SUCCESS OF EXTERNAL CEPHALIC VERSION WITH TERBUTALINE AS TOCOLYTIC AGENT

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ABSTRACT

OBJECTIVE: To find out the role of Terbutaline in external cephalic version (ECV) in terms of successful version to cephalic presentation.

METHODS: This observational study was conducted in Peshawar Health Center (PHC), University Town, Peshawar, Pakistan from 15th August 2015 to 9th November 2016. Patients having uncomplicated breech presentation with 36-42 weeks' gestation and having no contraindication for ECV were included in the study. All patients were given Injection Terbutaline subcutaneously(s/c) 15 minutes before the procedure. ECV was performed by a single skilled consultant obstetrician. After the procedure the mother and the fetus were observed for any complication. Success was defined in terms of conversion of the fetus from breech to cephalic presentation. All the relevant data including demographic data was entered in a pre-designed proforma and was evaluated using SPSS version 17.

RESULTS: A total of 80 patients having uncomplicated breech fetuses at 36-42 weeks were included in the study. Mean age of the patients was 29.37±7.04 years. Twenty-nine were primigravida (36.25%), 38(47.5%) multigravida and 13(16.25%) were grand multi gravida. Success rate was 83.7%. There were no serious maternal or fetal complications except 2(2.5%) fetuses having transient bradycardia.

CONCLUSION: Terbutaline is a safe tocolytic drug for ECV in terms of successful version to cephalic presentation.

KEY WORDS: Terbutaline (MeSH), External cephalic version (Non-MeSH), Breech Presentation (MeSH).

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INTRODUCTION

The incidence of breech presentation at term is 3-4%.[1] There is controversy regarding the optimal route of delivery of breech presentation. In developed countries the rate of elective cesarean section for breech presentation is very high.[2] The Term Breech Trial (TBT) was terminated early in 2000 because there was significant reduction in the short term outcome e.g. perinatal mortality and morbidity while there was no increase in serious maternal complications in patients who underwent cesarean section for breech presentation as compared to breech vaginal delivery.[3] After the publication of this trial, there was an abrupt rise in the previous scar and its associated complication. In order to decrease the incidence of previous scar, Royal college of Obstetrician and Gynecologist (RCOG) and American College of Obstetrician and Gynecologist (ACOG) now recommend external cephalic version (ECV) as 1st option in selected cases.[4,5] According to ACOG, the decision regarding the mode of delivery for breech presentation at term are dependent on health care provider's expertise and experience. ECV is a low cost and low tech procedure which can lower the abdominal delivery rates and its associated complications.

In 2008 Kok M, et, al. documented the success rate of ECV to be 53%.[6] There are certain factors which increase the success of ECV e.g. parity, gestational age, amount of liquor, type of breech and relaxed uterus.[7-9] Another meta-analysis showed that ultrasound factors such as posterior placenta, complete breech and amniotic fluid index of 10cm or more were associated with successful ECV.[10] It is also known that tocolytics increase the success rate of ECV. Breech presentation was reduced by 41% by ECV without using tocolytics while with tocolytics the success rate was 57%.[11] Different strategies have been used to relax the uterus e.g. glyceral trinitrate, hypnotics, regional anaesthesia, fetal acoustic stimulation and sympathomymetic drugs.[12,13] Fernandez et al. has documented 52% success rate with 0.25mg subcutaneous Terbutaline as compared to 27% with placebo.[14]

We planned to conduct this study as limited studies are available in our setup to see the effect of Terbutaline in the external cephalic version and this might help others regarding management of breech presentation.

METHODS

This observational study was conducted in Peshawar Health Center (PHC), University Town, Peshawar, Pakistan from August 15, 2015 to November 9, 2016. A total of 80 patients were

included in the study through non-probability convenience sampling. Patients having breech presentation from 36-42 weeks were included in the study. While those having any contraindication to vaginal delivery e.g. placenta previa/abruption, those having non-reassuring cardiotocography (CTG), anomalous fetus, bad obstetric history, intrauterine growth retardation (IUGR), multiple pregnancy and maternal refusal were excluded from the study. Patients having one cesarean section previously were included in the study.

After selection, informed written consent was taken from all the parturient women. Detailed clinical and ultrasound examination were done to exclude any contraindication for ECV and also to confirm fetal wellbeing, back of the fetus and placental localization. All the ECV procedures were done in a fully equipped set up having facilities for CTG, emergency cesarean section and neonatal intensive care unit (NICU) facilities. Before starting the procedure bladder was emptied and non-stress test was done to ensure fetal wellbeing. Fifteen minutes before starting the procedure, 0.25mg Terbutaline was given subcutaneously (s/c).Patient was put in supine position with 15 degree left lateral tilt and ECV was performed in a routine/standard way by a single obstetrician. First forward roll was tried and if unsuccessful then backward flip. Fetal heart sounds were monitored by ultrasound during the procedure. After successful version, patient was monitored for 20-40 minutes for any maternal and fetal complication e.g. premature rupture of membranes (PROM), contractions, antepartum haemorrhage (APH) and fetal distress. Rh-negative patients were given anti-D prophylaxis. Procedure was halted if no success occurred in 15-20 minutes or maximum of 3 attempts were tried.

All the relevant data was entered in a predesigned proforma and analyzed using Statistical Package of Social Sciences (SPSS) version 17. The outcome measure included success rate of ECV in terms of conversion from breech to cephalic at the end of the procedure confirmed clinically and by ultrasound while secondary outcome measures include any maternal and fetal complication.

RESULTS

A total of 80 patients having uncomplicated breech fetuses (those having no contraindication at 36-42 weeks) were included in the study. Mean age of the patients was 29.37±7.04 years. Twenty-nine were primigravida (36.25%), 38 (47.5%) were multigravida and 13(16.25%) were grand multigravida. Most of the patients (76.25%) were having period of gestation from ≥36-40 weeks (Table I). Out of 80 patients, 67 (83.7%) were having successful ECV while 13 (16.25%) had unsuccessful ECV. Sub group analysis has shown that ECV was most successful in grand-multigravida with success rate of 100%, in multigravida it was 92% while in primigravida successful ECV was only possible in 55% cases. In successful ECV group 37 (55.22%) were having flexed breech and 30 (44.77%) were extended while in the failed ECV group only 1 (7.69%) was having flexed breech and 12 (92.3%) were extended breeches (Table II). There were no serious maternal or fetal complications except 2 (2.5%) fetuses having transient bradycardia (Table III).

DISCUSSION

Breech is the commonest mal-presentation at term. RCOG and ACOG recommend ECV in all uncomplicated breech presentations. Different techniques have been used to relax the uterus in order to improve the success of ECV. Terbutaline sulfate (Britanyl) has been used successfully in ECV.

In our study the success rate of ECV was 83.7%. Studies have reported 35-86% success rate of ECV, with an average figure of 50%.[15]Tasnim N et al. has documented 40.5% success with salbutamol, while Mohamed Ismail NA et al. has documented 58.1% in their studies.[16,17] Similarly in a randomized placebo controlled trial the rate of successful external cephalic version with Terbutaline was 52% as compared to 27% with placebo (p = 0.019).[14] In a double blind randomized trial by Collaris and Tan, subcutaneous terbutaline was compared to nifedipine and success rate of ECV was higher in the terbutaline group as compared to nifedipine (52% vs 34%).[18] Subcutaneous terbutaline significantly increases the success rate of external cephalic version and therefore decreasing the number of cesarean section for breech presentation.[19] The success rate in our study was almost doubled as compared to these studies.

The failure rate in our study was 13%. Extended breech presentation was present in 92.3% of the failed cases while only 7.69% were having flexed breeches. Our results were consistent with those of Arif W et al. that reported 85% success with flexed breech presentation as compared to 16% in extended breech presentations. This shows that failure rate related to fetal position is not influenced by tocolysis.[20]

Although studies have shown maternal and perinatal complications associated with ECV including rupture of

TABLE I: DEMOGRAPHIC DETAILS OF THE SAMPLE (n=80)

Parameters		Number (percentages)
Age (years)	≤ 20	11(13.75%)
	21-30	33(41.25%)
	31-39	28(35%)
	≥ 40	8(10%)
Parity	Nullipara	29(36.25%)
	Multipara	38(47.5%)
	Grandmultipara	13(16.25%)
Gestational age (weeks)	≥ 36-40	61(76.25%)
	>40-42	19(23.75%)

TABLE II: FACTORS AFFECTING THE SUCCESS OF EXTERNAL CEPHALIC VERSION (n=80)

Factors		Successful External Cephalic Version	Unsuccessful External Cephalic Version
Placental location	Anterior	14(20.8%)	7(53.8%)
	Posterior	14(20.8%)	5(38.46%)
	Fundal	39(58.2%)	1(7.69%)
Spine location	Right	32(47.76%)	8(61.53%)
	Left	35(52.2%)	5(38.46%)
Type of breech	Flexed	37(55.22%)	1(7.69%)
	Extended	30(44.77%)	12(92.3%)

TABLE III: COMPLICATIONS OF EXTERNAL CEPHALIC VERSION (n=80)

Complications	Number (percentages)
Fetal distress	2(2.5%)
Antepartum haemorrhage	0(0%)
Premature contractions	0(0%)
Premature rupture of membranes	0(0%)

membranes, ante partum haemorrhage, CTG abnormalities requiring emergency cesarean section.[21,22] In our study there was no major maternal or fetal complication except transient bradycardia in 2.5% cases which resolved spontaneously. In a review study including 7377 patients, transient bradycardia was observed in 6% of cases while persistent abnormality occurred in 0.4% cases.[23]

There are certain factors which increases the success of ECV, one of which is location of placenta. In a meta-analysis it was shown that anterior placental location was associated with less successful ECV, whereas in women with posterior placenta, ECV was successful more often (OR, 1.9). While fundal and lateral placental locations were not associated with ECV outcome.[24] In our study 58.2% of the successful cases were associated with posterior placenta. In the same study position of the fetal spine has an important role in the success of ECV. Anterior location tended to be associated with successful ECV (OR, 4) while lateral and posterior spine were not associated with ECV outcome (OR, 1.1 and 0.9).[25] In our study success of ECV was not influenced by the position of fetal spine.

CONCLUSION

Terbutaline 0.25mg given s/c before ECV, significantly increased the initial success rate of version to cephalic presentation. It is a safe drug as there were no significant maternal and fetal complications.

REFERENCES

1. Hannah ME, Hannah WJ, Hewson SA, Hodnett ED, Saigal S, William AR. Planned caesarean section versus planned vaginal birth for breech presentation at term: a randomised multicentre trial. Term Breech Trial Collaborative Group. Lancet 2000;356(9239):1375-83.
2. Hutton EK, Hofmery GJ, Dowswell T. External cephalic version for breech presentation before term. Cochrane Database Syst Rev 2015 Jul 29;(7): CD000084.DOI:10.1002/14651858.CD000084.pub3.
3. Su M, Hannah WJ, Willian A, Ross S, Hannah ME; Term Breech Trial Collaborative Group. Planned caesarean section decreases the risk of adverse perinatal outcome due to both labour and delivery complications in the Term Breech Trial. Br J Obstet Gynaecol 2004;111(10):1065-74.
4. Royal College of Obstetricians and Gynaecologists. Breech presentation management. Greentop guideline No.20b, London: RCOG press;2016:1-13.
5. Committee on Obstetric Practice. ACOG committee opinion. Mode of term singleton breech delivery. No.265, December 2001. American College of Obstetricians and Gynecologists. Int J Gynaecol Obstet 2002;77(1):65-6.
6. Kok M, Bais JM, van Lith JM, Papastsonis DM, Kleiverda G, Hanny D, et al. Nifedipine as a uterine relaxant for external cephalic version: a randomized controlled trial. Obstet Gynecol 2008;112(2,part1):271-6.
7. Choudhary SM, Ayaz A. Effort to reduce cesarean section rate. J Surg Pak 2003 March;08(1):25-7.
8. Ebner F, Friedl TW, Leinert E, Schramm A, Reister F, Lato K, et al. Predictor for a successful external cephalic version: a single centre experience. Arch Gynecol Obstet 2016 Apr;293(4):749-55.
9. Mowat A, Gardener G. Predictor of successful external cephalic version in an Australian maternity hospital. Aust N Z J Obstet Gynaecol 2014 Feb;54(1):59-63. DOI: 10.1111/ajo.12152.
10. Cho LY, Lau WL, Lo TK, Tang HH, Leung WC. Predictor of successful outcome after cephalic version in singleton term breech pregnancies: a nine year historical cohort study. Hong Kong Med J 2012;18(1):11-9.
11. Zandstra H, Mertens HJ. Improving external cephalic version for foetal breech presentation. Facts Views Vis Obgyn 2013;5(2):85-90.
12. Cluver C, Gyte GM, Sinclair M, Dowswell T, Hofmeyr GJ. Intervention for helping to turn term breech babies to head first presentation when using external cephalic version. Cochrane Database Syst Rev 2015 Feb 9;(2):

CD000184. DOI: 10.1002/14651858.CD000184.pub4. Epub 2015 Feb 9.

13. Robertson AW, Kopelman JN, Read JA, Duff P, Magelssen DJ, Dashow EE. External cephalic version at term: is a tocolytic necessary? Obstet Gynecol 1987 Dec;70(6):896-9.

14. Fernandez CO, Bloom SL, Smulian JC, Ananth CV, Wendel GD. A randomized placebo controlled evaluation of terbutaline for external cephalic version. Obstet Gynecol 1997 Nov;90(5):775-9.

15. Hofmeyr G. Interventions to help external cephalic version for breech presentation at term. Cochrane Database Syst Rev 2004;(1):CD000184.

16. Tasnim N, Mahmud G, Khurshid M. External cephalic version with salbutamol - success rate and predictors of success. J Coll Physcians Surg Pak 2009Feb;19(2):91-4. DOI: 02.2009/JCPSP.9194.

17. Ismail NAM, Ibrahim M, Naim NM, Mahdy ZA, Jamil MA, Razi ZRM. Nifedipine versus terbutaline for tocolysis in external cephalic version. Int J Gynaecol Obstet 2008 Sep;102(3):263-6.DOI: 10.1016/J.IJGO.2008.04.010

18. Collaris R, Tan PC.Oral nifedipine versus subcutaneous terbutaline tocolysis for external cephalic version: a double blind randomised trial. Br J Obstet Gynaecol 2009;116(1):74-80.

19. Salim R, Zafran N, Nachum Z, Edelstin S, Shalev E. Employing nifedipine as a tocolytic agent prior to external cephalic version. Acta Obstet Gynaecol Scand 2008;87(4):434-7. DOI: 10.1080/00016340801996598.

20. Arif W, Iqbal M, Lodhi SK. Outcome of external cephalic version in terms of success rate and fetomaternal complications. Ann King Edward Med Uni 2010 Jan-Mar:16(1):64-8. DOI: 10.21649/akemu.v16i1.142

21. Lim PS, Ng BK, Ali A, Shafiee MN, Kampan NC, Ismail NAM, et al. Successful external cephalic version: Factors predicting vaginal birth. Sci World J 2014;2014:860107. DOI: 10.1155/2014/860107.

22. Kathpalia S, Singh Y, Sharma R. Outcome of external cephalic version in breech presentation. Med J Armed Forces India 2012 Apr;68(2):151-3. DOI:10.1016/S0377-1237(12)60036-7.

23. El-Sayed YY, Pullen K, Riley TE, Lyell D, Druzin ML, Cohen SE, et al. Randomized comparison of intravenous nitroglycerine and subcutaneous terbutaline for external cephalic version under tocolysis. Am J Obstet Gynecol 2004 Dec;191(6):2051-5.

24. Kok M, Cnossen J, Gravendeel L, Van Der Post JA, Mol BW. Ultrasound factors to predict the outcome of external cephalic version: a meta-analysis. Ultrasound Obstet Gynecol 2009 Jan;33(1):76-84. DOI: 10.1002/uog.6277.

25. Wilcox CB, Nassar N, Roberts CL. Effectiveness of nifedipine tocolysis to facilitate external cephalic version: a systematic review. Br J Obstet Gynaecol 2011 Mar;118(4):423-8. DOI:10.1111/j.1471-0528.2010.02824.x

AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under:

BR: Concept & study design, acquisition, analysis & interpretation of data, drafting the manuscript, final approval of the version to be published

RK: Acquisition of data, drafting the manuscript, final approval of the version to be published

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

CONFLICT OF INTEREST

Authors declared no conflict of interest

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