Original Article

Comparison of Materials used in Facilitating External Cephalic Version

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Abstract

Introduction: External cephalic version (ECV) is a procedure to manipulate a fetus with breech presentation to the cephalic presentation through the maternal abdomen under ultrasound guidance. Talcum powder or aqueous gel is frequently used to facilitate ECV.

Materials & Methods: This retrospective descriptive study was conducted at POF Hospital, Wah from 10th Oct 2015- 10th Oct 2019. A total of 56 low-risk gravid women underwent ECV. Powder and gel use was compared in attaining a successful version.

Results: In the powder use group, 9 ECVs were successful and 19 ECVs were unsuccessful. In the gel use group, 12 ECVs were successful and 16 were unsuccessful. There were more successful ECVs in the gel group but the association was not significant (P value .408

Conclusion: Powder or gel is not superior over the other as an aid for achieving successful ECV through gel use is more satisfying for the provider than powder use in performing ECV. More studies are required regarding aids used in performing ECV for recommendations in clinical practice.

Keywords: ECV, gel, powder.

Introduction

A breech presentation in obstetrics is described as a fetus lying longitudinally with buttocks/feet occupying the lower segment and head in the upper segment of the uterus. The incidence of breech presentation at term is 3-4%.[1] Perinatal mortality and morbidity are increased with breech presentation as compared to the cephalic presentation.[2] There are fetal complications associated with vaginal breech delivery like fetal asphyxia, femur /clavicle fractures & head entrapment.[3] Perinatal mortality increases to 2-4 times with breech delivery irrespective of the mode of delivery.

Regarding a breech baby, there is 0.5/1000 risk of perinatal mortality with caesarean delivery after 39 weeks & 2/1000 with planned breech birth as compared to 1/1000 with planned cephalic birth.[1]

Most hospitals (nationally & internationally) perform caesarean delivery for breech presentation, especially after the Term Breech Trial.[4] The trial concluded that planned caesarean delivery significantly decreases perinatal mortality/morbidity in breech presentation as compared to planned vaginal delivery. The caesarean section rate for breech presentation started rising after the Term Breech Trial throughout the world. Caesarean rate for the breech presentation was 86.9% in the USA in the year 2002.[5] According to the WHO, caesarean section rate in any region should not be more than 10% as it does not decrease maternal & neonatal mortality rates.[6]

Performing external cephalic version (ECV) in breech presentations at term reduces the incidence of vaginal breech delivery and caesarean section for breech and hence reduces the risk of complications associated with them.[7] External cephalic version (ECV) is a procedure under ultrasound guidance to manipulate the fetus with the breech presentation to cephalic presentation through the maternal abdomen. It should be offered to low-risk gravid women with fetuses in breech presentations at 37 wks in multigravidas & 36 weeks in primigravidas. The success rate of ECV is variable, 50% on average Success levels are more for multiparous than nulliparous women, 60% & 40% respectively.[8] In our recently published study, we found multiparity unengaged breech & complete flexed breech as predictors of successful ECV, and the success rate of ECV was 48.2% in the study.[9]

There are few contraindications for ECV, like placenta previa, placental abruption, abnormal CTG/doppler, severe preclampsia & conditions where the indication for caesarean section is already present. The complication rate of ECV procedure is very low, only a 0.5% rate of emergency caesarean within 24 hrs is narrated due to abnormal CTG or vaginal bleeding.[10] Successful ECVs save the expense of caesarean sections.

ECV should be performed in a facility, where the adequate provision of ultrasound, caesarean section & experienced practitioner for ECV is available.

Before starting ECV talcum powder, aqueous gel or mineral oil is usually applied to the maternal abdomen. It helps to reduce the friction between the maternal skin and the practitioners' hands[11] & hence facilitates ECV. The use of these substances may also decrease maternal discomfort during the procedure. Their use reduces the chance of maternal abdominal injury, eases the movements of the hands of the practitioner, and increases the practitioners' satisfaction in performing ECV. Moreover, all of these substances are easily available and cost-effective. Talcum powder is low-priced for all three substances. The aqueous gel is used in doing ultrasound and ultrasound is a pre-requisite for ECV procedure hence there is no additional cost for the gel. It depends upon the choice of the practitioner which substance to use during ECV. Until now there is no standard recommendation to prefer the use of any one substance over the other. We compared talcum powder and gel use during ECV in our study.

Objectives:

1. To compare the use of talcum powder versus aqueous gel to attain a successful external cephalic version (ECV).
2. To compare the practitioner satisfaction level with the use of talcum powder versus aqueous gel in performing the external cephalic version (ECV).

Materials and Methods

This retrospective study was conducted from 10th Oct 2015 to 10th Oct 2019. It was done in POF hospital, Wah Cantt (OBGYN dept) by Wah Medical College, after approval from the ethical committee.

Inclusion Criteria

1. Low-risk primigravidas from 36 weeks up to 40 weeks gestation.
2. Low-risk multigravidas from 37 weeks up to 40 weeks gestation.

Exclusion Criteria

1. Primigravidas and multigravidas < than 36/37 weeks gestation respectively and > than 40 weeks gestation.

2. Women with absolute contraindication to ECV.[12]
3. Women with obstetrical and medical complications (i.e. Known or gestational diabetes, pregnancy-induced hypertension, intrauterine growth retardation & liquor abnormalities or others)
4. Abnormal cardiotocograph

A total of 56 low-risk gravid women underwent ECV. Those women who met the inclusion & exclusion criteria & consented to the procedure were selected for this study by using convenient consecutive sampling. Out of 56 women, 28 women were allocated gel & the rest of the 28 women were allocated talcum powder. Detailed history and examination including an ultrasound scan were done. ECV was done in the hospital (labour room) with facilities for fetal monitoring & emergency caesarean section. Baby talcum powder & USG (aqueous) gel was used for the comparison. Fetal wellbeing was assessed for 30-40 min by cardiotocography before and after the procedure. Ultrasound was performed to assess the position and wellbeing of the baby. Gel or talcum powder (as allocated) was applied to the maternal abdomen liberally. ECV was attempted by a single provider according to the standard ACOG protocol.[13] The fetal heart rate was checked every 2 minutes during ECV. Cross overuse to the other substance was done in the second attempt for unsuccessful ECVs.

The ECV was considered successful if the baby turned to the head down position (cephalic). It was confirmed by an ultrasound scan. Practitioner satisfaction (PS) was defined as the degree of ease with which, the provider performed ECV. It was based upon the ease or difficulty experienced by the provider with the material used during each ECV and was described as high, medium, or low satisfaction by the provider. If ECV was done with maximum ease, it was graded as high satisfaction, if intermediate ease, then medium satisfaction & if least ease, then minimum satisfaction. The women after ECV were retained in the hospital for 2-3 hours to observe any complications like uterine contractions, vaginal loss of fluid/blood, or decreased fetal movements. The women were allowed to go home if no problem was observed. The women were advised to come in an emergency if they experienced pain, vaginal loss of fluid/blood, or decreased fetal movements at any time, otherwise were instructed to come for an antenatal check-up after one week. Anti D immunoglobulin injection was given to RH-negative women to avoid maternal RH sensitization just after the procedure. The women included in the study were followed until their delivery.

Data was recorded & analysed on SPSS 22. Frequencies (percentages) of the data set were found by descriptive statistics. Chi-square test of association was used to find out the relationship between successful/unsuccessful ECV attempts with powder versus gel use, crossover to powder /gel use & practitioner's satisfaction level with powder versus gel use.

Results

A total of 56 ECVs were attempted. 28 were allocated to powder and 28 to gel use.

There were more successful ECVs with gel use than powder use but the association was not significant, P value being .408. (Table 1)

16 unsuccessful ECVs from gel use were reattempted with powder use (crossover to powder), 2 became successful while 14 remained unsuccessful. Unsuccessful ECVs from the powder use group were reattempted with gel use (crossover to gel). 4 ECVs became successful while 15 remained unsuccessful. More ECVs became successful on cross-over to gel use but again, the association was not significant, P value being 0.504.

Practitioner satisfaction level in performing ECV regarding the type of material used was high with gel use. (Table 2)

Table 1: No. of successful and unsuccessful attempts of ECVs with powder and gel (1st attempt)

Attempt	*Powder*	*Gel*	*P value*
successful	9 (32.1%)	12(42.9%)	.408
unsuccessful	19 (67.9%)	16 (57.1%)	
Total	28	28	

Table 2: Level of practitioner satisfaction in performing ECV with powder and gel respectively

Practitioner satisfaction	*Powder*	*Gel*	*P value*
High satisfaction	4(14.3%)	15(53.6%)	<
Medium satisfaction	7(25%)	11(39.3%)	.001
Low satisfaction	17(60.7%)	2(7.1%)	
Total	28	28	

Discussion

In our study, there are more successful ECVs in the gel use group than in the powder use group (42.9% versus

32.1%) but there is no significant association (P-value .408). The practitioner satisfaction is high with gel use than the powder use (53.6 versus 14.3%). Our results are similar to Vallikkannu et al study[14] in which there were 26 (55.3%) successful ECVs with gel use as compared to 21 (43.8%) successful ECVs with powder use. Though the difference between the two groups was also small in their study.

In our study, out of 19 failed ECVs (1st attempt with powder) were reattempted with gel, 4 became successful and 15 remained unsuccessful, while those of 16 ECVs, reattempted with powder (1st attempt with the gel), 2 were successful and 13 failed. Cross-over to gel use was associated with more successful ECVs than cross-over to powder use but again the association was not significant (P-value .504).

In Vallikkannu et al study there were also more successful ECVs on the cross over to gel. In their study, 13 unsuccessful ECVs were reattempted with gel, 5 ECVs were successful & 8 failed, while those 4 reattempted with powder, 1 was successful & 3 failed.

The second outcome of their study was the comparison of procedure-related maternal pain, which was less in the gel than in the powder.

The women included in our study did not complain of any pain during the procedure whether gel or powder was used. Though slight discomfort was present in some women it vanished as soon as the ECV was stopped. Furthermore, there were no complications related to the procedure except transiently decreased variability in 2 cases post ECV, which became normal after 15-20 minutes. This additional finding of low complication rate is similar to other studies.[15,16]

We could not find any other study in literature (local or international) except Vallikkannu et al study comparing powder versus gel use in facilitating external cephalic version up to date. Cochrane Database.[17] Of systematic reviews 2015, assessing various interventions in ECV, concluded that there wasn't enough evidence to prefer gel or powder used in terms of the success of ECV.

Regarding the practitioner's satisfaction in our study, it was high with gel than the powder. Practically it was easier for the practitioner to rotate the baby with gel rather than talcum powder as the gel aided in the smoothness of movement of the practitioner's hands by its lubricating effect. It also helped in doing an ultrasound intermittently to assess the position of the baby during the procedure. While using powder for ECV, assessment of the baby's position with USG during ECV was cumbersome as the powder and gel needed to be removed & reapplied on the maternal abdomen alternately to avoid clumping of powder with gel and hence, causing interruptions in doing ECV. Furthermore, in spite of removing the powder completely from the maternal abdomen before doing USG, some of the powder still managed to stay there and the gel applied to do USG on the maternal abdomen caused clumping of powder with gel and caused friction between practitioners' hands and skin of the maternal abdomen during the procedure.

There are a few limitations in our study like, the sample size was small as our hospital is mainly intended for the entitled patients (Ordinance workers and families). A single practitioner performed ECV which was advantageous for the 1st outcome, as there were no discrepancies between the performance (had there been more practitioners doing ECV, the success or failure could have been confounded by the experience of practitioners with the procedure) and disadvantageous for the 2nd outcome, as it included the opinion of one practitioner instead of having more opinions for satisfaction level on the use of powder/gel in performing ECV.

Conclusion

Among the materials used in performing ECV, powder or gel is not superior over the other in facilitating the success of the external cephalic version. Though gel is superior over the powder in terms of practitioner's satisfaction level in performing the procedure.

More studies should be done regarding materials facilitating external cephalic versions on a large scale so that the recommendations can be incorporated into clinical practice to increase the number of successful external cephalic versions (ECVs) & hence decrease caesarean section rate for breech presentation.

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