

ORIGINAL RESEARCH ARTICLE

PERINATAL OUTCOMES OF SINGLETON BREECH DELIVERIES IN A TERTIARY CARE CENTRE IN NEPAL

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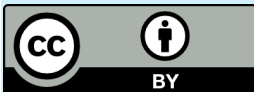
**Key words:** Breech presentation; Caesarean Section; Perinatal Outcome; Prevalence; Singleton.

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**ABSTRACT**

**Background:** Breech presentation has been associated with higher rates of perinatal morbidity irrespective of mode of delivery. The aim of this study was to determine the prevalence and perinatal outcomes of singleton breech deliveries at Chitwan Medical College, a tertiary level hospital in Nepal.

**Methods:** A retrospective review of records of all women who delivered at Chitwan Medical College with breech presentation from September 2018 to October 2020 was conducted. Information on demographic variables, obstetric characteristics and perinatal outcomes were obtained, recorded and analyzed.

**Results:** Out of 6712 cases of deliveries during the study period, 226 had breech presentation with prevalence of 3.37%. One hundred ninety-one (84.5%) of them had undergone Caesarean delivery with 125 (65.4%) emergency and 66 (34.6%) elective Caesarean delivery. More than two third (70.4%) of breech deliveries were term deliveries while 28.8% were preterm. There were 2 cases of still births and 1 neonatal death with Perinatal Mortality Rate of 13.27 per 1000 breech deliveries. Vaginal breech delivery was associated with higher perinatal mortality, low Apgar score and low birth weight. Caesarean breech delivery was associated with increased rates of Neonatal Intensive Care Unit admission.

**Conclusions:** The neonatal mortality and morbidity were higher with the vaginal breech deliveries. However further studies with larger sample size and greater statistical power is necessary to draw definitive conclusion.

**INTRODUCTION**

In breech presentation, the lie is longitudinal and the podalic pole presents at the pelvic brim.<sup>1</sup> The incidence of breech presentation is found to be 20% at 28 weeks of gestation which gradually decreases to 3-4% at term.<sup>2-4</sup>

Globally, there is variation in the incidence of term breech presentation. Its incidence is reported to be 4% in Ethiopia, 3.8% in Malaysia and 2.1% in India.<sup>5-7</sup> Likewise, the prevalence of term breech presentation was reported to be 3.7% in USA and 3.4% in Norway.<sup>8,9</sup> A recent study in Nepal revealed the incidence of singleton breech to be 2.4%.<sup>10</sup> Breech presentation is associated with increased rates of maternal and perinatal morbidity regardless of modes of delivery.<sup>10,11</sup> A 10-fold higher risk of intrapartum fetal death is found to be associated with vaginal breech delivery in comparison to caesarean delivery.<sup>12</sup>

The aim of this study was to explore the prevalence and perinatal outcomes of singleton breech delivery at Chitwan Medical College, a tertiary level hospital in Nepal.

**METHODS**

A retrospective study was conducted on prevalence and perinatal outcomes of singleton breech delivery in Chitwan Medical College, Nepal. Ethical approval was taken from the Institutional Review Committee (CMC-IRC/077/078-064). All the pregnant women who delivered either by vaginal, Cesarean Section or instrumental delivery at the centre from September 2018 to October 2020 were included in the study. Multifetal pregnancies, IUFD and congenital malformed breech deliveries were excluded from the study. Pregnant women who delivered at our centre with breech presentation during these two years were identified from the obstetric audit books and their In-patient (IP) number was used to collect data from the electronic records (MIDAS). A preformed pro forma was prepared and data was collected.

A recent study on breech presentation had reported a prevalence of 2.4% in Nepal.<sup>10</sup> Considering the same prevalence as our expected frequency and with 95% confidence level and 2% margin of error; sample size was calculated to be 225 from openepi.com, open source software for epidemiologic statistics. However, 226 pregnant women were enrolled in the

study. Convenience sampling method was used. Information on demographic variables, obstetric characteristics and perinatal outcomes were considered for evaluation. Demographic factors included maternal age. Obstetric characteristics included variables like gravida, gestational age at delivery and modes of delivery. Perinatal outcomes related factors included neonatal outcome (alive at birth, still birth, neonatal death), Apgar score at 1 min and 5 min, sex of fetus, fetal weight, IUGR and NICU admission.

Data was entered into and analyzed by SPSS version 20.0. Categorical variables were expressed as frequency number and percentage (%). Normally distributed variables were expressed as mean  $\pm$  standard deviation. The information was illustrated in tabular format and figures.

## RESULTS

Out of 6712 deliveries, there were 226 cases of singleton breech presentation with a prevalence of 3.37%. The demographic characteristics and obstetric findings among women reported with breech presentation are presented in table 1. Mean age of mothers was 25.0  $\pm$  5.04 years (Range 16-40 years), with 125 (55.3%) primigravida and 101 (44.7%) multigravida.

**Table 1: Demographic characteristics and obstetric findings among women with breech presentation (n=226)**

Variable	Frequency (%)
<b>Age (years)</b>	
<20	43 (19.0%)
20-30	141 (62.4%)
31-40	42 (18.6%)
Mean age $\pm$ SD	25.0 $\pm$ 5.04
<b>Gravida</b>	
Primigravida (1)	125 (55.3%)
Multigravida ( $\geq$ 2)	101 (44.7%)
<b>Gestational Age</b>	
Preterm (<37 weeks)	65 (28.8%)
Term (37-42 weeks)	159 (70.4%)
Post term (>42weeks)	2 (0.9%)
Mean gestational age $\pm$ SD (weeks)	37.7 $\pm$ 2.6
<b>Mode of delivery</b>	
Vaginal breech delivery	33 (14.6%)
LSCS	191 (84.5%)
Instrumental delivery	2 (0.9%)
<b>Types of LSCS (n=191)</b>	
Emergency	125 (65.4%)
Elective	66 (34.6%)
<b>Indications of LSCS (n=191)</b>	
Breech in labour	137 (71.1%)
Oligohydramnios	27 (14.1%)
Pre-eclampsia/ eclampsia	15 (7.8%)
Fetal Distress	8 (4.2%)
Footling presentation	2 (1.0%)
Polyhydramnios	2 (1.0%)

Out of 226 breech deliveries, more than two third (159, 70.4%)

delivered at term while there were 65 (28.8%) preterm and 2 (0.9%) post-term deliveries. The Caesarean Section for breech presentation was done in 191 (84.5%) pregnant women out of which 125 (65.4%) were emergency LSCS and 66 (34.6%) were elective. There were 35 (15.5%) vaginal deliveries with 33 (14.6%) spontaneous vaginal deliveries and 2 (0.9%) instrumental deliveries. Breech in labor (137, 71.7%) was the most frequent indication for LSCS followed by oligohydramnios (27, 14.1%) and Pregnancy Induced Hypertension (15, 7.8%).

**Table 2: Perinatal outcomes among the women with breech presentation (n=222)**

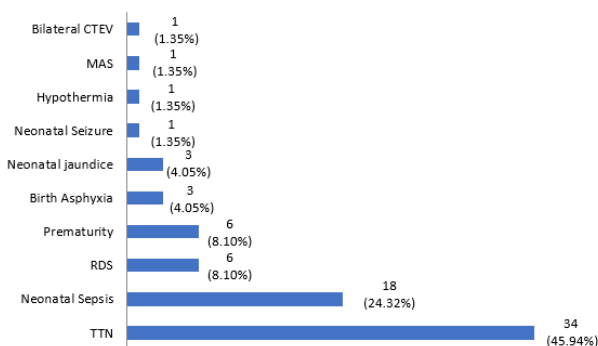
Variable	Frequency (%)
<b>Fetal outcome</b>	
Alive at birth	220 (99.1%)
Still birth	2 (0.9%)
Neonatal death	1 (0.45%)
<b>1<sup>st</sup> min Apgar score</b>	
<5	24 (10.8%)
5-7	81 (36.5%)
>7	117 (52.7%)
<b>5<sup>th</sup> min Apgar score</b>	
<5	11 (4.9%)
5-7	13 (5.8%)
>7	198 (89.3%)
<b>Sex</b>	
Male	109 (49.1%)
Female	113 (50.9%)
<b>Fetal weight (grams)</b>	
<2500	89 (40.1%)
2500-3500	119 (53.6%)
>3500	14 (6.3%)
Mean weight $\pm$ SD	2615.07 $\pm$ 796.78 gm
<b>IUGR</b>	
Yes	40 (18.0%)
No	182 (82.0%)
<b>Admission to NICU</b>	
Yes	74 (33.3%)
No	148 (66.7%)
<b>Hospital stay in days (n=226)</b>	
<3	179 (79.2%)
3-7	43 (19.0%)
>7	4 (1.7%)

Perinatal outcomes are shown in table 2. In four cases of breech presentation, complete information on neonatal outcomes was not available. So, only 222 cases were taken for analysis of perinatal outcomes. Out of 222 neonates born with singleton breech presentation, 220 (99.1%) neonates were alive at birth. There were 2 (0.9%) stillbirths and 1 neonatal death. Forty (18.0%) were small for gestational age (SGA). One hundred and five (47.3%) neonates were born with Apgar score less than 7 at 1 minute while only 24 (10.7%) had APGAR score less than 7 at 5 minutes. The mean weight of neonates was 2615.07 grams but 89 (40.1%) neonates were below 2500 gram.

**Table 3: Birth outcomes of breech presentation according to modes of delivery (n=222)**

Variables	Label	Modes of Delivery	
		Vaginal Delivery (n=35)	LSCS (n=187)
Perinatal Outcome	Dead	2 (5.7%)	0 (0.0%)
	Alive	33 (94.3%)	187(100.0%)
APGAR at 5 minutes	<7	17 (48.6%)	7 (3.7%)
	>7	18 (51.4%)	180 (96.3%)
Weight at birth (gram)	<2500	28 (80%)	61 (32.6%)
	>2500	7 (20%)	126 (67.4%)
NICU admission	Needed	10 (28.6%)	63 (33.7%)
	Not needed	25 (71.4%)	123 (66.3%)

Seventy-four (32.7%) neonates required NICU admission. The most common indications for NICU admission were Transient Tachypnea of the Newborn (TTN) (34, 45.94%) followed by Neonatal sepsis (18, 24.32%) (Figure 1).



**Figure 1: Reasons for NICU admission among neonates born with breech presentation (n=74)**

## DISCUSSION

This study was aimed at determining the prevalence and perinatal outcomes of singleton breech delivery at a tertiary level hospital in Nepal. The prevalence of breech presentation in our study was higher than that reported by previous studies conducted in Nepal (1.9-3.1%),<sup>10,13,14</sup> but it was less than the prevalence reported in Ethiopia<sup>5</sup> and Malaysia.<sup>6</sup> Our centre is a tertiary level hospital where significantly large number of cases of high-risk pregnancy including abnormal presentations are referred in, which might be the reason for higher incidence of breech in comparison to previous national studies. The rate of CS for breech presentation in our study (84.5%) was comparable to the rates reported previously in Nepal.<sup>10,13</sup> However it was higher than that reported in Ethiopia<sup>15</sup> and Austria.<sup>16</sup> The reason for higher rate of CS could be the institutional policy of performing Caesarean section for all term breech deliveries. A randomized multicentre trial (2000) has recommended planned CS as the route of choice for better perinatal outcome at term.<sup>17</sup> However there has always been a debate over the best mode of delivery regarding breech presentation.<sup>18</sup> Royal College of Obstetricians and Gynaecologists (RCOG) has recommended External Cephalic Version (ECV) for women with breech presentation at term unless there is an absolute contraindication. In case of unsuccessful or declined offer of ECV, the women should be counselled on the risks and benefits of planned vaginal breech delivery versus planned caesarean

section for further management.<sup>4</sup>

The Perinatal Mortality Rate (PMR) in our study was 13.37 per 1000 breech births, which was lower than that the studies in Ethiopia, Nigeria and India. (192-250 per 1000 breech births).<sup>2,7,19</sup> This might be due to lower rate of vaginal breech deliveries in our study (14.6%) in comparison to those studies done by Assefa et al,<sup>2</sup> Singh et al,<sup>7</sup> and Ojiyi et al.<sup>19</sup>(42.6%-73.2%). In this study, the perinatal mortality was present only among the neonates delivered by vaginal breech delivery 5.7%). Similarly, Apgar scores and weight at birth of neonates who were delivered by LSCS were comparatively better than those delivered vaginally. (Table 3) Similar results were demonstrated by previous studies conducted in Nepal<sup>10, 20</sup> and India.<sup>7</sup> In contrast, Malla et al. reported no significant difference in neonatal outcome in terms of modes of delivery.<sup>13</sup>

About one third of neonates (33.3%) required NICU admission in this study with TTN being the most frequent indication. The rate of NICU admission was higher among neonates delivered by LSCS (33.7%) than vaginal delivery (28.6%). Various studies have reported Caesarean Section to be associated with higher rate of NICU admission.<sup>21,22</sup> The rate of CS for breech presentation in our study is comparatively high which might have resulted in higher rate of NICU admission.

This was a single centered study conducted retrospectively in a tertiary level teaching hospital where the most complicated and higher risk cases of the region are referred in. So, the findings may not reflect the situation in general population. Although, it demonstrates difference in neonatal outcome in terms of modes of delivery, the effects of confounding factors were not studied.

## CONCLUSION

Although the neonatal mortality and morbidity were higher with vaginal breech delivery, but further comprehensive studies with larger sample size and greater statistical power are needed to get to a definitive conclusion. Also, a standard protocol for trial of vaginal breech delivery seems to be necessary as Cesarean breech delivery is found to be associated with increased needs of NICU admission.

**CONFLICT OF INTEREST:** None

**FINANCIAL DISCLOSURE:** None

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