Improving external cephalic version for foetal breech presentation

H. Zandstra¹, H.J.M.M. Mertens²

¹Junior resident, ²Gynaecologist, Department of Obstetrics and Gynaecology, Orbis Medical Center, Dr. H. Van der Hoffplein 1, 6162 BG Sittard-Geleen.

Correspondence at: h.mertens@orbisconcern.nl
Tel.: 0031-88-4597787; fax: 0031-88-4597463

Abstract

Objectives: If success rate of external cephalic version (ECV) increases, the rate of primary caesarean sections declines. The aims of this retrospective cohort study were to evaluate the ECV and to identify factors associated with the success rate of ECV for breech presentation at term. The second aim of this study was to analyse the outcome of labour of all patients with a foetus in breech near term.

Methods: All women with a foetus in breech near or at term were included. Logistic regression analyses were performed to identify the association between patient characteristics and success rate of ECV.

Results: The overall rate of successful ECV’s was 19%. Foetal and maternal complications after ECV were negligible. BMI, type of breech and amount of amniotic fluid were significantly correlated with a successful ECV. The rate of primary caesarean sections for the group of patients who underwent an ECV was lower than the rate in the group who did not (52.9% vs. 79.6%). The rate of spontaneous deliveries was increased after ECV (36% versus 12%). After successful ECV the rate of spontaneous deliveries was 75%; after unsuccessful ECV 26.8%.

Conclusion: The overall rate of successful ECV was low (19%). BMI, type of breech and amount of amniotic fluid were significantly correlated with a successful ECV. The rate of primary caesarean sections was significantly lower in patients with ECV (52.9% versus 79.6%). The rate of spontaneous deliveries was significantly higher (36% versus 12%).

Key words: BMI, breech presentation, caesarean section, external cephalic version, pregnancy.
refused ECV after counselling mostly because of fear for pain and complications.

Baseline characteristics

The mean age of all patients was 31.4 ± 4.8 years; the mean BMI was 24.7 ± 5.1 kg/m². Baseline characteristics like parity, ethnicity, placental localisation and type of breech of patients from group A and group B were not significantly different. A history of breech is defined as having had a breech delivery or an ECV in a previous pregnancy. This was positive in 3.7% in group A versus 12.8% in group B, this was significantly different.

Outcome after ECV (group A) if compared to no ECV (group B)

If the two groups are compared, the rate of primary caesarean sections was significantly lower for patients of group A (52.9%) compared to for patients of group B (79.6%) (p < 0.001). The rate of secondary caesarean sections was 11.6% for group A and 8.4% for group B. The rate of spontaneous deliveries (including vaginal breech deliveries) was 36% for group A, compared to 12% for group B (P < 0.001). After successful ECV, the rate of spontaneous deliveries was 75%. After unsuccessful ECV, the rate of spontaneous deliveries was 26.8%.

Among the 36 patients in group A who had a successful ECV, 27 (75%) had a cephalic presentation at labour and 9 returned back to breech before labour started. Among the 27 patients who had a cephalic presentation during start of labour, 24 had a vaginal delivery from a foetus in cephalic position and 3 had a secondary caesarean section. Among the 9 remaining patients, 3 had a vaginal breech delivery, 4 had a primary caesarean section and 2 had a secondary caesarean section. Among the 153 patients who had an unsuccessful ECV, 8 (5.2%) had a cephalic presentation at labour after spontaneous turn of the foetus. Eventually 7 patients (4.6%) had vaginal delivery of a foetus in cephalic presentation, 34 (22.2%) had vaginal breech delivery, 96 (62.7%) had a primary caesarean section and 16 (10.5%) underwent a secondary caesarean section (Figure 1). In group B, 27 (12%) patients had a vaginal breech delivery, 179 (79.6%) patients underwent a primary caesarean section and 19 (8.4%) had a secondary caesarean section. In group A 4 vacuum extractions were reported compared to no vacuum extractions in group B.

Success rate (SR) of ECV

The SR of the ECV’s was 19.0%. Associations with SR and several patient characteristics were analysed.
Complications and neonatal outcome

All complications after the ECV were reported. No neonatal mortality neither other maternal or neonatal complications were reported. In one case persistent CTG-abnormalities after the ECV was reported, requiring an emergency caesarean section approximately 6 hours after the ECV. The neonatal outcome was good (Apgar score 8/9).

Discussion

In (inter-)national literature, the SR of ECV is 30-61% (Kuppens et al., 2010, Skupski et al. 2003). The SR of ECV in our population was exceptionally low if compared to these statistics (19%). We found, in accordance with other literature that BMI, type of breech and amount of amniotic fluid were of significant influence on the success rates of ECV (Skupski et al., 2003; Hutton et al., 2008; Kok et al., 2011; Burgos et al. 2011). Despite the SR being low, the rate of primary caesarean sections was significantly reduced in the ECV-group if compared with the non-ECV group (79.6% vs. 52.9%). The rate of spontaneous deliveries was significantly increased after ECV (36% vs. 12%).

After 10 years of experience of ECV in the Orbis Medical Center, the percentages in literature of successful ECV (30 - 61% (Kuppens et al., 2010; Skupski et al., 2003) are never achieved. We focussed on the bad results of ECV and hypothesized that the low success rates in our clinics, is strongly biased by several home practising midwives doing ECV’s at their own consultation hours. Besides, it may be partially explicable by the lack of rationale in our protocol for selection of patients for ECV. With the knowledge of the factors associated with the SR, we must better counsel and select our
In our population, a 10% higher SR in multiparous women, compared to nulliparae was found. This was a non-significant correlation [OR 1.782, \( p = 0.122 \) CI 0.857-3.705]. Caucasian women were less likely to have a successful ECV [OR 0.470, \( p = 0.111 \) CI 0.186-1.188]. We hypothesized that this was because of a statistically significant higher incidence of multiparity in the non-Caucasian group. However after adjustment for parity, we still found a difference among patients for the ECV. Also the timing of counselling could be reconsidered. Patients might be more susceptible for choosing ECV if counselled earlier in pregnancy before having heard stories from several non-professionals.

Analysing our disappointing small SR of ECV, we focussed on associated aspects. Kok et al. described, after analyzing 310 women, a statistically significant advantage for multiparous women with an OR of 2.85, 95% CI 1.74-4.67 (Kok et al., 2011).

Table 1. — Baseline characteristics of patients in the ECV group compared to patients in the non-ECV group.

| Characteristics                  | Value* all patients | Value* patients with ECV | Value* patients without ECV | P-value |
|----------------------------------|---------------------|--------------------------|----------------------------|---------|
| BMI                              | 24.67 (± 5.09)      | 24.58 (± 5.07)           | 24.85 (± 5.13)             | N.S.    |
| Age                              | 31.4 (± 4.84)       | 31.2 (± 5.00)            | 31.5 (± 4.72)              | N.S.    |
| Parity                           |                     |                          |                            |         |
| Nullipara                        | 259 (63%)           | 116 (61.4%)              | 143 (63.7%)                | N.S.    |
| Multipara                        | 155 (37%)           | 73 (38.6%)               | 82 (36.3%)                 |         |
| Placental localisation           |                     |                          |                            |         |
| Anterior                         | 178 (43.0%)         | 88 (46.6%)               | 90 (40.0%)                 |         |
| Posterior                        | 215 (51.9%)         | 99 (52.3%)               | 116 (51.6%)                |         |
| Other                            | 21 (5.1%)           | 2 (1.1%)                 | 19 (8.4%)                  |         |
| Ethnicity                        |                     |                          |                            |         |
| Caucasian                        | 370 (89.3%)         | 162 (85.7%)              | 208 (92.4%)                | N.S.    |
| other                            | 44 (10.7%)          | 27 (14.3%)               | 17 (7.6%)                  |         |
| History of breech presentation   |                     |                          |                            | \( p < 0.01 \) |
| Yes                              | 36 (8.7%)           | 7 (3.7%)                 | 29 (12.8%)                 |         |
| No                               | 378 (91.3%)         | 182 (96.3%)              | 196 (87.1%)                |         |
| Type of Breech                   |                     |                          |                            |         |
| Frank                            | 315 (81%)           | 142 (78.9%)              | 173 (82.8%)                | N.S.    |
| Complete                         | 50 (12.9%)          | 26 (14.4%)               | 24 (11.5%)                 |         |
| Other                            | 24 (6.2%)           | 12 (6.7%)                | 12 (5.7%)                  |         |

*Values are given as mean ± SD or number (percentage).
between the two groups. This could possibly be explained by a different pattern of engagement in women of African descent (Kuppens et al., 2010).

Lack of experience with performing ECV’s is in our opinion an important factor explaining the low SR. The past ten years, ECV’s were performed by 7 gynaecologists, which makes the total amount of performed ECV’s very low. The number of ECV’s performed each year vary from 1-30 for the different gynaecologists. Therefore we reduced the gynaecologists performing the ECV’s to 1-2 gynaecologists. Besides, despite the technical procedure being comparable to the technique used in other clinics, we suggested that inter- and intra-individual feedback may also improve the success rates.

The importance of experience of the performing gynaecologist and the setting of the ECV is described in literature as well. Kuppens et al. (2010) found a significant improvement of success rates (61% vs. 47%) after implementing four procedural or circumstantial factors concerning the ECV: 1. routine (only performed by 2 experienced obstetricians), 2. regularity (one fixed morning in the week for ECV’s), 3. rest (the obstetrician was free from other tasks) and 4. relaxation (use of tocolytic). Reconsidering our setting may improve results easily, while in our setting ECV is not centralized to 2-3 obstetricians only and ECV is often performed in between by the gynaecologist on call. Introducing a fixed consultation for ECV’s with only a few selected obstetricians performing the ECV might result in an improvement of our SR.

In our study no significant difference was found for placental location. However, several publications show significantly better results for women with a non-anterior placenta (Kok et al., 2009, 2011; Burgos et al., 2011). For example, Burgos et al found a significant advantage for women with a posterior placental location. Women with a posterior placental location had an increased success rate of 2.85 times compared with an anterior placenta (95% CI 1.87-4.36) (Burgos et al., 2011). For example, Burgos et al. (2010) described a statistically significant increase in cephalic presentation at labour and birth and a significant reduction in caesarean sections if both nulliparous and multiparous women were administered tocolytic drugs preceding an ECV (RR 1.38, 95% CI 1.03-1.85). We introduced the administration of betamimetic drugs as a standard treatment for nulliparous as well as multiparous women preceding the ECV after finishing this study. The use of tocolytics only in nulliparous women during our study period could be an important factor explaining the lack of statistical difference between nulliparous and multiparous women in terms of SR of ECV.

It will take some time to implement the new procedures and monitor the progression of the success rate. Further research is needed to identify other factors associated, possibly focussing more on circumstantial factors and the adequate selection of patients.

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