

The outcomes of midline versus medio-lateral episiotomy

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Abstract

Background

Episiotomy is the surgical enlargement of the vaginal orifice by an incision of the perineum during the second stage of labor or just before baby delivery. Through 1970s, it was common practice to perform episiotomy for almost all women having their first delivery. The reasons behind its uses included prevention of severe perineum tears and easier to repair. However, there is no ultimate available data to suggest if it should be midline or medio-lateral episiotomy. The objectives of this study aimed to evaluate the extended perineal tear, pain scores, wound infection rate and other complications between midline and medio-lateral episiotomy.

Methods

A prospective cohort study of 1,302 women who gave vaginal birth between April 2005 and February 2006 at Srinagarind Hospital, a tertiary care center in the Northeastern part of Thailand, recruited to study. They were term low risk pregnancy. They were assessed the study outcomes in rate of deep perineal tear (perineal tear with anal sphincter and/or rectum tear), its complications, and their satisfaction at 48 hours and 6-week postpartum period.

Results

There were deep perineal tear 14.79% in women with midline episiotomy, which greater than there were in women with medio-lateral episiotomy (6.97%) (p-value < 0.05). There was no difference in other outcomes including blood loss, vaginal hematoma, infection, pain, dyspareunia, and satisfaction. The risk factors of deep perineal tear were midline episiotomy, primiparity, maternal height less than 145 cm, baby birth weight >3,500 gm, and forceps extraction for vaginal delivery.

Conclusions

Midline episiotomy would have more deep perineal tear than medio-lateral episiotomy which we should consider that deep perineal tear might be more likely to occur in cases with other risk factors.

Background

Episiotomy is the surgical enlargement of the vaginal orifice by an incision of the perineum during the second stage of labor or just before baby delivery. This procedure is done with scissors and requires sutured repairing [1]. Through 1970s, it was common practice to perform episiotomy for almost all women having their first delivery. The reasons behind its uses included prevention of severe perineum tears and easier to repair. Another common cited but unproven benefit of routine episiotomy was the prevention of pelvic relaxation. A number of observational studies and randomized trials showed that routine episiotomy is associated with an increase incidence of anal sphincter and rectal tears [2].

In Cochrane Database of systematic review 1999, there was recommended a restrictive use of episiotomy rather than routine use of episiotomy. However, there was not described the indications of episiotomy in terms of the assisted vaginal delivery (forceps or vacuum), preterm delivery, breech delivery, predicted macrosomia, and presumed imminent tear. No trial was included to the review to compare medio-lateral versus midline episiotomy because of poor methodological quality [3]. Then there is no ultimate available data to suggest if it should be midline or medio-lateral episiotomy. In Srinagarind Hospital, our personnel were encouraged to use restrictive episiotomy and independently selected episiotomy type.

The objectives of this study aimed to evaluate the deep perineal tear, pain scores, wound infection rate and other complications between midline and medio-lateral episiotomy in 48-hour and 6-week postpartum period.

Methods

This is a prospective cohort study. We recruited 1,302 pregnant women who gave vaginal births at Srinagarind Hospital, Khon Kaen University, a tertiary care center in the northeastern part of Thailand, between April 2005 and February 2006. They were low risk pregnant women according to the following criteria: singleton, cephalic presentation, and term pregnancy. All of them were performed episiotomy which dependently selected midline or medio-lateral type by the individual attending personnel. Women with spontaneous perineal tear were not included. We excluded pregnant women who received epidural analgesia and/or had any underlying diseases such as diabetes mellitus, chronic renal disease, immune deficiency related diseases.

We collected some of the study data from their medical records. The primary outcome of deep perineal tear which defined as perineal tear with anal sphincter and/or rectum tear was assessed by their attending physicians or nurses. The amount of blood loss were estimated by the delivery attendants based on visual inspection. By 48 hours after delivery, they were asked to fill the pain scoring form which including informed consent to assess their perineal pain. We used pain scoring range of 0-10 for none to severe pain. While their attending physicians would perform physical examination to assess perineal hematoma, episiotomy wound infection if there was swelling with or without pus discharge from episiotomy wound. By six weeks postpartum, they were interviewed via telephone call by a physician if they were not followed up at

postpartum clinic to assess perineal pain, wound infection, dyspareunia (defined as pain or discomfort on the episiotomy wound) and their satisfaction.

We used STATA 9.0 software for Windows (STATA Corp., College Station, TX) for data processing and analysis. Results were reported as mean, standard deviations (S.D.), median, range, relative risk (RR), and 95% confidence interval (CI).

This study was approved by the Human Research Ethics Committee of Khon Kaen University.

Results

Among 1,302 studied pregnant women, 426 were performed midline episiotomy, 876 were performed medio-lateral episiotomy for their deliveries. The baseline characteristics of the two groups were similar in terms of maternal weight before delivery, maternal height, baby birth weight, operative vaginal delivery, and antibiotic prophylaxis. However, there was statistical significant difference between the two groups in terms of maternal age, gravidity, parity, gestational age, duration of second stage, baby birth asphyxia, suture material used for perineal repair, duration of perineal repair, and type of personnel who performed their delivery (p-value < 0.05) as shown in Table 1.

There were deep perineal tears 63 cases of 426 women with midline episiotomy (14.79%). This occurred greater than women with medio-lateral episiotomy which found 61 cases from 876 women (6.97%) with statistical significant (p-value < 0.05). However, there was no statistical significant difference in the outcomes of blood loss

(median = 200 ml., range 50-100 ml. in midline group vs. median = 200 ml., range 50-900 ml. in medio-lateral group), vaginal hematoma complication after delivery (2/426 vs. 1/876).

We could assess pain scores and wound infection at 48-hour postpartum period from women who gave informed consent in 222 of 426 cases of midline episiotomy and 536 of 876 of medio-lateral episiotomy. There was no difference of pain scores at 48 hours after delivery between the two groups (mean = 3, range 0-8 in midline group vs mean = 3, range 0-9 in medio-lateral group). There was only one case of episiotomy wound infection occurred in the medio-lateral episiotomy group.

Among studied women, we have a successful telephone call to assess the outcomes in 312 women (24.0%) at 6-week postpartum period. We found no statistical significance between two groups on pain scores and satisfaction on their episiotomy. There were only 5 cases of midline episiotomy and 19 cases of medio-lateral episiotomy had sexual intercourse before six weeks postpartum. There was no difference on dyspareunia between two groups. None of them had wound infection.

We assessed the risk factors of deep perineal tear using univariate analysis which there were statistically significant in women with midline episiotomy (RR 2.12; 95% CI 1.52, 2.96), primiparity (RR 3.47; 95% CI 2.27, 5.31), maternal height \leq 145 cm (RR 2.60; 95% CI 1.19, 5.67), vacuum extraction (RR 1.92; 95% CI 1.17, 3.15), forceps extraction (RR 4.04; 95% CI 2.70, 6.04), duration of second stage $>$ 60 minutes (RR 2.30; 95% CI 1.17, 4.45). We controlled confounders of the factors affecting deep perineal tear by using multivariate analysis, the only statistical

significant factors are midline episiotomy (RR 1.94; 95% CI 1.25, 2.99), nulliparity (RR 3.56; 95% CI 2.23, 5.69), maternal height \leq 145 cm (RR 4.22; 95% CI 2.01, 8.44), baby birth $>$ 3500 gm (RR 2.22; 95% CI 1.46, 3.38), and forceps extraction (RR 2.82; 95% CI 1.89, 4.19), as shown in Table 2.

Discussion

From this cohort study, among 1,302 low risk pregnant women were assessed the outcomes of midline and medio-lateral episiotomy. We found that midline episiotomy had greater rate of deep perineal tear than medio-lateral episiotomy (14.8 % vs 6.9%) but no difference between the two groups on other outcomes such as blood loss, hematoma, infection, pain and dyspareunia.

This study's results were similar to the previous reports regarding to deep perineal tear were found more in cases of midline episiotomy than in cases of medio-lateral episiotomy. As a previous study by Aytan H, et al., found severe perineal lacerations was 3% with midline and 1% with medio-lateral group [4] that was similar to Angioli R, et al., reported 6.6% in midline and 4.1% medio-lateral episiotomy, and midline group had more incidence of deep perineal tear than medio-lateral group [5].

We found that the risk factors of deep perineal tear were midline episiotomy, primiparity, maternal height \leq 145 cm, baby birth weight $>$ 3500 gm, and forceps extraction. The results of this study were also similar to previous studies' results [6-13].

Another study by Werner CH, et al., reported that midline episiotomy had less hematoma formation and blood loss [12]. While our study found that vaginal

hematoma was the only complication which occurred in the two groups but there was no difference. This is a rare complication that our study might not have power to detect the difference.

A previous study to comparison between midline and medio-lateral episiotomy by Coats PM, et al., a randomized controlled trial, found no difference in perineal pain at immediate and 3 months postpartum [9] which is similar to our study's results. While another previous study by Werner CH, et al., found significant less pain in midline episiotomy than medio-lateral on the third day of postpartum period [12]. Somehow our study might have limitation on pain assessment evaluation since the proportion of women who gave inform consent and fill the pain scoring form by 48 hours after delivery and were interviewed via the telephone call at six weeks postpartum was quite low.

Our study found only one case of wound infection in the medio-lateral episiotomy group, occurred at 48 hours and absent at 6 weeks postpartum period. A previous study reported by Larsson PG, et al., to assess perineal problems after episiotomy compared with those after spontaneous perineal laceration, found a significant higher infection rate in the episiotomy group than in spontaneous perineal laceration group [14]. Another reported by Harrison RF, et al., had no case of infection for the first four days after delivery and 6 weeks postpartum check up [15]. Whereas Owen and Hauth, retrospectively reviewed records for five years of births at the University of Alabama Hospitals, there were only ten cases of postpartum perineum infections in 20,713 deliveries, all of the infectious complications occurred in midline episiotomy [16].

Regarding to satisfaction, we found that almost all women in both groups satisfied with her perineum scar. On dyspareunia, midline episiotomy was less than medio-lateral episiotomy (0% vs. 15.8%). However we could not firmly conclude that which one is better since a few numbers of subjects who had sexual intercourse during postpartum period within six weeks postpartum. A previous reported midline episiotomy was better than medio-lateral on sexual function, healing, and improved appearance of the perineal scar [17].

The only a few data were available and cannot make a strong conclusion for its long term effects because there was high rate of loss follow up. Another important immediate effect of episiotomy type on blood loss from our study, we did not find the difference among the two type of episiotomy. While by theory, midline episiotomy the line of incision stays within an area where the muscles of the perineum from both sides connected that should resulted in less amount of blood loss [12]. We might under estimated blood loss by visual inspection which would be unrecognized error that our study also cannot make a firm conclusion if we did not use measuring method to estimate blood loss.

In conclusion, midline episiotomy would have more cases of deep perineal tear than medio-lateral episiotomy. The risk factors of deep perineum tear are primiparity, maternal height, baby birth weight, forceps extraction for vaginal delivery that obstetricians should concern to perform which type of episiotomy to avoid deep perineal tear.

Conclusions

Midline episiotomy would have more deep perineal tear than medio-lateral episiotomy which we should consider that deep perineal tear might be more likely to occur in cases with other risk factors.

Competing interests

No competing interest.

Authors' contributions

Sooklim R, Thinkhamrop J, Pitak P, Chansamak S have made substantial contributions to conception and design, acquisition of data, analysis and interpretation of data; Sooklim R, Thinkhamrop J, Lumbiganon P, Prasertcharoensuk W, Pattamadilok J, Chongsomchai C, and Seejorn K have been involved in drafting and revising the manuscript; Thinkhamrop J, and Seejorn K have given final approval of the version to be published.

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Table 1 Baseline characteristic of studied pregnant women

Characteristics	Midline episiotomy (n=426)	Medio-lateral episiotomy (n=876)	P- value
Age (yr, median, min-max)	28 (16-44)	26 (12-47)	<0.05
Weight before delivery (kg, median, range)	64 (44.3-93.2)	64.8 (45.4-96.3)	0.40
Height (cm, mean \pm SD)	156.7 \pm 5.0	156. \pm 5.2	0.23
Gravidity (No., mean \pm SD))	1.9 \pm 0.9	1.7 \pm 0.9	<0.05
Nulliparous (No., %)	206 (48.4)	488 (55.7)	<0.05
Multiparous (No., %)	220 (51.6)	388 (44.3)	<0.05
Gestational age (wks, mean \pm SD)	38.7 \pm 1.3	38.9 \pm 1.2	<0.05
Duration of 2 nd stage (min, median, min-max)	13 (1-111)	14 (1-140)	<0.05
Baby birth weight (gm, mean \pm SD)	3,104.4 \pm 346.5	3,147 \pm 383.9	0.05
Birth asphyxia. (No., %) (Apgar score at one minute \leq 7)	14(3.3)	64(7.3)	<0.05
Suture's time (min, mean \pm SD)	22.75 \pm 11.40	26.15 \pm 12.89	<0.05
Estimate blood loss (ml, median, min-max)	200 (50-1,000)	200 (50-900)	0.53
Type of delivery. (No., %)			0.07
1. normal delivery	379 (88.9)	734(84.8)	
2. forceps extraction	22 (5.7)	49(5.6)	
3. vacuum extraction	25 (5.9)	84(9.6)	
Delivery performed by (No., %)			<0.05
1. intern	5(1.2)	57(6.5)	
2. resident	155(36.4)	725(82.8)	
3. staff	266(62.4)	94(10.7)	
Suture material. (No., %)			<0.05
1. polyglycolic acid	28(6.6)	57(6.5)	
2. non polyglycolic acid	369(86.7)	816(93.2)	
3. combined	29(6.8)	3(0.3)	
Antibiotic prophylaxis at LR (No., %)	28(6.6)	44(5.1)	0.26

Table 2 Risk factors of deep perineal tear

Risk factors	Univariate analysis RR (95% CI)	Multivariate analysis RR (95% CI)
Midline episiotomy	2.12 (1.52, 2.96)*	1.94 (1.25, 2.99)*
Maternal age >35 yrs., <20 yrs.	0.81 (0.49, 1.33)	0.94 (0.56, 1.59)
Primiparity	3.47 (2.27, 5.31)*	3.56 (2.23, 5.69)*
Gestational age > 41 wks.	0 (α , α)	8.39 (0, α)
Maternal height \leq 145 cm.	2.60 (1.19, 5.67)*	4.22 (2.01, 8.44)*
Maternal body mass index >25	0.94 (0.65, 1.36)	1.01 (0.96, 1.06)
Baby birth weight > 3500 gm.	1.51 (0.99, 2.27)	2.22 (1.46, 3.38)*
Experienced Physician		
1. intern	2.50 (0, α)	9.45 (0, α)
2. resident	0.48 (0.34, 0.67)	0.69 (0.44, 1.08)
3. staff	1	1
Operative vaginal delivery		
1. vacuum extraction	1.92 (1.17, 3.15)*	1.12 (0.62, 2.00)
2. forceps extraction	4.04 (2.70, 6.04)*	2.82 (1.89, 4.19)*
3. normal vg. delivery	1	1
Duration of second stage > 60 min	2.30 (1.17, 4.54)*	1.69 (0.81, 3.54)

*with statistical significance