

External Cephalic Version for Breech Presentation at and Near Term

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ABSTRACT

Objectives: To determine the safety of procedure external cephalic version (ECV), the success of procedure at different gestational ages and to calculate the reduction in caesarean rate secondary to successful procedure.

Study Design: Retrospective, descriptive study.

Place and Duration of Study: from August, 2002 to July, 2003.

Patients and Methods: This was a single centered retrospective descriptive study. It was carried out at the Department of Obstetrics and Gynecology at Shaikh Zayed Federal Postgraduate Medical Institute and Hospital, Lahore from August 2002 to July 2003. Hundred cases were selected for study.

Results: Most of the patients in this study were multiparous. Success rate of ECV in this study was 50%. Out of this successful group 88% persisted as cephalic and 12% experienced reversion of their fetuses to breech. Normal vaginal delivery rate was 80% in the successful ECV group. Remaining cases underwent emergency caesarean section either due to spontaneous reversion to breech or fetal distress of cephalic fetuses in labour. Unsuccessful ECV group constitute 50% of cases. Elective caesarean delivery rate was high i.e. 96% in this group. Only one had vaginal breech delivery. The remaining underwent emergency caesarean section for various indications including footling breech, delayed progress in first stage of labour or at patient's request. Multiparity was the factor associated with greater success. No relationship could be found of the birth weight of fetus with the success of procedure in this study. No complication was observed during and after ECV.

Conclusion: All the pregnant women with uncomplicated breech presentation should be offered external cephalic version when they are approaching term. This will provide them an alternate management option without causing any harm to them and their fetuses. This will also help in reducing the number of caesarean sections for breech presentation.

Key words: External Cephalic Version, Breech Presentation, Caesarean Section.

INTRODUCTION

Malpresentation carries an important risk for both mother and fetus¹. The babies presenting as breech had significantly more neonatal morbidity and perinatal mortality. The overall perinatal mortality for breech presentation was almost nine times higher than for vertex presentation^{2,3}.

In patients who reach term with breech presentation, it should be tried to find out conditions which prevent spontaneous version. Fetal prognosis in breech presentation is poor. Main factors for poor prognosis are multiparity large fetus, cord prolapse, second stage of labour lasting more than 30 minutes and obstetrical maneuvers^{1,3}.

Planned vaginal delivery may be associated with higher perinatal mortality and morbidity rates than planned caesarean delivery. Most obstetrician suspect that vaginal delivery is probably safer for the baby and vice versa for caesarean section^{4,5,6}.

In modern practice two standard management strategies are accepted: breech delivery for selected low-risk patients and increasingly caesarean section. An additional problem posed by this trend is the falling level of experience in delivery of breech via the vaginal route and younger practitioners are increasingly unskilled in this art⁷.

External cephalic version the manipulative transabdominal conversion of breech to cephalic presentation has been practiced since ancient times. There is significant reduction in the risk of caesarean section where there is an intension to undertake ECV without any increased risk to baby. The evidence is such that all women at and near term with an uncomplicated pregnancy having breech presentation should be offered ECV. The benefit to mother is clear in avoiding the mortality and morbidity associated with breech delivery and reducing the need for caesarean section^{8,9}.

PATIENTS AND METHOD

The study included 100 cases who were selected on the basis of inclusion and exclusion criteria and

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underwent attempt at ECV, after obtaining informed consent from patients. This study was done on patients aged between 25-35 years. All the multi and primigravidae with uncomplicated breech presentation \geq 35 weeks of elaborate gestation were included.

Women were allocated for ECV from the antenatal clinic of Obstetrics and Gynecology at Shaikh Zayed Hospital, Lahore. The protocol for ECV in our study was that one Obstetrician with sufficient expertise in the procedure was involved in performing ECV and that was our Professor and head of the Department. The procedure and its rationale was first explained to the woman and her informed consent obtained.

The ECV was carried out in labour with ultrasound machine adjacent to bed and with full preparation for caesarean section. An ultrasound examination was done before the procedure to confirm the presentation as breech. After the procedure irrespective of outcome a cardiotocography or repeat ultrasonography was done to assess the fetal condition. In case of failure or reversion to breech presentation two further attempts were made at an interval of one week. In case of success women were allowed to go into spontaneous labour till term and induction criteria was no different than those cases with vertex presentation. In case of persistence of breech presentation decision was taken regarding mode of delivery (elective C. section or trial of vaginal breech delivery).

In most of the cases no pre-medication was used. Anxiolytics were given in the morning of ECV to anxious women only. Maternal cooperation and relaxation was obtained by proper explanation of the procedure. The first manoeuvre in most cases was to displace the breech upwards and laterally away from the pelvis into iliac fossa. The fetus was turned in the direction of forward roll. The backward roll was attempted only if forward roll failed. If a woman experienced pain during the procedure, the procedure was stopped and restarted more gently once the pain was alleviated. If version was not completed within five minutes, the attempt was abandoned. The fetal heart was auscultated after each attempt. The ECV was abandoned at any stage if the woman requested it.

Nominal variables were recorded as frequency and/or percentages. Numerical data was recorded as Mean \pm SD. Nominal variables were analyzed using Chi-square test while the numerical data was analyzed with an independent sample t test for all analysis.

RESULTS

In this study 100 (50%) of cases were above the age of 30 years. Thirty six (36%) cases were 20-25 years of age and 14 (14%) were 26-30 years (Table 1). Out of 100 cases 54 (54%) cases were multigravidae either delivered vaginally previously or having previous one caesarean section. Forty six (46%) were primigravidae (Table 2). A maximum of three attempts were made. Seventy six (76%) case underwent only one attempt. In 20 (20%), two attempts, and in 4 (4%) cases three attempts were made with an interval of one week (Table 3).

Out of group with successful ECV 40 (80%) achieved vaginal delivery. Four (8%) underwent emergency caesarean section due to fetal distress of cephalic fetuses and three cases underwent elective C. section due to spontaneous reversion of their fetuses to breech. Thirty two (64%) of unsuccessful ECV group underwent elective C. section due to breech presentation. Trial of breech delivery was planned in 14 (28%) cases but it was conducted in only two. Remaining 12 underwent emergency C. section for various indications i.e footling breech (4 cases), patient's request (4 cases) and prolonged first stage of labour (4 cases).

The other 4 with planned elective C. section came in labour and underwent emergency C. section. So a total of 16 (32%) underwent emergency C. section (Table 4).

Rate of caesarean section was 96% in unsuccessful ECV group and 20% in successful ECV group (Table 5). Multigravidae constitutes 36 cases (72%) of successful ECV group and primigravidae were 14 cases (28%). Likewise 18 cases (36%) case in unsuccessful ECV group were multigravidae and 32 (64%) were primigravidae (Table 6).

External cephalic version was successful before 37 weeks of gestation in 30 cases (60%) as compared to 20 cases (40%) after 37 weeks. But unsuccessful group also had more of case at less than 37 weeks of gestation i.e., 36 cases (72%) as compared to 14 cases (28%) after 37 weeks (Table 7).

As majority of fetuses were having birth weight of less than 3kg i.e. 68 cases (68%). Out of them 26 cases (26%) were belonging to successful ECV group and 42 cases (42%) to unsuccessful group All others babies of more than 3kg or even more than 4kg were belonging to successful ECV group irrespective of mode of delivery as both of babies having birth weight of more than 4kg were /delivered by emergency caesarean section. Indication was fetal distress and intraoperatively there were 3 loops of cord around the neck in both of the cases (Table 8).

Table 1: Age Distribution for Breech Presentation (n=100)

Age Range (years)	=n	%age
20 – 25	36	36
26 – 30	14	14
31 – 35	50	50

Mean age 28.06±4.43 Age range 20 – 38 years

Table 2: Parity of Women Undergoing External Cephalic Version

Parity	=n	%age
Multigravida	54	54
Primigravida	46	46

Mean age 2.04±1.19 P < 0.05

Table 3: Number of Attempts at External Cephalic Version

No. of Attempts	=n	%age
One	76	76
Two	20	20
Three	4	4

Mean±SD 1.30±0.54 P value < 0.05

Table 4: Mode of Delivery in each Group (n=100)

ECV Group	=n	%age
Successful ECV group (n=50)		
Vaginal Delivery	40	80
Emergency LSCS	4	8
Elective LSCS	6	12
Unsuccessful ECV group (n=50)		
Elective LSCS	32	64
Vaginal breech delivery	2	4
Emergency LSCS	16	32

Table 5: Caesarean Section Rate in Two Groups (n=100)

ECV Group	%age
Successful (n=50)	20
Unsuccessful (n=50)	96

Table 6: Outcome of ECV Parity

ECV Group	Primigravida	Multiple Gravida
Successful (n=50)	14 (28%)	36 (72%)
Unsuccessful (n=50)	32 (64%)	18 (36%)

P < 0.05

Table 7: Outcome of ECV with Gestational Age

ECV Group	Before 37 weeks	At & after 37 weeks
Successful (n=50)	30 (60%)	20 (40%)
Unsuccessful (n=50)	36 (72%)	14 (28%)

Minimum gestational age = 35 weeks
Maximum gestational age = 38 weeks

Table 8: Outcome of ECV in Relation to Birth Weight of Fetuses

Birth Weight of Fetus	Successful ECV (n=50)	Unsuccessful ECV (n=50)
2.5 – 3 kg	26 (26%)	42 (84%)
3.1 – 3.5kg	18 (18%)	8 (8%)
3.6 – 4 kg	2 (2%)	0
>4 kg	4 (4%)	0

Mean±SD = 2.96±0.39 P < 0.05

DISCUSSION

Mean age of the patients with breech presentation in this study was 28.06 years. Maximum number of patients were between 31-35 years i.e. 50 (50%). This finding of increased maternal age in our study was due to that majority of cases 54 i.e. (54%) were multigravidae. This effect was also shown in another study in which women in the ECV group were of more advanced age and more likely to be multiparous.¹⁰ In another study of 233 cases with breech presentation 169 (72.5%) were multigravida and 64 (27.5%) were primigravidae.¹¹

In this study external cephalic version was successful in 54 (54%) of cases. In remaining 46 cases attempt at ECV failed. The author of a recent literature review of twenty five studies on the efficacy of external cephalic version calculated an overall success rate of 63.3% with a range of 48 to 77%^{9,12} so success rate in this study is comparable to other studies.

External cephalic version is a safe procedure. These studies documented minimal risks including umbilical cord entanglement, abruptio placentae, preterm labour, preterm rupture of membranes and severe maternal discomfort. Overall complication rate have ranged from about 1-2% since 1979.¹² In another study fetal heart rate changes occurred in 39% of fetus during ECV attempt but these changes were transient and had no relationship to the final outcome.⁹ Since 1980 only two fetal deaths have been reported. Both occurred without the use of fetal heart rate monitoring.¹³ Another study mentioned that fetal distress occurs in less than 1 % of cases requiring abdominal delivery and fetal-maternal haemorrhage occurs in approximately 6% of patients.¹² No complications occurred in any of our woman. No emergency C. section was needed in any case after ECV.¹⁴ The effect of ECV on fetal-maternal haemorrhage was not observed in this study because of the fact that none of our women was having Rh -ve blood group.

It is well known that some fetuses spontaneously revert to breech before birth. Vartan and Friedlander reported the rate of reversion to breech to be 22% and 11 %.¹⁵ Another study quoted the reversion rate to be 16% before 37 weeks and 6-7% after 37 weeks of gestation.¹⁶ In our study reversion rate was 12% collectively. A report by Rosen have suggested that ECV can be repeated safely if reversion to breech occurs.¹⁷

In this study 20 (20%) cases underwent two attempts and 4 (4%) cases have three attempts of ECV. These extra attempts were made without addition of complications. In remaining cases ECV was attempted once.

External cephalic version has also been shown to be safe in women with previous caesarean section. Flamm et al performed ECV on 56 such women with good success rate and without any complication.^{9,18} According to another study external cephalic version was used successfully in vaginal birth after caesarean section candidates without any incidence of uterine rupture.

In this study 4(8%) cases were having previous one caesarean section for non-recurrent causes in whom ECV attempted and no complication was observed in anyone of them.

External cephalic version has an 80% success rate when performed in preterm gestation. It is summarized that relatively small size of preterm fetuses is responsible for these high rates. A small fetus has more room, to be turned¹⁹. At term defined as 37 weeks or more of gestation the success rate falls to be 63%. The same rationale the large fetus has less freedom of movement is responsible for these reduced rates¹².

In this study the successful attempt at external cephalic version was observed in 30 (60%) case before 37 weeks and in 20 (40%) case after 37 weeks of gestation. These results were correlating with other studies of increased success rate before 37 weeks of gestation^{19,20}.

Unsuccessful attempts were seen in 36(72%) cases before 37 weeks and 14(28%) cases after 37 weeks of gestation. This effect was because greater number of cases undergoing ECV were at less than 37 weeks of gestation (but not showing the decreased success rate before 37 weeks). Fetuses presenting by breech have higher rates of neonatal morbidity and mortality than do fetuses with a cephalic presentation. Before the resurgence of the use of ECV management of breech presentation consists of either routine C. section delivery or a selected trial of labour. However over the past two decades theoretically for safety concerns regarding the fetus the rate of caesarean delivery for breech presentation increased from 14% in 1970 to current rates upto 100% at some institution. Very few trials of labour being attempted.²¹⁻²⁴

Caesarean section does not eliminate birth trauma in breech presentation and may increase the risk of pulmonary hypertension in new-borns. Maternal morbidity is higher after C. section than after vaginal delivery. Although operation has become safer, it is still associated with a four times higher maternal death rate than is vaginal delivery. Reproductive function following C. section is compromised and there may also be a negative emotional effect on mother and her relationship with her baby.

Though the possibility of negative psychological effects for mothers and caregivers when it fails has been raised. It results in a considerable reduction in the risks both of C. section and of vaginal breech delivery which often entails on operative delivery.²⁵

Routine use of external version could reduce the rate of caesarean delivery by about two thirds. The high proportion of normal vaginal delivery in this study i.e in 40 (80%) case is very encouraging. Five (20%) case underwent emergency C. section due to fetal distress resulting from 3 loops of cord around neck in four cases and in remaining three fetuses spontaneous reversion to breech presentation was the cause.

According to one study failed ECV trial may have a psychological effect on patient and obstetrician contributing to this high caesarean rate.²⁶ Trial of breech delivery was planned in 14 (28%) cases but only one vaginal delivery was conducted. The remaining case 16 (32%) underwent emergency C. section and there were definite indications for performing the C. section.

So reduction in caesarean section rate in successful ECV group was 76% i.e 20% in successful ECV group as compared to 96% in failed ECV group in this study. This remarkable reduction in caesarean delivery is worth mentioning.⁹

A variety of factors have been associated with ECV success in literature. Newman et al using linear regression analysis found that parity cervical dilatation, estimated birth weight breech station and placental implantation site were the most useful predictors of success. Maternal weight, gestation age, type of breech, amniotic fluid volume and cervical effacement did not have significant effect.²⁷

In this study multiparity found to be important predictor of success i.e. 36 (72%) of case with successful version were found to be multigravidae as compared to 14 cases (28%) who were primigravidae. likewise majority of unsuccessful version i.e. in 32 (64%) cases were observed in primigravidae as compared to 18 (36%) in multigravidae.

In this study the relationship of birth weight of fetuses with the success of ECV could not be explained as the majority of babies were having birth weight of 3 or less than three kg irrespective of successful or unsuccessful ECV group. It was striking that success rate was rather greater i.e. 24% as compared to 8% among mothers giving birth to heavier babies i.e., more than 3kg. In this study engagement of breech found to be poor predictor of success. Amniotic fluid index, placental site, type of breech, breech station and cervical effacement were not studied.

CONCLUSION

The study evaluated the following aspects of women with breech presentation undergoing attempts at external cephalic version.

1. External cephalic version when attempted in suitable women, using strict protocols, risk of procedure is almost nil in expert hands.
2. Attempting external cephalic version in women approaching term i.e between 35 and 37 weeks of gestation is associated with higher success rate without causing pre-term birth.
3. Multigravidity is a positive predictor of success, whereas breech engagement is a negative predictor.
4. Attempts at ECV reduce the number of women presenting with breech in labour.
5. It provides the women with breech presentation a third management option and possibility of avoiding a vaginal breech delivery or C. section.
6. Reduction in caesarean delivery rate was significant in successful ECV group as compared to unsuccessful ECV group.

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