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Original Article

Frequency of External Cephalic Version in Women with Breech Presentation at Term

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ABSTRACT

Background: External cephalic version (ECV) is a pivotal obstetric procedure aimed at reducing caesarean section rates by correcting fetal breech presentation to cephalic presentation through maternal abdominal manipulation. Despite its established efficacy, variability in success rates across different populations and healthcare settings highlights the need for continued evaluation of its clinical application and outcomes.

Objective: To assess the success rate of ECV in term pregnancies with breech presentation and identify factors influencing its outcomes in a tertiary care setting.

Methods: This cross-sectional study was conducted at the Gynecology & Obstetrics Unit of Lady Reading Hospital, Peshawar, between November 21, 2019, and May 21, 2020. A sample size of 100 women with singleton pregnancies, aged 20-35 years, presenting with breech at term (37-42 weeks), was included using non-probability consecutive sampling. Exclusion criteria encompassed contraindications to vaginal delivery or ECV. Data on demographic characteristics, obstetric history, and ECV outcomes were collected. The procedure was performed by experienced obstetricians under ultrasound guidance. Statistical analysis was conducted using SPSS version 25.0, with chi-square tests applied to assess associations between variables and ECV success.

Results: The mean age of participants was 30 years (SD ± 5.887), with a mean gestational age of 38 weeks (SD ± 3.94). The success rate of ECV was 57%. Multigravida women constituted 73% of the sample. No significant associations were found between ECV success and age groups (P=0.8792), gestational period (P=0.9699), gravidity (P=0.7813), obesity (P=0.7519), or educational level (P=0.9668).

Conclusion: The study confirms a 57% success rate for ECV in correcting breech presentations at term, reinforcing the procedure's role in potentially reducing the need for caesarean sections. These findings support the incorporation of ECV into obstetric practice as a standard of care for eligible women with breech presentations, highlighting the necessity for skilled providers and patient education to optimize outcomes.

Keywords: External Cephalic Version, Breech Presentation, Caesarean Section, Obstetric Outcome, Term Pregnancy, Maternal Healthcare, Success Rate, Tertiary Care.

INTRODUCTION

External cephalic version (ECV) represents a pivotal maneuver in the obstetric management of breech presentation at term, entailing the manual adjustment of the fetus from a breech to a cephalic position through maternal abdominal manipulation. This procedure, ideally conducted post-37 weeks of gestation by skilled obstetricians and under ultrasonographic surveillance, emerges as a critical intervention amidst the 3-4% of term pregnancies afflicted by breech presentations and the consequential 10-15% of caesarean deliveries attributed to malpresentation(1,2). The significance of timely identified breech presentations cannot be overstated, as it enhances the feasibility of ECV, potentially halving the necessity for caesarean sections—a procedure with a success threshold of up to 50%, contingent upon the practitioner's expertise(3). Despite its benefits, ECV is contraindicated in cases of placenta previa,

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placental abruption, premature membrane rupture, non-reassuring fetal cardiotocography readings, uterine anomalies, ongoing contractions, and multiparity(4).

Empirical evidence underscores the efficacy of ECV in mitigating caesarean delivery rates. A notable study within a tertiary care military hospital in Taif, Saudi Arabia, involving 128 term breech presentation women, reported a 53.9% success rate for ECV, with 84.1% of these successful interventions culminating in vaginal births and a mere 14.5% necessitating caesarean sections(3). Similarly, research conducted at Al-Batool Teaching Hospital in Iraq on 90 women after 37 weeks of gestation with uncomplicated breech presentations revealed an 80% success rate for ECV. This study further identified parity, placental location, breech type, and birth weight as influential predictors for ECV success, noting a 12.5% subsequent caesarean delivery rate(5). Contrastingly, the Royal Women Hospital in Melbourne documented a lower ECV success rate of approximately 37%, with 29% of these cases proceeding to natural vaginal deliveries. Factors such as low body mass index, multiparity, and an amniotic fluid index exceeding 166.6 were highlighted as positive prognosticators for ECV success(6-9).

The current study aims to enrich the existing literature by assessing the preventive potential of ECV against breech vaginal deliveries and caesarean sections within a local context where data remains scarce. By establishing the success rates of ECV and its impact on delivery mode, this investigation seeks to provide reassurance to mothers apprehensive about surgical births and to contribute to the optimization of obstetric care practices (10-13). Moreover, within settings such as the LRH MTI, where a stringent bed management policy enforces a one-patient-per-bed system, findings from this study could significantly influence patient triage, prioritizing bed allocation for more severe cases (14-17). A successful ECV, by increasing the likelihood of vaginal delivery, not only shortens hospital stays compared to post-caesarean recovery but also facilitates better resource utilization and patient management in the context of breech pregnancies (18-20).

MATERIAL AND METHODS

This cross-sectional study was conducted at the Gynecology & Obstetrics Unit (B) of Lady Reading Hospital, Peshawar, between November 21, 2019, and May 21, 2020. The study aimed to assess the success rate of external cephalic version (ECV) in women with breech presentation at term. The sample size was determined to be 100 participants, calculated using the World Health Organization (WHO) sample size calculation formula. This calculation was based on an anticipated population proportion of success of 53.9% (3), with a confidence level of 95% and an absolute precision requirement of 9.8% (4).

Inclusion criteria were women aged 20 to 35 years, with a singleton pregnancy and breech presentation, either primigravida or multigravida, and a gestational period of 37 to 42 weeks. The gestational period was ascertained either from the last menstrual period or ultrasound findings, with an unengaged presenting part assessed via abdominal examination (21-23). Exclusion criteria encompassed multiple pregnancies (assessed through abdominal examination/ultrasound), ruptured membranes (confirmed by per vaginal examination), antepartum hemorrhage, oligohydramnios on scan, previous cesarean section or uterine scar, pre-eclampsia, Rhesus isoimmunization, or any contraindications to vaginal delivery. The study employed a non-probability consecutive sampling method (6).

Ethical approval for the study was obtained from the hospital's research ethics committee and the College of Physicians and Surgeons Pakistan (CPSP). Participants were recruited from the antenatal clinic of Lady Reading Hospital, Peshawar. The study's purpose and potential benefits were thoroughly explained to the participants and their relatives. Assurance was given that the study was conducted solely for research purposes and data publication. Upon agreement, written informed consent was obtained from each participant. Participants were instructed to arrive at the labor room in a fasting state. An initial cardiotocography (CTG) was performed, followed by a comprehensive collection of the patient's age, obstetric history, details of the current pregnancy, and gestational age. An abdominal examination was conducted, and obstetrical ultrasound assessments were consistently performed by the same ultrasonographer using a standardized ultrasound facility to minimize bias. Tocolysis was administered 30 minutes prior to the ECV procedure, which was performed by a senior obstetrician. The procedure involved displacing the fetal breech from the maternal pelvis while keeping the fetus flexed and gently moving the breech away from the pelvis. Following the ECV, an ultrasound confirmed the fetal presentation, and a repeat CTG was conducted (11).

The study adhered strictly to the exclusion criteria to control confounders and bias. Data were analyzed using SPSS version 25.0. Descriptive statistics, including mean and standard deviation, were calculated for age, gravidity, parity, and gestational age. Frequency and percentage were computed for successful ECV, educational status, socioeconomic status, and obesity (BMI $\geq$ 27.5kg/m^2). Potential effect modifiers, such as age, gravidity, parity, gestational age, educational status, socioeconomic status, and obesity, were assessed through stratification and post-stratification analysis. The Chi-square test was applied to evaluate associations, with a p-value of $\leq$ 0.05 considered statistically significant. The study was conducted in accordance with the ethical principles for medical research involving human subjects as outlined in the Declaration of Helsinki.

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RESULTS

In the conducted cross-sectional study, a comprehensive assessment of demographic and obstetric characteristics alongside the success rates of external cephalic version (ECV) among women with breech presentations at term was carried out. The analysis, delineated in Table 1, encapsulates the age distribution, gestational period, gravidity, obesity status, education level, and socioeconomic status of the 100 participating women. The mean age of participants was 30 years, with a standard deviation of ±5.887, where 41% were within the 20-25 years age group, and 59% fell into the 26-35 years category. The gestational period averaged 38 weeks (SD ±3.94), with 63% of the cases reported between 37-39 weeks and the remaining 37% between 40-41 weeks. Gravidity showed that 27% of the participants were primigravida, while 73% were multigravida. In terms of obesity, 46% were categorized as non-obese and 54% as obese. Educational status revealed that 56% of the women were illiterate, 31% had primary to secondary education, and 13% were graduates or postgraduates.

Table 1: Demographic and Obstetric Characteristics

Characteristic	Frequency Distribution	Mean (SD)
Age		30 years (±5.887)
- 20-25 years	41 (41%)	
- 26-35 years	59 (59%)	
Gestational Period		38 weeks (±3.94)
- 37-39 weeks	63 (63%)	
- 40-41 weeks	37 (37%)	
Gravidity		
- Primigravida	27 (27%)	
- Multigravida	73 (73%)	
Obesity		
- Non-Obese	46 (46%)	
- Obese	54 (54%)	
Education Level		
- Illiterate	56 (56%)	
- Primary to Secondary	31 (31%)	
- Graduate and Postgrad	13 (13%)	
Socioeconomic Status		
- Poor	47 (47%)	
- Middle Class	42 (42%)	
- Rich	11 (11%)	

Socioeconomic status indicated that 47% of the participants were considered poor, 42% as middle class, and 11% as rich.

Table 2: Study Variables and Association with Successful External Cephalic Version

Variable	Yes (n=57)	No (n=43)	Total (n=100)	P-value (Chi-Square Test)
Age Group				0.8792
- 20-25 years	23	18	41	
- 26-35 years	34	25	59	
Gestational Period				0.9699
- 37-39 weeks	36	27	63	
- 40-41 weeks	21	16	37	
Gravidity				0.7813
- Primigravida	16	11	27	
- Multigravida	41	32	73	
Obesity				0.7519
- Non-Obese	27	19	46	
- Obese	30	24	54	

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Variable	Yes (n=57)	No (n=43)	Total (n=100)	P-value (Chi-Square Test)
Education Level				0.9668
- Illiterate	32	24	56	
- Primary to Secondary	18	13	31	
- Graduate and Postgrad	7	6	13	

Table 2 provides an in-depth look at the association of various demographic and obstetric variables with the success of ECV. Among the 100 cases, 57 reported successful ECV outcomes, translating to a success rate of 57%. When examined against age groups, there was no significant association found between age and ECV success (P-value: 0.8792), with 23 successes in the 20-25 years group and 34 in the 26-35 years group. The gestational period also did not show a significant correlation with ECV success (P-value: 0.9699), as 36 successful versions were within 37-39 weeks and 21 within 40-41 weeks. Analyzing gravidity, 16 successful ECVs were observed in primigravida and 41 in multigravida, yielding a P-value of 0.7813, indicating no significant difference in ECV success rates based on gravidity. The obesity status of participants also showed no significant impact on the success of ECV (P-value: 0.7519), with successful versions nearly evenly distributed between non-obese (27) and obese (30) groups. Lastly, the educational level of the women did not significantly affect ECV outcomes (P-value: 0.9668), with success rates distributed across different educational backgrounds: 32 successes among the illiterate, 18 among those with primary to secondary education, and 7 among graduates or postgraduates.

DISCUSSION

In the realm of obstetrics, external cephalic version (ECV) emerges as a pivotal intervention aimed at correcting fetal breech presentation to cephalic presentation through abdominal manipulation, ideally performed at term from 37 weeks of gestation under the guidance of an experienced obstetrician and ultrasound (1). Given that breech presentation affects 3-4% of term pregnancies and contributes to 10-15% of caesarean sections due to malpresentation (2), the significance of timely performed ECV cannot be overstated, particularly in its potential to mitigate the necessity for caesarean delivery. The success rates of ECV, reportedly up to 50%, underscore the procedure's efficacy, albeit influenced markedly by the executing obstetrician's experience (1).

The current study, recording a mean participant age of 30 years (SD ± 5.887) and a mean gestation period of 38 weeks (SD ± 3.94), revealed a 57% success rate for ECV among the cohort, with a notable predominance of multigravida women (73%) over primigravida (27%). This success rate aligns with the broader discourse on ECV's efficacy, albeit with variations across different studies and populations. For instance, Hussin O et al.'s(7) investigation in a tertiary care military hospital in Taif, Saudi Arabia, documented a 53.9% success rate for ECV, with a subsequent normal delivery rate of 84.1% among successful ECVs and a reduced caesarean section rate, illustrating the procedure's profound impact on delivery outcomes. Similarly, Al-Jwadi, S et al.(8,11) reported an 80% success rate for ECV, with the majority of these cases resulting in vaginal delivery (87.5%), underscoring ECV's role in averting caesarean deliveries. Contrastingly, Kew N et al.(9,10) provided a broader analysis of 447 ECV cases, reflecting the procedure's acceptance and outcomes within a different demographic and healthcare setting, noting mean participant metrics closely aligning with national averages (17).

The juxtaposition of these findings with our study underscores the variable efficacy of ECV, influenced by demographic factors, healthcare settings, and procedural expertise. Despite the strengths of our study, including a well-defined sample and rigorous adherence to inclusion criteria, limitations persist (24). The study's cross-sectional design and single-center nature might not fully capture the multifaceted dynamics influencing ECV outcomes across diverse populations. Additionally, the absence of a more detailed analysis on the impact of variables such as BMI, amniotic fluid index, and the obstetrician's experience on ECV success represents a missed opportunity for deeper insights (21).

Future research should aim at overcoming these limitations through multicentric studies encompassing a broader demographic spectrum and incorporating a longitudinal design to track long-term outcomes post-ECV. Additionally, qualitative analyses exploring patient experiences and obstetrician perspectives on ECV could enrich quantitative findings, offering a holistic view of the procedure's efficacy and areas for improvement (22-25). The inclusion of more granular data on procedural techniques and obstetrician expertise could further delineate factors contributing to successful ECVs, paving the way for targeted interventions aimed at enhancing success rates and ultimately reducing the prevalence of caesarean sections attributed to breech presentations (18, 25-27).

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CONCLUSION

The conclusion of this study, revealing a 57% success rate for external cephalic version (ECV) in term breech presentations, underscores the technique's significant role in potentially reducing caesarean deliveries, a crucial consideration in maternal healthcare. By aligning with existing literature that highlights variability in success rates, it emphasizes the need for skilled execution and informed patient selection. The findings advocate for broader implementation and training in ECV practices as a viable intervention to lower caesarean section rates due to breech presentation, contributing to safer childbirth experiences and promoting maternal and fetal health. This study not only reaffirms ECV's value in obstetric care but also calls attention to the importance of enhancing obstetric skills and patient education to leverage this procedure's full potential in improving pregnancy outcomes.

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