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Interventional program to reduce both the incidence of anal sphincter tears and rate of Caesarean sections

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ABSTRACT

Objective: To estimate the ability of an intensive interventional program to decrease the number of obstetric anal sphincter injuries (OASIS), while simultaneously decreasing the rate of Caesarean sections (CS).

Study design: The intervention, which aimed at decreasing the number of OASIS, started with a compulsory tutorial for all the midwives and physicians. At the same time, the clinic initiated a program to decrease the number of CS. We compared the outcomes before and after the intervention by calculating the risk ratios with 95% confidence intervals. The changes in selected outcomes were also tested using the test of relative proportions. The follow-up was extended for 1 year after the intervention.

Results: The number of deliveries by CS decreased significantly, as did the number of OASIS in all the subgroups, except for the multi-parous women. The rate of OASIS for instrumental deliveries (mostly by vacuum) decreased significantly ($p < 0.003$), as compared to pre-interventional period. The number of Grade 4 tears decreased significantly: from 0.4 ruptures per 100 deliveries before the start of the intervention to 0.1 ruptures after the start of the intervention (RR 0.37, 95% CI 0.14–0.98, $p = 0.037$). However, the OASIS and Grade 4 sphincter injuries increased with forceps delivery. The CS rate decreased from 17.7 to 15.0 per 100 deliveries (RR 0.85, 95% CI 0.78–0.93). The post-interventional follow-up period revealed a further decrease in the frequency of OASIS (to 1.28%, $p < 0.001$) and a stable CS rate (14.2%).

Conclusion: The intervention significantly decreases the frequency of OASIS, in line with the results obtained for earlier interventions. At the same time, a decrease in CS rate was obtained.

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Introduction

Obstetric anal sphincter injuries (OASIS) are a common complication of vaginal delivery and carry a risk of severe and long-standing morbidity [1–3]. OASIS can have a significant impact on women by impairing their quality of life both in the short and long terms. In addition, OASIS can lead to perineal wound breakdown, fistula, chronic pain, anal incontinence, and sexual dysfunction. Given the long-term morbidity associated with third-degree and fourth-degree lacerations, prevention of these complications is an important clinical goal [4,5].

Injury to the anal sphincter is recognized as the most common cause of anal incontinence and anorectal symptoms in otherwise

healthy women. There are personal costs for the patient in terms of pad use and time missed from work, and there are costs for women and the health-care system, including appointments and treatments. This type of injury may also make women apprehensive about giving birth to children in the future and may adversely affect the remainder of their reproductive lives.

As always, a choice needs to be made between a planned Caesarean section (CS), which carries its own morbidity risks, and a vaginal delivery of the baby. In Europe, more than one out of three deliveries are CS in Switzerland (33%), Malta (33%), Poland (34%), Portugal (36%), Romania (37%), Italy (38%), and Cyprus (52%) [6]. In the USA, the CS rate is currently 32% [7]. Monetary incentives for interventions, such as CS, also contribute to high CS rates [8]. Furthermore, in some countries, a CS is performed to avoid a negligence lawsuit, which increases the CS rate even more [9]. One major cause of the increment in CS is that women's own requests for Caesarean delivery are increasingly accepted by physicians [10]. A woman's wish to have a CS is often based on a fear of vaginal

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delivery [11], and this group includes women who choose CS following an anal sphincter injury during a previous delivery. However, in many European countries, there is a movement to decrease the demand for CS.

The aim of this prospective study was to assess the impact of a multi-faceted intervention designed to improve obstetric quality. The measured parameters were: a decrease in the number of OASIS; and a simultaneous decrease in the CS rate at Varberg Hospital, which is a teaching hospital in the south-west of Sweden.

Material and methods

The intervention started with a compulsory tutorial held by the authors for all the midwives and physicians at Varberg Hospital. The program included the basics regarding anal sphincter tears and a presentation of the ongoing project. The entire labour ward staff took part. The physicians were also instructed in the use of similar manual protective techniques in combination with vacuum extractors or forceps. One of the important messages in the tutorials was the four focus points (Table 1). One of the main goals for the training period was to establish a local core team of experts, who would continue the training and continuous reassessment of the staff after the instructors had completed the active training period. These experts reinforced the information provided in the training sessions by including work-place meetings. After the summer 2013, one expert midwife (TP) worked for 4 weeks at the delivery ward, where she trained all the midwives in the pelvic model, followed by hands-on work and supervision in the delivery room. The expert midwife initially placed her hand on the midwife's hand to teach the proper technique, and when the midwife mastered the technique, she was further supervised, typically for 3–4 deliveries, before she was considered to be fully qualified. A specialist in obstetrics and gynaecology (JP) trained the department's physicians in perineum support during instrumental delivery using a pelvic model. Every doctor underwent an individual discussion and training period that lasted for 1 h.

The delivery room personnel were instructed to encourage the pregnant women to move freely during delivery and to push in the position in which they felt most comfortable. Furthermore, they were expected to help the women to choose a position during the final minutes of pushing so that the classic manoeuvre could be performed while allowing the perineum to be observed.

Diagnosis and suturing of the OASIS were performed immediately after the obstetric trauma, as per the department's standard procedure. If the midwife suspected OASIS during delivery, she always called a specialist in obstetrics and gynaecology for an evaluation and suturing.

During the summer of 2014, the clinic also started a program to decrease the number of CS, after planning for this for a decade. Earlier, the CS rate (around 20%) was among the highest in Sweden, and at the time of the intervention the CS rate was close to 18%. Of

outmost importance was that the whole department shared the philosophy that a vaginal delivery represented the safest and optimal pathway for both mother and baby. The factors identified as influencing the decrease in CS rate are presented in Table 2.

After a slight increase in the frequency of OASIS, the hospital requested an additional educational session/a refresher course. Therefore, a 3-day extra tutorial, which including a short conclusion of the project, was organised in April 2016.

The data were collected continuously during the period of the intervention. A distinction between instrumental and non-instrumental delivery was made. Similarly, a distinction was made between primi-parous and multi-parous births. We compared the outcomes for the periods before (January 2010–September 2013) and after (October 2013–September 2015) the intervention by calculating the risk ratios with 95% confidence intervals. The change in selected outcomes was also tested using the test of relative proportions.

The local advisory board approved the project. Furthermore, both projects were classified as quality-improving projects, and therefore a separate approval by the local Ethics Committee was not required.

Results

The results are presented in Table 3. Following the intervention, the number of Caesarean deliveries decreased significantly ($p < 0.001$) (Fig. 1), as did the total number of OASIS (total OASIS, $p = 0.013$) (Fig. 2 and Table 3), especially for instrumental deliveries, and primi-parous and multi-parous women. The decrease in the frequency of OASIS for non-instrumental deliveries first became significant in 2016. While the episiotomy rate also increased initially, it levelled out at the pre-interventional level (12%) by the end of the intervention.

The number of deliveries involving the use of vacuum and forceps was quite stable throughout the intervention. There were 364 instrumental deliveries (6.3%) out of 5698 vaginal deliveries before the start of the intervention, and 200 instrumental deliveries (5.6%) out of 3544 vaginal deliveries after the start of the intervention (Table 3). Forceps deliveries accounted for 5.3% of instrumental deliveries before the intervention, and 7.5% after the intervention. Most of the forceps deliveries were carried out in 2015, when the CS rate showed the greatest decrease (13.6% of vaginal deliveries).

The diagnosis coding system used at Varberg Hospital was changed quite late, in 2014, compared to other Nordic countries. In the previous system, OASIS were designated as partial, total, and Grade 4 tears, though this grading scheme was changed in the new system (3a, b, c and 4). Consequently, it is not possible to present a continuous categorisation of the different grades of OASIS. However, the number of Grade 4 tears in the different periods was comparable, and this number decreased significantly: 0.4

Table 1

The four focus points (4, 11–13).

- Good communication between the delivering woman and the birth assistant.
- Visualisation of the perineum during the final stages of delivery. During the final minutes of 2nd stage of labour, the delivering woman should adopt a position such that the perineum is visible (lateral recumbent or semi-recumbent).
- Support of the perineum during the final minutes of pushing on the one hand slows down the speed of head emergence, while on the other hand it supports the perineum with a firm grip around the introitus with the 1st and 2nd fingers. The three lateral fingers are entwined and pressed into the perineum while still 1 cm of the perineum remains visible.
- Lateral episiotomy is recommended. The episiotomy should be angled away from anal opening, be of sufficient length, and be performed only when there is a clear indication.

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