

Risk of cesarean delivery was increased after successful external cephalic version for breech presentation

Vézina Y, Bujold E, Varin J, Marquette GP, Boucher M. Cesarean delivery after successful external cephalic version of breech presentation at term: a comparative study. *Am J Obstet Gynecol* 2004; 190:763–8.

OBJECTIVE To determine if women who have had successful external cephalic version (ECV) are at greater risk of cesarean delivery than women with a fetus in spontaneous vertex presentation.

DESIGN Prospective, controlled cohort study.

SETTING Hospital in Canada.

SUBJECTS The ECV group consisted of 301 women who had undergone successful ECV, between 1987 and 2000, of a singleton fetus in breech presentation that remained in vertex presentation at delivery. The control group consisted of another 301 women, selected from the labour and delivery unit log book as the next woman of the same parity as each woman in the ECV group, who had no contraindication to labour and a singleton term fetus in spontaneous vertex presentation. The mean age of nulliparous women (50% of women) was 28 years and of multiparous women was 31 years.

INTERVENTION ECV was performed at ≥ 36 weeks gestation, with or without intravenous ritodrine as tocolytic, by one of two obstetricians. Information on pregnancy outcomes was obtained from the hospital records.

MAIN OUTCOME MEASURES Cesarean delivery, operative vaginal delivery.

MAIN RESULTS The mean gestational age at delivery was 39.9 weeks in the ECV group and 39.4

weeks in the control group for nulliparous women ($p < 0.01$) and 39.4 weeks in both groups for multiparous women. For both parity levels, the rates of induction of labour were similar between treatment groups, but the proportions of women who had epidural anesthesia were significantly higher in the ECV group. The cesarean delivery rate was significantly higher in the ECV group, compared to the control group, for both nulliparous women (30 vs 16%, $p < 0.01$) and multiparous women (20 vs 5%, $p < 0.0001$). The difference was due mainly to increased rates of dystocia in the ECV group at both parity levels and increased rates of non-reassuring fetal heart rate in multiparous women. The operative vaginal delivery rate was significantly higher in the ECV group for multiparous women (9 vs 3%, $p = 0.02$), but not for nulliparous women (21 vs 15%, $p = 0.23$). Controlling for confounding variables, such as maternal age, gestational age, birthweight, and use of epidural, the odds ratio for cesarean delivery in women with ECV was 2.0 (95% CI 1.1-3.7) for nulliparous women and 4.3 (CI 1.8-10.5) in multiparous women.

CONCLUSION The odds of cesarean delivery after successful external cephalic version was increased 2-fold in nulliparous women and 4-fold in multiparous women, compared to women with spontaneous vertex presentation.

External cephalic version (ECV) has been shown to be safe and effective in the management of breech presentation, with reported success rates ranging from 35 to 86%.¹ However, the incidence of intrapartum cesarean section (CS) following successful ECV has been reported to be as high as 20 to 31%.^{2,3}

In this prospective, controlled cohort study, the authors investigated 301 women who had undergone successful ECV and 301 matched controls with spontaneous vertex presentation. On multivariate analysis, controlling for maternal age, gestational age, birth weight, and use of epidural, the risk of CS was significantly increased in the ECV group, compared to the control group, for both nulliparous and multiparous women. The difference was due mainly to increased rates of dystocia in the ECV group at both parity levels and increased rates of non-reassuring fetal heart rate in the multiparous women.

These results agree with those in earlier reports. Using a prospective design, one study found that the incidence of intrapartum CS after ECV was 16.9%, 2.25 times higher than that of the control group.² The authors explained this difference by the 2.5-fold higher rate of intrapartum fetal distress (defined by pH < 7.20 in a fetal scalp blood sample) and the 2.8-fold higher rate of dystocia and augmentation of labor in the study group. Although all newborns had a 5-minute Apgar score of > 8 and no significant complications, the authors concluded that all pregnancies after successful ECV should be considered high risk. The same group of investigators recently published two additional related studies. One examined the Doppler ultrasonographic findings of the umbilical and middle cerebral circulations before and after ECV; no significant disturbance of placental resistance to blood flow was noted.⁴ However, the second study found a significant increase in the concentration of fetal DNA (a marker of fetal–maternal hemorrhage) in maternal serum after ECV, indicating that ECV causes a significant disturbance to the maternal–placental interface.⁵ Other researchers reported that fetuses in breech presentation without version are at higher risk of labor disorders or non-reassuring fetal heart rate patterns.⁶ Our retrospective study of 223 attempts of ECV yielded a relatively low success rate of 47%.⁷ The intrapartum CS rate was 3.2-fold higher in the study group than in the control group, which was matched for maternal age, gravidity, parity, and ethnic origin. However, the study group did not have a higher rate of non-reassuring fetal heart rate patterns associated with CS/instrumental delivery. We speculated that the higher rates of labor dystocia and malpresentation found in the study group could explain these results.

By contrast, two studies reported low CS rates following successful ECV (6 and 8%, respectively), but their overall CS rates were also very low (8 and 7%, respectively), relative to other reports in the literature.^{8,9} In another retrospective analysis, there was also no significant difference in the CS rate between those who underwent successful ECV (22.8%) and controls (23.4%).¹⁰

In a recent meta-analysis of six studies, including some of those mentioned above but not the present study, the CS rate was 27.6% in pregnancies after successful version and 12.5% in cephalic-presenting pregnancies (combined relative risk of 2.04,

95% CI 1.43–2.91).¹¹ The increased CS rate was accounted for, primarily, by higher rates of dystocia and fetal distress.

The reasons for the increase in labor dystocia in women with successful ECV remain unclear. Uterine anomalies or atypical maternal pelvis configuration may cause both an increased risk for fetal breech presentation and a higher risk of dystocia during labor. Alternatively, it is possible that, following the procedure, the fetal head is more likely to be unmolded, unengaged, or in an asynclitic position. An unfavorable cervix may also be associated with higher rates of labor induction and CS. Finally, women with successful ECV may have an increased uterine compliance that, in time, can lead to abnormal uterine contractility.⁷

In conclusion, although ECV for breech presentation is associated with an increased rate of CS compared to spontaneous vertex presentation, most women, particularly multipara, will still benefit from vaginal delivery. Nevertheless, proper patient selection and informed consent after adequate counseling, with emphasis on the expected success rate of ECV and the increased CS rate following successful ECV, are required.

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