JK SCIENCE

ORIGINAL ARTICLE

A Randomized Trial of External Cephalic Version in Late Pregnancy

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Abstract

To assess the role of external cephalic version (ECV) in late pregnancy. A prospective randomized controlled trial of external cephalic version after 37 weeks gestation. All women, in whom routine ultrasound examination during the 37th week of pregnancy had shown a single breech presentation were eligible for recruitment. Department of Obstetrics & Gynecology, Sher-i-Kashmir Institute of Medical Sciences, Srinagar. 60 women with breech presentation at term were recruited after satisfying eligibility criteria. There were 30 women in study group and 30 in the control group. Intervention - ECV was attempted in study group in dorsal position with left lateral tilt over a maximum period of 5 minutes. Main outcome measures - Success rate in terms of presentation during labour, need for caesarean section and various variables related to foetal outcome.ECV was successful in 24 out of 30 patients (80%). Breech presentation at delivery occurred in 93.3% of the control group and in 20% of the ECV group. The caesarean section rates were 73.3% and 20% respectively. There were no troublesome complications from the procedure.

Key Words

External Cephalic Version, Breech Presentation, Vaginal Delivery, Caesarean Section.

Introduction

Breech presentation is the most common abnormal presentation occurring in 3-4% of all deliveries. Till 15th century breech presenting babies were always delivered vaginally. It was only in the mid 16th century that external cephalic version was perfected and popularized to avoid breech delivery. Even after 500 years external cephalic version is generating controversies.

The management of breech presentation before and during labour remains controversial. Advances in anesthesia, safe blood transfusion and new antibiotics have led to marked liberalization of the indications for caesarean section. Over the past four decades the caesarean delivery rate for term breech presentation has continued to grow and approaches 100% at some institutions (1). Presumably the increased use of caesarean section reflects obstetricians' belief that the abdominal route of delivery has significant benefits for the infant with minimal increased risks for the mother.

A number of studies have shown that the frequency of perinatal mortality and morbidity in vaginally born mature infants is increased in infants presenting by breech as compared to those in vertex presentation (2, 3). Further, long term follow up has revealed intellectual and neurological sequelae in breech babies born vaginally (3). This has led to more liberal use of caesarean section and consequently to higher maternal mortality and morbidity (4). It is therefore, rational to prevent breech presentation by performing safe and successful external cephalic version before the start of labour. The use of external cephalic version successfully converts approximately 65% of term breeches into vertex presentation with a reduction in the need for caesarean delivery (5). The effect and risks involved in external cephalic version have been debated (6).

The aim of this prospective study was to determine the benefits of external cephalic version after the 37th week of pregnancy compared with a control group in which version was not attempted.

Material and Methods

This was a randomized controlled trial of ECV after 37 weeks gestation. The hypotheses were that ECV would reduce the frequency of breech presentation -in labour and also need for caesarean section. All women, in whom routine ultrasound examination during the 37th week of

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Study group		Control		
	(n=30)	(n=30)		
Maternal age (yrs)				
Mean (SD)	26.9(2.5)	27.5(2.9)		
Parity				
Mean (SD)	1.9(0.9)	1.7(1.2)		
Primigravida	12(40%)	14(46.7%)		
Parity> 2	18(60%)	16(53.3%)		
Gestational age (weeks)				
Mean (SD)	38.2(1.6)	37.3(1.2)		
37 weeks	12(40%)	17(56.7%)		
38 weeks	4(13.3%)	6(20%)		
39 wks	6(20%)	2(6.67%)		
> 40 wks	8(26.7%)	3(10%)		
Maternal wt (kg)				
Mean (SD)	66.1(4.8)	65.6(5.2)		
> 80 kg	2(6.7%)	2(6.7%)		
Birth weight (kgs)				
Mean (SD)	3.1(0.4)	3.2(0.6)		

Table 2. Fetoplacental Characteristics In The Two Groups

Study group		Control		
	(n=30)	(n=30)		
Placental site				
Anterior	7(23.3%)	8(26.7%)		
Posterior	8(26.2%)	8(26.7%)		
Fundal	15(50%)	14(46.7%)		
Position of foetal back				
Left	15(50%)	13(43.3%)'		
Right	10(33.3%)	9(30%)		
Anterior	3(10%)	5(16.7%)		
Posterior	2(6.7%)	3(10%)		
Type of breech				
Frank	9(30%)	10(33.3%)		
Flexed	21(70%)	20(66.7%)		

Stu	Study group (n=30)		P Value
Vertex presentation at delivery	24(80%)	2(6.7%)	0.000
Breech presentation at delivery	6(20%)	28(93.3%)	0.000
Caesarean section	6(20%)	22(73.3%)	0.000
Vaginal delivery	24(80%)	8(26.7%)	0.000





pregnancy had shown a single breech presentation were eligible for recruitment. The gestational age was calculated from the date of the last menstrual period and confirmed by ultrasound during early pregnancy. The contraindications to attempting version were as follows: Ante partum haemorrhage, placenta praevia, uterine anomalies, severe proteinuric hypertension, diabetes, cardiac disease, conditions favoring premature labour, rhesus negative mother, ruptured membranes, previous two or more than two caesarean sections.

The possible benefits and risks of external cephalic version were explained to the patients. Consecutive women were allocated to ECV or the control group using consecutively numbered sealed opaque envelopes.



Table 4. Comparison of Outcomes in Two Groups

Study group (n=30)		Control (n=30)	
Breech presentation in labour	6(20%)	28(93.3%)	P < .001
Caesarean	6(20%)	22(73.3%)	P < .001
Apgar score at 1 & 5 mts	1 mt 5 mt	1 mt 5 mt	
<7	6 1	15 4	
<5	1 1	2 2	
Neonatal unit admission	3	6	
Perinatal deaths	1	2	

Table 5. Factors related to success of ECV

Factor	Success rate		
Gestational age (weeks)			
37	10/12(83.3%)		
38	4/4 (100%)		
39	5/6 (83.3%)		
>40	5/8 (62.5%)		
Parity			
Primipara	7/12(58.3%)		
Multipara	17/18 (94.4%)		
P <0.05			
Site of placenta			
Anterior	4/7(57.1%)		
Posterior	7/8(87.5%)		
Fundal	13/15(85.7%)		
Position of baby's back			
Left	12/15 (80%)		
Right	7/10 (70%)		
Anterior	3/3(100%)		
Posterior	2/2(100%)		
Type of breech			
Frank	6/9 (66.7%)		
Flexed	18/21(85.7%)		

Recruitment continued until the sample size of 30 women per group was reached. Informed consent was obtained from all women before recruitment. No women refused to enter the study. All women were seen weekly for routine antenatal care until delivery. When the fetus continued to present by the breech, decision was made about the best method of delivery by the responsible consultant on the basis of the guidelines within the department. The external cephalic version took place either in the outpatient department or ultrasound room. The patient lay in dorsal position with left lateral tilt and foetal heart was auscultated with stethoscope before attempting ECV, during procedure and after completion of ECV. A single attempt of ECV was then made. Version was attempted over a maximum period of 5 minutes. If bradycardia or foetal heart rate irregularity was noted, the attempted version was discontinued and the foctus reverted back to the breech position. The attempt was abandoned if uterine contractions or pain occurred or if version could not be performed easily. ECV was attempted in the study group only. The patients were referred back to the antenatal clinic and there was no subsequent intervention in their management.

The following variables were examined in the study group (1) frequency of cephalic presentation during labour, (2) foetal heart rate abnormality during and immediately after the procedure (3) mode of delivery (4) Apgar scores, admission to neonatal unit, still birth and neonatal death. Variable 1, 3 and 4 were also assessed in the control group.

Statistical Analysis

Analysis of data was done by means of the Chai square test. Significance was regarded as p < 0.05.

Result

There was no significant difference in age, parity and maternal weight between two groups. There were comparable numbers of primigravidae and type of breech in each group. Fundal placentas occurred more often in the ECV group. EC version was attempted in 30 cases and was successful in 24(80%); 24(80%) presented by the vertex during labour and one foetus reverted spontaneously to breech presentation. Spontaneous version occurred in one of the unsuccessful cases. Of the 30 women in the control group only 2(6.7%) presented by the vertex during labour. The difference between two groups was highly significant. Presentation and mode of delivery in the two groups is shown in *table 3*.

The frequency of vertex presentation was significantly higher in the version group than in the non-version control group (p < .001). The rate of caesarean section in study group was only 20% (6 cases) compared with 73.3% (22) in the control group (p< 0.001). The overall frequency of caesarean section for breech presentation was 73.53% while only 3(11.5%) with vertex presentation had to be delivered by caesarean section. Two patients in the control group converted spontaneously to the vertex presentation and delivered vaginally. One patient in the group of failed version converted spontaneously. Only one patient in the group of successful version reverted to breech presentation in which second version was not tried and patient delivered vaginally by breech presentation:

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Study group		
LSCS	=	6
Vaginal delivery	=	24
Control group		
LSCS	=	22
Vaginal delivery	=	8
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No serious maternal or fetal complications attributable to the version were noted. Transient bradycardia occurred in only one patient at the end of version which recovered



spontaneously in left lateral position. A normal fetal heart rate was recorded in all of the patients for 30 minutes after the attempt at version. No patient went into labour as a result of the version.

Depressed neonatal condition, defined as a 1-minute Apgar score of < 7 occurred significantly less often (p <0.05) with cephalic deliveries (8.3%, 2 out of 24) than with breech deliveries (66.7%, 6 out of 9). Six patients (20%) had Apgar score <7 at 1 minute in study group as compared to 15 patients (50%) in control group (p<.05) shown in table 4. One baby in the study group and 2 babies in the control group had Apgar score < 5 at 1 minute.

Three infants in study group and 6 in control group were admitted in neonatology. There were 3 and 6 vaginal breech deliveries in the study and control group respectively. The numbers were too small to compare complications in breech vaginal deliveries. There were three perinatal deaths, two occurred in the control group, one was in a woman with breech presentation who came with leaking, not in labour but liquor was meconium stained and foetal heart rate was 110/mt. Caesarean section was done baby delivered had A/S 4 at 1 mt and could not be resuscitated. The second death was in woman in whom head was stuck and there had been some delay in the birth of the head. Dead baby was delivered. The perinatal death in ECV group occurred in a woman with successful version. Baby was born by vertex vaginal delivery but second stage was prolonged. Infant was born with Apgar score of 4/10. All attempts at resuscitation were unsuccessful.

Discussion

The results of this controlled trial clearly demonstrate that external cephalic version near term will reduce the incidence of breech presentation in labour and caesarean section rate. This is in agreement with findings of Van Dorsten et al (1981) (7). They used tocolysis for external cephalic version but we did not use tocolysis before ECV. The reported success rate for version after 37 weeks has varied from 8 to 97% (Savona-Ventura 1986) (8). Our reported rate of success (80%) is in concordance with K, Mahomed et al 1991 (9). Their success rate was 83%. But this success rate is substantially higher than reported by some others (Van Dorsten et al 1981(7); Brocks *et al* 1984; Ferguson *et al* 1987; Marchick (1988) (10, 11, 12). There are several possible explanations for this difference. Parity has an influence on the success rate, which generally is higher in multigravidae. Brocks et al (1984) reported an overall success rate of 41% but a rate of 62% in parous women. The different number of primigravidae in different studies may explain the differing success rates. In our study 40% were primigravidae compared with 68% and 60% in the series described by Brocks *et al* (1984) and Marchick (1988) respectively. Some authors have noted success rate to be affected by gestation (Van Dorstel *et al*, 1981), our success rate did not seem to be related to gestation as observed by K Mahomed *et al* 1991 too in their study.

Fianu and Vaclavinkova (1979) 13 concluded that success rates were better for anterior and posterior placentas than for fundal or cornual ones. Our results did not show any difference although cornual locations were not categorized separately. It has been suggested that the site of placenta probably alters the intrauterine configuration and lessens the available space for external cephalic version. Some authors have noted success rate to be affected by type of breech, Ferguson et al (1987) who reported a success rate of 65% for frank compared with 96% for flexed breeches. In our study we too noted a lower success rate with frank (66.71%) than with flexed breeches (85.7%). Some previous investigators found that extension of the fetal legs did not influence the success rate of ECV (Bradley-Watson 1975; Ellis 1968) (14, 15). It has been suggested that splinting effect of extended fetal legs interferes with successful version (Hofmeyr 1983) (16), The range of reported rates of spontaneous version has varied from 14-20% (Van Dorsten et al 1981; Brocks et al, 1984). But in our study spontaneous version occurred in only 9.9% cases. This low rate of spontaneous version in our study may be because of small sample size. Hofmeyr (1983) noted high rate of 33% for spontaneous version and explained this partly by the tendency to late engagement of the presenting part in African population. A corollary of the observation that spontaneous version occurs not infrequently in late pregnancy is that elective caesarean section for persistent breech presentation alone should not be performed before the onset of spontaneous labour. The caesarean section rate will depend to a certain extent on the success or the version procedure and on the management of breech presentation in those patients where version was unsuccessful or was not tried. In general, tile caesarean section rate is much higher with breech presentation and thus any reduction in the frequency of breech presentation will automatically lower the caesarean section rate. We have been challenged to reduce the number of abdominal deliveries (17).

In our study only 12.5% of successful version required caesarean section in comparison with 50% of the failure group. This observation is in concordance with the findings of John C *et al* 1986 (18). In their study 10% of successful versions required caesarean section, in comparison with



60% of the failure group. In our study 20% and 73.3% in the ECV and control group respectively were delivered by caesarean section. Many other investigators have also demonstrated a reduction in caesarean rates (7).

There were hardly any maternal complications due to ECV. Therefore, maternal complications for ECV must be considered relative to those from caesarean section which carries a significant maternal mortality and morbidity.

The safety of ECV for the fetus is of vital importance. Fetal heart rate abnormalities were transient and may have resulted from disturbance in oxygenation. In this study no intrauterine deaths or neonatal losses attributed to a cord accident or placental abruption occurred. Other studies offer similar results (9, 18). Careful intraprocedure monitoring allows repetitive manipulation in individual cases where fetal heart rate irregularities transiently occur.

External version early in pregnancy would entail a much larger number of women subjected to the procedure, many of whom would have converted to the vertex presentation spontaneously. So, our opinion is that ECV should be done in late pregnancy. As the maternal and foetal risks involved in ECV are low, we are of the opinion that it is very important in a developing country like ours that skills for performing ECV should be developed, promoted and improved with continued practice at all medical colleges and teaching hospitals. Training in the art and skill of performing ECV must be made mandatory part of postgraduate education in obstetrics.

Recently, also one of the study suggested that ECV is safe, simple procedure with good success rate and help to prevent significant number of caesarean section (19). **Conclusion**

We conclude that ECV at term can substantially reduce the occurrence of breech presentation and also of caesarean section for breech presentation. The procedure is relatively easy and all obstetricians should gain experience in ECV.

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