European Journal of Obstetrics & Gynecology and Reproductive Biology 230 (2018) 119–123

Contents lists available at ScienceDirect

European Journal of Obstetrics & Gynecology and Reproductive Biology

journal homepage: www.elsevier.com/locate/ejogrb

Full length article

Implementation of a perineal support programme for reduction of the incidence of obstetric anal sphincter injuries and the effect of non-compliance☆

Lore De Meutter[a,*], Antonine D van Heesewijk[a], Ien van der Woerdt-Eltink[b], Jan Willem de Leeuw[a]

[a] Ikazia Ziekenhuis, Dept. of Obstetrics and Gynaecology, Rotterdam, the Netherlands
[b] Rotterdam University of Applied Sciences, Master Physician Assistant-Clinical Midwife, the Netherlands

ARTICLE INFO

Article history:
Received 1 February 2018
Accepted 11 September 2018
Available online xxx

Keywords:
Prevention OASIs
Perineal support
Training programme
Implementation

ABSTRACT

Objective: Obstetric anal sphincter injury (OASI) is a serious complication of a vaginal delivery. In 2005, a Norwegian nation-wide training programme to reduce the OASI rate was successfully implemented. The aim of the present study was to assess the impact of a perineal support programme, inspired by the Norwegian programme, on the incidence of OASIs in a Dutch hospital with a low a priori rate.

Study design: Prospective cohort study with historical comparison group. Three midwives and one obstetrician were trained on site by an expert midwife from Norway. These four trained the rest of the obstetrical staff. Data were prospectively recorded using the Dutch National Perinatal Registry, with additional recording whether the manual perineal support was actually applied in individual deliveries. OASI rates in three time periods were studied: the year preceding the training programme, the training period of 7 months and the year after the training period (respectively "control period", "training period" and "result period"). After exclusion of caesarean sections, preterm deliveries, breech and twin deliveries, a total of 4391 deliveries were recorded during the study period.

Results: During the training period, the OASI rate decreased significantly from 2.0 to 0.7% (aOR 0.34; 95%CI 0.15–0.76). In the result period, manual perineal support was performed in 72.7% of the deliveries and the overall OASI rate raised to 1.7% again, mainly because of non-compliance to the programme during vacuum deliveries. Nevertheless, multivariate logistic regression analysis with correction for known OASI risk factors showed that the OASI rate was 83% lower with application of perineal support (aOR 0.17; 95% CI 0.07-0.39).

Conclusion: A perineal support programme decreases OASI rate. Continuous verification of application and repetitive training is necessary, especially during vacuum deliveries.

Introduction

Perineal trauma is often inevitable during vaginal delivery. Small trauma is not associated with long-term consequences, but larger trauma of the perineum with rupture of the anal sphincters may lead to anal incontinence, pain and dyspareunia. At long-term follow up, anal incontinence has been reported in 57% of women with obstetric anal sphincter injuries (OASIs) [1]. Literature shows that the incidence of OASIs varies between 0,6 and 9% worldwide. In the Netherlands an incidence of 2% was reported [2].

Knowledge of risk factors of OASIs may be the first step in its prevention. Many studies have been published about maternal, obstetric and fetal risk factors. Important risk factors are: first vaginal delivery, fetal macrosomia, abnormal fetal presentation, prolonged second stage of labour, induction of labour, previous delivery by cesarean section, previous delivery with OASIs and Asian origin [3–9]. An important modifiable risk factor is an operative vaginal delivery with a higher risk for OASIs in forceps deliveries compared to vacuum extractions [3,7,8,10]. There is no concensus about the effect of an episiotomy on the risk of OASIs. But there is evidence that an episiotomy does prevent OASIs in operative vaginal deliveries, both in primiparous and multiparous women [3,7,11].

☆ Part of this work was presented as an abstract at the EUGA-congress, Barcelona, 19–21 october 2017.

* Corresponding author at: Ikazia Ziekenhuis, Montessoriweg 1, 3083AN, Rotterdam, the Netherlands.
E-mail address: l.de.meutter@ikazia.nl (L. De Meutter).

https://doi.org/10.1016/j.ejogrb.2018.09.021
0301-2115/

Whether application of manual perineal support during the second stage of labour is protective for the occurence of OASIs remains a subject of discussion in the Netherlands and many other countries. In the systematic reviews of Aasheim et al. and Bulchandani et al. no effect of perineal support on the incidence of serious perineal trauma was found [12,13]. However in the RCT's included in these reviews, there was no structural training of the staff and no clear definition of how the perineal support was actually performed. In Norway instead, a nation-wide structured training programme to reduce the OASI rate was implemented in 2005 [14]. The method of perineal protection implemented with this programme consisted of four components during the last part of second stage of delivery: slowing the delivery of the baby's head with one hand, supporting perineum with the other, dominant hand and squeezing the perineum with the thumb and index finger towards the middle in order to lower the pressure in the posterior fourchette, asking the delivering woman not to push and, when needed, performing an adequate episiotomy. The incidence of OASIs decreased significantly from 4% before implementation of the programme, to 1.9% after. The training programme was successfully implemented in other countries as well [15,16].

Our hospital is a teaching hospital with approximately 2500 medium and high risk deliveries per year. The incidence of OASIs in the period before the start of the study was 2%. This rate was half the incidence of OASIs in Norway before the training programme started. The primary aim of the present study was to assess the impact of a perineal support method, inspired by the Norwegian programme, on the incidence of OASIs in a setting with a low a priori rate.

Materials and methods

The study was conducted as a prospective cohort study with historical comparison group, in a large teaching hospital.

OASI rates in three time periods were recorded: the year preceding the training programme (September 2014 – September 2015), the training period of 7 months (September 2015 – April 2016) and the year after the training period (April 2016 – April 2017), respectively control period, training period and result period.

Implementation of perineal support programme

In september 2015, three midwives and one obstetrician were trained on site by an expert midwife from Norway. These four trained the rest of the obstetrical staff. A checklist was made for every member of the team, so that the expert midwives could verify that the entire obstetrical staff was properly trained. The first part of the training included a practical training on a pelvic delivery model. The second part of the training consisted of conducting three deliveries under supervision of the expert team. All new members of the obstetric team were trained during their first working weeks. The perineal support programme was implemented according to the four components of the Norwegian method as described earlier.

Diagnosis of OASIs

The extent of the perineal trauma was assessed by clinical examination, including rectal examination, immediately preceding repair and trauma was classified according to the RCOG classification [17]. As common in the Netherlands, spontaneous deliveries were mainly attended by clinical midwives and junior registrars, whereas operative vaginal deliveries were attended by more experienced registrars and obstetricians (medical specialists). If the clinical midwife or registrar suspected an OASIs, perineal trauma was assessed and classified by an obstetrician for confirmation.

Data collection

Data were prospectively recorded using the Dutch National Perinatal Registry. During the result period, actual application of manual perineal support in individual deliveries was recorded in a seperate research file additionally. Information on maternal, obstetrical and fetal risk factors for OASIs was collected, including maternal age, parity, delivery method, occiput presentation, duration of pregnancy, episiotomy, start of labour, pain relief, birthweight, shoulder dystocia and duration of second stage. Also, the degree of perineal trauma and type of healthcare provider were recorded for each delivery. Caesarean sections, preterm deliveries (<37 weeks), breech and twin deliveries were excluded from the study population. A power calculation was made with the program G*Power (Heinrich Heine Universität Düsseldorf, 2014). In Norway, a decrease of the OASI rate of more than 50% was achieved. Assuming that the same decrease would take place in Ikazia Ziekenhuis, a total study population of 1283 women would be needed to obtain significant results (effect size 0.1, power 0.80, alpha 0.05).

Outcomes

The primary outcome was the incidence of OASIs in three time periods: before, during and after the training period. Secondary outcomes were the incidence of the different perineal tears and the rate of application of the manual perineal support by type of healthcare provider.

Statistical analysis

Data were analysed by using IBM SPSS Statistics 22.0. Categorical variables were analysed in contingency tables with the chi-square test. Student's *t*-test and Mann-Whitey U test were used to compare parametric and nonparametric continuous variables. Multivariate logistic regression analysis was done to investigate the impact of manual perineal support on the OASI rate, with correction for possible confounding risk factors known from the literature. A two-sided P value of 0.05 was considered to be the limit of statistical significance. Adjusted ORs with 95% CI were reported from multivariate logistic regression analysis.

Results

In the three study periods 4391 deliveries were recorded, 70 of which with OASIs (1.6%). Maternal characteristics and OASI risk factors were compared between the three time periods: control period versus training period and control period versus result period (Table 1). During the result period, more primiparous women gave birth than during the control period. During and after the implementation of the perineal support programme, there were significantly more spontaneous deliveries and less episiotomies were performed. With regard to other factors, no differences were found.

The OASI rate decreased significantly from 2.0% during the control period to 0.7% during the training period (Table 2). This reduction was consistent across subgroups of women by parity, delivery method and type of care provider (Table 3). In the result period, the OASI rate raised back to 1.7% (Table 2). During the training en result period, no difference was found in 1 st and 2nd degree ruptures and labial ruptures compared to the control period. The number of women with an intact perineum was