Beyond successful external cephalic version

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Chapter 8

A national survey to measure practice variation in the screening for developmental dysplasia of the hip after breech presentation

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Abstract

OBJECTIVES

To inquire the current practice of screening for developmental dysplasia of the hip (DDH), after successful external cephalic version and breech delivery, in hospitals in the Netherlands.

METHODS

An online questionnaire was sent to obstetric professionals in 92 hospitals in the Netherlands.

RESULTS

The response rate was 75/92 (82%). All hospitals had the possibility to offer external cephalic versions (ECV). There were 51/75 (68%) hospitals that had a registration system for ECV attempts. In 60/75 (80%) of the hospitals a paediatrician was consulted after breech delivery, while in 14/75 (19%) of the hospitals a paediatrician was consulted after birth of a neonate in cephalic presentation after successful ECV. Neonates were referred for ultrasound examination of the hip after birth in breech presentation in 65/75 (87%), and in 20/75 (27%) of the hospitals this was done after birth in cephalic presentation after successful ECV.

CONCLUSIONS

There is a large practice variation in the screening for DDH in neonates born in breech presentation in hospitals in the Netherlands. This practice variation underlines the need for more knowledge on the subject, resulting in national guidelines.

Introduction

Developmental dysplasia of the hip (DDH) represents a spectrum of anatomical abnormalities in the shape, size and orientation of the femoral head, acetabulum or both. The precise definition of DDH is not well established and DDH covers a wide range of severity, ranging from minor dysplasia to irreducible dislocation.[1] DDH is the most common musculoskeletal disorder in the newborn, with an estimated incidence ranging from 1.4 to 35 cases per 1000 live births, depending on the definition and population being studied.[1,2] This large range in incidence has probably more to do with how the disorder is defined, the diagnostic method and timing of evaluation, than the true population variance.[2] In the Netherlands the incidence of DDH is estimated to be around 1-3% and the incidence of hip dislocation at 0.4%.[3,4]

Screening for DDH is part of the programme for child health surveillance and takes place in publicly financed centres for the health surveillance and care for all neonates and children. The current Dutch screening programme involves physical examination of all infants from four weeks of age until six months of age, and additional ultrasound screening, at three months of age, in case of abnormalities at physical examination or risk factors for DDH.[5] The risk factors considered are, a positive family history of DDH in first or second-degree relatives, a breech presentation in the last trimester or congenital postural or foot deformities.[5] This includes neonates born in cephalic presentation after successful external cephalic version (ECV), since these neonates were still in breech presentation in the last trimester of pregnancy. Visits to the child health centres are voluntarily and the first visit is at four weeks of age. In case of breech presentation, the delivery will always take place in a hospital, which provides the opportunity to screen for DDH directly after birth or to schedule an ultrasound examination. There are no recommendations for this screening implemented in our national obstetric guideline for breech presentation.[6] The aim of this study was therefore, to survey the current practice of screening for DDH after birth, in breech presentation and breech presentation in the last trimester, in hospitals in the Netherlands.

Materials and methods

We developed an online questionnaire, which was sent by email to one obstetric professional of all 92 hospitals in the Netherlands (eight academic, 37 non-academic teaching and 47 non-academic nonteaching hospitals). A reminder was sent to non-responders two and three months after the first request.

The questionnaire consisted of multiple-choice questions and provided space for additional remarks. We inquired whether external cephalic version (ECV) was performed in their hospital and whether there was a registration system for ECV attempts. We inquired whether consultation of a paediatrician took place after breech delivery. Furthermore, we inquired whether clinical hip examination took place with the modified Ortolani and Barlow test, and if so who performed this examination and whether this professional was trained for this examination. Finally, we inquired whether an appointment was made for sonographic evaluation of the hips at three months of age. The questions were all proposed for neonates born after breech delivery and neonates born in cephalic presentation after successful ECV.

Results

The response rate of the questionnaire was 75/92 (82%), of which five (out of 8, 63%) academic, 29 (out of 37, 78%) non-academic teaching and 41 (out of 47, 87%) non-academic non-teaching hospitals.

The responses inquired by this survey are summarized in Table 1, while additional remarks are stated in the Appendix. All respondents (100%) reported that ECVs were performed in their hospital. Only 51/75 (68%) of the hospitals registered ECV attempts. More teaching and nonteaching hospitals had a registration system compared to academic hospitals.

Table 1 - inquiries of national survey

	Total n=75 n (%)	Academic n=5 n (%)	Non-academic teaching n=29 n (%)	Non-academic nonteaching n=41 n (%)
ECV registration				
Yes	51 (68.0)	1 (20.0)	22 (75.9)	28 (68.3)
No	24 (32.0)	4 (80.0)	7 (24.1)	13 (31.7)
Consultation paediatrician				
Yes	60 (80.0)	3 (60.0)	20 (69.0)	37 (90.2)
No	10 (13.3)	2 (40.0)	4 (13.8)	4 (9.8)
Sometimes	5 (6.7)	0	5 (17.2)	0
Clinical hip examination				
Yes	35 (46.7)	0	11 (37.9)	24 (58.5)
No	28 (37.3)	2 (40.0)	9 (31.0)	15 (36.6)
Sometimes	1 (1.3)	0	1 (0.3)	0
Don't know	11 (14.7)	3 (60.0)	8 (27.6)	2 (4.9)

	Total n=75 n (%)	Academic n=5 n (%)	Non-academic teaching n=29 n (%)	Non-academic nonteaching n=41 n (%)
Clinical hip examination after ECV				
Yes	14 (18.7)	0	6 (20.7)	8 (19.5)
No	32 (42.7)	4 (80.0)	13 (44.8)	15 (36.6)
Sometimes	11 (14.7)	1 (20.0)	2 (6.9)	8 (19.5)
Don't know	18 (24.0)		8 (27.6)	10 (24.4)
US referral				
Yes	65 (86.7)	5 (100)	21 (72.4)	39 (95.1)
No	3 (4.0)	0	3 (10.3)	0
Sometimes	2 (2.7)	0	0	2 (4.9)
Don't know	5 (6.7)	0	5 (17.2)	0
US referral after ECV				
Yes	20 (26.7)	1 (20.0)	9 (31.1)	10 (24.4)
No	38 (50.7)	2 (40.0)	15 (51.7)	21 (51.2)
Sometimes	9 (12.0)	2 (40.0)	2 (6.9)	5 (12.2)
Don't know	8 (10.7)	0	3 (10.3)	5 (12.2)

ECV, external cephalic version, US, ultrasound

CLINICAL EXAMINATION

In 60/75 (80%) of all breech birth a paediatrician was consulted, and differences ranged from 3/5 (60%) in the academic to 37/47 (90%) in the non-academic nonteaching hospitals. Clinical examination of the hips of neonates born in breech presentation, by the Ortolani and Barlows test, was performed according to the respondents in 35/75 (47%) of the hospitals. Overall, 28/75 (37%) responded that this examination was not performed and 11/75 (15%) of the respondents were unaware whether this examination was performed or not. When clinical hip examination was performed, according to our respondents, this was performed in 32/35 (91%) by either a paediatrician or paediatric resident. 3/35 (9%) of the respondents stated that obstetric residents performed clinical hip examination. The professional performing clinical hip examination was trained for this examination according to 14/35 (40%) of the respondents, 21/35 (60%) answered that they were not sure whether the person performing the examination was trained for it.

When a neonate was born in cephalic presentation after successful ECV, consultation of a paediatrician for clinical hip examination took place in 14/75 (19%) of the hospitals, ranging from none of the academic, to 6/29 (21%) of the teaching hospitals (Table1).

ULTRASONOGRAPHY

Sonographic evaluation of the neonatal hips, for neonates born in breech presentation, was arranged by 65/75 (87%) of the responding hospitals. Overall, 3/75 (4%) of the respondents answered that no appointment for ultrasonography was made and in 5/75 (7%) the respondent did not know whether an appointment was made. Two respondents placed an additional remark that an X-ray of the neonatal hip, instead of an ultrasound, was made at three months of age. Five respondents stated that child health centres arranged ultrasound hip examination.

When a neonate was born in cephalic presentation after successful ECV an appointment for ultrasound evaluation of the hips was made in 20/75 (27%) of all the hospitals, ranging from 1/5 (20%) in the academic, to 9/29 (31%) in the non-academic nonteaching hospitals (Table 1).

Discussion

In this study, we investigated the current practice of screening for DDH both after breech delivery and delivery after successful ECV, in 75 hospitals in the Netherlands. Our main finding is that there is a large practice variation in the screening policy applied in different hospitals.

Considering the 82% response rate of our survey we consider that this survey resulted in a fair reflection of the routine policy in hospitals in the Netherlands, since a response rate over 70% has been reported to limit bias.[7,8] There was a good distribution of response rates among different hospital types, academic, non-academic teaching and non-academic nonteaching hospitals.

In the screening of DDH there are different health care professionals involved. In this survey we only inquired the screening policy from an obstetric view. We acknowledge that a survey among all involved health care providers would provide us with a better insight. The fact that some respondents indicated that they were unaware whether examination is performed or whether the professional performing this examination was trained to do so supports this. Nevertheless, our results show a large practice variation among obstetric professionals.

All respondents claimed that ECV's were performed in their hospital. An inventory survey among all hospitals in the Netherlands from 2007 reported that 5% of hospitals did not perform ECV's in case of breech presentation at term.[9] The overall response rate of this survey in 2007 was 87%, in our survey we had an overall response rate of 82%. It might be possible that among the non-responding hospitals there are some that do not perform ECV's. Nevertheless, the fact that 100% of the responding hospitals claimed to perform ECV is very

positive. Although, this does not imply that every eligible women with a breech presentation at term is also offered an ECV. A recent conducted cluster randomized controlled trial, on the implementation of ECV in the Netherlands, showed that the overall implementation rate of ECV is only 72%. Suboptimal implementation was caused by either, the care provider not offering ECV to eligible women (18%), or women not opting for ECV (9.5%).[10] This study showed that although all hospitals might offer ECV's the implementation of ECV's could still be improved. In our survey, 68% of all hospitals claimed to have some form of registration for ECV attempts. In comparison to the survey in 2007, where the reported registration rate was 19%, this is a large improvement.[9] Nevertheless, a national registration system in a web based file, in which 100% of all ECV attempts will be registered, seems necessary.

Studies have shown that clinical hip examination with the Ortolani and Barlow tests is only accurate and reliable in the hands of an experienced examiner, with sensitivity depending on the skills and number of examinations the professional has performed.[1,11-12] In our survey, 60% of the respondents stated that they were not informed whether the professional performing the hip examination was trained to do so. As mentioned earlier, this might be explained by the fact that paediatric professionals performed most of the examinations, whereas the survey was sent to obstetric professionals. Nevertheless, we could not rule out that inexperienced physicians perform clinical hip examination, especially since 9% of the respondents claimed that obstetric residents performed this clinical hip examination. We should warrant for the fact that clinical hip examination is reserved for experienced physicians. Especially since this hip examination will also be performed at the first visit of neonates at a child health centre at four weeks of age.

A large majority, 87% of the hospitals referred neonates born in breech presentation for ultrasound hip examination. Five respondents explained that this referral was not arranged by the hospital, since child health centres already arrange ultrasound hip examination. In case of birth in cephalic presentation after successful ECV, only 27% of the hospitals arranged a referral. Apparently, awareness of the increased risk for DDH after successful ECV is missing. Not all neonates after successful ECV are born in the hospital. The Dutch obstetric system is divided in primary and secondary care. In which low-risk pregnancies are under surveillance of midwives or general practitioners, so called primary care. In case of breech presentation a pregnancy is considered a high-risk pregnancy, and involves referral from primary to secondary care. After successful ECV this referral can be reversed, from secondary to primary care, and women can have a planned home delivery under the care of a midwife. This survey did not cover the screening for DDH in primary care.

There are several screening strategies for detecting DDH in infants, which involve clinical examination, ultrasound examination (universal, or targeted to high risk groups) or a combination of both. In Germany, Austria and Switzerland universal ultrasound screening is currently applied. In many other countries, including Australia, North America and European

countries a selective screening is adopted.[13,14] Unfortunately, neither of these strategies has shown to improve clinical outcomes including late diagnosed DDH and the need for surgery.[15] In the Netherlands we adopted a selective screening programme for DDH, which is incorporated in the preventive care provided by child health care centres. Every child is scheduled to visit a child health centre eight times during its first year of life for routine checks. Clinical hip examination is performed on all children during their visits in the first six months of life, starting with the first examination at an age of four weeks.[5] In case of risk factors, including a positive family history of DDH in first or second-degree relatives, a breech presentation in the last trimester or congenital postural or foot deformities, additional ultrasound screening is planned. Since neonates born in cephalic presentation after successful ECV were in breech presentation in the last trimester of pregnancy, these neonates are also referred for ultrasound evaluation of the hip, according to the current screening strategy.[5] This referral is supported by two cohorts studies that showed that neonates born in cephalic presentation after successful ECV are still at increased risk for DDH.[16,17]

Future studies are necessary to determine the best screening strategy for DDH. Until new evidence is available, we advice, that the care for all neonates born in the Netherlands should be uniform. Currently, there is only one national guideline for the screening of DDH developed by child health care.[5] In this guideline the role of the paediatrician, obstetrician and midwife in the screening for DDH is not incorporated. We therefore suggest the development of a multidisciplinary, national guideline in which also the role of the obstetrician and midwife is determined. For now, we advise that we follow the screening strategy determined by child health care, with ultrasound referral for all neonates born in breech presentation and all neonates born in cephalic presentation after successful ECV. Furthermore we should warrant that clinical hip examination is only be performed by an experienced professional.

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Appendix

Free remarks

- Screening for DDH is arranged by child health care centres (5x)
- Neonates are referred for an outpatient consultation with an ortophedist
- Neonates are referred for an outpatient consultation with a paediatrician
- X-ray is performed at 3 months of age in stead of an ultrasound (2x)