caesarean section. The higher perinatal mortality and morbidity associated with breech presentation is mainly due to prematurity, congenital malformation, birth asphyxia and trauma.<sup>6</sup>

The management of breech presentation is External Cephalic Version (ECV), planned caesarean section and vaginal delivery. ECV may reduce the number of breech presentations and caesarean section, while caesarean section has a higher maternal morbidity in terms of febrile illness and increased duration of hospital stay with small risk of perinatal mortality. For vaginal breech delivery, estimation of maternal height and clinical assessment of

pelvis remains the most important factor.<sup>7</sup> Caesarean section for breech presentation has been suggested as a way of reducing the associated perinatal problems and in many countries in Northern Europe and North America caesarean section has become the normal mode of breech delivery.<sup>8,9</sup>

In 2000, the Term Breech Trial Collaborative Group published the results of a randomized, multicenter trial comparing planned cesarean section to planned vaginal birth for term fetuses with a breech presentation.<sup>10</sup> The trial included many different hospitals providing for a large sample size and wide generalizability, but consistent selection criteria was not made mandatory. This trial was stopped early secondary to data indicating that perinatal mortality, neonatal mortality and serious neonatal morbidity in the planned vaginal birth arm were higher than in the planned cesarean arm. Based on this trial, the American College of Obstetricians and Gynecologists (ACOG) published a committee opinion stating that patients with persistent breech presentation at term in a singleton gestation should undergo a planned cesarean delivery.<sup>11</sup>

It was published in 2000 that, the Term Breech Trial was a large, multicentre randomized controlled trial designed to determine the safest mode of delivery for a term breech fetus.<sup>12</sup> In countries with a low perinatal mortality rate, the trial showed no difference in perinatal mortality between a planned CS and a Trial of labour but a striking difference in "serious" short-term neonatal morbidity: 0.4% versus 5.1%. No difference in maternal mortality or serious morbidity was measured, leading most experts to recommend planned CS for breech presentation at term.<sup>13,14</sup>

Term breech trial is the largest randomized clinical trial ever under taken on term breech mode of delivery and it has provided a wealth of information about breech birth.

From a large, well-maintained national database, Reitberg et al. studied the change in obstetrical breech practice in the Netherlands before and after publication of the TBT. They detected an abrupt drop immediately after publication in overall vaginal breech birth rate from 50% to 20%, accompanied by a drop in perinatal mortality from 0.35% to 0.18% and in fetal trauma from 0.29% to 0.08%.<sup>15</sup>

In 1980, Collea et al randomized 208 women in labour with term frank breech presentations to either elective caesarian delivery or attempted vaginal delivery after radiographic pelvimetry. Oxytocin was allowed for dysfunctional labour. Of the 60 women with adequate pelvis, 49 delivered vaginally. Two neonates had transient brachial plexus injury. Women randomized to elective caesarian delivery had higher post partum morbidity rates (49.3% vs 6.7%).<sup>16</sup>

In 1983, Gimovsky et al randomized 105 women in labour with term non frank breech presentations to a trial of labour vs elective caesarian delivery. In this group of women, 47 had complete breech, 16 had incomplete breech presentations (hips flexed, 1 knee extended/1 knee flexed) 32 had double footling presentations. Oxytocin was allowed for dysfunctional labour. Of the labour group, 44 had successful vaginal delivery. Most caesarian deliveries were performed for inadequate pelvis. The rate of neonatal morbidity did not differ between neonates delivered vaginally and those delivered by caesarian section although a high maternal morbidity was seen in the caesarian section group.<sup>17</sup>

In cases of breech whatever be the mode of delivery, it increases the rate of subsequent handicap. In other words failure to adopt normal cephalic presentation is an indicator of foetal impairment.<sup>18</sup>

While trial for vaginal delivery most common reason to go for emergency caesarian section is failure to progress and foetal distress.

Three types of vaginal breech delivery are as follows-

- 1) Spontaneous breech delivery.
- 2) Assisted breech delivery
- 3) Total breech extraction

Methods for after coming head are -

- Burn Marshall Technique
- Malar flexion and shoulder traction (modified Mauriceau Smellie Viet technique)
- Forceps delivery.<sup>19</sup>

Hence the present study is planned to study the maternal and neonatal outcomes in terms of various complications associated with breech delivery.

## 2. Material and Methods

This prospective study was conducted on 100 breech cases with gestations (34-40 weeks) admitted in labour room in Deptt. of Obstetrics And Gynecology PGIMS Rohtak. Patients with previous cesaraen section, contracted pelvis, multiple gestations, severe Intra uterine growth restriction, antepartum deaths, congenital malformations and placenta previa were excluded A detailed history of patients regarding present and previous pregnancies was recorded.

History of breech presentation in previous pregnancies, their mode of delivery, duration of labour and fetal outcome was recorded in detail. A proforma containing all these details was filled for each patient in the study group. Abdominal examination was performed for fundal height, fetal presentation, amount of liquor, engagement, foetal heart rate and fetal size. Pelvic examination including per speculum examination and per vaginal examination was performed under full aseptic techniques for pelvic assessment, cervical dilatation, type of breech and state of amniotic membranes, cord prolapse or presentation. Ultrasound was performed at the time of admission for the confirmation and type of breech, gestational age, fetal heart rate, estimated fetal weight, position of head, amount of liquor, placental localization and any congenital anomalies. Following investigations including Hb, blood group, Rh factor, TSH, urine complete examination, HIV, HBsAg and VDRL was done. Study group was divided into two groups, group I including women undergoing elective c-section and group II including women for planned vaginal delivery. Group II women were monitored during labour as per hospital protocols. Women in this group were subjected to cesarean section when indicated and they formed group III (emergency caesarian section). Maternal outcomes were studied for vaginal delivery which include perineal tear, blood loss >1500ml, haematoma and that for C-section include wound infection, febrile illness >1day, DVT and post-operative haematoma. Neonatal outcomes were studied in terms of apgar score <7 and <4 at 5mints, NICU admissions, birth traumas and death.

Statistical analysis- Data was described with proportion for categorical variables and with median and ranges for continuous variables. Crude association between categorical data was assessed with chi-square tests and t-tests for continuous variables. P value <0.05 will be considered statistically significant data.

## 3. Result

One hundred patients were selected for study. 57% were unbooked while 43% were booked. Most of the cases of group II were diagnosed with breech presentation only after admission to PGIMS.

**Table 1:** Age distribution

Age range (years)	Group I (n=30)	Group II (n=70)
≤20	1(3.33%)	5(7.14%)
21-25	23(76.66%)	45(64.28%)
26-30	4(13.33%)	18(25.71%)
>30	2(6.66%)	2(2.85%)
Mean±SD	23.93±2.79	23.81±3.15
Range	20-32	19-32
p value	0.851	(NS)

In the present study, majority of patients were 21-25 years age group i.e. in group I, we observed 23(76.66%) patients and in group II, 45 (64.28%) patients. In more than 30 years age group, two patients each were found in both the groups. It suggests maximum reproductivity of this age group.

Most of breech cases in group I(53.33%) were from urban areas while in group II (65.71%) were from rural areas.

66.66% women were nulliparous in group I and 60% in group II. Mean period of gestation was  $38.3 \pm 1.66$  in group I and  $37.25 \pm 2.0$  in group II.

**Table 2:** Mode of delivery

Mode of delivery	Group I (n=30)	Group II (n=70)
Elective caesarean section	30(100%)	0
Emergency caesarean section	0	38(54.28%)
Assisted vaginal delivery	0	32(45.71%)

From group II a total of 32 women underwent assisted vaginal delivery and 38 underwent emergency caesarean section, who formed group III.

**Table 3:** Various indications of emergency caesarean section in group III

Indications	No. of cases (n=38)	Percentage
Abruption	2	5.26%
Cord prolapsed	1	2.63%
Foetal distress	13	34.21%
Non progress due to Failure of descent	9	23.68%
Non progress due to Failure of cervical dilatation	13	34.21%

Foetal distress and non-progress due to failure of dilatation was the most common indication (13 each) followed by non-progress due to failure of descent in 9 patients. Abruption seen in 2 patients while single case of cord prolapse was there.

**Table 4:** Neonatal outcome

Outcome	Group I (n=30)	Group II (n=70)	P value
Baby weight	$2.70 \pm 0.54$	$2.44 \pm 0.55$	0.03 S
Apgar score 1 min	$6.63 \pm 0.61$	$5.91 \pm 1.12$	<0.001 S
Apgar score 5 min	$8.5 \pm 0.73$	$7.85 \pm 1.19$	<0.001 S
Neonatal morbidity			
NICU	6(20%)	30(42.85%)	
M/S	24(80%)	40(57.14%)	0.08 NS
Neonatal mortality	0	4(5.71%)	0.181 NS

Neonatal outcome of the present study shows mean birth weight in group I  $2.70 \pm 0.54$  kgs and  $2.44 \pm 0.55$  kgs in group II. Mean APGAR score at 1 minute was  $6.63 \pm 0.61$  in group I and  $5.91 \pm 1.12$  in group II and at 5 minute, it was  $8.5 \pm 0.73$  in group I and  $7.85 \pm 1.19$  in group II which was found to be statistically significant ( $p < 0.001$ ). A total of 6 babies in group I and 30 in group II admitted to NICU. Four babies expired in group II and none in group I.

**Table 5:** Various indications of NICU admission (n=36)

Indications	No. of cases(36)	Percentage
Hyperbilirubinemia	7	19.4%
Hypoglycemia	4	11.11%
Low apgar score	12	33.33%
Prematurity	6	16.66%
Neonatal sepsis	3	8.33%
RDS	2	5.55%
Seizures	2	5.55%

With regard to NICU admission of babies, low APGAR score at delivery, hyperbilirubinemia and prematurity are the most common indications.

**Table 6:** Apgar score at 5 minute

Apgar score 5 minute	Group I (n=30)	Group II (n=70)	P value
< 4	0	0	-
< 7	0	9	0.03 S

APGAR score <7 at 5 minutes was found in 9 neonates in group II while none in group I. It was also found to be statistically significant (p value 0.03).

**Table 8:** Maternal morbidity

Maternal morbidity	Group I (n=30)	Group II (n=70)	p value
Blood transfusion	2(6.66%)	3(4.28%)	0.616
Uneventful	26(86.66%)	58(82.85%)	0.633
Febrile illness	1(3.33%)	3(4.28%)	0.823
Wound infection	1(3.33%)	3(4.28%)	0.823
Perineal tear	0	3(4.28%)	0.249

In the present study shows that blood transfusion was given to 2 women in group I and 3 in group II (p value 0.616). A total of 26(86.66%) women in group I and 58 (82.85%) in group II had no complications. Perineal tear was found in 3 women in group II (p value 0.249). Febrile illness and wound infection was observed in 1 and 3 women each in group I and II respectively (p value 0.823).

#### 4. Discussion

In the present study, a total of 100 antenatal women at 34-40 weeks of gestation with breech presentation were enrolled for study. These were divided in two groups, group I with elective c-section and group II with planned vaginal delivery. Women in group II were monitored during labor and subjected to emergency c-section, when indicated. These women formed group III. Patients with previous caesarian section, contracted pelvis, multiple gestations, severe intra uterine growth restriction, antepartum fetal death, congenital malformations and placenta previa were excluded. In the present study, majority of patients were 21-25 years age group i.e. in group I, we observed 23(76.66%) patients and in group II, 45 (64.28%) patients. Maximum women in both the groups were nulliparous i.e. 20(66.66%) and 42(60%) in group I and II, respectively.

#### Maternal morbidity

Maternal morbidity	Present study		Term Breech Trial by Hannah et al	
	Planned vaginal	Planned c-s	Planned vaginal	Planned c-s
Perineal tear	3(4.28%)	0	0.1%	0
Wound infection	3(4.28%)	1(3.33%)	0.9%	1.4%
Febrile illness	3(4.28%)	1(3.33%)	1.3%	2.8%

Maternal morbidity of the present study was comparable to study by Hannah et al.<sup>63</sup> A total of 26(86.66%) women in group I and 58 (82.85%) in group II had no complications.. Collea et al (1980) reported higher maternal morbidity in their studies of breech delivery and reported 49.3% complications in planned caesarean section and 6.7% in planned vaginal delivery groups.<sup>16</sup>

#### Neonatal morbidity

36% of the neonates in present study were being admitted to NICU. Low APGAR score being the most common reason

(33.33%) and this is comparable to study by Gimovsky (1980).<sup>17</sup>

In present study out of 70 patients of planned vaginal delivery 45.71% delivered vaginally while it was 32% out of 100 cases and there were 2 neonatal mortality each in those delivering vaginally and those undergoing caesarean section. No mortality was seen in elective caesarean section.

On contrary to study by Hannah et al and Reitberg, we found no excess risk of serious neonatal morbidity in planned vaginal versus planned caesarean.<sup>10,15</sup>

#### Neonatal mortality

Neonatal death in my study was 5.71%(4) in group II and none in group I which is comparable to study of Term Breech Trial By Hannah et al.<sup>10</sup> Perinatal mortality was observed in 1.9% of planned vaginal deliveries and 0.6% of planned CS deliveries in areas of high national perinatal mortality rates in the Term Breech Trail (p = 0.01).

#### 5. Conclusion

Breech is the most common malpresentation. Perinatal morbidity and mortality is significantly affected by the mode of delivery. If selection criteria are met planned vaginal delivery is considered safe. Maternal morbidity is comparatively higher in caesarean sections. From this study we find most of the women were nulliparous in both the groups. Perinatal morbidity and mortality is higher in planned vaginal delivery compared to planned caesarean section while maternal morbidity remains same. The present study cannot conclude that planned vaginal delivery is completely safe but it can be practised if all selection criteria are met and labour monitored under good supervision in a tertiary care centre with skilled obstetrician.

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