

External Cephalic Version: A Single Centre Experience

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Abstract

Incidence of caesarean section for breech presentation has increased markedly. External cephalic version (ECV) is effective in reducing non cephalic presentation at births and caesarean section (CS) for breech presentation. Success rates are good but there is increasing need for induction of labour (IOL) as well as for intrapartum CS for reasons that are not clear. The aim of this study was to report the experience with ECV at a single centre where ECVs were performed by or under the guidance of one senior clinician. This was a 7-year retrospective audit of 147 ECVs at a single centre in Queensland. ECV was successful in 53.7%, 34% in nulliparous and 69% in multiparous women. Of the few variables explored, nulliparity was the only variable that was associated with poor success. Among those with successful ECV, 32 (40.5%) had IOL. Intrapartum CS rate in women who had had a successful ECV was 16.5% compared to 11% for the hospital. There was no difference in early neonatal outcome between the groups. We have confirmed a success rate that is comparable with many other studies. Mothers with successful ECV do have a higher IOL and a higher CS rate especially in women whose labour is induced. We suggest a need to look at some novel methods to increase uptake further and to improve success rates in nulliparous women.

Keywords

ECV, Breech, Labour, Caesarean, Predictors

1. Introduction

Approximately 3% - 4% of pregnant women will present with a fetus in breech position at term [1]. Incidence of caesarean section (CS) for breech presentation has increased markedly in most well resourced countries since the publication of the term breech trial [2] [3]. It has clearly been shown [4] that external cephalic version (ECV)

is effective in reducing non cephalic presentation at births as well as reducing the need for CS for breech presentation. Current guidelines [5]-[7] therefore recommend that ECV should be offered to all women with breech presentation at term. Success rates of ECV vary between 40% - 60% [5] with it being more successful if multiparous, breech is not low in the pelvis, uterus not tense, easily palpable fetal head, and maternal weight less than 65 kg [8]. It is also likely that adequate amounts of amniotic fluid, non-frank breech, non-anterior placenta and anterior fetal back also improve success rate [9] [10].

The aim of this retrospective audit was to report the experience with ECV at a single centre where ECVs were performed by or under the guidance of one clinician with much experience with ECVs.

2. Patients and Methods

This was a retrospective audit of all ECVs performed at Ipswich Hospital, Ipswich during the period 2006 to Dec 2012. All ECVs were performed in birth suite. Women had cardiotocography (CTG) performed before and after the procedure. Tocolysis using 500 mcg salbutamol by slow intravenous infusion was the routine. Ultrasound scan was used to assess fetus and to confirm presentation. Talcom powder was applied over the abdomen after which the version was by either a forward or a backward somersault. Procedure was abandoned at her request at any time during the procedure if discomfort was not tolerable. The procedure usually lasted no more than 5 minutes. Anti-D immunoglobulin was administered prophylactically to all Rhesus-negative women.

Data on demographics and on the ECV procedure and pregnancy outcome were extracted from the charts and entered into an excel spreadsheet. Data were analysed using Stata/SE 9.0 for Windows (StataCorp LP 2005). All variables were treated as categorical; continuous variables were classified into categories and treated as categorical variables. Maternal and pregnancy characteristics were compared between women with successful and unsuccessful ECV procedure using Chi squared test or Fisher's exact test, where appropriate. The association between maternal and pregnancy characteristics and successful ECV was explored using univariate logistic regression.

The study was approved by the West Moreton Hospital and Health service HREC.

3. Results

A total of 147 external cephalic versions (ECVs) were performed. Sixty four women (43.5%) were in their first pregnancy. Mean (SD) BMI was 27.2 (6.4). Fifty four (36.7%) women had a BMI of $<25 \text{ kg/m}^2$, 24 (16.3%) were obese (BMI 30 - 34.9) and 22 (15.0%) were morbidly obese (BMI 35 and above). Seven women (4.8%) had had one previous caesarean section. ECV was successful in 4 of these 7 women. Eighty four (57%) women were <37 weeks pregnant at the time of the ECV.

Overall ECV was successful in 79 (53.7%) of women. Success rate was 34% in nulliparous and 69% in multiparous women. None reverted back to breech after a successful ECV but two women with failed ECV had spontaneous version to cephalic before birth.

In **Table 1** we looked at the effect of parity, BMI, placental position and gestational age on the success rate of ECV. Nulliparity was the only variable that was associated with poor success. Gestational age <37 weeks, anterior placenta and maternal body mass index were not associated with failure to turn the baby in our experience.

In **Table 2** we looked at some of the pregnancy outcomes in the women who had an attempt at ECV. Among those with successful ECV, 32 (40.5%) had induction of labour (IOL), in 17 (22% of the women with successful ECV) it was for post dates. Other indications included prelabour rupture of membranes at term (5), gestational diabetes (3), pre eclampsia (2), unstable lie (1) and maternal medical concerns (4). No adverse events were recorded and no woman needed to be delivered as a result of fetal concern at the time of the ECV.

Majority of the women (83.6%) had a vaginal birth. Intrapartum caesarean section rate in women who had had a successful ECV was 16.5%. This rate was 6.5% if they went into spontaneous labour as opposed to 28% if they had IOL. Indication for caesarean section was failure to progress in two thirds of these cases. In terms of neonatal outcome there was no significant difference between the groups in terms of low Apgar score or need for admission and duration of admission into special care unit. Number of neonates with these events were however small.

4. Discussion

Overall success rate of 54% is similar to that reported by others in well resourced countries [4] [6]. The success

Table 1. Univariate association between maternal and pregnancy factors and ECV outcome.

Characteristics	ECV Successful (<i>n</i> = 79)	ECV unsuccessful (<i>n</i> = 68)	Odds ratio (95% CI)
Parity:			
0	22 (27.9)	42 (61.8)	Ref (1.00)
1 - 2	39 (49.4)	16 (23.5)	4.65 (2.14 - 10.1)
3 or more	18 (22.8)	10 (14.7)	3.44 (1.36 - 8.70)
Body Mass Index (kg/m²):			
<25	30 (38.0)	24 (35.3)	1.01 (0.46 - 2.22)
25 - 29.9	26 (32.9)	21 (30.9)	Ref (1.00)
30 - 34.9	11 (13.9)	13 (19.1)	0.68 (0.25 - 1.83)
35 and above	12 (15.2)	10 (14.7)	0.97 (0.35 - 2.68)
40 and above*	4 (5.1)	4 (5.9)	0.85 (0.21 - 3.55)
Placental position:			
Anterior	30 (38.0)	29 (44.6)	0.76 (0.39 - 1.48)
Posterior/Fundal	49 (62.0)	36 (55.4)	Ref (1.00)
Gestational age at ECV:			
Less than 37 weeks	43 (54.4)	41 (60.3)	0.79 (0.41 - 1.52)
37 weeks or more	36 (45.6)	27 (39.7)	Ref (1.00)

*Referent category—less than 40 kg/m².

rate was 34% in nulliparous versus 69% in multiparous women. The success rate in nulliparous women was not significantly better if ECV was performed before 37 weeks as compared to 37 weeks and above, 33% and 36% respectively. The lower success rate in nulliparous women as been noted by others [4] [8] [11] and is thought to be due to a more tense uterus in such women [8]. It is also ones impression that nulliparous women tend not to tolerate much discomfort. Several strategies to improve success of ECV have been tested. The EECV2 Multi-centre RCT [12] reported a better success rate when ECV was performed between 34 - 36 weeks compared to at 37 weeks and above but was associated with an increased risk of preterm birth and many ECVs in that study were performed nearer to 34 than to 36 weeks. We now recommend ECV at 36⁰ weeks in nulliparous women. Another strategy that is promising is the use of regional block. None of our cases were done with regional block. Meta analysis of several RCTs reported a better success rate (59.7% compared with 37.6% without analgesia; pooled relative risk 1.58; 95% confidence interval 1.29 - 1.93) and no increase in adverse events, with the use of spinal or epidural for ECV [13].

It is of note that in women with successful ECV, vaginal birth rate was high. This supports the women's decision to undergo the ECV procedure in the first instance. Women who have spontaneous vaginal birth after successful version tend to be more satisfied with childbirth than women with planned c/section [14]. We were surprised to record a high induction of labour rate of 40.5% in the women who had had a successful ECV (our hospital overall IOL rate is around 21%). Many of these inductions were for post dates, 53% of women who had IOL it was for post dates, a much higher rate than that in our unit where post dates accounts for 32% of all inductions. Parity did not seem to contribute to this high IOL rate as only 22% of our nulliparous women needed IOL. This was in contrast to IOL rates of 49% in nulliparous and 30% in multiparous women reported recently in a unit in Japan [10].

There was also a higher rate of intrapartum caesarean section (16%) compared to around 11% for the hospital. While some [15] [16] have not seen such an increase, a meta analysis [17] of several studies has noted a two fold increase in CS rate after a successful ECV and this was independent of any increased induction rate. A recent study from Canada [18] also reported a Caesarean section rate in such women of 15% versus 6.0% in

Table 2. Pregnancy outcome by success of external cephalic version.

Characteristics	ECV Successful (<i>n</i> = 79)	ECV unsuccessful (<i>n</i> = 68)	Total (<i>n</i> = 147)	<i>p</i> value
Onset of labour				
Spontaneous	46 (58.2)	7 (10.3)	53 (36.1)	<0.000*
Induction of labour	32 (40.5)	0 (0.0)	32 (21.8)	
No labour (Elective CS)	0 (0.0)	60 (88.2)	60 (40.8)	
No labour (Emergency CS)	1 (1.3)	1 (1.5)	2 (1.4)	
Mode of birth				
Vaginal	66 (83.6)	3 (4.4)	69 (46.9)	<0.000*
Elective CS	0 (0.0)	53 (77.9)	53 (36.1)	
Emergency CS	13 (16.5)	12 (17.7)	25 (17.0)	
Apgar score				
1 min - 3 or less	4 (5.1)	1 (1.5)	5 (3.4)	0.374*
5 min - 6 or less	2 (1.4)	0 (0.0)	2 (1.4)	0.499*
SCN admission	11 (13.9)	12 (17.7)	23 (15.7)	0.536
Indication for SCN admission				
Apnoea	1 (1.3)	1 (1.5)	2 (1.4)	0.815*
Observation	3 (3.8)	3 (4.4)	6 (4.1)	
Blood sugar monitoring	2 (2.5)	2 (2.9)	4 (2.7)	
Congenital abnormality	0 (0.0)	1 (1.5)	1 (0.7)	
Respiratory distress	4 (5.1)	2 (2.9)	6 (4.1)	
Prematurity	0 (0.0)	2 (2.9)	2 (1.4)	
Chorioamnionitis	1 (1.3)	0 (0.0)	1 (0.7)	
Not Applicable	68 (86.1)	57 (83.8)	125 (85.0)	
Days in SCN				
Less than 1 day	68 (87.2)	56 (82.4)	124 (84.9)	0.389*
1 - 3 days	9 (11.5)	8 (11.8)	17 (11.6)	
More than 3 days	1 (1.3)	4 (5.9)	5 (3.4)	

*Fisher's exact; *p* value for t-test.

women with cephalic presentation from the onset and noted that nulliparity and induction of labour were associated with caesarean section. Women who go into spontaneous labour seem to avoid the need for a caesarean birth. In our study the rate of CS was 6.5% for spontaneous labour versus 28% for labour that was induced. Similar differences in caesarean section rate was also noted previously in another study (4% versus 34%) [10]. The reasons for increased need for IOL and for the increase in caesarean section remain unclear [15]. Several possible reasons include inability of a breech baby to tolerate stress during labour (in which case there would be higher rate for fetal distress which we did not show (only 2 of the 13 sections were due to fetal distress), some uterine muscle abnormality that predisposed to breech presentation in the first instance and an unmolded unengaged fetal head, both of which may predispose to dystocia. This may explain our higher IOL and our higher caesarean section rate for failure to progress. Even though this increase in caesarean section rate may be small, such information is important for patient counselling and may affect a woman's preferences when choosing

ECV.

It is also of note that we safely performed an ECV in women with one previous CS. Another study [19] also reported similar success rates in women with one previous CS compared to no previous CS. Concern about procedural success or adverse effect in women with a previous CS is unwarranted and should not deter from recommending an ECV in such women.

We provide a proactive approach to women noted to have a breech presentation during the antenatal period. ECVs were performed or supervised by a senior Obstetrician. Trainees and other colleagues could also assist or perform ECV under direct supervision and guidance. As more than 90% of ECVs were performed or supervised by a single clinician, the procedure entailed considerable homogeneity, although admittedly less generalisability.

We need to have any data regarding uptake of ECV in our unit but it has been reported to be as low as 18% [12]. We need to prospectively look at possible barriers towards ECV, including the ability or otherwise of clinicians to fully inform and consent women. Fear of pain does influence women's willingness to have ECV and whilst we promote a proactive approach when consenting we always reassure women that unbearable pain is always a reason to stop procedure. We do however emphasise that vast majority of women report that the experienced pain is bearable. Use of videos as part of the information on ECV is another area that needs further research. If women with breech presentation have a primary caesarean section in the first pregnancy a large number will have an elective repeat procedure in their second pregnancy. Data [20] regarding increased risk of placenta accrete after CS are concerning.

5. Conclusion

We have confirmed that ECV is a safe procedure with a success rate that is comparable to many other studies but suggested more research into other novel methods to increase uptake further and to improve success rates especially in nulliparous women. Mothers with successful ECV do have a higher IOL and a higher CS rate especially in women whose labour is induced.

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