

The study for the effectiveness of External Cephalic Version for Breech Presentation at Term Pregnancy in Quetta, Pakistan

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Abstract

Objective:

Breech presentation is a common complication during pregnancy that increases the risk of fetal morbidity and mortality during vaginal delivery compared to caesarean section. To reduce the number of caesarean sections and associated complications, external cephalic version (ECV) is recommended. The objective of this cross-sectional study was to determine the success rate of ECV in uncomplicated singleton breech presentation at term.

Material and Methods:

The study was conducted on 85 patients at Gynae-unit I, SPH/ Bolan Medical Complex Hospital, Quetta, Pakistan. The success rate of ECV was found to be 42.4%, while the failure rate was 57.6%. Multigravida had a higher success rate (80.6%). Complications such as fetal distress, ruptured membranes, placental abruption, and emergency cesarean section occurred in a small percentage of cases.

Results:

According to study, the success rate was 42.4% and failure rate was 57.6%. Multigravida shows higher success rate (80.6%). In one patient (1.2%) emergency cesarean section was done due to abruption placenta, that occur in (1.2%) after the successive version, and in 4.7% cases fetal bradycardia was seen, which was transient, that resolved spontaneously. No complication seen after failed ECV.

Conclusion:

The study concludes that ECV is an effective and safe procedure in reducing the incidence of breech presentation at term with a low risk of complications. Maternal age and multiparity are associated with a higher success rate, and the procedure is simple to learn and perform. Properly counseled women are satisfied with the procedure, and well-equipped obstetrics units should routinely offer the procedure in selected cases during term pregnancies.

Keywords: *Abruption placenta, Breech presentation, External cephalic version, Term pregnancy*

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INTRODUCTION

In gynecological practice, the breech presentation is very commonly presenting malpresentation, that occurs when the fetus' pelvis or lower extremities occupy the maternal pelvic inlet (Arulkumaran, 2007; Goffinet et al., 2019). The incidence of breech presentation varies according to gestation, with a prevalence of 40% at 20 weeks, 6-8% at 34 weeks, and 3-4% at term (Hofmeyr et al., 2015). Breech presentations have an increased risk of fetal morbidity and mortality after breech vaginal delivery compared to Caesarean section (Hofmeyr et al., 2015).

The breech presentation of the fetus is converted into cephalic presentation by manipulation through abdominal wall. This procedure reduces the number of related complications of breech presentation and that leads to decreased number of caesarean sections to a significant level (Hofmeyr et al., 2015; Nasir-ud-Din et al., 2020). Various studies have shown that external cephalic version at term is a safe and effective procedure with no major neonatal adverse outcomes and an extremely low complication rate (Hofmeyr et al., 2015; Li et al., 2014). External cephalic versions have documented advantages in decreasing the rate of breech presentation and thereby number of caesarean sections, but the success rate is higher at term (Hofmeyr et al., 2015; Li et al., 2014).

Major factors contributing to successful versions are adequate liquor volume, multiparity, and non-engaged breech (Hofmeyr et al., 2015). A study showed a 67.5% success rate,

among which 77.7% delivered vaginally. Following a failed version, 61.5% had elective caesarean section (Ahmed et al., 2018). It is recommended that the procedure be performed in a setting where an urgent caesarean section is possible in case of any complication (Hofmeyr et al., 2015).

In a community where Caesarean section is not a feasible solution and vaginal delivery is preferred, many patients with breech presentation end up in emergency Caesarean section, which has its own hazards. Therefore, external cephalic version is being considered as an alternative to reduce the number of Caesarean sections and change breech presentation into cephalic presentation without any complications (Gonzalez et al., 2018). At present, the cesarean section is the major factor leading to more rates of postpartum morbidity and mortality of mothers. Given the above, the successful version of breech presentation into cephalic permits patients to prevent cesarean delivery (Kuppens et al., 2013). The data on external cephalic version is rare considering the local scenario, and this study is aimed at determining its success rate and effects on pregnancy outcome.

Historical significance of external cephalic version

External cephalic version, a technique used to manipulate a fetus in breech presentation to cephalic presentation, has a long historical significance dating back to the time of Hippocrates and Aristotle ((Hofmeyr et al., 2015 and Jones, 2009). This technique has been practiced for centuries, particularly in societies where medical services are limited or where vaginal breech delivery skills are scarce (Baker et al., 2017). Despite its value in such settings (Jones, 2009), there are concerns about the risks associated with ECV in more technologically advanced societies such as Europe and North America, leading to its declining popularity in recent times (Witkop et al., 2008).

However, the true value of ECV lies in its ability to reduce the incidence of breech presentation during labor without posing any risk to the mother and the neonate when compared to surgical alternatives (Hannah et al., 2000). The understanding of the mechanism of breech delivery and the development of techniques to assist in extracting the breech began in the 17th century by Mauriceau-Smellie-Veit and Braxton Hicks (Jones, 2009).

Prior to 1970, the use of ECV was widespread, particularly before term at around 30-34 weeks' gestation. Obstetricians were either in favor or opposed to the procedure with fervor (Tasneem et al., 2009). However, the popularity of ECV before term declined by the mid-1970s due to uncertainty about its effectiveness at a gestational age when spontaneous version commonly occurs and reports of fetal mortality following the procedure (Hutton EK & Hofmeyr, 2006). Consumer demands for non-interventional birth experiences also played a role in its resurgence (Collins et al., 2007).

MATERIALS & METHODS

Study design

This study was a Cross-sectional study. The study was performed at Department of OBS/Gynae Unit 111, Bolan Medical College Hospital Quetta. (n=85) women keeping confidence level 95% anticipated population 67.5% (5) and absolute precision 10%.

Inclusion criteria

Women representing with uncomplicated singleton breech presentation from 37-41 completed weeks of gestation were included in the study.

Exclusion criteria

Patients having any medical or obstetric risk factor in index pregnancy as: multiple pregnancy (technically difficult due to more than one fetus), oligohydramnios (increase chances of fetal distress due to cord compression), polyhydramnios (increased risk of spontaneous reversion and unstable lie), placenta previa (increase chances of bleeding), pre-labor rupture of membrane (decrease amniotic fluid), pregnancy induced hypertension (growth restriction and decreased amniotic fluid) were excluded from the study. Moreover, the patients having any past obstetrical history risk factor as: previous uterine scar (increase chances of scar dehiscence), bad obstetrical history, any contraindication to vaginal delivery & labor (contracted or borderline pelvis, any pelvic mass) and desire of mother after thorough counseling were also excluded from the study.

Procedure and Data collection

Patients attending OBS/GYNAE O.P.D and labor room with breech presentation at 37-41 weeks of gestation were assessed for inclusion criteria by taking detail history and examining them. After thorough counseling and informed consent for the procedure, complete physical examination was performed to exclude any medical or obstetrical risk factor in pregnancy. Routine investigation including ultrasonography was done, for confirmation of fetal position, placental localization, and amount of liquor. Cardiotocography was done for 30 minutes before procedure. External cephalic version

was performed, and version was confirmed by ultrasound. Cardiotocography was done for 30 minutes after the procedure. Mother and fetus were monitored for any leaking, bleeding, or fetal distress. Injection of Anti D given to Rh negative woman. When the patient was stable during the admission in ward for 24hours and external cephalic version was remained successful, she was discharged home. Patients were counseled for readmissions in case of labor pains, any leaking or bleeding. Age and parity were the confounding factors; these were controlled by grouping women of similar ages e.g., 20-25 years in one group, parity was also controlled by grouping in two, Primigravida and Multigravida. Record was kept confidential and maintained on the specially designed Proforma.

Data analysis

For statistical analysis of the data the programmed, “statistical package for social sciences (SPSS) version 10.0 was used. Frequency and percentages of variables like success rate, failure rate, parity, maternal /fetal complication (abruption placenta, rupture of membranes, fetal distress), need of emergency caesarean section were calculated. Measures of central tendency and variability like mean, standard deviation (SD) was used to describe age and parity.

RESULTS

A total of (n=85) patients with singleton breech presentation at term (37- 41weeks) were included in this study. The age distribution of patients is presented in (Fig. 1), divided in different age groups. The highest percentage was found in the age group of 26-30 (n=36, 42.4%) and the lowest was found in age greater than 35 years. Out of (n=85) patients (n=53; 62.4%) patients were Multigravida and (n=32; 37.6%), patients were Primigravida shown in (Fig. 2a). External cephalic version was successful in (n=36, 42.4%), while in (n=49, 57.6%) cases version was failed presented in (Fig. 1b).

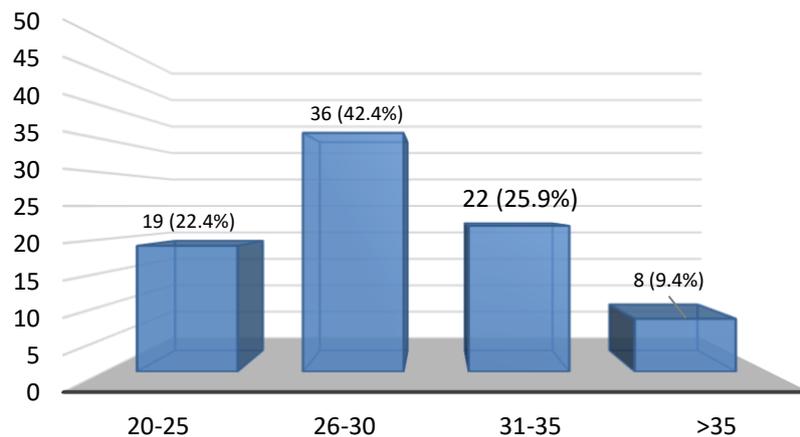


Figure 1. Maternal Age distribution among the patients under study

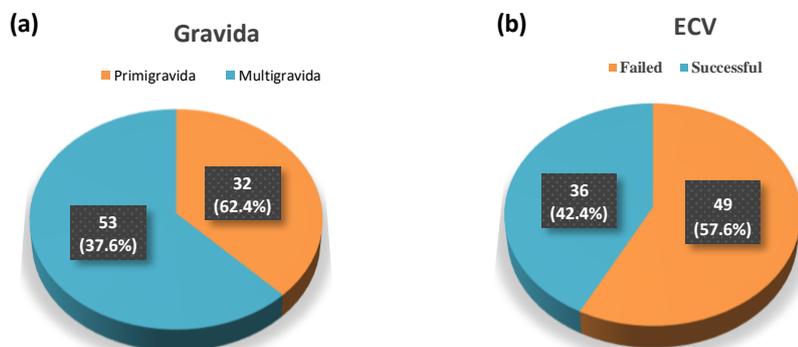


Figure 2. (a) Parity of women undergoing ECV (b) Overall % Success rate of ECV.

Multigravida showed higher success rate (n=29, 80.6%), while in Primigravida (n=07, 19.4%) were successful, shown in Table I. Out of (n=53) Multigravida patients, (n=29, 54.7%) were successful, and in (n=32) Primigravida patients only (n=07, 21.9%) showed success. Successful ECV according to different maternal age group is presented in Table II. Following successful ECV, one patient (1.2%) underwent an Emergency C-Section due to partial abruption placenta, and in (n=4, 4.7%) cases transient fetal bradycardia was seen, which was resolved spontaneously Table III. Properly counseled women were satisfied with the procedure.

Table 1. Outcome of ECV with respect to parity

Gravida	ECV		Total
	Successful	Failed	
Multigravida	29 (54.7%)	24 (45.3%)	53
Primigravida	07 (21.9%)	25 (78.1%)	32

Table 2. Outcome of ECV with respect to maternal age

Maternal Age	ECV		Total
	Successful	Failed	
20-25	3 (15.8%)	16 (84.2%)	19
26-30	21 (58.3%)	15 (41.7%)	36
31-35	10 (45.6%)	12 (55.4%)	22
>35	2 (25%)	6 (75%)	8
Total	36	49	85

Table 3. Complications of ECV

Complications	Frequency	Percentage %
Rupture of Membranes	0	0%
Vaginal Bleeding	01	1.2%
Fetal Distress (transient bradycardia)	04	4.7%
Need of Emergency Caesarean Section	01	1.2%

DISCUSSION

Breech presentation is a common malpresentation that poses a clinical problem for obstetricians. The mode of delivery for breech presentation is a controversial issue, as it is associated with fetal abnormalities and poor perinatal outcomes (Cluver et al., 2012). Vaginal delivery of breech presentation has a perinatal mortality rate of 4-5% (Giusti et al., 2000), which has led to more than 90% of breech fetuses being delivered by planned cesarean section to decrease short-term morbidity. However, the mortality rate is the same in planned vaginal delivery and planned cesarean section. To reduce the number of breech presentations and C-sections, External cephalic version (ECV) is recommended. ECV is a safe procedure with a success rate ranging from 35-86% at term (Goffinet et al., 2019; Barber et al., 2011).

This study was conducted at Quetta-Pakistan to determine the success rate, safety, and efficacy of ECV in their setting. A total of 85 patients with uncomplicated singleton breech presentation were offered ECV at 37-41 weeks of pregnancy. It is encouraging that the success rate of ECV in our study was higher in multigravida patients, which is consistent with findings from previous studies. Among the patients, ECV was successful in only 42.4% of cases, while it failed in 57.6%. Despite the low success rate, women who underwent ECV had a significant reduction in both non-cephalic births and C-sections compared to women who did not undergo ECV. Multiparity, amniotic fluid index >7cm, non-frank breech, and body mass index were prognostic parameters for the success of ECV (Yogev et al., 2002; Hofmeyr et al., 2015).

Regarding parity, the success rate of ECV was 80.6% in multigravida and 19.4% in primigravida, indicating a higher success rate in multigravida. Maternal age also played a role in the success rate of ECV, with higher age showing a positive influence on success rate. Complications of ECV are rare but include cord accidents, pre-labor rupture of membranes, fetomaternal transfusion, placental separation, fetal compromise, and fetal death. In this study, one patient experienced bleeding immediately after ECV, and emergency C-section was performed, with the cause of bleeding being partial abruption

placenta. In four cases, fetal bradycardia was transient and resolved after a few minutes spontaneously.

Another important factor that can influence the success rate of ECV is the experience of the operator. In a study conducted by Naumann and colleagues (Naumann et al., 2017), it was found that the success rate of ECV increased significantly when the procedure was performed by an experienced obstetrician compared to a less experienced operator. Therefore, it is essential to ensure that the procedure is performed by an experienced obstetrician to maximize the success rate and minimize the risk of complications.

Furthermore, it is important to note that ECV may not be suitable for all patients with breech presentation. In some cases, such as when there is a medical indication for C-section or when the fetal head is engaged in the pelvis, ECV may not be recommended. It is also contraindicated in cases of multiple gestations, placenta previa, or any other condition that may increase the risk of fetal compromise (Buitendijk, 2008). Therefore, a thorough assessment of the patient's medical history and fetal condition is necessary before performing the procedure.

CONCLUSION

The present study confirms that ECV is a safe and effective procedure for converting breech presentation to cephalic presentation in our setting. Despite the relatively low success rate observed in this study, ECV remains an important option to reduce the need for C-section and improve perinatal outcomes.

Conflict of interest

Authors declare that there is no conflict of interest.

Ethical approval

The ethical approval was taken from Review board of Bolan Medical College & Hospitals, Quetta, Pakistan.

Consent for Publication

All authors approved manuscript for publication.

REFERENCES

- Ahmed, I., Siddiqui, S., & Khanam, N. (2018). Success of external cephalic version at term pregnancy for breech presentation. *Journal of Rawalpindi Medical College (JRMC)*, 22(4), 320-322.
- Arulkumar S. Malpresentation, malposition, cephalo pelvic disproportions and obstetric procedures. In: Edmonds DK, editor. *Dewhurst's textbook of obstetrics and gynecology*. 7th ed. United Kingdom: Blackwell Science; 2007. 213-26. 3.
- Baker, P. N., Johnson, I. R., & Harvey, C. C. (2017). Breech presentation: current management. *Obstetrics, Gynaecology & Reproductive Medicine*, 27(6), 170-176.
- Barber, E.L., Lundsberg, L.S., Belanger, K., Pettker, C.M., Funai, E.F. & Illuzzi, J.L. (2011) Indications contributing to the increasing cesarean delivery rate. *Obstet Gynecol.* 118:29-38
- Buitendijk S. A retrospective study of the success, safety and effectiveness of external cephalic version without tocolysis in a specialized midwifery Centre in the Netherlands. *Midwifery*. 2008; 24:38-45
- Collins S, Ellaway P, Harrington D, Pandit M, Impey LW. The complications of external cephalic version: results from 805 consecutive attempts. *BJOG* 2007; 114: 636-8.
- Cluver, C., Hofmeyr, G. J., Gyte, G. M., & Sinclair, M. (2012). Interventions for helping to turn term breech babies to head first presentation when using external cephalic version. *The Cochrane database of systematic reviews*, 1, CD000184.
- Goffinet, F., Carayol, M., Foidart, J. M., Alexander, S., Uzan, S., Subtil, D., ... & Deneux-Tharoux, C. (2019). Is planned vaginal delivery for breech presentation at term still an option? Results of an observational prospective survey in France and Belgium. *American journal of obstetrics and gynecology*, 220(4), 378-e1.
- Giusti, M., Bertolotti, G.C., Nappi, R.E., Fignon, A. & Zara, C. (2000) External cephalic version as a possible treatment of breech presentation. *Minerva Gynecol.* 52: 221-7.
- Gonzalez, N. A., Qadir, N., & Zaidi, S. (2018). Success rate and effects on pregnancy outcome of external cephalic version in teaching hospitals of Quetta. *Journal of Ayub Medical College Abbottabad*, 30(4), 491-494.
- Hannah, M. E., Hannah, W. J., Hewson, S. A., Hodnett, E. D., Saigal, S., & Willan, A. R. (2000). Planned caesarean section versus planned vaginal birth for breech presentation at term: a randomized multicentre trial. *The Lancet*, 356(9239), 1375-1383.

- Hofmeyr, G. J., Barrett, J. F., Crowther, C. A., & Group, E. C. (2015). Planned caesarean section for term breech delivery. *Cochrane database of systematic reviews*, (7), CD000166.
- Hutton EK, Hofmeyr GT. External cephalic version for breech presentation before term. *Cochrane Database Syst Rev*. 2006 Jan 25; (1):84.
- Jones, M. K. (2009). The modern history of external cephalic version. *Best Practice & Research Clinical Obstetrics & Gynaecology*, 23(4), 517-525.
- Kuppens, S.M., Hutton, E.K., Hasaart, T.H., Aichi, N., Wijnen, H.A. & Pop, V.J. (2013) Mode of delivery following successful external cephalic version: comparison with spontaneous cephalic presentations at delivery. *J Obstet Gynaecol Can.* 35(10):883-8.
- Li, N., Cai, R., Zhu, Y., & Huang, X. (2014). Safety and efficacy of external cephalic version for term breech presentation: a systematic review and meta-analysis of randomized controlled trials. *Journal of Obstetrics and Gynaecology Research*, 40(2), 239-247.
- Nasir-ud-Din, A., Kauser, M., Parveen, A., & A. Saeed Usmani, S.A. (2020). Risk factors and pregnancy outcome in patients having placenta previa along with placenta accrete. *National Journal of Medical and Health Sciences*, 2(2), 89–95.
- Tasnim, N., Mahmud, G., Khurshid, M. (2009) External cephalic version with salbutamol, success rate and predictors of success. *J Coll physicians Surg Pak* 2009; 19: 91-4.
- Witkop CT, Zhang J, Sun W, Troendle J. Natural history of fetal position during pregnancy and risk of non-vertex delivery. *Obstet Gynecol* 2008; 111: 875-80.
- Yogev, Y., Horowitz, E., Ben-Haroush, A., Chew, R., & Keplan, B. (2002) Changing attitude towards mode of delivery and external cephalic version in breech presentation. *Int J Gynecol Obstet.* 79: 221-4.