

Evaluating Pregnancy Outcomes in Breech Presentations Post External Cephalic Version Procedure

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Abstract

Objective: To determine the outcome of external cephalic version in breech presentation and to analyze the perinatal and the maternal outcome.

Study Design: A prospective study was performed of 30 patients with breech presentation at 34 weeks or more period of gestation were enrolled. External Cephalic Version (ECV) was carried out in selected cases after applying inclusion and exclusion criteria at or after 37 weeks of gestation. These patients were followed up till the time of delivery for type of delivery, maternal and neonatal outcome. Data so accumulated was analyzed at the end of the study.

Results: Out of 30 attempted ECV 18 were successful out of which one reverted back to breech after initial successful external cephalic version. Total success rate of external cephalic version in the study was 60 percent (95% CI 43.3, 76.7) and failure rate was 40 percent (95% CI 23.3, 56.7). Of the total attempted ECV; 20 (66.7 %) were in nulliparous women, 08 (26.7 %) were in primiparous women and 02 (6.6 %) were in multiparous women. Total success rate in nulliparous women was 55 percent (11 out of 20), total success rate in primiparous women was 62.5 percent (5 out of 8) and all two cases of external cephalic version were successful in multiparous group. External cephalic version failure rates were 45 percent (9 out of 20) in nulliparous, and 37.5 percent (3 out of 8) in primiparous women respectively. There were no cases of failed external cephalic version in multiparous group.

Conclusion: External Cephalic Version is a cost effective, bed side and relatively safe procedure in experienced hands for doing so. Most of the cases of breech presentation are delivered by cesarean section in current obstetric practice. External cephalic version can be tried in selected cases before taking them up for cesarean section.

Introduction

One of the most common abnormal fetal presentations is a breech presentation with an incidence of 3-4% at term. Vaginal deliveries for breech presentations have been debatable. Breech births are associated with much higher neonatal risks with an increased incidence of premature rupture of membranes, prolapsed cord, premature labour, traumatic deliveries, perinatal mortality and morbidity including various birth injuries making breech an unfavorable presentation.^[1]

Breech presentations are commonly associated with fetal asphyxia, intracranial hemorrhage, visceral injuries, fractures, dislocations and peripheral nerve injuries.^[2] Breech presentations and caesarean sections could be minimized by external cephalic version (ECV) but there are complications associated with this procedure.

Over the years, assisted breech delivery has suffered a consequential setback due to decreased training of obstetrician compounded by small family norms and hesitation due to litigations. In current obstetric practice, the breech presentations are frequently subjected to cesarean section despite it not assuring improved outcome of baby in addition to risk for mother when compared to vaginal delivery.

ECV can help reduce an unfavorable breech presentation into cephalic presentation from 3-4% to 1% but it is a potentially risky procedure with increased risk of ante partum hemorrhage, fetal distress, fetomaternal hemorrhage, rupture of membranes, placental abruption and cord complications. However, in hands of an experienced obstetrician ECV with ultrasonography, cardiotocography and tocolytics the overall success rate of procedure is

77% with minimal risk of complications.^[3] The ease of procedure, minimal patient preparation along with its low cost can be of importance in a country with resource poor situations like India. The present study evaluates the outcome of external cephalic version in breech presentation.

Materials and methods

This prospective observational study was carried out in a tertiary care hospital with 30 patients with breech presentation at 34 weeks or more period of gestation were enrolled with ECV being carried out in selected cases at or after 37 weeks of gestation. The inclusion criteria included all uncomplicated cases of singleton breech presentation at 34 weeks or more period of gestation. The exclusion criterias included all cases of breech presentation < 34 weeks and >40 weeks period of gestation, cases with severe oligohydramnios or polyhydramnios (amniotic fluid index (AFI) <5 or >25), breech in labor, Intra Uterine Growth Restriction, multiple gestation, Fetal anomalies and uterine malformations, Cases with concomitant adverse factors like - Hypertensive disorders of pregnancy, Heart disease, Diabetes mellitus/ Gestational diabetes mellitus, Placenta previa/ abruptio placenta, Previous caesarean section and cases with any contraindication for vaginal delivery were excluded from the study.

All the selected cases underwent an ultrasound examination to ascertain the breech position, AFI, placental location, the presence of a nuchal cord and any congenital anomalies. The patients were advised to empty their bladder before the procedure. A non-stress test (NST) was carried out to ascertain the absence of foetal heart rate abnormalities, followed by administration of 0.25 mg terbutaline subcutaneously as tocolytic. The patient was then placed in a slight Trendelenburg position to facilitate disengagement/mobility of the breech. (Figure 1 to 5) On completion of procedure regardless of failure or success a NST and ultrasound examination were performed for exclusion of foetal bradycardia and confirmation of successful version. All Rh-negative patients were administered Rho (D) immunoglobulin (Rhogam).



Figure 1: Non Stress Test before the procedure



Figure 2: Operator grasps one of the fetal poles, and the buttocks are elevated from the maternal pelvis and displaced laterally



Figure 3: The buttocks are then gently guided toward the fundus, while the head is directed toward the Pelvis



Figure 4: Operators changing the hands



Figure 5: Cephalic pole is brought to the pelvis

All the patients were followed up till the time of delivery for type of delivery, maternal and neonatal outcome. Data so accumulated was analyzed at the end of the study.

Results

A total of 30 ECV were attempted, out of these 18 were successful while one case reverted back to breech after initial successful external cephalic version. A total success rate of external cephalic version in the study was 60 % (95% CI 43.3, 76.7) and failure rate was 40 % (95% CI 23.3, 56.7). (Table-1) Out of the total of 30 attempted external cephalic versions; 20 (66.7 %) were in nulliparous women, 08 (26.7 %) were in primiparous women and 02 (6.6 %) were in multiparous women. Total success rate in nulliparous women was 55 percent (11 out of 20), total success rate in primiparous women was 62.5 percent (5 out of 8) and all two cases of external cephalic version were successful in multiparous group. External cephalic version failure rates were 45 percent (9 out of 20) in nulliparous, and 37.5 percent (03 out of 08) in primiparous women respectively. There were no cases of failed external cephalic version in multiparous group. (Table- 2) Probable cause of failure of external cephalic version as given by operator was breech engaged deep in pelvis in three cases (25%), extended breech presentation in two cases (16.7%), reduced liquor volume in one case (8.3%), higher estimated fetal weight in two cases (16.7%), maternal obesity in one case (8.3%), and anterior location of the placenta in two cases (16.7%). No apparent cause could be attributed for the failure of version in one case (8.3%). (Figure 6)

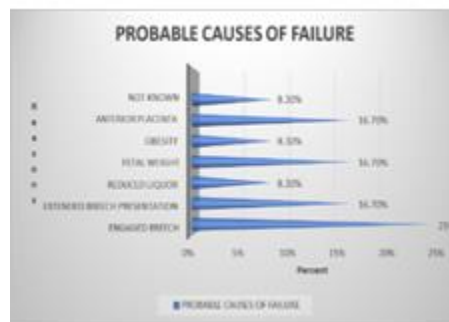


Figure 6: Probable Causes of Failure

In the case of failed external cephalic version (8.3 %) cause for the failure of version could not be identified, however data suggests ‘parity’ to be one of the most important prognostic indicator for success of external cephalic version. Engaged breech at the time of version, extended breech where the splinting action of limbs prevent smooth manipulation during version, obesity, reduced liquor volume, anterior placental position and higher fetal weight were the other probable prognostic factors.

Out of a total of 30 cases where external cephalic version was attempted 14 cases (46.7%) had normal delivery, one case (3.3%) had vacuum delivery, 14 cases (46.7%) had lower segment cesarean section and one case (3.3%) had assisted vaginal breech delivery who presented in advanced labour.(Table- 3)

Out of 18 successful external cephalic versions, 14 (46.7 %) had normal delivery, one (3.3 %) had vacuum delivery and three (16.7 %) had emergency cesarean sections for various obstetric indications. In failed external cephalic version group, 11 patients (91.7%) had cesarean section (two had emergency cesarean section for non reassuring fetal heart rate pattern after version and one case had transient fetal bradycardia which became normal once the fetus was reverted back to breech). One case of failed external cephalic version who were planned of elective cesarean section reported in advanced labour. In this case assisted vaginal breech delivery was conducted in presence of an experienced gynecologist. In this case there was difficulty in delivery of after coming head resulting in delay in delivery and mild birth asphyxia with Apgar scores of 1 and 4 at one minute and five minute respectively. This baby was admitted in NICU and was handed over to mother after 04 days. The mother had cervical lacerations which were sutured.(Table- 3)

Low Apgar scores (mild depression) were present in two cases of successful external cephalic version group (6.6 percent) and one case in failed version group. There were two NICU admissions in failed version group, first one the case of severe birth asphyxia in assisted vaginal breech delivery and second case of cesarean section with thick meconium stained liquor where baby was observed for few hours in NICU for meconium stained liquor. There was no statistically significant difference between the two groups.

There were no significant traumatic fetal injuries in both the groups except in a case of vaginal breech delivery with entrapped fetal head and a case of vacuum delivery where baby sustained a minor scalp laceration injury.

In both the groups there was a case of atonic post partum hemorrhage which was managed with oxytocics. Two cases in failed external cephalic version group who underwent cesarean section had minor febrile morbidity.

There were few procedure related complications which were managed by emergency cesarean section. One case had non reassuring fetal heart rate pattern who were delivered by cesarean section. This case had a true knot in the umbilical cord. There was also a case of transient fetal bradycardia which was delivered after two days by elective cesarean section with favorable neonatal outcome. There was one case of spotting from vagina after the procedure however the fetal heart rate was maintained. Immediate cesarean section was performed in this case which showed a marginal separation of the placenta. Neonatal outcome in this case was favourable.

Discussion

The external cephalic version was successful in 60 percent of the cases in the present study (18 successful cases out of 30) and version failed in rest of 40 percent of the cases. The success rate is in accordance with most of the related studies in literature.^[4,5]

Higher the parity better is the successful outcome of external cephalic version. In the present study 66.7 percent of the cases were nulliparous, 26.7 percent were primiparous and 6.6 percent were multiparous. External cephalic version was successful in 55 percent cases in nulliparous group, 62.5 percent cases in primiparous group and in all two cases of multiparous group. The external cephalic version failed in 45 percent nulliparous women and 37.5 percent primiparous women. The probable causes of failure of version as given by operator were breech engaged in pelvis in 25 percent cases, extended breech in 16.7 percent, reduced liquor volume in 8.3 percent, high expected fetal weight in 16.7 percent, maternal obesity in 8.3 percent, anteriorly located placenta in 16.7 percent and no cause could be identified in 8.3 percent of the cases with failed external cephalic version.

HindawiI.^[6] performed a comparative study to determine the efficacy and pregnancy outcome of external cephalic version at $>$ or $=$ 37 weeks gestation. External cephalic version was successfully performed on 59 fetuses (64%). Version was more successful in multiparous than nulliparous women.

In the present study out of total 30 cases of attempted external cephalic version, 14 (46.7%) had normal vaginal delivery, 01 case (3.3%) had vacuum delivery, 14 cases (46.7%) had lower segment cesarean section and 01 case (3.3%) had assisted vaginal breech delivery who presented in advanced labour. (Table- 3)

This study favors the fact that ECV should be performed in carefully selected cases of breech presentation prior to taking them up for caesarean section, however larger sample size studies are recommended for statistically significant results.

Tables:

Table 1: Outcome of External Cephalic Version

Outcome of ECV	Frequency (%age)	95 % Conf Limits
Successful ECV	18 (60%)	43.3% - 76.7%
Failed ECV	12 (40%)	23.3% - 56.7%
Total	30 (100%)	-

Table 2: Distribution of the Cases as Per Parity and ECV Outcome

Parity		Frequency	%age	95 % Conf Limits	ECV Failed (%age)	ECV Successful (%age)
Nulliparous	NULLI	20	66.7%	50.0%-83.3%	09 (45%)	11 (55%)
Primiparous	G2P1L1	06	20.0%	6.7%-36.6%	03 (37.5%)	05 (62.5%)
	G3P1L1A1	02	6.7%	0.0%-16.7%		
Multiparous	G3P2L2	02	6.6%	0.0%-16.7%	0	02 (100%)

Table 3: Mode of Delivery

Mode of Delivery	Frequency (% age)	95 % Conf Limits	ECV Failed (% age)	ECV Successful (% age)
Normal Delivery	14 (46.7%)	30.0 % to 63.3 %	0 (0%)	14 (77.8%)
Vacuum Delivery	01 (3.3%)	0.0 % to 10.0 %	0 (0%)	01 (5.5%)
LSCS	14 (46.7%)	30.0 % to 63.3 %	11 (91.7%)	03 (16.7%)
Assisted breech Delivery	01 (3.3%)	0.0 % to 10.0 %	01 (8.3%)	0 (0%)
Total	30 (100%)	-	-	-

Conclusion

Breech presentation is associated with higher incidence of mortality and morbidity irrespective of the route of delivery as compared to cephalic presentation. Any complications associated with breech presentation can be reduced by converting it to cephalic presentation by ECV. ECV is a cost effective, bed side and relatively safe procedure in experienced hands for doing so and can be of importance in a country with resource poor situations. The procedure can be performed in selected cases before taking them up for cesarean section and any procedure related complications if any can be diagnosed easily and managed with emergency cesarean section. The management of breech presentation at term with a protocol that includes external cephalic version, careful selection criteria and active management of vaginal delivery can achieve a great decrease in the rate of cesarean section for breech presentation as an improved chance of cephalic birth outweighs the risks associated with the procedure.

References

1. Kathpalia S, Singh Y, Sharma R. Outcome of external cephalic version in breech presentation. Medical Journal, Armed Forces India. 2012;68(2):151-153.
2. Boucher M, Bujold E, Marquette GP, et al. The relationship between amniotic fluid index and successful external cephalic version: a 4-year experience. Am J ObstetGynecol2003;189:251.
3. Bujold E, Boucher M, Rinfret D, et al. Sublingual nitroglycerin versus placebo as a tocolytic for external cephalic version: a randomized controlled trial in parous women. Am J ObstetGynecol 2003;189: 1070.
4. Hofmeyr GJ, Kulier R, West HM. External cephalic version for breech presentation at term. Cochrane Database Syst Rev. 2015 Apr 1;(4):CD000083.
5. Vedpathak SG, Korde Nayak VR, Panigrahi PP. Outcome of external cephalic version (ECV) in singleton pregnancy with uncomplicated breech presentation at term in a tertiary rural hospital . Int J Reprod Contracept ObstetGynecol 2017;6: 3528-32.
6. Hindawi I. Value and pregnancy outcome of external cephalic version. East Mediterr Health J 2005;11:633–639.