

OUTCOME OF TERM BREECH PRESENTATION IN A PERIPHERAL TERTIARY CARE CENTRE OF WEST BENGAL, INDIA

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ABSTRACT

BACKGROUND

Choosing the mode of delivery in case of term breech pregnancy is controversial. The aim of this study is to find out the mode of delivery in term breech presentation and to describe the foetomaternal outcomes.

MATERIALS AND METHODS

A descriptive follow-up study was conducted from 1st July 2013 to 30th June 2014 in the In-Patient's Department (IPD) of Obstetrics, BSMCH, West Bengal, India involving 196 pregnant women with singleton term breech presentation and grouped them into vaginal breech delivery group and abdominal breech delivery group. Data was collected via interview, clinical examination and laboratory investigation including imaging. Data analysis was done by describing variables using mean, standard deviation, proportion and displaying data via tables and chart. Statistical tests like unpaired t-test, Chi-square/ Fisher's exact test, Odd's ratio with its 95% confidence interval were used for drawing inference about the relation of variables.

RESULTS

Overall, average estimated age was 22.27 ± 3.41 (mean \pm SD) years without any between group variation. Around seventy one percent (71.42%) participants were nullipara. Significantly, higher proportion of babies with low Apgar score at 5 minutes, admission in Special Newborn Care Unit (SNCU) and birth asphyxia was found among women who delivered vaginally. Significant difference with regard to genital tract trauma was also found to be higher in planned vaginal delivery group.

CONCLUSION

Study results support abdominal delivery of term breech presentation, which needs to be cautiously interpreted in our resource poor setting. Potentiality of vaginal delivery among carefully selected patients following specially designed protocol may be tried.

KEY WORDS

Term Breech Presentation, Vaginal Breech Delivery, Abdominal Delivery, Apgar Score, Perinatal Death Rate.

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BACKGROUND

About 3-4% of term pregnancies have breech presentation.¹ Breech delivery has higher risks as compared to cephalic presentation with respect to foetal morbidity and mortality.² Breech at term can be managed either by external cephalic version, vaginal breech delivery or by caesarean section.³ Prematurity, uterine malformations or fibroids, polyhydramnios, placenta previa, foetal abnormalities (e.g. CNS malformations, neck masses, aneuploidy) and multiple gestations are the disposing factors for breech presentation.⁴

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Mode of delivery of breech presentation at term has been a subject of long-term debate amongst the Obstetricians.⁵ Previously, it was believed that there is an increased neonatal morbidity and mortality amongst the breech babies delivered vaginally compared with Elective Caesarean Section (CS) delivery.⁶ However, the mode of delivery for this group was a matter of controversy until the large randomised trial of Hannah et al concluded that an elective caesarean section appeared to be safer for the foetus than an attempt to vaginal delivery.^{7,8} After this trial, the rate of CS for breech presentation went up to 70 to 80% within the next 25 months.² The American College of Obstetricians and Gynaecologists (ACOG)⁹ also recommended elective CS for all singleton foetuses at term in breech presentation, as it improves the outcome for breech babies as well as the safety of the procedure for the mother.^{10,11} However, there remains a view that with obligation of strict criteria before and during labour, planned vaginal delivery with singleton breech at term remains a reasonable option to offer for selected women.¹² A retrospective observational study analysing the neonatal outcome in the Netherlands before and after the publication of the 'Term Breech Trial' reported that though

the combined rate of neonatal mortality and birth trauma decreased from 0.35% to 0.18% and 0.29% to 0.08%; of interest, a decrease in mortality also was seen in both emergency CS and the vaginal delivery group, a finding that can be attributed for better selection of women for vaginal breech delivery.¹³ Reports started coming out from different parts of the world criticising the 'term breech trial' and the ACOG guidelines.² From a study in the year 2004, Whyte and colleagues concluded that CS delivery did not completely reduce maternal and perinatal outcome.¹⁴ Glezerman M criticised the 'term breech trial' and the ACOG guidelines stating that the perinatal deaths did not differ significantly between two groups.¹⁵ Many retrospective reports of Vaginal Breech Delivery (VBD) that follow very specific protocols noted excellent neonatal outcomes.² One such report noted 298 women in a vaginal breech trial with no perinatal morbidity and mortality¹⁶ and the other one noted similar outcomes in 481 women with planned VBD.¹⁷

Most of the studies are from developed countries. The factors such as height, BMI (Body Mass Index), race and mean birth weight of Indian babies are different from them and have not yet been studied well. Bankura Sammilani Medical College and Hospital (BSMCH), one of the peripheral medical colleges of West Bengal, India caters huge patient load and ranked as one of the topper institutions conducting highest (approximately 22,000) delivery per annum in the eastern India. Arranging CS delivery for so many expected breech deliveries is impractical in this resource poor peripheral setting. In this context, the present study was undertaken with a view that the results might help to formulate and standardise a protocol for selection of patients for vaginal deliveries and to achieve a comparable data for foetomaternal outcome with elective CS deliveries.

Specific Objective

- To find out the mode of delivery in the pregnant women with term breech presentation.
- To describe the foetal outcomes among them.
- To ascertain the morbidities, if any sustained by them.
- To compare foetomaternal outcome(s) between modes of deliveries.

MATERIALS AND METHODS

A descriptive follow-up study was conducted from 1st July 2013 to 30th June 2014 in the In-Patient's Department (IPD) of Obstetrics, BSMCH, West Bengal, India involving pregnant mothers with completed 37 weeks of gestation, singleton live foetus in breech presentation and 11 gram% Hb level admitted for delivery. Women with history of previous CS, Antepartum Haemorrhage (APH), uterine malformation with breech pregnancy and chronic medical disorder, e.g. Heart disease, jaundice, renal disease etc. were excluded from the study.

Sample size for the present study was calculated based on the formula used for comparison of two proportions. $N = [Z_{\alpha} \sqrt{2pq} + Z_{\beta} \sqrt{(p_1q_1 + p_2q_2)}]^2 / (p_2 - p_1)^2$, where $Z_{\alpha} = 1.96$ (two-tailed) at 95% Confidence Interval (CI) with 5% precision, $Z_{\beta} = 0.84$ for 80% power of test, p_1 and $p_2 =$ incidence(s) of event of interest, e.g. proportion of women suffering morbidity in study (delivered abdominally) and comparison (delivered vaginally) groups, q_1 and $q_2 =$ complements of p_1 and p_2 i.e. $100 - p_1$ and $100 - p_2$, $p = (p_2 + p_1) / 2$ and $q = 100 - p$.

Subjects belonged to the study and comparison groups were selected @ 1: 1 basis. Here, p_1 and p_2 were considered to be 6.6% and 21.92%, respectively as per the existing literature.¹ Estimated sample size was revised assuming 20% dropout and finally it became approximately 100 for each group. Consecutive cases of term pregnancy with breech presentation and delivered either vaginally or abdominally were included till the desired number was achieved. After admission in the IPD of Obstetric Department, BSMCH with breech presentation the pregnant women were assessed by interview, clinical examination using pre-designed format for data collection. Information pertaining to age, weight, height, race (Tribal/Non-Tribal), clinical features, parity, gravidity, gestational age, presentation, blood pressure, volume of liquor, antepartum haemoglobin (APHb)%, blood grouping and Rh Typing, blood sugar, HIV I and II was gathered. Ultrasonography (if patient was not in advanced labour) was done to determine the mode of delivery. Whenever there was rupture of membrane, condition of foetus was assessed by $\frac{1}{2}$ hourly by Cardiotocography (CTG) in the labour room. Decision about mode of delivery was taken by respective visiting surgeons and data about detailed obstetrical history, type of breech presentation, mode of delivery to be conducted and indication for CS were collected from Bed Head Ticket (BHT). All vaginal deliveries were conducted by experienced residents and emergency surgeons. When trial of labour failed in any participants, then termination was done by emergency CS. Data about final mode of delivery, i.e. VBD or Abdominal Breech Delivery (ABD) by elective CS; neonatal parameters like birth weight, Apgar score at 5 minutes, birth asphyxia, birth injury, live born/ still born, resuscitation (bag mask/ intubation), admission in Special Newborn Care Unit (SNCU), early neonatal death; maternal complications e.g. Postpartum Haemorrhage (PPH), genital tract trauma, wound infection, Urinary Tract Infection (UTI), blood transfusion, prolonged hospital stay (defined as > 48 hours and > 7 days in vaginal delivery and CS, respectively) were collected through follow-up till the participants were discharged. Data were compiled and codified in Microsoft Excel data spreadsheet 2007. Summarisation of data was done by calculating mean and Standard Deviation (SD) for continuous variable and proportion for categorical variables. Data display was done by tables and charts. Statistical tests like student's t-test, Pearson Chi-square test, Fisher's exact test, Odd's ratio (OR) with its 95% Confidence Interval (CI) were applied for drawing inference about relationship between input and outcome variables. For the purpose of analysis, the software package SPSS 17.0 version was utilised. $P < 0.05$ was considered statistically significant.

RESULTS

During trial of vaginal delivery, four mothers underwent emergency CS due to foetal distress and prolonged labour. So, the outcomes of those four cases were not included in the final analysis.

The analysis showed that the highest proportion of participants belonged to 20 - 24 years (55.1%) and only (1.02%) of the study population belonged to more than 35 years of age [Fig. 1]. On the whole, the average age was estimated as 22.27 ± 3.41 (mean \pm SD) years and there was no significant difference across the group in this regard with respective values of 21.95 ± 3.25 and 22.60 ± 3.55 years

among the groups delivered by abdominal and vaginal routes, respectively. Though the average height was significantly more among the abdominal group, the BMI was found significantly higher in vaginal group. However, gestational age, diastolic BP, APHb%, birth weight and Apgar score at 5 minutes after delivery were found higher in ABD group having a statistically significant between group differences, [Table-1].

It was found that overall 71.42% participants were nullipara and 58.67% did not have adequate antenatal check-up (booking). Analysis revealed further that the proportion of nulliparous and participants with adequate antenatal coverage was significantly higher in the abdominal group [83% vs. 59.38%, $\chi^2= 13.395$, $p= 0.000$ at $df 1$; $OR= 3.341$ (1,723 - 6,476)] and [73% vs. 8.37%, $\chi^2= 84.471$, $p= 0.000$ at $df 1$; $OR= 0.034$ (0.014 - 0.078)].

The study results reflected a significantly higher proportion of babies with low Apgar score at 5 minutes after delivery, admission in SNCU, birth asphyxia; still birth and early neonatal death among the women of planned VBD than those underwent planned ABD [Table-2].

The analysis revealed further that there was a between group significant difference in respect to genital tract trauma, which was found higher in planned vaginal delivery group. However, regarding PPH, wound infection/ UTI, blood transfusion and prolonged hospital stay, the groups were revealed to be comparable [Table 3].

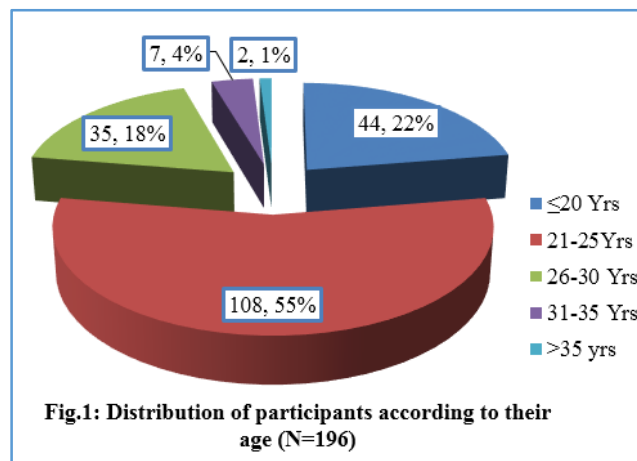


Fig.1: Distribution of participants according to their age (N=196)

Attribute	Mode of Delivery	N	Mean	Std. Deviation	Unpaired T	P at df 194
Age (yrs.)	Abdominal	100	21.95	3.25	1.347	0.180
	Vaginal	96	22.60	3.55		
Weight (kg)	Abdominal	100	57.40	4.97	5.205	0.000
	Vaginal	96	53.55	5.38		
Height (cm)	Abdominal	100	156.61	4.91	4.558	0.000
	Vaginal	96	153.61	4.25		
Gestational Age	Abdominal	100	38.14	0.84	2.418	0.017
	Vaginal	96	37.86	0.75		
Systolic BP	Abdominal	100	120.05	7.45	1.086	0.279
	Vaginal	96	121.19	7.21		
Diastolic BP	Abdominal	100	75.47	5.29	2.775	0.006
	Vaginal	96	77.55	5.21		
Antepartum Hb (gm %)	Abdominal	100	10.62	0.53	2.792	0.006
	Vaginal	95	10.41	0.49		
Birth Weight (gm)	Abdominal	99	2765.15	287.89	3.812	0.000
	Vaginal	96	2632.08	187.55		
Apgar Score at 5 minutes	Abdominal	100	8.04	1.15	7.240	0.000
	Vaginal	96	6.19	2.26		

Table 1. Distribution of Participants according to some Characteristics of them and their Newborn Babies (N= 196)

Attribute	Mode of Delivery		χ^2 , p at df 1	
	Vaginal (n1= 96) No. (%)	Abdominal ((n2= 96)) No. (%)		
Apgar score < 7 at 5 minutes	39 (40.6)	12 (12)	20.849, 0.000	
SNCU Admission	37 (38.5)	16 (16)	12.615, 0.004	
Neonatal Morbidity	Birth trauma	03 (3.1)	01 (1)	0.361*
	Birth asphyxia	12 (12.5)	04 (4)	0.0298*
Still birth	07 (7.3)	----	0.006*	
Early neonatal death	03 (3.12)	01 (1)	0.0361*	

Table 2. Distribution of Participants according to Perinatal Outcome and Mode of Delivery (N= 196)

Attribute	Vaginal Delivery (n1= 96) No. (%)	Abdominal Delivery ((n2= 96)) No. (%)	χ^2 , p at df 1
PPH	3 (3.1)	2 (2.0)	0.677*
Genital tract trauma	8 (8.33)	----	0.002*
Wound infection	4 (4.16)	3 (3)	0.716*
UTI	4 (4.1)	9 (9.0)	0.251*
Blood transfusion	3 (3.1)	2 (2.0)	0.677*
Prolonged hospital stay	7 (7.2)	15 (15.0)	2.921, 0.087

Table 3. Distribution of Participants according to their Morbidity and Mode of Delivery (N= 196)

* Fisher's exact test.

DISCUSSION

The present study determined the correlations of different profiles like age, parity, antenatal booking status of the study participants with the mode of delivery in singleton live term breech pregnancy with gestational age of 37 weeks completed or more.

This study showed majority of mothers (55.10%) were in 20 - 24 years' age group and only (1.02%) belonged to more 35 years' age group. This contrast might be due to low education, early marriage. The average age was 21.95 ± 3.25 and 22.60 ± 3.55 (mean \pm SD) in abdominal and vaginal group, respectively. Gaikwad S et al showed that breech presentation is most common in 21 - 25 years' age group i.e. 48.5% followed by 26 - 30 years' age group i.e. 24.5%.¹ Pradeep MR et al reported overall age of study subjects of 23.35 ± 3.6 (mean \pm SD) years with the range from 18 - 36 years with (38.01 ± 2.77) and (37.77 ± 2.86) years in primi and multiparous, respectively.³ The majority (33.3%) participants belonged to age group 25 - 29 years with a mean age of 29.9 ± 5.7 years as reported by Igwegbe AO et al.⁵

In the present study, majority of study subjects were nulliparous (71.4%). Gaikwad S et al observed that breech presentation was slightly more common in multipara (53%).¹ Consistent with the present study Dars S et al reported that primigravidas were more in ABD group, while multigravida predominates in VBD group.⁴

Observation made by Pradeep MR et al that gestational age and foetal weight are significantly higher in ABD than VBD has concurrence with the present study findings.³

In this study, Apgar score < 7 at 5 minutes was significantly higher (40.6%) among the planned VBD than the planned ABD group. Gaikwad S et al showed that the mean Apgar score was higher in babies delivered by abdominal route. The term babies had higher mean Apgar score than preterm babies.¹ In their study, Prabhoo S et al revealed that higher proportion of newborns delivered vaginally had poor Apgar score of < 7 [44.44% vs 7.5%, $\chi^2 = 14.64$, $p = 0.0001$ at $df = 1$; OR= 9.87 (2.40 - 46.98)].² Pradeep MR et al observed that 20.62% VBD had poor Apgar score (< 7) at 5 minutes compared to 10.81% in ABDs [$\chi^2 = 1.75$, $p = 0.186$ at $df = 1$; OR=2.14 (0.64 - 8.07)].³ Igwegbe AO et al reported that Apgar score < 7 at 5 minutes were found in 42.3% and 7.7% of the vaginal and abdominal groups [$\chi^2 = 8.19$, $p = 0.004$ at $df = 1$; OR= 8.80 (1.72 - 60.18)].⁵ A similar finding was noted in Sweden by Herbst A and in Ile -Ife, Nigeria by Orji et al.^{1,18}

In the present study, SNCU admission in planned VBD babies (38.5%) was significantly higher than the planned ABD babies (16%) and this was supported by Prabhoo S et al, who reported that 22.2% of the total babies delivered vaginally required neonatal intensive care, whereas 12.5% of total ABDs were transferred to neonatal intensive care unit. However, the difference was not statistically significant [$\chi^2 = 1.38$, $p = 0.240$ at $df = 1$].² In their study, Pradeep MR et al observed that 8.25% and 2.7% of the babies of VBD and ABD admitted to Intensive Neonatal Care Unit (NICU) and again the difference was statistically insignificant [Fisher $p = 0.232$, OR= 3.24 (0.39 - 71.44)].³ From the observation of their study, Igwegbe AO et al reported NICU admission of 61.5% vs. 38.5%, which was also insignificant [$\chi^2 = 2.84$, $p = 0.09$ at $df = 1$; OR= 2.56 (0.88 - 7.57)].⁵ However, Herbst A et al and Conde -Agudelo A et al reported that SNCU admission were

significantly higher among those fetuses with breech presentation at term and were delivered by vaginal route.^{19,20}

In this study early neonatal morbidity, especially the frequency of birth asphyxia was significantly higher among the babies of planned VBD group (12.5%) than the babies of planned ABD group (4%). Similarly, birth trauma was more in planned VBD (3.1%) than planned ABD (1%), though the difference was not statistically significant (p value= 0.361). Gilbert WM et al revealed that increased neonatal morbidity (asphyxia: OR= 5.7, 95% CI 4.5, 7.3; brachial plexus injury: OR 33.9, 95% CI 15.2, 76.1; and birth trauma: OR= 5.8, 95% CI 4.7, 7.1) was found among VBD compared with ABD in nulliparous women. In breech presenting women with one prior vaginal delivery neonatal mortality was not different between groups, but morbidities (asphyxia: OR= 3.9, 95% CI 3.0, 5.1; brachial plexus injury: OR= 22.4, 95% CI 9.9, 50.5; and birth trauma: OR= 4.2, 95% CI 3.4, 5.3) remained increased for VBD compared with ABD.⁶ The present study finding in regard to birth asphyxia also has concurrence with the findings of the study conducted by Herbst A et al and Conde-Agudelo A et al.^{19,20}

Present study revealed statistically significant (Fisher's exact, $p = 0.006$) higher still birth rate of 7.3% and higher early neonatal death in planned VBD. In their study, Prabhoo S et al found that the perinatal mortality rate for VBD was 42/1000.² There was no perinatal mortality in ABD babies. Overall, the perinatal outcome in ABD was significantly better than VBD.² It is seen that the percentage of survival increases with increasing gestational age. Prabhoo S et al showed that there was no adverse perinatal outcome in ABD. The overall perinatal survival rate in ABD was significantly better than VBD.² Dars S et al opined that prenatal mortality rate was significantly high in VBD (22.58% as compared to ABD 5.45%).⁴ Igwegbe AO et al also showed high but insignificant neonatal mortality among VBD vs. ABD [(17.3% vs. 11.5%), $\chi^2 = 0.11$, $p = 0.38$ at $df = 1$; OR= 1.60 (0.35 - 8.36)].⁵ Gilbert WM et al revealed that VBD in nulliparous women was associated with increased neonatal mortality [OR= 9.2 (3.3 - 25.6)].⁶

This study showed overall maternal morbidity of 30.61% and marginally higher maternal morbidity among the planned ABD group than the planned VBD group (31% vs. 30.18%) without any statistically significant difference across the groups. This is comparable to 23.2% reported in a study conducted by Fawole et al.²¹ Igwegbe AO et al reported statistically insignificant high maternal morbidity among the ABD group (11.5% vs. 30.8%) in terms of PPH, genital tract trauma, prolonged hospital stay, blood transfusion, episiotomy wound infection [Fisher exact $p = 0.041$, OR= 0.29 (0.08 - 1.11)].⁵

In their study Wasim T et al observed that the maternal complications of operative delivery, wound infection and PPH were seen in 34%, 6% and 3% patients, respectively. There was no maternal mortality in these patients. Booking status was significantly important as the successful VBD were 79.5% amongst the elective ANC provided booked patient as compared to 46.2% unbooked patients.²²

CONCLUSION

Results of this study favour abdominal deliveries for term breech presentations. Better neonatal outcome in terms of higher Apgar score at 5 minutes reduces need for sophisticated care in SNCU/NICU, results in less perinatal loss

and causes minimum genital tract injury to the mothers. A well-planned large multicentric study is the needed for testing the effectiveness of carefully designed protocols and wise selection of patients.

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