ELMER PRESS

Original Article

J Clin Gynecol Obstet. 2020;9(1-2):3-11

Regional Differences in External Cephalic Version and Management of Vaginal Breech Delivery: A Survey in the Netherlands

Tessa J. Slutter[a, c], Danniek A.M. Vinkenvleugel[a], Maria G. van Pampus[a], Leonie E. van Rheenen-Flach[a], Brenda B. Hermsen[a], Joost Velzel[a, b]

Abstract

Background: This study aims to gain insight into external cephalic version (ECV) and regional differences in management of vaginal breech delivery in the Netherlands.

Methods: A nationwide online survey was sent to the obstetric department of each hospital (n = 80).

Results: The response rate was 81% (65 of 80 hospitals). All centers performed ECV and 98% offered ECV to more than 90% of the eligible women. ECV was mostly performed by gynecologists (89%). A special ECV outpatient clinic existed in 35% of the centers, ECV was conducted at the regular outpatient clinic in 15% and in 44% ECV was conducted in the clinic. For uterine relaxation atosiban (46%) was the most given, followed by ritodrine (32%), fenoterol (18%) and nifedipine (4%). All centers are experienced in vaginal breech delivery. Induction for obstetrical reasons was allowed in 72% and labor augmentation, if needed, was administered in 83% of the responders. Pain relief for vaginal breech delivery was offered in all centers when requested. A selected team of gynecologists assisting vaginal breech delivery existed in 28% of the centers. Preterm vaginal breech delivery was possible in 92% of the centers.

Conclusions: In the Netherlands, ECV is well implemented, and large variations in practice concerning ECV and the use of several tocolytic agents for ECV exist. Vaginal breech delivery at term is possible in all centers; however, intrapartum management of vaginal breech delivery differs among centers.

Keywords: External cephalic version; Breech presentation; Breech delivery; Survey

Manuscript submitted February 10, 2020, accepted April 6, 2020
Published online May 23, 2020

[a]Department of Obstetrics and Gynecology, OLVG, Amsterdam, The Netherlands
[b]Department of Obstetrics and Gynecology, Amsterdam UMC, The Netherlands
[c]Corresponding Author: Tessa J. Slutter, Department of Obstetrics and Gynecology, OLVG, Jan Tooropstraat 164, 1061AE, Amsterdam, The Netherlands. Email: sluttertessa@gmail.com

doi: https://doi.org/10.14740/jcgo624

Introduction

Breech presentation occurs in 3-4% of all term singleton pregnancies [1], and since the year 2000, management of breech presentation has changed considerably as Hannah et al published the Term Breech Trial [2]. In this trial women were randomized between planned vaginal breech delivery and elective cesarean delivery. They demonstrated a reduction in overall risk of perinatal and neonatal mortality (relative risk (RR): 0.23, 95% confidence interval (CI): 0.07 - 0.81) and morbidity (RR: 0.33, 95% CI: 0.19 - 0.56) in favor of elective cesarean delivery compared to planned vaginal breech delivery. As a consequence, after publication of the trial the overall cesarean delivery rate for breech presentation at term increased significantly worldwide [3]. Criticism on the trial followed and was mostly regarding methodological issues, incomplete follow-up and questions concerning safety, experience, equipment and clinical capability to perform breech deliveries [4, 5]. With all these critiques, doubts were raised about cesarean delivery as the dominant mode of delivery for breech presentation [6].

Traditionally, the preferred mode of breech presentation in the Netherlands has been vaginal; however, this has shifted towards elective cesarean delivery, and from 2000 onwards, an increase from 50% to 80% was observed [3]. The question therefore is whether vaginal breech delivery is still available and how this is regulated to guaranty safety.

A preventive method to decrease cesarean delivery rate for breech presentation is external cephalic version (ECV). This obstetrical manoeuvre reduces cesarean delivery significantly (RR: 0.46, 95% CI: 0.31 - 0.66) and is considered as a safe intervention [7, 8]. However, routine implementation remains not optimal and little is known about the best possible setting in which ECV should be performed to have the highest chance of success [9]. In the Netherlands, there is a national guideline for the management of breech presentation [10] in which ECV and vaginal breech delivery are reported. However, this guideline was published in 2008 and allows extensive policy.

Therefore, the aim of this survey is to gain insight into breech management in the Netherlands, to identify practice variation, to make implications for future research and for the best possible care in hospitals.

Table 1. Characteristics of Centers and Gynecologists

	No. (%) of responders
Type of centers	
General hospital	33 (51)
Teaching hospital	24 (37)
Academic hospital	8 (12)
Special interest	
Obstetrics	51 (78)
Other	14 (22)
Existence of written guideline for ECV	
Yes	59 (91)
No	6 (8)
Existence of written guideline for breech delivery	
Yes	55 (85)
No	10 (15)

ECV: external cephalic version.

Materials and Methods

A web-based survey was sent to all obstetric departments in the Netherlands, and therefore, 80 separate hospitals received an invitation to participate. Participants were asked to answer the survey by using SurveyMonkey®. A link to the questionnaire (Supplementary Material 1, www.jcgo.org) was sent by email in February 2018, and a reminder email was sent in March 2018 to all non-responders. The online survey was open till April 5, 2018.

Before sending the survey, every question was evaluated and improved by using the Question Appraisal System (QAS-99) [11]. The survey was reviewed and tested for face validity by a panel of four experts in obstetrics and specialized in breech management. The survey comprised 45 questions that covered three topics and included only closed-ended, multiple choice questions; adding personal comment was possible.

The outcome of the survey was analyzed for all responders together, and we only analyzed cases that completed the whole survey. Statistical analyses were performed using Microsoft Excel Office 2016 and SPSS Statistics for Macintosh, version 25.0 (IBM Corp., Armonk, NY, USA). This study was conducted in compliance with all the applicable institutional ethical guidelines for the care, welfare and use of animals (Institutional Review Board (IRB) approval).

Results

A total of 65 responders completed the survey, which corresponds with a response rate of 81%. All academic centers answered the questionnaire. A guideline about ECV was available in 59 (91%) centers and a guideline about breech delivery was available in 56 (85%) centers (Table 1).

ECV

Table 2 demonstrates practice for ECV among the centers in the Netherlands. All centers performed ECV and 98% offered it to > 90% of eligible women. A minority, 18 hospitals performed ECV before 36 weeks of gestation. The procedure on performing ECV varied, in 19% of the responders ECV was always performed by one person, in 36% always by two and in 45% it varied. Performers were mostly obstetricians or midwives (89% and 55%, respectively). Among the responders, 8% reported to have a success rate of 50-75% in primiparous women, and 48% reported to have a success rate of 50-75% in multiparous women. Electronic fetal monitoring was performed before every ECV attempt in 95% of the centers and in 100% of the centers after ECV. A special ECV consultation took place in 35% of all responders, in 15% ECV was conducted at the regular outpatient clinic, and in the majority (44%) ECV was performed in the clinic. The other four responders (6%) described combinations of the options mentioned. The use of uterine relaxants was offered by 77% of the responders, 46% administered the oxytocin receptor blocker atosiban, 18% administered fenoterol, 32% ritodrine and 4% nifedipine. Only one respondent offered epidural anesthesia during ECV.

Breech delivery

Table 3 demonstrates the outcome concerning breech delivery. All centers offered vaginal breech deliveries with a widespread from < 5 to > 30 planned vaginal breech deliveries in 2016. Of these planned vaginal breech deliveries, intrapartum cesarean

Table 2. ECV

	No. (%) of responders
Is ECV offered?	
Yes, offered to > 90% of patients with breech presentation	64 (98)
Yes, offered to > 50% of patients with breech presentation	1 (2)
Minimum term for ECV	
34 weeks of gestation	2 (4)
35 weeks of gestation	16 (36)
36 weeks of gestation	27 (60)
No answer	20
Maximum term for ECV	
37 weeks of gestation	4 (6)
38 weeks of gestation	9 (14)
39 weeks of gestation	8 (12)
40 weeks of gestation	11 (17)
41 weeks of gestation	10 (15)
42 weeks of gestation	21 (33)
No answer	2 (3)
Maximum number of separate ECV attempts	
1	6 (9)
2	49 (75)
3	8 (12)
4	2 (3)
By whom is ECV performed (multiple answers possible)?	
Obstetrician	57 (89)
AIOS (resident)	15 (23)
Clinical midwife	35 (55)
ANIOS (pre-registration house officer/intern)	3 (5)
Midwife	12 (19)
No answer	1
Is ECV performed by one or two people?	
Always one	12 (19)
Always two	23 (36)
Variable	29 (45)
No answer	1
Time taken for an ECV	
< 15 min	13 (20)
15 - 30 min	39 (60)
30 - 45 min	12 (18)
No answer	1 (2)
Setting of an ECV attempt	
During a special ECV outpatient clinic	22 (35)
ECV is conducted during regular outpatient appointment	10 (15)
ECV is conducted in the clinic	29 (44)
Other	4 (6)

Table 2. ECV - *(continued)*

	No. (%) of responders
Local ECV registration	
Yes	46 (73)
No	17 (27)
No answer	2
Center success rate of ECV in general	
< 25%	2 (3)
25-50%	38 (60)
50-75%	23 (37)
No answer	2
Center success rate of ECV on primigravidae	
< 25%	9 (14)
25-50%	37 (58)
50-75%	5 (8)
Unknown	13 (20)
No answer	1
Center success rate of ECV on multigravidae	
25%	0 (0)
25-50%	13 (20)
50-75%	31 (48)
> 75%	7 (11)
Unknown	14 (22)
Center success rate after a first failed attempt by a midwife in primary care	
< 25%	9 (14)
25-50%	10 (16)
70-75%	0 (0)
> 75%	0 (0)
Unknown	45 (70)
No answer	1
Is electronic fetal monitoring performed before ECV?	
Yes, always	61 (95)
Yes, sometimes	2 (3)
No, never	1 (2)
No answer	1
Is electronic fetal monitoring performed after ECV?	
Yes, always	65 (100)
Uterine relaxant offered for ECV	
Yes, with every attempt	35 (54)
Yes, only with primigravidae	1 (2)
Yes, from the second attempt	4 (6)
Yes, under other conditions	10 (15)
No	15 (23)
If yes, which uterus relaxants?	
Atosiban	23 (46)

Table 2. ECV - *(continued)*

	No. (%) of responders
Fenoterol	9 (18)
Ritodrine	16 (32)
Nifedipine	2 (4)
Administration of pain relief for ECV	
Yes	1 (2)
No	64 (98)
If yes, which painkiller?	
EDA	1 (100)
Remifentanil	0 (0)
If no, if pain relief would be effective, would you offer it?	
Yes	56 (88)
No	8 (12)

ECV: external cephalic version; EDA: epidural analgesia.

Table 3. Breech Delivery

	No. (%) of responders
Does your center offer vaginal breech deliveries?	
Yes	65 (100)
Amount of started planned vaginal breech deliveries in 2016	
< 5	5 (8)
5 - 15	28 (43)
15 - 30	20 (31)
> 30	12 (19)
How did you come to this answer?	
Through the annual report	9 (14)
Through a national registration	15 (23)
It is an estimation	41 (63)
Percentage ended in cesarean delivery	
< 25%	5 (8)
25-50%	40 (63)
50-75%	17 (27)
> 75%	1 (2)
No answer	2
Percentage of women with breech presentation opting for elective cesarean delivery	
< 25%	2 (3)
25-50%	8 (13)
50-75%	25 (39)
> 75%	29 (45)
No answer	1
How did you come to this answer?	
The annual report	7 (11)
PRN	9 (14)
It is an estimation	48 (75)
No answer	1

Table 3. Breech Delivery - *(continued)*

	No. (%) of responders
Breech deliveries in an upright position	
Yes	19 (29)
No	46 (71)
Inducing delivery when indicated in case of breech position	
Yes	47 (72)
No	18 (28)
Labor augmentation in breech presentation	
Yes	53 (83)
No	11 (17)
No answer	1
Options for pain relief during breech delivery	
Yes, epidural anesthesia, remifentanil or other pain-relieving medication	49 (75)
Yes, only epidural anesthesia	16 (25)
Yes, only remifentanil	0 (0)
No	0 (0)
Epidural administration prophylactically given during breech delivery	
Yes	2 (3)
No	63 (97)
Limited number of gynecologists that supervises a breech delivery	
Yes	18 (28)
No	47 (72)
Operation team present in the hospital during a planned vaginal breech delivery	
Yes	28 (43)
Yes, from the latest part of dilatation phase	24 (37)
No	13 (20)
Operation team informed about the presence of a breech delivery	
Yes	35 (56)
No	28 (44)
No answer	2
Operation team informed about the start of the second stage	
Yes	42 (65)
No	23 (35)
Vaginal breech delivery possible in case of in premature delivery	
No	5 (8)
Yes, with every term	39 (61)
Yes, from 34 weeks of gestation	17 (27)
Yes, from 35 weeks of gestation	2 (3)
Yes, from 36 weeks of gestation	1 (2)
No answer	1
Way of counselling a premature pregnant woman with breech presentation	
Conform a full-term breech presentation	26 (40)
More pro vaginal than full-term breech presentation	21 (32)
More pro cesarean than full-term breech presentation	16 (25)
No answer	2 (3)

PRN: Perinatale registratie Nederland.

delivery was performed in < 25% of the women by 8% of the responders and in > 75% of the cases by 2% of the responders. Most responders (45%) answered that > 75% of the women chose for an elective cesarean delivery in cases of breech presentation. In 20% of the centers there was no operation team in the hospital during a vaginal breech delivery. Concerning preterm vaginal breech delivery, in 92% of the centers this is available.

Induction of labor in breech presentation when indicated took place in 72% of the centers. Moreover, 83% of the responders reported performing augmentation of labor in women with breech presentation when indicated. Nineteen centers (29%) perform vaginal breech deliveries in an upright position. All centers offer pain relief and two (3%) responders reported that prophylactic epidural anesthesia was advised during a breech delivery. A special vaginal breech delivery team of gynecologists performing vaginal breech delivery is present in 28% of the responding centers.

Discussion

Our study provides novel insight on current practice in the management of breech presentation in the Netherlands. Although ECV is widely performed and vaginal breech delivery still exists in every center, large variation in practice is observed.

Strengths and limitations

Compared to previous surveys among gynecologists, our study had a very high response rate [12-14]. A reason for this could be that our approach as this was different compared to other surveys. Instead of sending a mass mail, which is done in the majority of survey studies, we chose a personnel method. One dedicated gynecologist per center was approached personally and asked to answer the questionnaire on behalf of the center they worked for. This method resulted in a high response rate; for example, all academic centers answered the questionnaire and could therefore be a fair representation for the management of breech presentation. However, this could be a limitation as well, as selection bias could arise by one gynecologist representing their center. Although we aimed to include the most representative gynecologist in the field of breech presentation of each center, it is possible that there is practice variation between gynecologists in the same center. This could result in reporting bias. Another limitation is the type of questions in our survey. To be able to increase generalizability, multiple choice questions were used, which may not always totally reflect the actual practice in centers. For example, we asked about if ECV was offered to more than 90% of eligible women, but we did not specifically ask about the eligible criteria in the hospitals. A third limitation is that social desirability bias could arise as it is plausible that responders could fill in the most acceptable answers which could result in an underestimation of the practice variation, which is supported by the fact that around 70% of the respondents stated that some of their answers were a guess instead of looking it up in the annual report. Moreover, we are aware of the fact that this survey reflects only the practice in the Netherlands. Additionally, extending this survey to more countries could offer more insight in practice variation on this topic.

Interpretations

To discuss our results further, it is important to notice that obstetric care in the Netherlands, compared to other countries, is organized differently by the use of an echelon system into primary and secondary care. Pregnant women are categorized into low-risk (primary) or high-risk (secondary) and can be referred. In the case of low risk, community midwives guide pregnancy and delivery (at home, birth centers, or hospitals) without involvement of doctors. In case of high risk, guidance and monitoring are performed in hospitals (general or academic). These women will be attended by clinical midwives, residents in obstetrics and gynecology or an obstetrician-gynecologist. ECV can be conducted in primary and secondary care, but breech delivery is considered high risk and therefore secondary care.

ECV

Our findings demonstrate a high implementation rate of ECV in the Netherlands. All responders reported that ECV was performed in their center, and in 98% ECV was offered to more than 90% of eligible women. Compared to a previous study on implementation of ECV, a large increase is observed [15]. However, the results of this survey implicate a widespread in practice concerning ECV including performer, setting, timing and the use of tocolytic agents. It is important to stress that some evidence concerning these topics is present. First, it is believed that performing ECV with a trained team, in a special ECV office setting, increases the success rate and therefore lowers the rate of cesarean delivery [16]. However, information is lacking on an operator effect and evidence-based learning programs on improvement of skills and the existence of a minimal number of ECV attempts per year needed to remain experienced needs to be explored. Further, timing of ECV varies among centers,18 centers in the Netherlands perform ECV before 36 weeks of gestation. A recent review demonstrates an increased rate of cephalic presentation when ECV performed between 34 and 35 weeks of gestation (early group) compared to 37 weeks of gestation (late group); however, early ECV may increase the risk of preterm labor [17]. Therefore, it is important that future research reports infant morbidity outcomes. Another issue of concern is the widespread of implementation of atosiban, an oxytocin receptor blocker, for ECV among Dutch centers. This type of tocolytic agent is not effective for ECV compared to a beta-mimetic, demonstrated by the largest randomized controlled trial (for successful ECV RR: 0.73, 95% CI: 0.55 - 0.93) [18]. Therefore, atosiban should be discouraged for this purpose and a beta-mimetic should be used. In our opinion, an ECV attempt needs to be undertaken when

chances of success are optimized which reflects best setting, offering uterine relaxant medication and being performed by trained personnel who perform ECV frequently.

Vaginal breech delivery

Even though our study demonstrates that vaginal breech delivery is generally offered in the Netherlands, management varies widely in terms of labor augmentation, induction, maternal position in the second stage and the presence of a stand-by operation team. This variation could be due to a lack of evidence, which is present for augmentation and induction. However, it is important to notice that a stand-by operation team could be beneficial as labor complications, including the need for cesarean delivery, are more common in breech delivery compared to cephalic presentation indicated by previous studies [6, 19]. Moreover, a prospective cohort study concluded that a vaginal delivery in upright position instead of on the back reduces delivery manoeuvres (odds ratio (OR): 0.45, 95% CI: 0.31 - 0.68) and neonatal birth injuries (OR: 0.08, 95% CI: 0.01 - 0.58) [20]. More research is needed to confirm this finding.

Another important result from our study is that vaginal breech delivery can still be undertaken in every center in the Netherlands. In our survey, only 28% of all centers reported that there is a special vaginal breech delivery team with a limited number of gynecologists who supervise a breech delivery. Considering our findings and the low incidence of planned vaginal breech deliveries a year (1,350 in 2017) [21], a Dutch gynecologist will supervise one or less vaginal breech delivery a year. It is plausible to assume that a gynecologist who supervise one vaginal breech delivery a year is not capable to perform a safe vaginal breech delivery. The question arises if centralization could be beneficial in terms of the neonatal outcome. As the PREMODA study group demonstrated that vaginal breech delivery could be safe in a dedicated center; nevertheless, they do not report on an annual number to remain dedicated [6]. Besides that a recent survey in the Netherlands demonstrated that more than half of Dutch residents and starting gynecologists judge the current resident program to be insufficient for guiding vaginal breech deliveries [22]. Centralization care of breech presentation could be beneficial for both neonatal and maternal outcomes and should be highlighted as topic for future research.

In case of preterm breech delivery, the preferred mode of delivery is not established. This is also reflected by the outcome of our study as there is a widespread in counselling towards vaginal (33%) and cesarean delivery (26%) in preterm breech presentation. Even though a systematic review concluded that in preterm breech deliveries a cesarean delivery reduces the neonatal mortality compared to a vaginal delivery (pooled RR: 0.63, 95% CI: 0.48 - 0.81), randomized controlled trials (RCTs) on this topic are lacking [23]. Future research should focus on this clinical dilemma, taking into account long-term neonatal follow-up and subsequent pregnancies.

Conclusions

This survey demonstrates practice variation in the management of breech presentation for both ECV and vaginal breech delivery in the Netherlands. This practice variation shows that there is a great need for future research. Variables that should be given priority are: the best setting for ECV, preferred mode of delivery for preterm breech and centralization of breech deliveries.

Supplementary Material

Suppl 1. Full questionnaire.

Acknowledgments

None to declare.

Financial Disclosure

None to declare.

Conflict of Interest

None to declare.

Informed Consent

Not applicable.

Author Contributions

TJS provided the design of the study, contributed to acquisition of data, analysis and interpretation of data, drafted the article, revised it critically for important intellectual content, and gave final approval of the version to be submitted. JV provided the design of the study, and supplied the design of study, analysis and interpretation. MGP supplied the acquisition of data, was responsible for the article critically for important intellectual content and gave final approval of the version to be submitted. DAMV, LER, and BBH were responsible for the article critically for important intellectual content and gave final approval of the version to be submitted.

Data Availability

Any inquiries regarding supporting data availability of this study should be directed to the corresponding author.

References

1. Hickok DE, Gordon DC, Milberg JA, Williams MA, Daling JR. The frequency of breech presentation by

gestational age at birth: a large population-based study. Am J Obstet Gynecol. 1992;166(3):851-852.
2. Hannah ME, Hannah WJ, Hewson SA, Hodnett ED, Saigal S, Willan 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):1375-1383.
3. Rietberg CC, Elferink-Stinkens PM, Visser GH. The effect of the Term Breech Trial on medical intervention behaviour and neonatal outcome in The Netherlands: an analysis of 35,453 term breech infants. BJOG. 2005;112(2):205-209.
4. Glezerman M. Five years to the term breech trial: the rise and fall of a randomized controlled trial. Am J Obstet Gynecol. 2006;194(1):20-25.
5. Hunter LA. Vaginal breech birth: can we move beyond the Term Breech Trial? J Midwifery Womens Health. 2014;59(3):320-327.
6. Goffinet F, Carayol M, Foidart JM, Alexander S, Uzan S, Subtil D, Breart G, et al. Is planned vaginal delivery for breech presentation at term still an option? Results of an observational prospective survey in France and Belgium. Am J Obstet Gynecol. 2006;194(4):1002-1011.
7. Hofmeyr GJ, Kulier R, West HM. External cephalic version for breech presentation at term. Cochrane Database Syst Rev. 2015;4:CD000083.
8. Beuckens A, Rijnders M, Verburgt-Doeleman GH, Rijninks-van Driel GC, Thorpe J, Hutton EK. An observational study of the success and complications of 2546 external cephalic versions in low-risk pregnant women performed by trained midwives. BJOG. 2016;123(3):415-423.
9. Vlemmix F, Rosman AN, Rijnders ME, Beuckens A, Opmeer BC, Mol BW, Kok M, et al. Implementation of client versus care-provider strategies to improve external cephalic version rates: a cluster randomized controlled trial. Acta Obstet Gynecol Scand. 2015;94(5):518-526.
10. NVOG - Nederlandse vereniging voor Obstetrie & Gynaecologie. STUITLIGGING Versie 2.0.; 2008.
11. Willis GB, Lessler JT. Question Appraisal System - QAS-99. 1999. http://www.websm.org/uploadi/editor/1364216022Willis_Lessler_1999_QAS_99.pdf. Accessed January 17, 2018.
12. Velzel J, Roovers JP, Van der Vaart CH, Broekman B, Vollebregt A, Hakvoort R. A nationwide survey concerning practices in pessary use for pelvic organ prolapse in The Netherlands: identifying needs for further research. Int Urogynecol J. 2015;26(10):1453-1458.
13. van Wessel S, Hamerlynck T, Schoot B, Weyers S. Hysteroscopy in the Netherlands and Flanders: A survey amongst practicing gynaecologists. Eur J Obstet Gynecol Reprod Biol. 2018;223:85-92.
14. Baas MAM, Scheepstra KWF, Stramrood CAI, Evers R, Dijksman LM, van Pampus MG. Work-related adverse events leaving their mark: a cross-sectional study among Dutch gynecologists. BMC Psychiatry. 2018;18(1):73.
15. Vlemmix F, Rosman AN, te Hoven S, van de Berg S, Fleuren MA, Rijnders ME, Beuckens A, et al. Implementation of external cephalic version in the Netherlands: a retrospective cohort study. Birth. 2014;41(4):323-329.
16. Kuppens SM, Hasaart TH, van der Donk MW, Huibers M, Franssen MJ, de Becker BM, Wijnen HA, et al. [Fewer caesarean sections for breech presentation following external cephalic version according to a protocol in a special office visit]. Ned Tijdschr Geneeskd. 2008;152(23):1323-1328.
17. Hutton EK, Hofmeyr GJ, Dowswell T. External cephalic version for breech presentation before term. Cochrane Database Syst Rev. 2015;7:CD000084.
18. Velzel J, Vlemmix F, Opmeer BC, Molkenboer JF, Verhoeven CJ, van Pampus MG, Papatsonis DN, et al. Atosiban versus fenoterol as a uterine relaxant for external cephalic version: randomised controlled trial. BMJ. 2017;356:i6773.
19. Vlemmix F, Bergenhenegouwen L, Schaaf JM, Ensing S, Rosman AN, Ravelli AC, Van Der Post JA, et al. Term breech deliveries in the Netherlands: did the increased cesarean rate affect neonatal outcome? A population-based cohort study. Acta Obstet Gynecol Scand. 2014;93(9):888-896.
20. Louwen F, Daviss BA, Johnson KC, Reitter A. Does breech delivery in an upright position instead of on the back improve outcomes and avoid cesareans? Int J Gynaecol Obstet. 2017;136(2):151-161.
21. Perined. Perinatale Zorg in Nederland 2017. Utrecht: Perined, 2019. http://www.perinatreg-data.nl/JB2017/Jaarboek2017.html. Accessed July 2, 2019.
22. Post WM, Vlemmix F, de Hundt M, van Rheenen LE. Does vaginal breech delivery have a future despite low volumes for training? Results of a questionnaire. Eur J Obstet Gynecol Reprod Biol. 2018;229:123-126.
23. Bergenhenegouwen LA, Meertens LJ, Schaaf J, Nijhuis JG, Mol BW, Kok M, Scheepers HC. Vaginal delivery versus caesarean section in preterm breech delivery: a systematic review. Eur J Obstet Gynecol Reprod Biol. 2014;172:1-6.