Original Article

The Impact of Postural Management Techniques on Breech Presentation: A Cross-Sectional Study of Pregnancy Outcomes

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Abstract

Background: Breech presentation in term pregnancies, increases the risk of complications during labor and delivery. External cephalic version (ECV) is a standard intervention but carries potential risks. Postural management techniques, such as the knee-chest position and pelvic elevation, offer non-invasive alternatives, but their efficacy remains underexplored. However, this study aimed to evaluate the impact of postural management techniques on breech presentation and pregnancy outcomes.

Methodology: A descriptive cross-sectional study was conducted at PUMHS, Nawabshah from Sept 2023 to March 2024, including 88 women with confirmed breech presentation at gestational ages ≥32 weeks. Data on pregnancy outcomes were collected using structured proformas. Statistical analyses were performed using SPSS version 20, with a significance level set at $p<0.05$.

Results: The mean participant age was 27.07±4.99 years. Among the participants, 23.9% underwent breech vaginal delivery, 42.0% achieved cephalic vaginal births, and 34.1% underwent cesarean sections. A significant association was observed between cephalic presentation and breech management (59.1% vs. 34.1%, p=0.019). Neonates in the breech-offered group had higher APGAR scores ≥7 (81.8% vs. 68.2%) and lower NICU admission rates (6.8% vs. 15.9%), though these differences were not statistically significant.

Conclusion: Postural management techniques were associated with increased rates of cephalic presentation and favorable neonatal outcomes. While the findings suggest the potential of these techniques as low-risk alternatives to invasive methods, further large-scale randomized controlled trials are needed to establish their efficacy and guide clinical practice.

Keywords: Breech Presentation, External Cephalic Version, Postural Management, Pregnancy Outcome, Cesarean Section

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Introduction

Breech presentation occurs in 3-4% of term pregnancies and traditionally requires cesarean section or vaginal breech delivery.[1] While cesarean section is often the preferred method, alternative strategies, such as External Cephalic Version (ECV), are recommended by national guidelines to convert breech to cephalic presentation before delivery.[2,3] ECV, which has historical and cross-cultural precedence, fell out of international use for a period but remains a viable option. Another alternative, moxibustion, has also been explored as a complementary therapy to correct breech presentation.[4] Furthermore, selective management protocols for nonfrank breech presentations have shown that a trial of labor can lead to successful vaginal deliveries in 44% of cases, with comparable neonatal outcomes to cesarean sections.[5] Despite differing national guidelines[6,7], there is growing recognition of the need for strategies to reduce cesarean rates and offer more options for women with breech presentations.[2]

Postural management techniques, such as maternal pelvic elevation, have gained attention as non-invasive alternatives or complements to ECV. However, a Cochrane review of six studies involving 417 women found insufficient evidence to support the use of postural management for breech presentation[8], showing no significant differences in outcomes such as non-cephalic

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births, cesarean sections, or low Apgar scores between intervention and control groups. More recent studies, such as a retrospective cohort study, have explored the efficacy of postural management in the lateral position for primiparous breech presentations.[9]

Although the knee-chest position and other postural methods are practiced in some clinical settings, the evidence supporting their effectiveness remains limited. The lack of rigorous controlled studies has led to uncertainty about their clinical utility. This study aims to assess the effects of postural management techniques on breech presentation and pregnancy outcomes, specifically evaluating whether maternal postural exercises can influence the success of cephalic version and improve outcomes such as presentation at birth, mode of delivery, and other perinatal factors.

Methodology

This cross-sectional study was designed to assess the impact of postural management techniques on pregnancy outcomes associated with breech presentations. The study was conducted from Sept 2023 to March 2024.

The study protocol was approved by the Ethical Review Committee of the People's University of Medical & Health Sciences (PUMHS) [Ref# PUMHSW/SBA/PVC/ERC/2023/327; Dated 17-11-2023]. Written informed consent was obtained from all participants prior to their inclusion in the study.

The study was conducted in the Department of Obstetrics and Gynecology at PUMHS Nawabshah. Women fulfilling the inclusion criteria were recruited from the labor room and emergency department.

Women included in the study had a breech presentation confirmed via ultrasound, a gestational age greater than 32 weeks, were aged between 18-40 years, had a parity of 1-4, and provided informed consent to participate. Women excluded from the study were those with multiple pregnancies, known cases of Type 1 or Type 2 Diabetes Mellitus, chronic hypertension, or chronic renal disease.

The maternal baseline characteristics assessed in this study were age, parity, residency, education, mode of delivery, and socio-economic status. The fetal variables assessed included fetal outcome, APGAR score, NICU admission, and fetal presentation at term.

Data including demographic, clinical characteristics, and pregnancy outcomes were collected using a structured proforma. Perinatal outcomes were documented based on delivery and neonatal records. Data accuracy was ensured by verifying records and ultrasound reports.

Selection bias was minimized by using a non-probability consecutive sampling technique to include all eligible women presenting during the study period. Information bias was mitigated through the use of standardized proformas and consistent definitions of outcomes.

The sample size was calculated using WHO sample size determination software and a significance level of 0.05. A total of 88 participants were recruited for the study.

The collected data were analyzed using SPSS version 20. Descriptive statistics summarized demographic and clinical characteristics. Categorical variables were reported as frequencies and percentages, while continuous variables were reported as means and standard deviations. Comparative analyses were conducted using appropriate statistical tests, such as the chi-square test for categorical variables and t-tests or ANOVA for continuous variables. A p-value of <0.05 was considered statistically significant.

Results

A total of 88 participants were included in the study with a mean age of 27.07 years (±4.99). Among them, 30.7% were nulliparous, 23.9% had a parity of 2-4, and 45.5% had a parity greater than 5.

The majority of participants resided in urban areas (52.3%), while the remaining 47.7% were from rural areas. Educational levels varied, with 31.8% having no formal education, 31.8% with primary education, 17.0% with secondary education, and 19.3% with higher education (Table I). The mode of delivery showed that 23.9% underwent breech vaginal delivery, 42.0% had a cephalic vaginal birth, and 34.1% required a cesarean section. Socio-economic status (SES) was predominantly middle-class (53.4%), followed by low SES (42.0%) and high SES (4.5%).

The fetal outcomes demonstrated that 87.5% of the neonates were born alive, while 3.4% were intrauterine deaths (IUD), 4.5% were stillborn, and 4.5% experienced early neonatal death (ENND). The APGAR score at birth indicated that 17.0% of neonates scored below 7, 75.0% scored 7 or above, and 8.0% had no recorded score due to non-viable outcomes. NICU admissions were required for 11.4% of neonates, while 80.7% did not require NICU care. Fetal presentation at

term was cephalic in 46.6% of cases, breech in 48.9%, and other presentations accounted for 4.5% (Table II).

The analysis revealed a statistically significant association between parity and breech position offered (p=0.004) as shown in table III. Nulliparous women were less likely to be offered breech management compared to multiparous women. Residency and socio-economic status showed no significant associations with breech management.

Fetal outcomes varied between those offered breech management and those who were not. Among the breech-offered group, 88.6% of neonates were born alive compared to 86.4% in the non-breech group, though this difference was not statistically significant (Table 4). The APGAR score ≥7 was higher in the breech-offered group (81.8%) compared to the non-breech group (68.2%), but this did not reach statistical significance (p=0.138). NICU admission rates were slightly lower in the breech-offered group (6.8%) compared to the non-breech group (15.9%), though the difference was not statistically significant (p=0.393).

A significant association was observed between fetal presentation and breech position management (p=0.019). In the breech-offered group, 59.1% of fetuses had a cephalic presentation, while 34.1% remained breech. Conversely, in the non-breech group, 34.1% of fetuses had a cephalic presentation, while 63.6% remained breech. This indicates a stronger likelihood of cephalic presentation following breech management (Table IV).

Table I: Participant Demographics and Delivery Characteristics.

Variables		n (%)
Age (Year); Mean±SD		27.07±4.99
Parity	Nullipara	27 (30.7%)
	2-4	21 (23.9%)
	>5	40 (45.5%)
Residency	Urban	46 (52.3%)
	Rural	42 (47.7%)
Education	No formal education	28 (31.8%)
	Primary education	28 (31.8%)
	Secondary education	15 (17.0%)
	Higher education	17 (19.3%)
Mode of Delivery	Breech vaginal delivery	21 (23.9%)
	Cephalic vaginal birth	37 (42.0%)
	Caesarean section	30 (34.1%)
Socio-economic Status	Low SES	37 (42.0%)
	Middle SES	47 (53.4%)
	High SES	4 (4.5%)

Table II: Fetal Outcomes and Neonatal Health Indicators.

Variables		n (%)
Fetal Outcome	IUD	3 (3.4%)
	Still Born	4 (4.5%)
	ENND	4 (4.5%)
	Alive	77 (87.5%)
APGAR Score	< 7	15 (17.0%)
	≥ 7	66 (75.0%)
	Not applicable	7 (8.0%)
NICU Admission	No	71 (80.7%)
	Yes	10 (11.4%)
	Not applicable	7 (8.0%)
Fetal Presentation at Term	Cephalic	41 (46.6%)
	Breech	43 (48.9%)
	Other	4 (4.5%)

Discussion

This study examines the impact of postural management techniques on breech presentation. Multiple studies have investigated the effectiveness of maternal posture,

Table III: Association of Baseline Characteristics with Breech Position Offered

Variables		Breech Offered		P-value
		Yes (n=44)	No (n=44)	
Age (Year); Mean±SD		27.13±5.05	27.0±4.98	0.890
Parity	Nullipara	7(15.9)	20(45.5)	0.004*
	2-4	10(22.7)	11(25.0)	
	>5	27(61.4)	13(29.5)	
Residency	Urban	26(59.1)	20(45.5)	0.200
	Rural	18(40.9)	24(54.5)	
Education	No formal education	16 (36.4%)	12 (27.3%)	0.063
	Primary education	12 (27.3%)	16 (36.4%)	
	Secondary education	4 (9.1%)	11 (25.0%)	
	Higher education	12 (27.3%)	5 (11.4%)	
Mode of Delivery	Breech vaginal delivery	14 (31.8%)	7 (15.9%)	0.208
	Cephalic vaginal birth	16 (36.4%)	21 (47.7%)	
	Caesarean section	14 (31.8%)	16 (36.4%)	
Socio-economic Status	Low SES	18 (40.9%)	19 (43.2%)	0.121
	Middle SES	22 (50.0%)	25 (56.8%)	
	High SES	4 (9.1%)	0 (0.0%)	

Table IV: Fetal Presentation and Associated Outcomes by Breech Position Offered.

Variables		Breech Offered		P-value
		Yes (n=44)	No (n=44)	
Fetal Outcome	IUD	1 (2.3%)	2 (4.5%)	0.50
	Still Born	3 (6.8%)	1 (2.3%)	
	ENND	1 (2.3%)	3 (6.8%)	
	Alive	39 (88.6%)	38 (86.4%)	
APGAR Score	< 7	4 (9.1%)	11 (25.0%)	0.138
	≥ 7	36 (81.8%)	30 (68.2%)	
	Not applicable	4 (9.1%)	3 (6.8%)	
NICU Admission	No	37 (84.1%)	34 (77.3%)	0.393
	Yes	3 (6.8%)	7 (15.9%)	
	Not applicable	4 (9.1%)	3 (6.8%)	
Fetal Presentation at Term	Cephalic	26 (59.1%)	15 (34.1%)	0.019*
	Breech	15 (34.1%)	28 (63.6%)	
	Other	3 (6.8%)	1 (2.3%)	

particularly pelvic elevation and knee-chest positions, in promoting cephalic version. Systematic reviews by Hofmeyr and Kulier (2012) found no significant evidence supporting the use of postural management for breech presentation.[8] Their analyses, showed no significant differences in non-cephalic births, cesarean sections, or low Apgar scores between intervention and control groups. An exploratory study by Founds (2006) even suggested that knee-chest posture might work opposite to the expected direction, though the small sample size (25 women) limited generalizability.[10] The authors consistently conclude that there is insufficient evidence to recommend postural management for breech presentation, emphasizing the need for further research with larger sample sizes and consideration of factors such as parity and gestational age.[8,10] In contrast, our study found a statistically significant association between breech management techniques and cephalic presentation at term, with 59.1% of women in the breech-offered group delivering cephalic, compared to 34.1% in the non-breech group (p=0.019). This suggests that postural management techniques could be effective in promoting cephalic version, particularly in multiparous women, as our data showed a significant influence of parity on the outcomes (p=0.004).

Breech presentation is associated with several maternal and fetal factors. Advanced maternal age, low gestational age, low birth weight, and female fetal gender increase the risk of breech presentation.[11,12] Parity plays a significant role, with nulliparity being a risk factor and multiparity showing a protective effect.[11] In our study, parity was a significant factor, with nulliparous women more likely to present with breech, corroborating the findings of previous studies. Our results also align with existing literature in that the overall prevalence of breech presentation increased among nulliparous women, as observed in 45.5% of the women in the no breech offered group, compared to 15.9% in the breech offered group (p=0.004). Interestingly, our study also found no significant differences in maternal age,

education level, or socioeconomic status between the two groups, which is consistent with previous findings suggesting that these factors alone may not be reliable predictors of breech presentation.[11]

However, breech presentation at term is associated with increased risks of adverse perinatal outcomes. Studies have shown a higher stillbirth rate in breech compared to cephalic presentations (0.2% vs 0.1%).[13] Our study similarly reported higher rates of stillbirth in the breech-offered group (6.8%) compared to the non-breech group (2.3%), although this was not statistically significant (p=0.50). Factors linked to adverse outcomes in breech deliveries include gestational age <39 weeks, birthweight <10th percentile, and delivery in smaller maternity units.[14] In our study, the rates of intrauterine death (IUD) and early neonatal death (ENND) were comparable between the groups, with 2.3% IUD and 2.3% ENND in the breech-offered group, compared to 4.5% IUD and 6.8% ENND in the non-breech group. Although these differences were not statistically significant, they suggest a trend towards improved fetal outcomes in the breech-offered group.

External cephalic version (ECV) can reduce the risk of breech presentation, with a 39% success rate reported.[15] However, ECV does not increase complications. In preterm premature rupture of membranes (PPROM), non-cephalic presentation is associated with earlier PPROM onset and higher rates of maternal complications and neonatal death compared to cephalic presentation.[16] In our study, there was no significant difference in NICU admissions between the two groups (6.8% in the breech-offered group vs. 15.9%

in the non-breech group, p=0.393), suggesting that the breech management techniques may not significantly alter the need for neonatal intensive care.

Overall, breech presentation is linked to various obstetric risk factors, including fetal growth restriction, oligohydramnios, gestational diabetes, previous cesarean section, and congenital anomalies.[12] Our findings suggest that while breech management techniques may improve cephalic presentation rates and potentially reduce some adverse outcomes, further research with larger sample sizes is necessary to draw definitive conclusions regarding their effectiveness in improving neonatal outcomes and reducing cesarean section rates.

Limitations: This study has several limitations that must be considered. The relatively small sample size (n=44 in each group) may reduce the generalizability of the findings. The non-randomized design introduces potential selection bias, and unmeasured confounders could have influenced the results. Additionally, the short follow-up period only focused on immediate perinatal outcomes, without considering long-term effects on infant health.

Conclusion

The findings suggest that postural management influences fetal presentation, significantly increasing the likelihood of a cephalic presentation at term. Women offered postural management had a higher rate of cephalic presentations compared to those who were not. However, no statistically significant differences were found in other outcomes, such as fetal survival rates, APGAR scores, and NICU admissions. This indicates that while postural management may assist in achieving a cephalic presentation, its effects on broader perinatal outcomes remain unclear. Further studies with larger sample sizes and more robust methodologies are needed to confirm these findings and explore its potential benefits in reducing cesarean deliveries and improving maternal and fetal health, establishing clearer guidelines for clinical practice.

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