

Foeto-Maternal Outcome between Vaginal Delivery and Caesarean Section in Breech Presentation: A Comparative Prospective Study.

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ABSTRACT

Background: The problem of high perinatal morbidity and mortality is a great challenge to obstetricians and neonatologists in the developing countries. Breech presentation which is one of the commonest malpresentations is a major cause of high morbidity and mortality. The optimum mode of delivery of breech in order to minimise the risk to both the mother and the baby still remains controversial. **Aims & objectives:** The current study was conducted to find out the associated factors for different modes of delivery in breech presentation and also to compare the maternal and perinatal outcome between vaginal delivery (VD) and Caesarean section (CS) for singleton term pregnancy with breech presentation. **Methods:** A prospective study was done during the period October 2011 to March 2013. All pregnant women with singleton breech presentation with gestational age > 37 weeks admitted at the department of Obstetrics and Gynaecology, Regional Institute of Medical Sciences (RIMS), Imphal were the study subjects. Those not willing to participate in the study, multiple pregnancy, preterm pregnancy, pregnancy with chronic illness, intra-uterine death, complicated pregnancy like ante-partum haemorrhage, pregnancy associated with gynaecological problems like fibroids, cervical polyps etc. and having history of any uterine surgery were excluded from the study. Socio-demographic details were obtained by using a pre-tested, semi-structured interview schedule. This was followed by a detailed history-taking and a thorough clinical examination. Relevant routine and sophisticated laboratory investigations were also performed wherever indicated. The study-subjects were followed up until discharge from the department. Data were analysed by using SPSSv16.0. **Result:** The CS rate was found to significantly higher among booked women, nulliparous women, women not in labour at the time of admission, complete breech and women with a higher gestational age and baby's weight more than 3 kg. Clients' age, religion, prior stay and fundal localization at cornua, although seemed to be slightly higher among CS cases, the associations were not found to be statistically significant. Apgar scores at 1 and 5 min, necessity for admission in Neonatal Intensive Care Unit (NICU) and neonatal deaths were found to be significantly lower to those babies delivered by CS compared to those delivered by VD. But, regarding maternal outcome, post-delivery blood transfusion was found to be significantly more necessary for CS compared to that of VD. **Conclusion:** Vaginal delivery confers more benefit to the mother whereas CS increases safety to the newborn. Bigger studies are needed to determine whether a potential benefit for the newborns outweighs the increased risk for the mothers associated with caesarean section. Meanwhile, great care, skill and judgment have to be exercised on case-based approach to get the best results.

Keywords: Breech presentation, Caesarean section, Maternal outcome, Mode of delivery, Perinatal outcome.

INTRODUCTION

The problem of high perinatal morbidity and mortality is a great challenge to obstetricians and neonatologists in the developing countries. In modern obstetrics where every pregnancy is precious, breech presentation which is defined as the foetal buttock occupying the lower part of the uterus demands extra attention and care. Breech presentation which is one of the commonest

malpresentations (incidence being 14% at 29-30 weeks and 2.2-3.7% at term) is a major cause of high morbidity and mortality.^[1]

Compared with a foetus with cephalic presentation, a breech foetus faces increased risk during labour and delivery of asphyxia from cord compression and traumatic injury during delivery of the shoulders and the after-coming head. Cord-prolapse is another added risk.^[3] A multi-centric has shown that pre-emptive Caesarean section (CS) can avoid most of the risk.^[4] On the other hand, CS involves too much maternal risk to be used routinely to lower the foetal risk.

Several studies have been done comparing the perinatal outcomes following vaginal and abdominal delivery with conflicting recommendations. Kumari AS et al reported no difference in the perinatal

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outcome whereas the multi-centric study by Hannah ME et al found better outcomes with elective CS.^[3,4] A study done in the African region concluded that an increase in the CS rate did not improve the outcome of breech deliveries compared to planned vaginal delivery.^[5] Meanwhile, maternal morbidity and mortality is said to be increased in CS, but the perinatal morbidity and mortality is said to be reduced.^[6]

The optimum mode of delivery of breech in order to minimise the risk to both the mother and the baby still remains controversial while taking decisions about the mode of delivery when there is no absolute indication for CS. Because of these conflicting and contradicting reports regarding the mode of delivery in breech presentation, the current study was felt to be pertinent.

Aims & objectives

The current study was conducted to find out the associated factors for different modes of delivery in breech presentation and also to compare the maternal and perinatal outcome between vaginal delivery (VD) and Caesarean section (CS) for singleton term pregnancy with breech presentation.

MATERIALS AND METHODS

A prospective study was done during the period October 2011 to March 2013. All pregnant women with singleton breech presentation with gestational age > 37 weeks admitted at the department of Obstetrics and Gynaecology, Regional Institute of Medical Sciences (RIMS), Imphal during this period of one and half years were the study subjects. Those not willing to participate in the study, multiple pregnancy, preterm pregnancy, pregnancy with chronic illness, intra-uterine death, complicated pregnancy like ante-partum haemorrhage, pregnancy associated with gynaecological problems like fibroids, cervical polyps etc. and having history of any uterine surgery were excluded from the study. After taking informed consent (assent if the study subject was minor supplemented with consent from her parent) socio-demographic details were obtained by using a pre-tested, semi-structured interview schedule. This was followed by a detailed history-taking and a thorough clinical examination. Relevant routine and sophisticated laboratory investigations were also performed wherever indicated. The study-subjects were followed up until discharge from the department.

Ethical approval from the study was obtained from the Institutional Ethical Committee, RIMS.

For data analysis and presentation, means and standard deviation were used for assessing the risk factors and complication. To establish associations, Chi-square test and its modification in the form of Fischer exact test were applied by using SPSSv16.0. A p value of <0.05 was considered as statistically significant.

RESULTS

During the study period there were a total of 17,428 deliveries out of which 420 cases were singleton term breech presentation. Of these, 287 (93 VD and 194 CS) cases fitted the study criteria. More than half of the study participants were from the age group of 24-34 with as mean age (SD) of 27.17±5.1 years.

The association between various risk factors and the mode of delivery is illustrated in Table 1. The CS rate was found to significantly higher among booked women, nulliparous women, women not in labour at the time of admission, complete breech and women with a higher gestational age and baby's weight more than 3 kg. Clients' age, religion, prior stay and fundal localization at cornua, although seemed to be slightly higher among CS cases, the associations were not found to be statistically significant.

Table 1: Factors associated with different modes of delivery.

Factors	Mode of delivery		P value
	VD (%) (n=93)	CS (%) (n=194)	
A. Socio-demography			
Age (in years)			0.911
15-24	36 (39.1)	71 (36.6)	
24-34	46 (50.0)	102 (52.6)	
≥ 35	11 (10.9)	21 (10.8)	
Religion			0.45
Hindu	85 (91.4)	192 (93.8)	
Muslim	8 (8.6)	6 (3.1)	
Christian & others	-	6 (3.10)	
Booked status			0.001
Booked	70 (75.3)	179 (92.3)	
Un-booked	23 (24.7)	15 (7.7)	
Parity			0.001
Nullipara	23 (24.7)	143 (73.7)	
One	53 (57.0)	29 (15.0)	
≥ Two	17 (18.3)	22 (11.3)	
B. Intra- & post-partum			
Status of labour at admission			0.001
Not in labour	33 (35.4)	102 (52.3)	
Latent stage	12 (12.9)	80 (41.0)	
Active stage	48 (51.7)	12 (6.7)	
Type of breech			0.001
Complete	25 (26.8)	94 (48.4)	
Frank	68 (73.2)	100 (51.6)	
Prior stay			0.006
Yes	33 (35.4)	102 (64.6)	
No	60 (52.6)	92 (47.4)	
Placental localization			0.006
Fundal (Cornua)	58 (62.3)	152 (78.4)	
Body	35 (37.7)	42 (21.6)	
Gestational age (in weeks)			0.001
37-37.6	42 (45.2)	32 (16.5)	
37.6-38.6	25 (26.9)	36 (18.5)	
38.6-39.6	18 (19.3)	108 (55.7)	
39.6-40	8 (8.6)	18 (9.3)	
Birth-weight (in kg)			0.001
2.0-2.5	28 (30.1)	9 (4.6)	
2.5-3.0	35 (37.6)	55 (28.4)	
> 3	30 (32.3)	130 (67.0)	

The comparison of perinatal outcome of the baby following VD and CS are illustrated in [Table 2].

Apgar scores at 1 and 5 min, necessity for admission in Neonatal Intensive Care Unit (NICU) and neonatal deaths were found to be significantly lower to those babies delivered by CS compared to those delivered by VD. Having lesser chance of bodily trauma to the newborn could not be commented upon because of insufficient sample size.

Table 2: Perinatal outcome following different modes of delivery.

Perinatal factors	Mode of delivery		P value
	VD (%) (n=93)	CS (%) (n=194)	
Apgar score at 1 min			
Low (< 7)	34 (36.6)	10 (5.2)	0.001
Normal	59 (63.4)	184 (94.8)	
Apgar score at 5 min			
Low	16 (17.2)	3 (1.5)	0.001
Normal	77 (82.7)	191 (98.6)	
Trauma to baby			
Nil	90 (96.7)	194 (100)	0.03
Lacerations/ nerve injury	3 (3.3)	-	
Admission to NICU			
Yes	12 (12.9)	6 (3.1)	0.001
No	81 (87.1)	188 (96.9)	
Neonatal death			
Yes	4 (4.4)	-	0.01
No	89 (95.6)	194 (100)	

Regarding maternal outcome, post-delivery blood transfusion was found to be significantly more necessary for CS compared to that of VD. Other factors like maternal infection, PPH, anaemia and peri-partum hysterectomy were found to be insignificant factors [Table 3].

Table 3: Maternal outcome by different modes of delivery.

Maternal outcome	Mode of delivery		p-value
	VD (%) (n=93)	CS (%) (n=194)	
Infection			
Present	9 (9.7)	20 (10.3)	0.86
Absent	84 (90.3)	174 (89.7)	
Genital trauma			
Present	10 (10.8)	NA	-
Absent	83 (89.2)	NA	
Post-partum haemorrhage			
Present	5 (5.4)	10 (5.2)	1.0
Absent	88 (94.6)	184 (94.8)	
Anaemia			
Present	13 (13.9)	51 (26.3)	0.02
Absent	80 (86.1)	143 (73.7)	
Post-delivery blood transfusion			
Present	5 (5.4)	43 (22.2)	0.001
Absent	88 (94.6)	151 (77.8)	
Peri-partum hysterectomy			
Yes	-	1 (0.6)	1.0
No	93 (100)	193 (99.4)	
Hospital stay (in days)			
1-2	69 (74.2)	-	NA
3-4	17 (18.2)	-	
5-7	7 (7.6)	164 (84.6)	
> 7	-	30 (15.4)	
Maternal deaths			
Yes	-	-	NA
No	93 (100)	194 (100)	

DISCUSSION

The overall incidence of CS being 72.4% as found out from the present study for singleton term breech was found to be comparable to the study finding made by Zaman SB et al.^[1] Also, the mean age-group of 27.17±5.1(SD) is comparable with previous study finding made by Babovic I et al.^[7]

From the present study it was found that CS was done among a high proportion of nulliparous women (73.7%). Study done by Doyle et al showed no significant difference in parity and breech whereas Adel Abu-Heija et al has shown contradicting results. The difference in the study-setting and study-timings might explain this discrepancy.^[8,9]

Breech presentation detected in active labour in the present study landed in VD (51.7%) whereas, those not in labour underwent CS in most case (52.3%) which shows that the status of labour at admission could affect the mode of delivery.

Fianu et al found that 73% of the breech presentation had placenta at cornu-fundal region.^[10] This finding is similar with the current study-finding of 78.4% of the cases showing placenta at the cornu-fundal region.

Most of the CS cases were found to be among women with 39-39.6 weeks of gestation (55.7%) which was found to be statistically significant in the present study. This was in contrast to study-finding made by Doyle NM et al where they did not find any significant difference.^[8]

No cord-prolapse was noted in this study as against the findings made by Adel Abu-Heija et al where they could find it in 6.9% of the cases.^[9] The different findings could be due to the exclusion of pre-term and complicated breech from the present study. There was no case of arrest of the after-coming head, too in the current study which deviated from the study-finding made by Pust et al who found it in one out of 12 breech deliveries.^[10]

Babies delivered by VD had more proportion of low Apgar score both at one minute and five minutes which was statistically significant in the current study. This finding was comparable to findings made by Daskalakis et al and Orji et al.^[5,12] But, Doyle et al and Wisestanokorn W et al gave different versions.^[8,13] The difference in the composition of the study-subjects might have resulted to this difference in study-findings.

Again vaginal delivery had more chance of trauma to the baby in the form of fractures, lacerations or nerve injury as compared to caesarean. This finding corroborates with earlier study-findings made by Zaman et al, Bavovic I et al and Irion et al.^[1,7,14] Further, NICU admission rate, in the current study, was found to be significantly higher among babies delivered by the vaginal route. Irion O et al also had the same result from their study (risk difference of 1.9%) but Schiff E et al could not detect any significant risk difference from their study.^[14,15]

Four neonatal deaths were recorded in the present study. All were delivered vaginally and died because of birth asphyxia. Similar findings were also made by Deutsch A et al, Schiff E et al and Igwegbe AO et al.^[6,15,16]

On the other hand, maternal infections in the form of endometritis, urinary tract infection and incisional wound infection albeit not statistically significant, were found to be slightly higher among caesarean delivered cases compared to vaginal deliveries. This finding is comparable to results made by Irion O et al.^[14] Genital trauma in the form of perineal trauma seen in 10.7% of the vaginally delivered cases seen in the current study, too needs to be considered. The same study by Irion O et al showed higher incidence of PPH among CS cases. But the present study could not support this. Anaemia and need for blood transfusion were found to be significantly higher among CS cases in the current study. Similar finding was made earlier by Sevela P et al.^[17]

There is no doubt that CS candidates had longer stay in hospital as compared to women with vaginal delivery. The same was seen by the above mentioned study. No maternal death was seen in the present study. But earlier study by Verhoeven AT found higher mortality and life-threatening complications among CS cases.^[18] Different technique used one decade back and the different study-subjects might explain this discrepancy.

CONCLUSION & RECOMMENDATION

Nulliparous, booked women, not in labour at the time of admission, complete breech and women with a higher gestational age and baby's weight more than 3 kg were found to be the main factors associated with caesarean section. Maternal morbidity in the form of endometritis, UTI, anaemia, PPH, the need for blood transfusion and longer hospital stay are more common among CS cases. On the other hand, perinatal morbidity in the form of low Apgar score, birth asphyxia, birth trauma and the need for admission in NICU and neonatal mortality are more common among vaginal delivery group.

Bigger studies are needed to determine whether a potential benefit for the newborns outweighs the increased risk for the mothers associated with caesarean section. Meanwhile, great care, skill and judgment have to be exercised on case-based approach to get the best results.

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