Pregnancy Outcomes of Healthy Parturients Delivered With or Without Episiotomy

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Background: *The use of episiotomy, a previously popular obstetric procedure, has been declining for the last 25 years, falling from 65% of deliveries in 1979 to 18% in 2003. Some complications have been reported in terms of maternal side effects; however, many episiotomies are still performed in Rajavithi Hospital.*
Objective: *To compare maternal and neonatal outcomes and complications in the 48-hour period after vaginal delivery in healthy parturients with and without episiotomy.*
Material and Method: *A historical cohort study was conducted by reviewing the medical records of 920 healthy parturients who gave birth vaginally in Rajavithi Hospital between January 1st and December 31st 2012. Data were collected of 460 cases who delivered with episiotomy and another 460 vaginal-delivery patients who did not. Data collection included maternal characteristics, and maternal and neonatal outcomes.*
Results: *Most parturients were parous cases (711/920, 77.3%). Gestational age, number of nulliparae, and duration of 2nd stage of labor were significantly higher in the episiotomy group. Third and fourth degree perineal tear was significantly higher in the episiotomy group than in the non-episiotomy group (21.0%: 0.0% and 20.2%: 0.0%; p<0.001) in nulliparous women, but there was no difference inparous patients. Wound infection within 48 hours postpartum was similar in parous parturients in the episiotomy and non-episiotomy groups while there was no wound infection in the nulliparous group. Mean birthweight in the episiotomy group was significantly higher than in the non-episiotomy groups (3,064.95±418.44 gm vs. 2,940.15±486.61 gm; p<0.001). Other neonatal outcomes and complications were similar in the two groups.*
Conclusion: *Incidence of second, third and fourth degree perineal tear was significantly higher in the episiotomy group than in the non-episiotomy group.*

Keywords: *Episiotomy, Vaginal delivery, Perineal tear, Maternal outcome, Neonatal outcome*

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The use of episiotomy, a previously popular obstetric procedure, has been declining for the last 25 years, falling from 65% of parturients who delivered in 1979 to 39% of those who gave birth in 1997 and just 18% in 2003[1,2]. Easier wound repair, better wound healing, greater postoperative pain tolerance, and prevention of pelvic diaphragm complications such as urinary incontinence were the reasons for the extensive use of episiotomy in nulliparous delivery in the 1970s[3]. However, many observational and randomized studies have provided evidence to show that all of these supposed advantages were, in fact, misconceptions[4-7]. Rajavithi Hospital (RH) handles a high number of births in Thailand, with 3,853 deliveries in 2013[8].

Up until now there has been no comparative study in RH of maternal and neonatal outcomes and complications among parturients with and without episiotomy. The objective of this study was to compare maternal and neonatal outcomes and complications, especially third degree perineal tear, in the 48 hours after vaginal delivery in parturients who delivered with episiotomy and in those who gave birth without it.

Material and Method

After being approved by the hospital's ethics committee (No. 148/2013), a historical cohort study was conducted by reviewing the medical records of healthy parturients who delivered between January 1st and December 31st 2012 at the Labor Room (LR) of Rajavithi

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Hospital. The episiotomy cases were parturients on whom episiotomy was performed before delivery, and the non-episiotomy cases were those who did not undergo this procedure. The ratio of the episiotomy and non-episiotomy cases was 1: 1, and all cases were singleton births, with cephalic presentation and viable fetus. Patients with multifetal pregnancy, operative vaginal delivery, fetal anomaly or incomplete data were excluded. Second degree perineal tear was considered to have occurred in almost every case of episiotomy because the bulbocavernosus muscle was cut in allcases except in median episiotomy.

At Rajavithi Hospital in 2012, there were no hospital guidelines for deciding whether to perform episiotomy. It was carried out according to the operator's preference, which was generally based on the estimated fetal weight or duration of second stage of labor. The main outcome, which was degree of perineal tear, was assessed by the operator who performed the episiotomy.

***Definition of perineallacerations*[9]**

First degree laceration involved the fourchette, perineal skin, and vaginal mucous membrane but not the underlying fascia and muscle.

Second degree laceration involved, in addition, the fascia and muscles of the perineal body but not the anal sphincter. These tears may be midline, but often extend upwards on one or both sides of the vagina, forming an irregular triangle.

Third degree laceration extended farther to involve the external anal sphincter.

Fourth degree laceration extended completely through the rectal mucosa to expose its lumen and thus involved disruption of both the external and internal anal sphincters.

Data collected included maternal characteristics and outcomes such as age, gravidity, parity, BMI, gestational age (GA), diabetes mellitus (DM), duration of labor, operator, type of episiotomy, perineal tear, and referral to NICU. Sample sizes of cases in each group were calculated using Selvin's formula[10] as follows:

where p_1 was the incidence of third degree perineal laceration in parturients with episiotomy and equaled 0.085[11], and p_2 was the incidence of third degree perineal laceration in women without episiotomy and equaled 0.012[11]. The power of the test (β) was 0.8. Statistical significance was set at p-value <0.05.

The number of required cases was 340 in each group plus a 35% allowance for incomplete data, making a total requirement of 459 cases, and 460 cases were finally enrolled in each of the groups. SPSS version 17.0 was used to collect and analyze the data which were analyzed using mean, mode, percentage, Chi-square or Fisher's exact test for comparison of categorical variables, and student T-test for comparison of continuous variables.

Results

Nine hundred and twenty parturients were enrolled in the study. The episiotomy and non-episiotomy groups had equal numbers (460) of cases. Demographic data is shown in Table 1. GA, parity, and duration of second stage of labor were significantly different in the two groups. Table 2 reveals overall maternal outcomes of the subjects. Second, third and fourth degree perineal tear were significantly higher in the episiotomy group than in the non-episiotomy one. Maternal outcomes were separately analyzed for nulliparous and parous parturients (Table 3).

In nulliparous women, third and fourth degree perineal tear was significantly higher in the episiotomy parturients than in those who did not undergo the procedure (21.0%: 0.0% and 20.2%: 0.0% respectively; p<0.001) while first degree perineal tear was significantly higher in the non-episiotomy parturients (47.1%: 0.0%; p<0.001) (Table 3). There was no significant difference between incidence of third and fourth degree perineal tear in parous cases in the two groups. While first degree perineal tear was significantly higher in the non-episiotomy group (62.1%: 0%; p<0.001), second degree perineal tear was significantly higher in the episiotomy group (95.5%: 34.7%; p<0.001) (Table 3). There were no cases of wound infection in any of the nulliparous deliveries. Table 4 reveals overall neonatal outcomes. Mean birth weight (BW) and SD in the episiotomy group were significantly higher than in the non-episiotomy group (3,064.95$\pm$418.44 gm vs. 2,940.15$\pm$486.61 gm respectively; p<0.001). Neonatal outcomes were separately analyzed in nulliparous and parous groups (Table 5). BW of neonates of parturients with episiotomy in both nulliparous and parous births was still significantly higher than in those without episiotomy.

Discussion

Nulliparous parturients in the episiotomy group had a significantly higher prevalence of third and fourth degree perineal tear than those in the non-episiotomy group, while third and fourth degree perineal tear were similar in parous women in the two

Table 1. Characteristics of parturients delivering with and without episiotomy

Characteristics	Total (n = 920)	Episiotomy		*p*-value
		With (n = 460)	Without (n = 460)	
Age (years) (mean ± SD)	28.13±5.89	28.34±5.89	27.93±5.90	0.490
(min-max)	(15 to 45)	(15 to 45)	(15 to 43)	
< 20	63 (6.8)	36 (7.8)	27 (5.9)	
20-35	750 (81.5)	370 (80.4)	380 (82.6)	
>35	107 (11.6)	54 (11.7)	53 (11.5)	
Parity				0.002*
0	209 (22.7)	124 (27.0)	85 (18.5)	
≥1	711 (77.3)	336 (73.0)	375 (81.5)	
BMI (kg/m^2) (mean ± SD)	27.17±4.02	27.34±3.99	26.99±4.03	0.188
(min-max)	(14.27 to 43.69)	(17.58 to 43.69)	(14.27 to 40.74)	
Maternal DM				0.471
Yes	51 (5.5)	23 (5.0)	28 (6.1)	
No	869 (94.5)	437 (95.0)	432 (93.9)	
GA (week) (mean ± SD)	38.26±2.60	38.47±2.61	38.05±2.57	0.007*
<38	249 (27.1)	108 (23.5)	141 (30.7)	
38-42	646 (70.2)	334 (72.6)	312 (67.8)	
>42	25 (2.7)	18 (3.9)	7 (1.5)	
Operator				0.147
Extern	113 (12.3)	61 (13.3)	52 (11.3)	
Nurse	366 (39.8)	176 (38.3)	190 (41.3)	
1st year resident	104 (11.3)	56 (12.2)	48 (10.4)	
2nd year resident	162 (17.6)	78 (17.0)	84 (18.3)	
3rd year resident	149 (16.2)	70 (15.2)	79 (17.2)	
Staff	26 (2.8)	19 (4.1)	7 (1.5)	
Labor duration (minute)				
1st stage median (min-max)	405 (15 to 1,440)	410 (25 to 1,440)	400 (15 to 1,290)	0.204
2nd stage median (min-max)	10 (1 to 185)	12 (1 to 185)	8 (1 to 107)	<0.001*

Value are presented as n (%), * significant at $p<0.05$
BMI = body mass ndex, DM = diabetes mellitus, GA = gestational age

groups. The authors suggest that having previous vaginal delivery could have been a factor in achieving greater perineal relaxation in parous mothers than in the nulliparous women. Supadech et al[11] reported a similarly higher incidence of third degree perineal tear in their episiotomy group than in their non-episiotomy group, but they found no fourth degree perineal tear in either group, even though their study was a randomized control trial while the present one was a historical cohort design. Although second degree perineal tear was considered to have occurred in almost every episiotomy case in this study, a significant difference in episiotomy and non-episiotomy parturients was found only in the nulliparous mothers.

Previous prospective research has studied comparisons of routine and restrictive episiotomy policies while the present study compared episiotomy and non-episiotomy groups. Rodriguez et al reported significantly higher third and fourth degree perineal tear in a routine episiotomy group than in a selective episiotomy group (14.3% vs. 6.8%)[7]. Shahraki et al also reported that restrictive episiotomy had fewer complications in the parturients than in those who underwent routine episiotomy[12].

Even though the mean GA was significantly higher in the episiotomy group than in the non-episiotomy group (38.47 week vs. 38.05 week), the author believes that there was probably no clinical significance because all the neonates were term and there was only a tiny time difference (0.42 weeks). Median second stage of labor was one of the significantly different maternal outcomes in the two

Table 2. Outcomes and complications in parturients delivering with and without episiotomy

Complications	Total (n = 920)	Episiotomy		*p*-value
		With (n = 460)	Without (n = 460)	
Type of episiotomy				-
Median		41 (4.5)	-	
Mediolateral		329 (35.8)	-	
Unknown type		90 (9.8)	-	
Degree tear				
1st degree tear	273 (29.7)	0 (0.0)	273 (59.3)	<0.001*
2nd degree tear	555 (60.3)	383 (83.3)	172 (37.4)	<0.001*
3rd degree tear	35 (3.8)	32 (7.0)	3 (0.7)	<0.001*
4th degree tear	34 (3.7)	28 (6.1)	6 (1.3)	<0.001*
Vaginal tear	2 (0.2)	2 (0.4)	0 (0.0)	0.499
Labia, clitoris	11 (1.2)	7 (1.5)	4 (0.9)	0.363
Laceration of cervix	10 (1.1)	8 (1.7)	2 (0.4)	0.056
Wound infection (At 48 hour postpartum)	2 (0.2)	2 (0.4)	0 (0.0)	0.499

Value are presented as n (%), * significant at $p<0.05$

groups; however, it was only 4 minutes longer in the episiotomy group than in the non-episiotomy one, and also probably had no clinical significance. More nulliparous parturients underwent episiotomy than did parous mothers, probably because some obstetricians or nurses in Rajavithi Hospital believed that their babies would be delivered more easily when episiotomy was performed. The significantly higher neonatal BW in the episiotomy group (120 grams) probably had no clinical significance because the median BW in both groups was around 3,000 grams.

Nowadays, restrictive episiotomy is recommended by the American College of Obstetricians and Gynecologists[13]. Episiotomy should be performed only in cases of operative vaginal delivery, breech assisting or extraction procedures, shoulder dystocia, or persistent occiput posterior[13]. The very small prevalence of wound infection in the present study was possibly due to the short duration of follow-up (48 hours postpartum). A limitation of the present study was its historical cohort design, as some mistakes might have occurred without our knowledge.

In conclusion, nulliparous parturients in the episiotomy group experienced significantly more third and fourth degree perineal tearthan their counterparts in the non-episiotomy group.

What is already known on this topic?

Some maternal complications, especially third degree perineal tear, have occurred in parturients with episiotomy

What this study adds?

Incidences of second, third and fourth degree perineal tear were significantly higher in the episiotomy group than in the non-episiotomy group.

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Potential conflicts of interest

None.

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Table 3. Maternal outcomes in nulliparous and multiparous parturients delivering with and without episiotomy

Complications	Total	Episiotomy		*p*-value
		With	Without	
Nulliparous group	n = 209	n = 124	n = 85	
Type of episiotomy				
Median	-	10 (4.8)	-	
Mediolateral	-	109 (52.2)	-	
Unknown type	-	5 (2.4)	-	
Degree tear				
1st degree tear	40 (19.2)	0 (0.0)	40 (47.1)	<0.001*
2nd degree tear	104 (49.7)	62 (50.0)	42 (49.4)	0.156
3rd degree tear	26 (12.4)	26 (21.0)	0 (0.0)	<0.001*
4th degree tear	25 (12.0)	25 (20.2)	0 (0.0)	<0.001*
Vaginal tear	1 (0.5)	1 (0.8)	0 (0.0)	1.000
Labia, clitoris	4 (1.9)	3 (2.4)	1 (1.2)	0.648
Laceration of cervix	9 (4.3)	7 (5.6)	2 (2.4)	0.316
Wound infection (At 48 hr postpartum)	0 (0.0)	0 (0.0)	0 (0.0)	
Parous group	n = 711	n = 336	n = 375	
Type of episiotomy				
Median	-	31 (4.4)	-	
Mediolateral	-	220 (30.9)	-	
Unknown type	-	85 (12.0)	-	
Degree tear				
1st degree tear	233 (32.8)	0 (0.0)	233 (62.1)	<0.001*
2nd degree tear	451 (63.4)	321 (95.5)	130 (34.7)	<0.001*
3rd degree tear	9 (1.3)	6 (1.8)	3 (0.8)	0.320
4th degree tear	9 (1.3)	3 (0.9)	6 (1.6)	0.511
Vaginal tear	1 (0.1)	1 (0.3)	0 (0.0)	0.473
Labia,clitoris	7 (1.0)	4 (1.2)	3 (0.8)	0.713
Laceration of cervix	1 (0.1)	1 (0.3)	0 (0.0)	0.473
Wound infection (At 48 hour postpartum)	2 (0.3)	2 (0.6)	0 (0.0)	0.224

Value are presented as n (%), *significant at $p<0.05$

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Table 4. Neonatal outcomes in parturients delivering with and without episiotomy

Characteristics	Total (n = 920)	Episiotomy		*p*-value
		With (n = 460)	Without (n = 460)	
BW (grams) (mean ± SD)	3,002.55±457.84	3,064.95±418.44	2,940.15±486.61	<0.001*
(min-max)	(740 to 4,250)	(1,025 to 4,250)	(740 to 4,228)	
Apgar score at 1 minute <7	21 (2.3)	7 (1.5)	14 (3.0)	0.122
Mode (min-max)	9 (0 to 10)	9 (2 to 10)	9 (0 to 10)	
Apgar score at 5 minute <7	3 (0.3)	0 (0.0)	3 (0.7)	0.249
Mode (min-max)	10 (0.10)	10 (7 to 10)	10 (0 to 10)	
Injury to the baby: shoulder dystocia	13 (1.4)	9 (2.0)	4 (0.9)	0.163
Refer to NICU	17 (1.8)	7 (1.5)	10 (2.2)	0.463

Value are presented as n (%), * significant at $p<0.05$
BW = birth weight

Table 5. Neonatal characteristics and outcomes in nulliparous and parous parturients

Outcomes	Total	Episiotomy		*p*-value
		With	Without	
Nulliparous group	n = 209	n = 124	n = 85	
BW (grams) (mean ± SD)	2,898.23±485.73	3,017.92±380.67	2,723.64±565.72	<0.001*
(min-max)	(1,130 to 3,992)	(1,896 to 3,778)	(1,130 to 3,992)	
Apgar score at 1 minute <7	10 (4.8)	3 (2.4)	7 (8.2)	0.094
Mode (min-max)	9 (2 to 10)	9 (2 to 9)	9 (3 to 10)	
Apgar score at 5 minute <7	0 (0.0)	0 (0.0)	0 (0.0)	-
Mode (min-max)	10 (7 to 10)	10 (8 to 10)	10 (7 to 10)	
Injury to the baby: shoulder dystocia	2 (1.0)	1 (0.8)	1 (1.2)	1.000
Refer to NICU	4 (1.9)	1 (0.8)	3 (3.5)	0.306
Parous group	n = 711	n = 336	n = 375	
BW (gms) (mean ± SD)	3,033.22±445.03	3,082.31±430.78	2,989.23±453.49	0.005*
(min-max)	(740 to 4,250)	(1,025 to 4,250)	(740 to 4,228)	
Apgar score at 1 minute <7	11 (1.5)	4 (1.2)	7 (1.9)	0.466
Mode (min-max)	9 (0 to 10)	9 (3 to 10)	9 (0 to 10)	
Apgar score at 5 minute <7	3 (0.4)	0 (0.0)	3 (0.8)	0.251
Mode (min-max)	10 (0 to 10)	10 (7 to 10)	10 (0 to 10)	
Injury to the baby: shoulder dystocia	11 (1.5)	8 (2.4)	3 (0.8)	0.088
Refer to NICU	13 (1.8)	6 (1.8)	7 (1.9)	0.936

Value are presented as n (%), * significant at $p<0.05$
BW = birth weight

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ผลลัพธ์การตั้งครรภ์ระหว่างของผู้คลอดสุขภาพแข็งแรงที่ได้รับการตัดหรือไม่ตัดฝีเย็บ

เอกชัย โควาวิสารัช, จาเน็ต หลายอำนวย

ภูมิหลัง: *การตัดฝีเย็บเป็นหัตถการทางสูติกรรมที่กระทำกันบ่อยในอดีตกระทำกันประมาณร้อยละ 65 ของผู้คลอดทางช่องคลอดเมื่อ 25 ปีที่ผ่านมา (พ.ศ. 2522) เหลือเพียงร้อยละ 18 ใน พ.ศ. 2546 แต่การตัดฝีเย็บยังเป็นหัตถการที่กระทำกันบ่อยในโรงพยาบาลราชวิถี*

วัตถุประสงค์: *เพื่อเปรียบเทียบผลและภาวะแทรกซ้อนของมารดาและทารกจากการคลอดทางช่องคลอดภายใน 48 ชั่วโมง ระหว่างผู้คลอดสุขภาพแข็งแรงที่ได้รับการตัดฝีเย็บและไม่ได้รับการตัดฝีเย็บ*

วัสดุและวิธีการ: *เก็บข้อมูลจากเวชระเบียนของผู้ที่มาคลอดทางช่องคลอดที่มีสุขภาพแข็งแรงที่ห้องคลอดโรงพยาบาลราชวิถีระหว่างวันที่ 1 มกราคม พ.ศ. 2555 ถึงวันที่ 31 ธันวาคม พ.ศ. 2555 จำนวน 920 คน โดย 460 คนเป็นผู้คลอดที่ได้รับการตัดฝีเย็บและอีก 460 คน ไม่ได้รับการตัดฝีเย็บ และเป็นผู้คลอดในลำดับถัดจากผู้ที่ได้รับการตัดฝีเย็บตามลำดับเวลาการคลอด ข้อมูลที่เก็บรวมลักษณะของมารดา ผลที่เกิดขึ้นทั้งต่อมารดาและทารก*

ผลการศึกษา: *ส่วนใหญ่ผู้คลอดในกลุ่มตัวอย่างเป็นครรภ์หลัง (711/920, 77.3%) อายุครรภ์ การตั้งครรภ์ ครรภ์แรก และการคลอดระยะที่สอง มีจำนวนมากกว่าในกลุ่มตัดฝีเย็บ การฉีกขาดแผลฝีเย็บระดับที่ 3 และระดับที่ 4 เกิดมากกว่าในกลุ่มที่ตัดฝีเย็บอย่างมีนัยสำคัญ (21.0%: 0.0% และ 20.2%: 0.0%, p<0.001) ในครรภ์แรกแต่ไม่แตกต่างกันในครรภ์หลัง การติดเชื้อของแผลฝีเย็บภายใน 48 ชั่วโมงหลังคลอด ในกลุ่มครรภ์หลังใกล้เคียงกัน และไม่พบการติดเชื้อของแผลฝีเย็บในกลุ่มครรภ์แรกเลย น้ำหนักทารกแรกคลอดในกลุ่มตัดฝีเย็บสูงกว่ากลุ่มไม่ตัดอย่างมีนัยสำคัญ (3,064.95±418.44 กรัม vs. 2,940.15±486.61 กรัม; p<0.001) นอกจากนั้นภาวะแทรกซ้อนของทารกจากทั้งสองกลุ่มใกล้เคียงกัน*

สรุป: *อุบัติการณ์ของแผลฝีเย็บระดับที่ 2, 3 และ 4 สูงกว่าในผู้คลอดสุขภาพแข็งแรงกลุ่มที่ได้รับการตัดฝีเย็บ เมื่อเทียบกับกลุ่มที่ไม่ได้รับการตัดฝีเย็บ*
