

# Perinatal Outcomes of Vaginal and Abdominal Breech Delivery - A Comparative Study

Shreya Prabhoo<sup>1</sup>, Mohan Gadam<sup>2</sup>

## ABSTRACT

**Introduction:** Neonatal mortality in breech presentation has continued to remain 3- 5 times higher than that of cephalic presentation. The present study was undertaken to achieve expertise in the management of breech deliveries, to standardise and formulate a protocol for selection of patients for vaginal deliveries and to achieve a comparable data for perinatal outcome with elective cesarean deliveries.

**Material and Methods:** In the present study a total number of 2023 cases were observed but only 85 patients having breech delivery were included in the study. If the patient had an adequate pelvis and an average baby weight and there were no high risk factors the patient was selected for vaginal delivery. All patients were delivered by assisted breech delivery. Breech extraction was not necessary in the cases studied. Cesarean section was performed either as elective procedure or after trial of labor. The data was analyzed by comparing the perinatal outcome of breech delivery by vaginal and abdominal. Statistical test used was Test of Significance between Proportions, and p-value was calculated using Z test.

**Results:** Incidence of breech presentation in this study was 4.2% and frank breech was the commonest type of breech. 53% of breech presentation delivered vaginally while 47% underwent Cesarean section. The perinatal mortality rate for vaginal breech delivery was 42/1000. 7 fresh stillbirths were associated with prematurity with other associated complications. 3 fresh stillbirths were due to asphyxia, 1 due to congenital anomalies. 22.2% of the total babies delivered vaginally required neonatal intensive care.

**Conclusion:** Overall perinatal mortality rate was higher in vaginally delivered babies while there was no mortality in cesarean delivered babies. When one minute apgar score in different modes of delivery was studied it was observed that vaginally delivered breech neonates had significantly higher incidence of low apgar score (43.6%) as compared to Cesarean delivered breech neonates (7.5%).

**Keywords:** Breech Delivery; Cesarean Section; Perinatal Morbidity

## INTRODUCTION

Breech presentation constitutes about 3-4% of term pregnancies. Management of breech delivery has higher risks as compared to cephalic presentation with respect to fetal morbidity and mortality. Breech at term can be managed by external cephalic version, vaginal breech delivery, or by cesarean section.<sup>1</sup> The safety of vaginal breech delivery represents the main point of controversy, which came into the forefront in 1931 when Soni MR<sup>2</sup> recommended elective cesarean section for term breech. Predisposing factors for breech presentation include prematurity, uterine malformations or fibroids, polyhydramnios, placenta previa, fetal abnormalities (e.g., CNS malformations, neck masses, aneuploidy), and multiple gestations.<sup>3</sup> Until 1959, the vaginal route of delivery was preferred for

breech presentation. In 1959, Wright proposed that all breech presentations irrespective of parity after 35 weeks be delivered by cesarean section to decrease the relatively high rates of perinatal morbidity and mortality.<sup>4</sup> Since then the cesarean section rate for breech presentations has increased dramatically all over the world.

The Term Breech Trial initiated in the year 2000 as reported by Hannah et al<sup>5</sup> had a significant impact on the management of breech deliveries. More than 1000 subjects were assigned for elective cesarean delivery and equal numbers were subjected to trial of vaginal delivery. This was a multicentric, multinational randomized control trial held in different parts of the world. The observation and results of the trial were far more in favor of elective cesarean delivery in terms of morbidity (1.3 versus 3.8%) and mortality (3/1000 versus 13/1000). Following this trial the cesarean section rates for breech presentation went up to 70 to 80% in the next 25 months. A recent retrospective observational report reviewed neonatal outcome in the Netherlands before and after the publication of the Term Breech Trial.<sup>6</sup> Between 1998 and 2002, 35,453 term infants were delivered. The cesarean delivery rate for breech presentation increased from 50% to 80% within 2 months of the trial's publication and remained elevated. The combined neonatal mortality rate decreased from 0.35% to 0.18%, and the incidence of reported birth trauma decreased from 0.29% to 0.08%. Of interest, a decrease in mortality also was seen in the emergency cesarean delivery group and the vaginal delivery group, a finding that the authors attribute to better selection of candidates for vaginal breech delivery. Reports started pouring from all over the world criticizing the term breech trial and the ACOG guidelines. Whyte and colleagues reported in the year 2004 a 2 year outcome for children born during a multicentric trial. It was concluded that maternal and perinatal outcome did not completely reduce in a cesarean delivery. Most children, 923 of 1,159 (79.6%), were assessed first by a screening questionnaire (Ages and Stages) that was completed by their parents.<sup>7</sup> All abnormal results were further evaluated with a clinical assessment of the neurodevelopment. The risk of death or neurodevelopmental delay was no different in the planned cesarean delivery group compared with the planned vaginal delivery group. In the year 2006 term breech trial and ACOG guidelines were also criticized. Obstetricians

<sup>1</sup>Assistant Professor, Department of OBGY, Topiwala National Medical College and BYL Nair Hospital, Mumbai, Maharashtra, <sup>2</sup>Consultant and Director Eva Infertility Centre, India

**Corresponding author:** Dr. Shreya Prabhoo, 603/ B Wing, Everest, Church Road, Marol, Andheri East, Mumbai 400059, India

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all over the world also thought that the suggestions given were not appropriate. Glezerman<sup>8</sup> in the year 2006 put his criticism to the term breech trial and the ACOG guidelines. He stated that the perinatal deaths did not differ significantly between the two groups. Serious neonatal morbidities, which were reported, did not have long term consequences. Less than 10% of the patients who underwent trial had undergone pelvimetry/ CT scan/ MRI scan. In more than 30% of the patients attitude of fetal head was judged by clinical examination. There are many retrospective reports of vaginal breech delivery that follow very specific protocols and note excellent neonatal outcomes. One report noted 298 women in a vaginal breech trial with no perinatal morbidity and mortality<sup>9</sup> and another report noted similar outcomes in 481 women with planned vaginal delivery.<sup>10</sup> In view of the this, the present study was undertaken to achieve expertise in the management of breech deliveries, to standardise and formulate a protocol for selection of patients for vaginal deliveries and to achieve a comparable data for perinatal outcome with elective cesarean deliveries

#### Material and Methods

The present study was a prospective clinical study which was planned in the department of obstetrics and gynecology of Dr. R. N. Cooper Hospital, Vile Parle (West), Mumbai, Maharashtra from August 2009 to July 2012. A total number of 2023 cases were observed but only 85 patients having breech delivery were included in the study. Ethical clearance was obtained from the institutional ethical committee and a written consent was obtained from the patients for trial of labor taken after detailed counseling. All the registered and unregistered cases presenting as breech in antenatal clinic after 28 weeks of pregnancy were included in the study. Patients with breech presentation were included while patients with fetal congenital malformation, low lying placenta, post dated pregnancy (>40 weeks), infertility conceived on treatment, associated medical or surgical pathology were excluded from the study. All patients were subjected to a

detail history and examination, according to which the mode of delivery was decided. USG was done to rule out congenital anomalies and to confirm presentation and type of breech. All patients were subjected to a detailed clinical examination for pelvic adequacy, ultrasonography was done at 38 weeks of pregnancy to confirm presentation, expected birth weight, type of breech, presence of any other complicating factor. If patient had an adequate pelvis, average baby weight and no high risk factors then the patient was selected for vaginal delivery. Each patient was closely monitored and records were kept for progress of labor. All patients were delivered by assisted breech delivery. Breech extraction was not necessary in the cases studied. Cesarean section was performed either as elective procedure or after trial of labor. Facilities for an emergency Cesarean section like cross matched blood, an anesthetist were always kept ready. After delivery the baby was resuscitated. Apgar score at 1,5,10 minutes was noted and congenital abnormalities were ruled out. Gestational age of baby was noted. Baby was assessed by a neonatologist and managed according to the condition of baby. Baby and mother were followed up in the post natal ward till the time of discharge.

#### STATISTICAL ANALYSIS

The data was analyzed by comparing the perinatal outcome in breech delivery by vaginal and abdominal. Statistical test used was Test of Significance between Proportions and p-value was calculated using Z test.

#### RESULTS

Incidence of breech presentation in this study was found to be 4.2%. The frank breech was the commonest type of breech presentation. 53% of breech presentation delivered vaginally while 47% underwent Cesarean section (table 1). The perinatal mortality rate for vaginal breech delivery was 42/1000. 7 fresh stillbirths were associated with prematurity and other associated complication. 3 fresh stillbirths were due to asphyxia, 1 due to congenital anomaly. 22.2% of the total babies delivered vaginally required neonatal intensive care (table 2). There was no perinatal mortality in breech babies delivered by cesarean section.

12.5% of total abdominal breech deliveries were transferred to neonatal intensive care unit with complications like 2 neonates had Jaundice, 1 had septicemia, 1 had hypoglycemia (table 3). Table 4 shows that overall the perinatal outcome in abdominal delivery was significantly better than vaginal delivery. In weight group <1.5kg, perinatal survival rate could not be compared significantly as there is vast difference in the sample size. In weight group 1.5- 2kg test was not significant. In the group 2.1- 2.5 kg perinatal survival was significantly more in abdominal delivery than vaginal delivery. In the group >2.5 kg survival was 100% in both groups. It is seen that the percentage of survival

Total No of cases	2023
Total No. of Breech deliveries	85
Incidence of breech	4.2%
<b>Type of breech</b>	
<b>Type</b>	<b>No. of cases/ Percentage</b>
Frank breech	70 (82.3%)
Complete breech	13 (15.2%)
Footling breech	2 (2.3%)
Kneeling breech	-
<b>Mode of delivery</b>	
<b>Mode</b>	<b>No. of Cases/ Percentage</b>
Vaginal assisted breech delivery	45 (53%)
Abdominal	40 (47%)
<b>Table-1: Incidence, type of breech presentation and mode of delivery</b>	

Wt gr.	Vaginal delivery	FSB	MSB	NICU	NNC	NND	Alive	Survival rate%
< 1.5	16	8	2	2	1	2	4	25%
1.5 – 2.0	13	2	0	8	4	2	9	69%
2.1 – 2.5	11	2	0	0	0	1	8	72.7%
> 2.5	5	0	0	0	0	0	5	100%
Total	45	12	2	10	10	5	26	66.5%
<b>Table-2: Perinatal outcome in vaginal breech delivery in different weight group</b>								

increases with increasing gestational age. Table 5 shows that there was no adverse perinatal outcome in abdominal breech delivery. Table 6 shows that overall the perinatal survival rate in abdominal delivery was significantly better than vaginal delivery. From table 7 it can be seen that in vaginally delivered breech babies, 20 had apgar score less than 7, while in abdominal breech delivery 3 babies had apgar less than 7.

## DISCUSSION

In the present study, the incidence of breech was found to be 4.2%. Pradeep MR et al<sup>1</sup> reported incidence of breech at term is 3.04%, Brown L et al<sup>11</sup> reported it to be 3.9%.<sup>6</sup> Frank breech was the most common type of breech presentation, and incidence of breech was higher in the age group 20 – 25 years, and decreased between 25 – 30 years of age which was also observed by Brenner et al,<sup>12</sup> Rosen et al<sup>13</sup> in their studies. Of the total 85 breech presentation 45 (53%) delivered vaginally

and 40 (47%) were delivered by LSCS. The perinatal mortality rate for breech presentation was 58/1000 total births. Perinatal mortality in vaginally delivered breech babies was 225/1000. It was interesting to find that the group, which underwent Cesarean section, had no perinatal mortality. When perinatal mortality depending on mode of delivery was compared in different weight groups, it was observed that mortality rate in vaginal route was higher mainly due to low birth weight less than 1.5kg. One cesarean section was performed in this group and there was no mortality. Effer et al,<sup>14</sup> Bodmer et al,<sup>15</sup> Cahill et al<sup>16</sup> and many of the authors in last few years have been unable to demonstrate a lower neonatal mortality. Poor perinatal outcome in this group is mainly because of extremely low birth weight, congenital malformation and prematurity, and not due to mode of delivery. When compared with those delivered vaginally there was no significant difference in mortality rate for the babies weighing more than 2kg. Results were comparable to results obtained by

Wt gr.	No. LSCS	FSB	MSB	NICU	NNC	NND	Alive	Survival rate%
< 1.5	1	-	-	0	0	0	1	100
1.5 – 2.0	9	-	-	2	2	0	9	100
2.1 – 2.5	15	-	-	3	2	0	15	100
> 2.5	15	-	-	0	0	0	15	100
Total	40	-	-	5	4	-	40	100

**Table-3:** Perinatal outcome in abdominal breech delivery in different weight groups

Wt gr.	Perinatal Outcome In Vaginal Breech Delivery			Perinatal Out Come In Abdominal Breech Delivery			Test of significance between proportions		
	Vaginal delivery	Alive	Survival rate%	No. LSCS	Alive	Survival rate%	Z- Score	p- value	Significance
< 1.5	16	4	25%	1	1	100%	-1.597	0.1103	NS
1.5 – 2.0	13	9	69%	9	9	100%	-1.84	0.0658	NS
2.1 – 2.5	11	8	72.7%	15	15	100%	-2.15	0.0316	Sig.
> 2.5	5	5	100%	15	15	100%			NS
Total	45	26	57.77%	40	40	100%	-4.664	<0.001	Sig

**Table-4:** Comparison of perinatal outcome in vaginal and abdominal breech delivery depending on weight groups

Perinatal outcome in vaginal breech delivery depending on gestational age								
Gestational Age (wks)	No. of cases	FSB	MSB	NICU	NND	Alive	Survival%	
28- 32	21	7	2	7	4	8	38%	
32- 36	11	4	0	5	1	6	54.5%	
>36	13	1	0	4	0	12	92.3%	
Total	45	12	2	16	5	26	57.77%	

Perinatal outcome in abdominal breech delivery depending on gestational age								
Gestational age (Wks)	No. of cases	FSB	MSB	NICU	NND	Alive	Survival%	
28 – 32	1	0	0	1	0	1	100%	
32 – 36	13	0	0	3	0	13	100%	
> 36	26	0	0	4	0	26	100%	
Total	40	0	0	8	0	40	100%	

**Table-5:** Perinatal outcome in vaginal breech and abdominal breech delivery depending on gestational age

Gestational Age (wks)	Perinatal Outcome in Vaginal Breech Delivery			Perinatal Out Come in Abdominal Breech Delivery			Test of significance between proportions		
	Vaginal delivery	Alive	Survival rate%	No. LSCS	Alive	Survival rate%	Z- Score	p- value	Significance
28- 32	21	8	38%	1	1	100	-1.23	0.2187	NS
32- 36	11	6	54.5%	13	13	100	-2.732	0.0063	Sig
>36	13	12	92.3%	26	26	100	-1.433	0.1519	NS
Total	45	26	57.77%	40	40	100	-4.664	<0.001	Sig

**Table-6:** Comparison of perinatal outcome in vaginal and abdominal breech delivery depending on gestational age

Gestational age	Vaginal delivery apgar			Abdominal delivery apgar score		
	< 4	4 – 7	< 7	< 4	4 – 7	< 7
28 – 32	4	3	5	0	0	1
32 – 36	2	4	1	0	2	11
> 36	2	5	5	0	01	25
Total	8	12	11	0	3	37
Percentage	17%	26.6%	24.4%	Nil	7.5%	92.5%

**Table-7:** APGAR scores in different mode of delivery at different age

Brown et al<sup>11</sup> and Rosen et al.<sup>13</sup>

Higher mortality rates were observed in vaginally delivered preterm babies mainly due to a generally high mortality rate in babies of less than 32 weeks of gestational age. There was no statistically significant difference between the two groups in term breech patients (>36 weeks). Thus it agrees with the opinion of Rosen et al,<sup>13</sup> Bassaw B et al,<sup>17</sup> Lagrew D et al<sup>18</sup> found that a vaginal trial can be given for breech presentation at term in selected cases. When one minute apgar score in different modes of delivery was studied it was observed that vaginally delivered breech neonates had significantly higher incidence of less than 7 apgar (43.6%) as compared to cesarean delivered breech neonates (7.5%). Difference was more marked in preterm babies delivered vaginally. Brenner et al,<sup>12</sup> Rosen et al,<sup>13</sup> Bassaw et al,<sup>17</sup> Lagrew D et al<sup>18</sup> have published similar results. The perinatal mortality rate of 7.3% for breech presentation seen in this study is higher than the rates for planned vaginal breech delivery in the term breech trial. This could be explained by the fact that a significant number of our pregnant women do not have access to quality antenatal care as more than 87% percent of the perinatal deaths occurred among unregistered mothers. These set of women had no form of prior planning for their delivery with most of them presenting in advanced labor after trying unsuccessfully to deliver.<sup>19</sup> Incidence of perinatal mortality was found higher among those delivered by vaginal route than those by abdominal route. Incidence of perinatal mortality was higher among preterm babies. PNM rate in breech presentation was 130/1000. Intrapartum asphyxia was the most common cause of perinatal mortality seen in 38.4% cases while cord prolapse was responsible for 5 still births (14.2%). Neonatal sepsis and pneumonia accounted for 14.2% and 7.6% of perinatal loss respectively.<sup>20</sup>

One study has shown an increased RR of perinatal mortality and morbidity in a vaginal breech delivery group in all assessed variables as compared with a LSCS breech delivery group. However, the absolute risks of perinatal mortality and morbidity in this group were very small.<sup>21</sup> When maternal morbidity was compared in terms of perineal tear, post partum hemorrhage and wound infection it was seen that the all patients were given an episiotomy besides which 2 patients who delivered vaginally had an additional perineal tear, 1 patient each who delivered vaginally and abdominally had post partum hemorrhage and needed blood transfusion, 1 patient had an episiotomy infection and 1 patient had a post cesarean scar wound infection.

## CONCLUSION

Perinatal mortality in vaginally delivered breech babies was much higher, while there was no perinatal mortality in cesarean

delivered breech babies when total population was considered. Mortality rate in vaginal route was higher mainly due to high mortality rate in less than 1.5kg weight group. Overall perinatal mortality rate was higher in vaginally delivered babies while there was no mortality in Cesarean delivered babies. When one minute apgar score in different modes of delivery was studied it was observed that vaginally delivered breech neonates had significantly higher incidence of low apgar score (<7) (43.6%) as compared to Cesarean delivered breech neonates (7.5%). When maternal morbidity was studied in different modes of delivery it was observed that 2 patients had additional perineal tear but otherwise there was no difference in morbidity. There was no maternal mortality.

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