



**Research Article**

**MANAGEMENT OF BREECH PRESENTATION AT TERM: A PROSPECTIVE STUDY OF MANAGEMENT OF BREECH PRESENTATION AND OUTCOME OF EXTERNAL CEPHALIC VERSION AT A TERTIARY CARE CENTRE**

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ECV- external cephalic version, NICU- neonatal intensive care unit

**ABSTRACT**

**Background:** Management of the Breech presentation has been topic of debate since long. Irrespective the route of delivery, breech presentation has been linked with adverse neonatal outcome. Most of the fetuses with breech presentation are delivered by cesarean section in current obstetric practice. External cephalic version is a procedure by which some of the breech presenting fetuses can be converted into cephalic and deliver normally.

**Objective:** To study the management of breech presentation at term at a tertiary care center in terms of route of delivery, success rates of external cephalic version, neonatal and maternal outcome

**Materials and methods:** An prospective observational study on 226 patients with breech presentation at term over a period of three years was carried out at a tertiary care center. Selected patients with singleton uncomplicated breech presentation were given a trial of external cephalic version and followed by vaginal delivery if version was successful.

**Results:** 80% of breech presenting fetuses were single. External cephalic version was attempted in 50% patients with singleton breech presentation. The success rate of external cephalic version was 61%, with 77% of them had normal delivery, 15 % had emergency cesarean section for various obstetrical indications and 7% had vacuum delivery. 92% patients with failed external cephalic version and majority of twin pregnancy with first breech, underwent planned cesarean section. 10 patients presented in advanced labour and had vaginal breech delivery. There was no neonatal or maternal mortality.

**Conclusion:** Planned cesarean section at term in case of breech presentation is associated with reduction in perinatal mortality and morbidity and also safer than emergency cesarean section in terms of perinatal and maternal morbidity. External cephalic version at term is a safe procedure with success rate near 60% and reduction in cesarean section rate by 25%.

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**INTRODUCTION**

Breech presentation is the commonest fetal malpresentation at term accounting for 3-4% of all [1]. Vaginal breech delivery has been linked to increased neonatal morbidity, mortality and traumatic maternal morbidity. Changing clinical practice, reduced experience in the vaginal breech delivery, wide availability and increased safety of anesthesia & surgical techniques, small family norms and fear of litigation has tilted the balance in favor of caesarean section.

Rising caesarean section rate have been a cause of worry across the globe.

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'Once a breech always a cesarean' and 'once a cesarean always a cesarean' is further going to worsen the problem. Attempts have been made all over to reduce the primary cesarean rate by fair labour trial, adequate intrapartum fetal monitoring, performing external cephalic version of breech presenting fetuses and trial of vaginal delivery in post cesarean cases to reduce the secondary cesarean rate.

Breech has been classified into complete, incomplete and frank breech depending upon the relationship between buttocks and lower limbs. Position of arm and degree of flexion of neck are also important while considering planned vaginal breech delivery.[2]

Other than the gestational age, polyhydraminos, multiple gestation, uterine and fetal anatomical abnormalities, cornuofundal placental attachment are the other factors associated

with breech presentation. In an analysis of 24 studies comprising of 11,721 patients with breech presentation Cheng and Hannah found that neonatal mortality and traumatic neonatal morbidity was higher in vaginal delivery compared to cesarean section group.[3] Giffard *et al* also confirmed the above findings in a meta analysis.[4]

A multicenter randomized controlled trial by 'Term Breech Trial Collaborative Group' was conducted at 121 centers in 26 countries with 2088 participants with singleton breech presentation. Among them 1042 patients underwent planned vaginal delivery with success rate of 56.7%, and 90.4% patients (941 out of 1041) of cesarean section group underwent cesarean section. Perinatal mortality and neonatal morbidity was lesser in cesarean section group (1.6% vs 5%,  $p < 0.0001$ ). [5]

ACOG advised cesarean section for singleton breech, after that cesarean section rates increased from 50% to 80% with decrease in neonatal mortality from 0.35% to 0.18%. [6] Maternal Fetal Medicine Committee and Society of Obstetrics and Gynecologist of Canada issued similar guidelines in year 2009. [7]

Hofmeyr GJ and Hannah in meta analysis of three randomized Controlled Trials with 2396 patients reported that planned cesarean section reduced the neonatal mortality and morbidity but with slightly increased short term maternal morbidity (RR 1.29) [8]

We studied the management of breech presentation at term at a tertiary care center over a period of three years with aim to describe the management of patients with breech presentation at term in term of route of delivery, outcome of external cephalic version and to analyze the perinatal and maternal outcome. Objectives of study were to study the type of delivery in breech presentation, to determine the outcome of external cephalic version, to determine the perinatal outcome in terms of birth asphyxia, NICU admission; and to determine Maternal morbidity.

### External Cephalic Version

External cephalic version is a procedure by which a fetus presenting as breech is turned into cephalic presentation by trans abdominal manipulation.

In 1972, Brooks Ranny, carried out external cephalic version between 25 to 37 weeks with success rate of 90% in 860 cases at St Louise Missouri. (9) With the availability of ultrasonography, tocolysis and electronic fetal monitoring, external cephalic version has become safer. (10)

Also, external cephalic version at 37 completed weeks has an advantage of spontaneous version; and prevention of iatrogenic prematurity in case emergency cesarean section is required to tackle any complication arising during the procedure. (11)

## MATERIALS & METHODS

A prospective observational study was conducted at obstetrics unit of tertiary care hospital for a period of 3 years. A total of 226 obstetric study subjects were included in study after fulfilling the inclusion and exclusion criteria. Study population included all obstetric patients with breech presentation at 37 weeks or more. Inclusion and exclusion criteria are mentioned as below:

### Inclusion criteria for external cephalic version

- Uncomplicated singleton breech at term
- Consent for external cephalic version
- A reactive non stress test

### Exclusion criteria for external cephalic version

- Breech presentation < 37 weeks and >40 weeks period of gestation.
- Breech in labor.
- Severe oligohydraminos or polyhydraminos (AFI <5 or >25)
- Contraindication to vaginal delivery
- Fetal Growth Restriction
- Fetal anomalies and uterine malformations
- Cases with concomitant adverse factors like
  - Hypertensive disorders of pregnancy.
  - Diabetes mellitus/ Gestational diabetes mellitus
  - Heart disease
  - Previous caesarean section
  - Placenta preavia/ abruptio placenta
  - Rh negative pregnancy

### Inclusion criteria for cesarean section

- Patients with breech presentation who are excluded from attempt of external cephalic version
- Patients unwilling to undergo attempt of external cephalic version
- All patients with failed external cephalic version
- Vaginal bleeding or fetal distress during attempted external cephalic version

### Inclusion criteria for vaginal breech delivery

Patients presenting in advanced labour (>8 cm of cervical dilatation)

As an institutional policy all the patients presenting with singleton uncomplicated breech presentation were offered external cephalic version; If successful, normal vaginal delivery was tried. Patients with complicated breech presentation, multiple pregnancies with first fetus presenting as breech, cases of failed external cephalic version and patients not willing for cephalic version delivered by cesarean section at term. Assisted vaginal breech delivery was reserved for patients presenting in advanced labour with spontaneous onset of labour and no contraindication for vaginal delivery.

## RESULTS

Total of 226 cases of breech presentation at term were studied over a period of three years, which include 180 (80 %) as singleton breech and 46 cases (20%) of twin pregnancy with first twin presenting as breech. Details of all 226 cases are depicted in Fig 1.

45 cases of twin pregnancy with first twin presenting as breech underwent planned cesarean section. 34 of these pregnancies were post IVF pregnancies. One patient presented in advanced labour and delivered vaginally.

Fig 2 Showing type of mode of delivery of total breech, singleton breech and twin breech. Out of 35 patients with failed external cephalic version, 32 underwent planned cesarean section and three had vaginal breech delivery as they

presented in advanced labour. Likely cause of failure of external cephalic version is given in Fig 3.

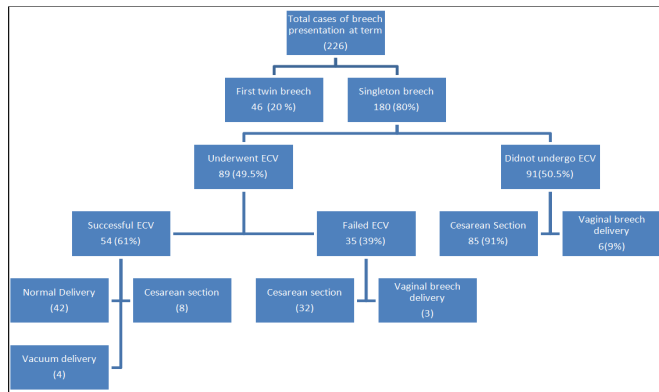


Figure 1 Algorithm of treatment protocol of study subject

Table 1 Distribution of the cases as per parity

Parity	Frequency	Percentage	95% CI
Nulliparous	64	71.2%	57.9% - 82.2%
Primiparous	21	23.7%	13.6% - 36.6%
Multiparous	04	05%	1.1% - 14.1%
Total	89	100%	

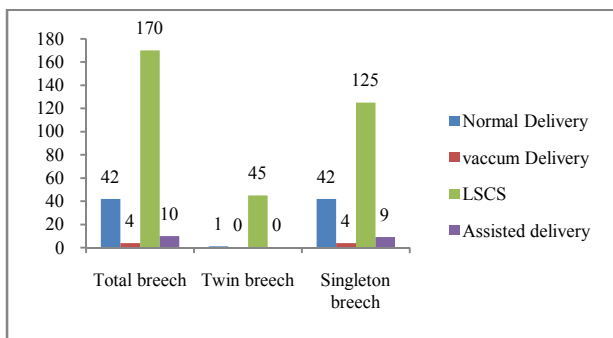


Fig 2 Mode of delivery as per type of breech presentation

Table 2 Outcome of External Cephalic Version: Successful/failed

Outcome of ECV	Frequency (Percentage)	95% Conf Limits
Successful ECV	54 (61%)	47.4% -73.5%
Failed ECV	35 (39%)	26.5% - 52.6%
Total	89 (100%)	-

Table 2 showing outcome of ECV among singleton breech, Table 3 showing Outcome of External Cephalic in association with Mode of delivery and Table 4 showing ECV outcome in respect to parity of study subject

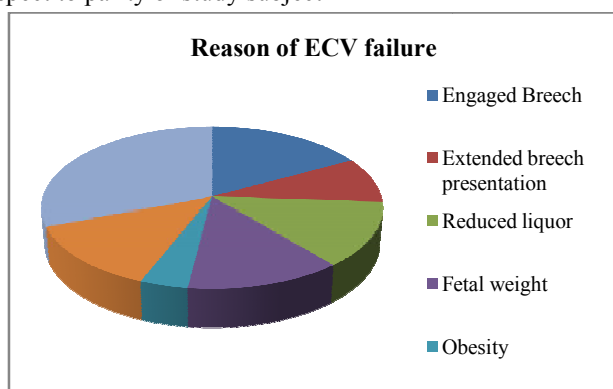


Fig 3 Probable causes of ECV failure

Table 3 Outcome of External Cephalic Version in association with mode of delivery

Mode of Delivery	Successful ECV (n=54)	Failed ECV (n=35)	Total (n=89)
Normal Delivery	42 (77.7%)	0 (0%)	42 (47.1%)
Vacuum Delivery	04 (7.4%)	0 (0%)	4 (4.5%)
LSCS	08 (14.8%)	32 (91.3%)	40 (44.9%)
Assisted Breech Delivery	0 (0%)	03 (8.6%)	3 (3.4%)
Total	54 (100%)	35 (100%)	89 (100%)

Table 4 ECV outcome in respect to parity of study subjects

Parity	Frequency	ECV failed (Percentage)	ECV successful (Percentage)
Nulliparous	64	29 (45.2%)	35 (54.8%)
Primiparous	21	06 (28.6%)	15 (71.4%)
Multiparous	04	0	04 (100%)

### Neonatal and maternal outcome

02 newborns had moderate birth asphyxia following vaginal breech delivery 01 newborn had meconium aspiration and required observation in NICU after normal delivery following successful version. Two newborns required NICU observation for tachypnoea following emergency cesarean section. A newborn delivered by vacuum delivery had superficial scalp laceration. Two patients had postpartum hemorrhage, one in vaginal breech delivery and another in emergency cesarean group. One patient had lateral vaginal wall laceration post vacuum delivery. 02 patients had post partum fever following emergency cesarean section and third had fever following vacuum delivery.

### DISCUSSION

Breech presentation was encountered 3.6 % of cases at term. Multiple pregnancy with first twins breech accounted for approximately 20% and singleton breech for rest 80% cases. There was one case of cord prolapse, one of cord presentation, (both contributing 1% of total), one newborn had dolicocephaly (also mother had unicornuate uterus), one had polydactily and two babies had club foot (fetal congenital anomalies 1.76%). Breech is the commonest fetal malpresentation accounting for 4 % of all.[8] The incidence of congenital anomalies is 6.3% compared to 2.4% in cephalic presentation. Nuchal arm complicates 6% of vaginal deliveries and incidence of cord prolapse is 0.5%, 5% and 15% in frank, complete and footling breech presentation respectively. Irrespective of the mode of delivery, the perinatal outcome is guarded in breech presentation.[12]

There was higher incidence of birth asphyxia, traumatic morbidity like fractures, dislocations, visceral injuries, intracranial hemorrhage and nerve injuries.[13] Even planned cesarean section does not guarantee improved neonatal outcome but may increase short term maternal morbidity.[14,15]

In present study, two newborns out of nine vaginal breech delivery had moderate birth asphyxia and they required NICU admission. Also, two newborns (3%) required NICU observation after emergency cesarean section for tachypnoea. Though there was no difference in the perinatal mortality, the neonatal morbidity was higher with vaginal breech delivery than the planned cesarean section. Also, both NICU admission and maternal febrile morbidity were observed more frequently

with emergency cesarean section than planned cesarean section; which is consistent with the literature.

As per Hofmeyr GJ in a retrospective analysis of 3594 patients with breech presentation from 1953 to 1970, the incidence of breech presentation was 4.1%, preterm delivery was 18.5%, corrected perinatal mortality was three times more and traumatic morbidity was twelve times more in breech compared to cephalic presentation. There was no difference in perinatal mortality in cesarean section however traumatic morbidity was five times higher.[8] In an analysis of 57,819 deliveries in Netherland, perinatal mortality was higher in breech even after balancing the compounding factors like gestational age, low birth weight and congenital anomalies.[16]

Collea *et al* reported higher maternal morbidity and slightly higher mortality in breech presentation.[10] Bingham & Lilford reported that maternal risks are more with emergency cesarean section than the planned one.[11]

External cephalic version was offered to approximately 50% of the patients. In rest of the 50%, 27 (29.6%) were unwilling for version, 12 (13.1%) had post cesarean status, 10 (11%) had reduced liquor, 4 (4.3%) had polyhydramnios, 11 (12%) had gestational diabetes mellitus, 8 (8.7%) had gestational hypertension, 5 (5.4%) had fetal growth restriction, 01 (1.1%) had intrahepatic cholestasis of pregnancy, 02 (2.1%) had low lying placenta, 04 (4.3%) had clinically inadequate pelvis and one (1.1%) had big baby. Planned cesarean section was performed in 91% (85) of these patients. Six patients presented in advanced labour and underwent assisted vaginal breech delivery in presence of an experienced obstetrician. The success rate of the external cephalic version in selected population was 61%. Also 77% of the patients had normal delivery after successful external cephalic version. There were no significant fetal or maternal complications during the procedure. Total reduction in the rate of cesarean section rate was 20.3% (and 25.5% when only singleton breech presentation cases were considered) in the present study. The results of the outcome of external cephalic version were in accordance with the literature.

As per American College of Obstetricians and Gynecologists practice bulletin no 13 on external cephalic version, the average the success rate of external cephalic version is 60%.[17]. Le Bret T, Grangé G in 2004 reported that External cephalic version reduced the rate of cesarean section by 20%[18]

Hindawi I *et al* in 2005 reported success rate was 64% in 90 cases of attempted external cephalic version and there were no major neonatal or maternal complications.[19]

In another study by Lojaco A *et al*, 84% of patients with successful external cephalic version had uneventful vaginal delivery with cesarean section rate of 16%. [20]

## CONCLUSION

Planned cesarean section at term in a case of breech is associated with reduction in perinatal mortality and morbidity. Also planned cesarean section is much safer than emergency cesarean section in terms of perinatal and maternal morbidity. External cephalic version at term is a safe procedure with success rate near 60%. Overall it helped in reduction of

cesarean rate by 25% in cases of singleton breech presentation at term.

Spontaneous onset and progress of labour appeared to be positive prognostic marker for successful vaginal breech delivery without increase in neonatal mortality and serious neonatal and maternal morbidity.

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