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Methods and consequences of changes in use of episiotomy

Tine Brink Henriksen, Karl Møller Bek, Morten Hedegaard, Niels Jørgen Secher

Abstract

Objectives—To evaluate the use of feedback by graphical profiles of rates of episiotomy and the impact on clinical practice and perineal state after spontaneous vaginal deliveries assisted by midwives with different attitudes towards episiotomy.

Design—Observation period in labour ward followed by feedback to midwives about their own and other midwives' use of episiotomies. The periods before and after the intervention were compared.

Subjects—All women (n=3919) delivering during the two periods who had been assisted by one of 30 midwives; each midwife supervised at least 20 deliveries during each period.

Main outcome measures—Overall rates of episiotomies and indications, incidence of intact perineums, perineal lacerations, and tears of anal sphincter.

Results—The overall rate of episiotomy during the observation period was 37.1% (615). During the second period the rate was 6.6% lower (95% confidence interval 3.6% to 9.6%), corresponding to a relative decrease of 17.8% (10.1% to 24.7%). Higher rates of episiotomy during the observation period were associated with larger reductions in the second period. The decrease could be explained by less use of episiotomy in deliveries with rigid perineum or impending perineal tear. Compared with the observation period, in the second period 3.2% more women (0.3% to 6.3%) had an intact perineum after delivery and 3.4% (0.4% to 6.2%) experienced perineal tears. The overall incidence of tears of the anal sphincter remained unchanged. Women had a slightly reduced incidence of tears of the anal sphincter, however, if they were delivered by midwives who reduced a medium or high initial rate of episiotomy and a tendency towards an increased incidence of tears if they were assisted by midwives who reduced low initial rates (around 20%) of episiotomy.

Conclusions—Changes in the use of episiotomy induced by awareness of clinical practice among midwives seem to increase the incidence of parturients with intact perineum without a concomitant rise in tears of the anal sphincter. To avoid the increase of such tears these changes should probably be restricted to midwives with rates of episiotomies above 30%.

Introduction

Rates of mediolateral episiotomy vary extensively between as well as within labour wards.^{1,4} Different attitudes towards episiotomy in different clinical settings might explain some of this variation.⁴ Randomised trials have shown that high overall rates of mediolateral episiotomies do not prevent perineal trauma and lesions of the anal sphincter,^{3,4} and a target overall rate of episiotomy of less than 30% in spon-

aneous vaginal deliveries has been suggested.^{4,5} Methods of changing the incidence of episiotomies in clinical settings, however, and the consequences for women's health of such changes have yet to be studied.

Different ways of presenting statistical information about management in clinical settings exist.⁷ Graphical profiles may be used to present maternity unit statistics,^{8,9} and they provide means of comparing units and perhaps also individual subjects—for example, midwives—within units. Whether feedback of information by means of such profiles has any effect on decision making is, however, unknown.^{8,10}

We evaluated the use of feedback by graphical profiles of rates of episiotomy and the impact on clinical practice and perineal state after spontaneous vaginal deliveries assisted by midwives with different attitudes towards episiotomy.

Subjects and methods

Two periods were defined: an observation period of 10 months (December 1989 to September 1990) and a period of 19 months (September 1990 to April 1992) after distribution of awareness profiles to the midwives in our department.

During the two periods all spontaneous vaginal singleton deliveries with the child in the occipito-anterior position were registered. The analyses were further restricted to women delivered by midwives who carried out at least 20 deliveries in each of the two periods. A total of 3919 women delivered by 30 midwives were included. All midwives were unaware of the aim of the study.

At the end of the observation period awareness profiles were prepared and mailed to each of the midwives at our department. The profile was presented as a chart of the distribution of the incidence of episiotomies, including indications by all the midwives. The charts were similar to the upper half of figure 3. The overall mean, median, and range of use of episiotomies were given. Each midwife was informed of her specific position on the graph.

The use of and indications for episiotomy, use of pudendal anaesthetic, duration of second stage of labour, perineal state after delivery, and birth weight were registered on a specific form by the assisting midwife. Indications for episiotomy were recorded as either prophylactic episiotomy (rigid perineum or impending perineal tear) or episiotomy for shortening of labour (fetal asphyxia or for the relief of mother or child). Additional information on maternal age, parity, and gestational age at birth was collected from medical records. The allocation of midwives to parturients is a random process in Denmark.⁴

On the basis of the midwives' incidence of episiotomy during the observation period, deliveries were classified into three groups, each corresponding to 10 midwives. The group of midwives with the lowest

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initial rate of episiotomy (22.3%) assisted 1276 deliveries during the two periods, the midwives with an intermediate initial rate (37.8%) assisted 1496 deliveries, and the group with the highest initial rate (55.2%) 1147 deliveries. Midwives were further classified as changers or non-changers, depending on whether their rate of episiotomy changed by 10% or more after receiving the awareness profile.

All episiotomies were mediolateral. Tear of the anal sphincter refers to deliveries when the sphincter was torn partly or completely. The diagnoses of these lesions were all confirmed by a senior registrar or a consultant.

DATA HANDLING AND STATISTICS

Relations between categorical variables were evaluated by χ^2 tests for independence within contingency tables. Stratified analysis was carried out as described by Mantel and Haenszel.¹¹ Multivariate analysis was performed by logistic regression.¹² Two sided P values less than 0.05 denote significance. Differences in proportions are shown with 95% confidence intervals, and means are shown with 1 SD. Weighted differences in rates of episiotomy and intact perineum between midwives in the two time periods were tested by paired *t* tests, the weights being the number of deliveries. The variance of the weighted rates of episiotomy and rates of intact perineum between midwives during the two time periods were compared by Hartley's F_{\max} test.¹³

Results

CHANGES IN INCIDENCE OF EPISIOTOMY

There were 1669 deliveries during the observation period and 2250 during the second period. Parity, birth weight, gestational age at delivery, and duration of second stage of labour did not differ between the two periods. Maternal age was slightly higher during the second period (table I).

TABLE I—Background characteristics in spontaneous vaginal deliveries assisted by 30 midwives before and after administration of management awareness profiles

Variable	Before September 1990	After September 1990	P value
No of deliveries	1669	2250	
No (%) with episiotomy	615 (37.1)	685 (30.5)	<0.001*
Mean (SD) maternal age (years)	28.1 (4.8)	28.5 (4.8)	0.02†
No (%) primiparous	714 (42.8)	990 (44.0)	0.4*
No (%) with pudendal anaesthetic	719 (43.1)	752 (33.4)	<0.001*
Mean (SD) length of second stage of labour (minutes)	27 (20)	28 (21)	0.2†
Mean (SD) birth weight (g)	3493 (518)	3501 (517)	0.6†
Mean (SD) gestational age (days)‡	281 (12)	280 (12)	0.4†

* χ^2 Test.

†Student's *t* test.

‡Estimated from ultrasound measurement of biparietal diameter between 12th and 21st week of pregnancy and from menstrual history in cases when no scans were performed.

Whether episiotomy was carried out or not was unknown in 10 deliveries during the observation period, and in four during the second period. During the observation period 615 (37.1%) episiotomies were performed compared with 685 (30.5%) in the second period. Thus, the overall rate of episiotomy was 6.6% lower (95% confidence interval 3.6% to 9.6%), corresponding to a relative decrease of 17.8% (10.1% to 24.7%) after the midwives had received the graphical profiles. Figure 1 shows the rates of episiotomy for each midwife during the two periods. The mean rates in the two periods differed significantly (paired *t* test $P < 0.001$). The variance of the distribution of episiotomy, however, did not change significantly: the ratio of the variance during the observation period to that during the second period (F_{\max}) was 1.09 ($P > 0.5$).

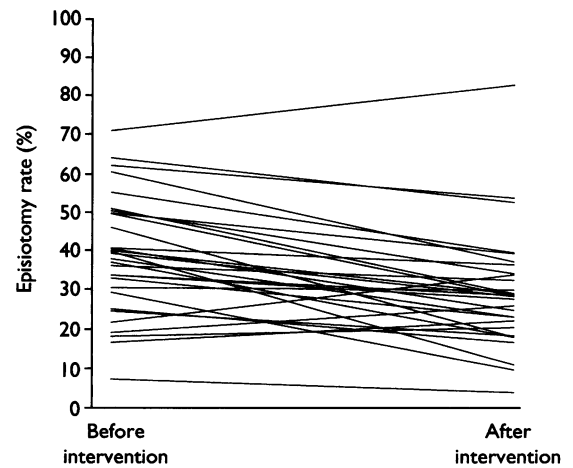


FIG 1—Rates of episiotomy in 30 midwives during two periods: before and after feedback on use of episiotomy in spontaneous vaginal deliveries

The difference in rate of episiotomy between the two periods was not due to a steady decline in the use of episiotomy continuing from the observation period through the second period (fig 2). Midwives with the highest rate of episiotomy during the observation period had the largest changes in rate (fig 3); the correlation between rate of episiotomy during the observation period and the change in rate was $r = -0.37$ ($P < 0.05$). When the midwives were categorised into three groups according to their initial episiotomy rate,

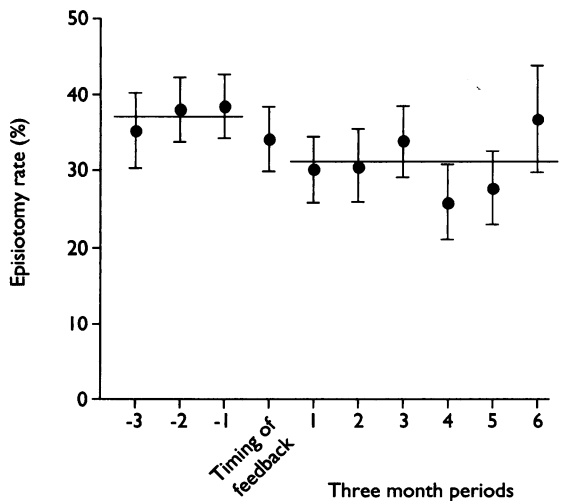


FIG 2—Overall rate of episiotomy during two periods: before and after feedback on use of episiotomy in spontaneous vaginal deliveries (solid line), and mean incidences in three month periods (●) with 95% confidence intervals (vertical lines)

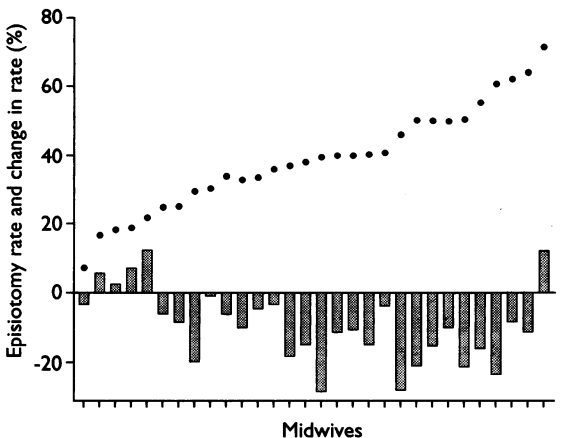


FIG 3—Mean rate of episiotomy during observation period for 30 midwives (●) and change in rates from observation period to period after feedback to midwives of their use of episiotomy (bars)

all groups including the one with the lowest initial rate reduced the incidence.

CHANGES IN INDICATIONS FOR EPISIOTOMY AND PERINEAL STATE

The decrease in the incidence of episiotomy could be explained by fewer episiotomies in deliveries with rigid perineum or impending perineal tear, whereas the use of episiotomy in deliveries when the safety of the child or mother was threatened did not change significantly (table II).

More women in the second period—that is, after the midwives received feedback—had an intact perineum after delivery compared with women in the observation period (32.1% (533) *v* 35.2% (792); difference of 3.2% (95% confidence interval 0.3% to 6.3%), although 3.4% (0.4% to 6.2%) more also experienced perineal tears (table II). Neither the percentage of women with perineal tears without episiotomy nor tears of the anal sphincter changed significantly (table II), however, even when the rates were controlled for parity, maternal age, birth weight, gestational age at delivery, and duration of second stage of labour.

TABLE II—Perineal lesions and indications for episiotomy in spontaneous vaginal deliveries assisted by 30 midwives before and after distribution of management awareness profiles in September 1990

	No (%) before September 1990	No (%) after September 1990	P value*
No of deliveries	1669	2250	
Indication for episiotomy†:			
Prophylactic	462 (27.8)	463 (20.6)	<0.0001
Shortening of labour	153 (9.2)	222 (9.9)	0.5
State of perineum:			
Episiotomy	615 (37.1)	685 (30.5)	<0.0001
Intact perineum	533 (32.1)	792 (35.2)	0.03
Perineal tear	511 (30.8)	769 (34.2)	0.03
	(48.9)‡	(49.3)‡	0.09
Tear of anal sphincter	32 (1.9)	50 (2.2)	0.6
Complete tear of anal sphincter	17 (1.0)	23 (1.0)	1.0

* χ^2 Test.

†Information about use of episiotomy was missing in 10 and four deliveries, respectively, during two periods.

‡Perineal tears among subgroup of women without episiotomy.

The percentage of parturients with an intact perineum increased or remained unchanged regardless of the midwives' rate of episiotomy during the observation period after they received the awareness profiles (table III). Women delivered by midwives with a medium or high initial rate of episiotomy had a slightly reduced incidence of tears of the anal sphincter (2.3% and 2.8% *v* 1.7% and 2.4%). The opposite trend was found in women assisted by midwives with a low initial rate of episiotomy (1.0% *v* 2.8%) (table III). There was no difference in the parity of parturients between the three groups of midwives (data not shown). Further classification of deliveries according to midwives' change in rate of episiotomy showed a trend towards an increased risk of a tear of the anal sphincter if midwives with a low initial rate reduced their rate of episiotomy 10% or more, whereas the risk decreased if the initial rates were medium or high (data not shown).

TABLE III—Perineal lesions in spontaneous vaginal deliveries assisted by 30 midwives before and after distribution of management awareness profiles. Grouping is according to midwives' incidence of episiotomy during observation period

Variable	No (%) before September 1990			No (%) after September 1990		
	Low	Medium	High	Low	Medium	High
No of midwives	10	10	10	10	10	10
No of deliveries	628	574	467	648	922	680
State of perineum:						
Episiotomy	140 (22.3)	217 (37.8)	258 (55.2)	136 (21.0)	257 (27.9)	292 (42.9)
Intact perineum	221 (35.1)	199 (34.7)	113 (24.2)	270 (41.7)	313 (33.9)	209 (30.7)
Tear of anal sphincter	6 (1.0)	13 (2.3)	13 (2.8)	18 (2.8)	16 (1.7)	16 (2.4)
Complete tear of anal sphincter	2 (0.3)	6 (1.0)	9 (1.9)	9 (1.4)	8 (0.8)	6 (0.9)

Discussion

CHANGES IN INCIDENCE OF EPISIOTOMY

The overall rate of episiotomy decreased by about 7%, a relative reduction of 18%, after we distributed simple graphic profiles which presented the incidence of and indications for episiotomy to midwives in our labour ward. Various kinds of feedback with information about surgical procedures in obstetrics, especially caesarean sections, have been shown to change rates of the procedure in some¹⁴ but not all studies.^{10 15-17} None of these studies, however, has dealt with episiotomy. The effect of our particular feedback might be because of the way we presented the information, as well as the fact that episiotomy is a fairly minor surgical procedure. It may be important that we contacted each of the midwives individually as they were responsible for the ultimate decision about whether to use episiotomy in those who had spontaneous vaginal deliveries.⁷ Furthermore, the simple graphical presentation with few quantitative data on the midwives' own use of episiotomy during the observation period may have played a significant part.⁷

The feedback did not coincide with introduction of new guidelines regarding the use of episiotomy at the department, and the midwives were unaware of the design and objectives of the study. The intended individual feedback, however, initiated discussions among the midwives about the use of episiotomy and may thus have contributed to the continued reduction in rate in the period after the intervention. Even though there was no clear trend towards a rise in the incidence of episiotomies during this second period of 19 months, the possibility of the effect wearing off later has to be considered.

We found a drop in the rate of episiotomies immediately after our intervention. Although contemporary information on the use of episiotomies in a control group of midwives was unavailable, the lack of a declining secular trend in rates of episiotomy during the observation period suggested that the reduction may have been because of the feedback.

The overall reduction in rates of episiotomy after the feedback was due to a reduction in the number of episiotomies in parturients with rigid perineum or impending perineal tear. Two large ($n \geq 1000$) randomised controlled trials of liberal versus selective episiotomy have been aimed specifically at reducing⁵ or eliminating³ episiotomies associated with these indications in an intervention group. The incidence of episiotomy in the intervention groups was around 10%³ and 30%.⁵ Tight supervision and control by the managers of randomised studies may be required to achieve the aim,¹⁸ and it may be difficult to lower rates in everyday clinical practice. Our study shows, however, that a reduction in episiotomies carried out for reasons related to the perineal state is also possible under less artificial conditions.

CHANGES IN PERINEAL STATE

More women had an intact perineum after delivery in the period after feedback. This agrees with results from randomised controlled trials of restrictive versus liberal use of episiotomy.^{3 5} In the Argentine episiotomy trial, however, the incidence of episiotomy in the routine group was 83%, leaving almost no chance of an intact perineum.⁵

The overall incidence of women with perineal tears also increased in the period after feedback. This would cause concern if such lacerations give rise to more severe complications than episiotomy does. Long term effects, such as urinary incontinence and dyspareunia after delivery, however, have been shown to be independent of whether the use of episiotomy has been restricted or liberalised.^{19 20} Compared with episiotomy, spontaneous lacerations have also been

Clinical implications

- Rates of mediolateral episiotomy vary extensively between and within labour wards
- After feedback to midwives in the same labour ward about their own and the other midwives' use of episiotomy the rate of episiotomies fell from 37% by 7%, a relative drop of almost one fifth
- After the intervention 3% more women had an intact perineum and 3% more had perineal lacerations, but the incidence of tears of the anal sphincter remained unchanged
- To avoid an increase in lacerations of the anal sphincter reductions in the use of episiotomy should probably be limited to midwives with initial rates of episiotomy above 30%

shown to result in the same⁶ or even decreased²¹ severity of dyspareunia six months after delivery.

The most serious long term effects associated with perineal conditions after vaginal delivery arise from damage to the anal sphincter. In our study the percentage of women with both complete and incomplete tears of the anal sphincter remained unchanged after the feedback. Perineal outcome, however, might depend on the use of episiotomy during the observation period and midwives' attitude toward episiotomy as well as the subsequent magnitude of the reduction in rate of episiotomy. We found a tendency towards increased risk of tearing of the anal sphincter in deliveries assisted by midwives with a low initial rate of episiotomy and a reduction in rate of 10% or more after the feedback. This finding indicates that there may be a lower limit to the optimal rate of episiotomy when perineal outcome is taken into account. The risk of a tear to the anal sphincter decreased among midwives with medium or high initial rates whose episiotomy rates changed by 10% or more. Though previous studies have supported an upper limit for overall rates of episiotomy in spontaneous vaginal deliveries of 20-30%,^{3,5,22} our data suggest that reducing overall rates substantially below this limit may do more harm than good.

CONCLUSION

Feedback of information about clinical practice in the form of graphical profiles can be useful in clinical

settings with large variations in certain surgical procedures—for example, episiotomy.

Self induced changes on the basis of such profiles among midwives in the use of episiotomy seem to increase the proportion of women with an intact perineum without a concomitant rise in tears of the anal sphincter. To avoid an increase in tears of the anal sphincter such changes should probably be restricted to midwives with rates of episiotomies above 30%.

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ONE HUNDRED YEARS AGO

KISSING AS A SANITARY SIN.

Johannes Secundus in his *Basia* might be thought to have dealt with kissing from every conceivable point of view, but he lived in prehygienic days, before the fear of the ubiquitous bacillus had eclipsed the gaiety of nations. Preachers of asceticism used to condemn kissing on the ground of its danger to the soul, but to the "average sensual man" the added spice of sin probably made it all more delightful. Now the apostle of sanitary perfection is denouncing kissing for its danger to the body. The Japanese, he tells us, are a hygienically-minded people, and they never kiss. The Sanitary Committee of the Orange (New Jersey) Board of Health has recommended that a circular be sent out to all whom it may concern "urging everyone to desist as much as possible from kissing, as the touching of lips is likely to convey contagion." That foul and deadly disease may be, and

often is, propagated in this way is of course a fact as to which there can be no sort of doubt. Many a mother has, like the Princess Alice, caught infection from the lips of her child dying or dead of diphtheria. There is every reason to believe that the seeds of tuberculosis may be implanted by kissing, and the too common beslobbering of children by friends of the family and by effusive strangers cannot be too strongly condemned on hygienic grounds. It cannot therefore be denied that kissing is dangerous, but will "Sanitary Committees" be able to put it down, as a too sanguine magistrate once undertook to "put down" suicide? Will love-making be conducted on antiseptic principles? "Kissing goes by favour" we are told—is it for the future to be by favour by the county council? Great no doubt is Hygeia, but we will back human nature with some confidence against her.

(*BMJ* 1894;ii:273.)