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Incidence of Obstetric Anal Sphincter Injuries by 60 Degrees for the Incision Angle of Mediolateral Episiotomy before Delivery

Phiangjit Wiruchpongsanon MD,
Apichai Maharungruengrat MD.

Department of Obstetrics and Gynecology, Taksin Hospital 10600, Thailand

ABSTRACT

Objective: To evaluate the incidence of obstetric anal sphincter injuries (OASI) by 60 degrees for the incision angle of mediolateral episiotomy before delivery.

Design: Descriptive study.

Setting: Department of Obstetrics and Gynecology, Taksin Hospital, Bangkok.

Material and Method: Descriptive study of 70 primiparous women at 37-42 weeks of gestation deliveried between October 2011 and May 2012 in the labor room, Taksin Hospital. All women were incised with 60 degrees of mediolateral episiotomy. The main outcome was obstetric anal sphincter injuries. And the angles formed by the suture lines with the midline were measured.

Main outcomes measures: Incidence of obstetric anal sphincter injuries and angle formed by the suture line with the midline.

Results: Of 70 primiparous women recruited into the present study, the mean gestational age was 38.67 $\pm$ 1.05 weeks, the mean birthweight was 3011 $\pm$ 334 grams. The mean suture angle of episiotomy was $42^0 \pm 4.8^0$ with change of angle $18^0 \pm 4.8^0$. The incidence of OASI was 1.4% (1 of 70).

Conclusion: The incision angle 60 degrees of mediolateral episiotomy before delivery is adequate angle to prevent obstetric anal sphincter injuries.

Keywords: anal sphincter injuries, episiotomy

Introduction

Obstetric anal sphincter injuries (OASI) or third and fourth degree tears complicate 0.5-15 % of vaginal deliveries[1,2]. Published series suggest that 30-50% of women are afflicted with anal incontinence, faecal urgency, dyspareunia and perineal pain[1,3-6]. The most important treatment is prevention. A recent systematic review[7] identified nulliparous, birthweight over 4,000 g., instrumental delivery, epidural anesthesia, induction of labor, delay in second stage of labor and persistent occipito-posterior position as the significant risk factors for such injuries. Episiotomy appeared to be protective against sphincter injury.

Episiotomy is the most common operation

performed in obstetrics. It was also believed to prevent the development of OASI but there is no evidence to support the use of episiotomy for this purpose[8] In fact, midline episiotomy (vertical incision in the direction of the anal sphincter), when compared with mediolateral episiotomy (incision directed towards the ipsilateral ischial tuberosity), was associated with significant higher rates of OASI. (12% versus 2%)[9-11].

However, despite the use of mediolateral episiotomy, a large proportion of women still develop OASI. The technique of performing mediolateral episiotomy is not described consistently in standard obstetric and midwifery textbooks but a consensus appears to be that the incision should begin at the posterior fourchette and be directed at an angle of between 40^0 and 60^0 from the midline[12].

Andrews et al[13] investigated differences in mediolateral episiotomy between doctors and midwives and found that doctors performed episiotomies that were significantly deeper, longer and more obtuse than those by midwives. In addition, no midwife and only 22% doctors performed truly mediolateral episiotomies.

Eogan et al[14] assessed 100 primiparas who underwent mediolateral episiotomy and found that the mean suture line angle was significant more acute in the 54 women who sustained a third degree tear than in the 46 who did not (30^0 vs 38^0). And Kalis et al[15] has demonstrated that the angle formed by the midline and the incision was 40^0 in all women, but the median angle of the suture line after delivery was 20^0 (mean 21.3^0) in those who had their episiotomy when the head was crowning.

In Taksin Hospital, uncomplicated deliveries are handled by midwives with the routine mediolateral episiotomy. The aim of the present study was to assess the incidence of OASI from the incision angle of 60^0 of mediolateral episiotomy.

Material and Method

This study was designed as descriptive study and approved by the Ethics Committee of the institution. Seventy cases were needed according to the estimated prevalence of OASI of 7%, with acceptable error of 6% at 95% significance level. Data were collected from October 2011 to May 2012.

The inclusion criteria were uncomplicated, singleton, nulliparous, 37-42 weeks of gestation, fetus in cephalic presentation and vaginal delivery designed. The exclusion criteria were instrumental delivery and previous surgical scar of perineum.

Cases were selected from the first delivering woman each day who met inclusion and exclusion criteria and agree to participate in the study.

Labor was conducted according to institutional guideline. All women were delivered only by the investigator, who also performed and sutured all episiotomies and measured all studied variables.

The incision line began at the posterior fourchette and formed a 60^0 angle with the midline, using a sterile aluminum tool in triangle shape with 60^0 (Fig. 1). A piece of transparent plastic film was placed on the perineum, and the lines of the episiotomy and perineal midline were drawn using a permanent marker. Episiotomy was performed on the marked line when the head was crowning (with the genital hiatus at least 40 mm. in diameter). The angle after repair was defined as the angle formed by the suture line and the midline. All measurements were performed in the lithotomy position with leg flexed at the hips joints at an angle between 90^0 and 100^0. All variables were measured using a protractor as Fig. 2.

The diagnosis of OASI was confirmed by the investigator. A partial or complete disruption of the external anal sphincter without involvement of the anal or rectal mucosa was classified as a third degree perineal tear, while tears involving the anal or rectal mucosa were classified as fourth degree.

Descriptive statistics including mean, standard deviation, number, and percentage were used to describe various baseline characteristics. Incidence of OASI was estimated.

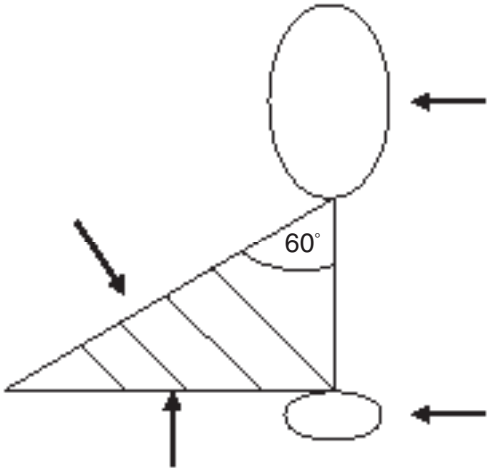

Fig. 1. Incision line measured using a aluminium tool in triangle shape with 60°

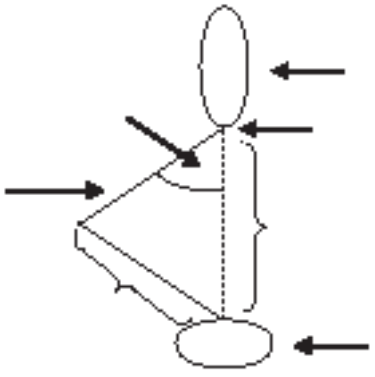

Fig. 2. The measurement performed after perineorrhaphy

Results

A total of 70 uncomplicated, singleton, nulliparous pregnant women between 37-42 weeks of gestation were enrolled. The characteristics are summarized in Table 1.

Table 1. Baseline characteristics of 70 women who underwent mediolateral episiotomy

Characteristics	Mean ± SD
Mean maternal age (years)	22.64 ± 5.12
Mean gestational age (weeks)	38.67 ± 1.05
Mean body mass index (kg/m^2)	25.83 ± 3.67
Median duration of the 2nd stage of labor (min)	38 (8-122)
Mean birth weight (g)	3011 ± 334
Mean estimated blood loss (ml)	201.00 ± 40.69

All episiotomies were performed at 60^0 as described. Mean episiotomy and the perineal length were 3.25 and 3.14 cm. The mean suture angle of episiotomy was $42^0 \pm 4.8^0$ with change of angle $18^0 \pm 4.8^0$ as demonstrated in Table 2. The incidence of OASI was 1.4 % (1 of 70). There were 3 women (4.3%) who had a perineal tear continuing the incision and 3 women (4.3%) had a vaginal tear continuing the incision but no women in this group sustained anal sphincter injury And no postpartum hemorrhage was found in this study.

Table 2. Outcome of 70 women who underwent mediolateral episiotomy

Outcome	Mean ± SD
Suture angle of episiotomy	$42^0 \pm 4.8^0$
Change of angle	$18^0 \pm 4.8^0$
Length of the episiotomy (cm)	3.25 ± 0.42
Perineal length (cm)	3.14 ± 0.61
Shortest distance from the anal canal (cm)	2.31 ± 0.38

For woman that sustained anal sphincter injury, she was 20 years old, BMI of 21.16 kg/m^2, her infant's birthweight was 3130 grams and had a second stage of labor 49 minutes. The suture angle of episiotomy was 41^0.

Discussion

This study shows that the angle of the mediolateral episiotomy is significantly different at the time of the incision and after the repair. The angle formed by the midline and the episiotomy was 60^0 in all women, but the mean angle of the suture line after delivery was 42^0 in those who had their episiotomy when the head was crowning. The results showed that the change of angle of episiotomy was 18^0 which was also comparable to previous study by Kalis et al[15] (20^0 change).

In this study, incidence of OASI was 1.4% which was comparable to previous study by Eogan et al[14]. In addition, such study also reported that the women who did not had a third degree tear had significantly greater post-repair angle than those who did (38^0 vs 30^0). Incidence of perineal tear continuing the incision was 8.57% which was also similar to previous report by Kalis et al[15] (14%).

For the woman who sustained anal sphincter injury, she don't had obstetrics factors that associated with levator ani muscle injuries. Because she don't use instrumental vaginal delivery and second stage of labor only 49 mintues (mean for this study 34 ± 37 min) that less than the study by Kearney et al[16], that the women who sustained a levator ani injury had a second stage of labor 170.5 ± 117.5 min. And her birthweight was only 3,130 grams, not more than 4,000 grams for risk of sustained anal sphincter injury[7].

The strength of this study was that variation in episiotomy angle was minimized by using the specific tool. However, some limitations should be noted. This study was performed by only one obstetrician, which caused selection bias. Long term function of anal sphincter muscle, incontinence and pain from episiotomies were not evaluated. And occult OASI that must detected by additional ultrasound investigation was not evaluated in this study. In addition, episiotomy angle to prevent OASI was also not evaluated in multiparous women or other complicated case and those with instrumental deliveries.

With the 18^0 change of episiotomy angle, doctors and nurses should aware of episiotomy angle they make. The angle might have to be wider to prevent or minimized OASI. In addition, the results can be applied for routine use with the aid of similar instrument for episiotomy, both in clinical practice or training.

Considering the results along with those of Eogan[14], 60^0 seems to be an adequate episiotomy angle to prevent OASI.

Conclusion

The incision angle 60 degrees of mediolateral episiotomy before delivery is adequate angle to prevent obstetric anal sphincter injuries. This is a small study, and research with a large sample is needed to further investigate.

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References

1. Sultan AH, Kamm MA, Hudson CN, Bartram CI. Third degree obstetric anal sphincter tears: risk factors and outcome of primary repair. BMJ 1994;304:887-91.
2. Walsh CJ, Mooney EF, Upton GJ, Motson RW. Incidence of third-degree perineal tears in labour and outcome after primary repair.Br J Surg 1996;83:218-21.
3. Fitzpatrick M,Behan M, O'Herlihy C. A randomized clinical trial comparing primary overlap with approximation repair of third-degree obstetric tears. Am J Obstet Gynecol 2000;183:1220-4.
4. de Leeuw JW, Vierhout ME, Struijk PC, Hop WCJ, Wallenberg HCS. Anal sphincter damage after vaginal delivery: functional outcome and risk factors for fecal incontinence. Obstet Acta Gynecol Scand 2001;80:830-4.
5. Williams A. Third-degree perineal tears: risk factors and outcome after primary repair. J Obstet Gynecol 2003;23:611-4.
6. Dee EF, Becky G, Pavna B, Lorri M, John OLD. Fecal and urinary incontinence after vaginal delivery with anal sphincter disruption in an obstetrics unit in the United States. Am J Obstet Gynecol 2003;189:1543-50.
7. de Leeuw JW, Struijk PC, Vierhout ME, Hop WCJ, Wallenberg HCS. Risk factors for third degree perineal ruptures during delivery. BJOG 2001;108:383-7.
8. Carroli G, Belizan J. Episiotomy for vaginal birth [Cochrane review]. In: Cochrane Library, issue 3,2000.
9. Signorello LB, Harlow BL, Chekos AK, Repke JT. Midline episiotomy and anal incontinence: retrospective cohort study. BMJ 2000;320:86-90.
10. Coats P, Chan K, Wilkins M. A comparison between midline and mediolateral episiotomies. BJOG 1980;87:408-13.
11. Robinson JN, Norwitz ER, Cohen AP, Lieberman E. Predictors of episiotomy use at first spontaneous vaginal delivery. Obstet Gynecol 2000;96:214-8.
12. Tincello DG, Williams A, Fowler GE, Adams EJ, Richmond DH, Alfirevic Z. Differences in episiotomy technique between midwives and doctors. BJOG 2003;110:1041-4.
13. Andrews V, Thakar R, Sultan AH, Jones PW. Are mediolateral episiotomies actually mediolateral ? BJOG 2005;112:1156-8.
14. Eogan M, Daly L, O'Connell PR, O'Herlihy C. Does the angle of episiotomy affect the incidence of anal sphincter injury? BJOG 2006;113:190-4.
15. Kalis V, Karbanova J, Horak M, Lobovsky L, Kralickova M, Rokyta Z. The incision angle of mediolateral episiotomy before delivery and after repair. Int J Gynecol Obstet 2008;103:5-8.
16. Kearney R, Miller J, Ashton-Miller J, DeLancey J. Obstetric factors associated with levator ani muscle injury after vaginal birth. Obstet Gynecol 2006;107:144-9.

อุบัติการณ์การฉีกขาดของหูรูดทวารหนักทางสูติกรรมจากการตัดฝีเย็บเฉียงออกไปด้านข้างด้วยมุม 60 องศาก่อนคลอด

เพียงจิตต์ วิรัชพงศานนท์, อภิชัย มหารุ่งเรืองรัตน์

วัตถุประสงค์ *: เพื่อศึกษาอุบัติการณ์การฉีกขาดของหูรูดทวารหนักทางสูติกรรมจากการตัดฝีเย็บเฉียงออกไปด้านข้างด้วยมุม 60 องศาก่อนคลอด*

วัสดุและวิธีการ *: สตรีตั้งครรภ์เดี่ยวอายุครรภ์เท่ากับหรือมากกว่า 37 สัปดาห์ ที่ไม่เคยคลอดบุตรทางช่องคลอดมาก่อน จะได้รับการวัดมุมโดยใช้เครื่องมือที่ทำขึ้นเป็นรูปสามเหลี่ยมมีมุม 60 องศา ทำการวัดมุมขณะที่มี crowning ของศีรษะเด็ก (เส้นผ่าศูนย์กลางของ genital hiatus อย่างน้อย 4 เซนติเมตร) แล้วทำการตัดฝีเย็บ ทำการตรวจดูว่ามีการฉีกขาดของหูรูดทวารหนักทางสูติกรรมหรือไม่หลังเด็กคลอด หลังจากนั้นจะทำการวัดมุมของฝีเย็บและความยาวของแผลหลังจากผู้ป่วยเย็บแผลเสร็จขณะยังอยู่บน lithotomy*

ผลการรักษา *: สตรีตั้งครรภ์ 70 คน ที่ได้รับการตัดฝีเย็บด้วยมุม 60 องศา ขณะที่มี crowning ของศีรษะเด็ก พบว่ามีอายุครรภ์เฉลี่ยอยู่ในช่วง 38.67 ± 1.05 สัปดาห์ น้ำหนักทารกแรกเกิดเท่ากับ 3,011 ± 334 กรัม และมีค่าเฉลี่ยของมุมฝีเย็บหลังการเย็บซ่อมแซมเท่ากับ 42 ± 4.8 องศา โดยมีการเปลี่ยนแปลงของมุมเท่ากับ 18 ± 4.8 องศา และพบสตรีตั้งครรภ์ที่มีการฉีกขาดของหูรูดทวารหนักทางสูติกรรม 1 คนคิดเป็นร้อยละ 1.4*

สรุป *: การตัดฝีเย็บเฉียงออกไปด้านข้างด้วยมุม 60 องศาก่อนคลอดสามารถป้องกันการฉีกขาดของหูรูดทวารหนักทางสูติกรรม*