

*Original Article***A comparison between early maternal and neonatal complications of restrictive episiotomy and routine episiotomy in primiparous vaginal delivery**

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**Abstract**

**BACKGROUND:** Routine episiotomy is a controversial issue among gynecologists. The aim of this study was to compare early maternal and neonatal complications of restrictive episiotomy and routine episiotomy in primiparous vaginal delivery.

**METHODS:** In this descriptive cross-sectional study, two groups of primiparous normal vaginal delivery (NVD) cases with routine and restrictive episiotomy were studied. Immediately and in the first 24 and 48 hours after delivery, specific charts were used to compare the two groups in terms of perineal laceration size, neonatal Apgar score and post-delivery. For data analysis, SPSS was used to conduct student t-test and Kruskal-Wallis test. A p-value < 0.05 was considered significant.

**RESULTS:** Forty primiparous pregnant women were studied in each group. Episiotomy was performed in 7.5% of the restrictive group. Perineal laceration was measured as  $3.68 \pm 0.47$  cm and  $1.21 \pm 1.1$  in routine and restrictive episiotomy groups, respectively ( $p < 0.05$ ). Intact perineum or first-degree laceration was seen in 80% of the restrictive group. However, second- and third-degree laceration were respectively observed in 75% and 15% of the routine episiotomy group ( $p < 0.05$ ). Pain relief (immediately, 24 and 48 hours after delivery) was significantly higher in the restrictive group ( $p < 0.05$ ). On the contrary, no significant difference in Apgar scores at the first and fifth minutes after birth was found between the two groups ( $p > 0.05$ ).

**CONCLUSIONS:** Restrictive episiotomy results in low maternal complications. Therefore, avoiding routine episiotomy in unnecessary conditions would increase the rate of intact perineal and minor perineal trauma and reduce postpartum delivery pain with no adverse effects neither on maternal nor neonatal morbidities.

**KEYWORDS:** Episiotomy, Normal Vaginal Delivery (NVD), Perineal Laceration.

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Episiotomy is performed as one of the most common surgery procedures to facilitate delivery and prevent complications of hard labor in both mother and her neonate.<sup>1-3</sup> On the other hand, some complications such as infection, hematoma, cellulite, abscess, incontinency, rectovaginal fistula, increased maternal blood loss, necrotizing fasciitis, as well as delay in the patients' resumption of sexual activity have led to some limitations against routine episiotomy.<sup>1</sup> In addition

to its maternal benefits (such as intact pelvic floor fascia and muscles), episiotomy can also prevent some potential complications in neonates during vaginal delivery.<sup>2</sup>

The rate of episiotomy has risen considerably and it differs from country to country and in different studies.<sup>4-8</sup> Reported rates of episiotomies vary from as low as 9.70% in Sweden to as high as 100% in Taiwan.<sup>9</sup> Rates of episiotomies around the world was reported to be 71% in Germany and 49% Nigeria in a study

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published in 2006.<sup>7</sup> In Argentina, episiotomy is a routine intervention in almost all nulliparous and primiparous births.<sup>5</sup> In Iran, episiotomy seems to be almost routine for the local primiparous patients. Based on a report by Moini et al., unpublished data from a hospital in Tehran suggested the rate of episiotomy in primiparous women to be about 39%, which is higher than evidence-based recommendations for optimal pregnancy care.<sup>10</sup>

Evidences from previous studies have indicated that the routine use of episiotomy may do more harm than benefit.<sup>2,11</sup> The restrictive versus routine use of episiotomy is associated with a lower risk of posterior perineal trauma, need for suturing perineal trauma, and healing complications at seven days.<sup>1</sup> It also has beneficial effects on reducing long-term complications.<sup>12</sup> Therefore, indications for routine episiotomy are not well supported.

Although some studies reported post-delivery pain and dyspareunia to decrease when episiotomy was avoided, this was not confirmed by some other research.<sup>13,14</sup>

In several studies, primiparous women showed significantly more vulnerability to perineal injuries following episiotomy.<sup>15</sup> In some studies, 3<sup>rd</sup> and 4<sup>th</sup> degree perineal lacerations increased following episiotomy in primiparous mothers.<sup>1</sup> While Baker et al. commented that episiotomies will be necessary in almost all primigravidae,<sup>17</sup> others reported that the procedure is not routinely recommended.<sup>18</sup>

The Argentine Episiotomy Trial Collaborative Group reported that episiotomy rates above 30% and 40% cannot be justified for multiparae and primigravidae, respectively.<sup>11</sup>

Due to all these controversies and the vulnerability of primiparous women to perineal injuries following episiotomy, the aim of this study was to compare maternal and neonatal short-term complications following routine prophylactic with restrictive episiotomy.

## Methods

This descriptive cross-sectional study (Research Project Number: 83314) was conducted from October 2007 to September 2008. It in-

cluded 80 primigravida pregnant women admitted for delivery to the main labor ward of Shahid Beheshti Hospital in Isfahan, Iran. The Medical Ethics Committee of Isfahan University of Medical Sciences approved the study protocol. In addition, all subjects provided their written consent.

Pregnant women with no history of pelvic surgery or neuromuscular diseases, whose single alive fetus weighted less than 4000 grams, had a gestational age of  $\geq 37$  weeks (based on sonographic findings) and a body mass index (BMI) of less than 30 were included. Exclusion criteria were abnormal and cephalic presentations with occiput posterior and fetal macrosomia which led to using forceps, vacuum or caesarian section, fetal abnormality and intrauterine growth retardation (IUGR).

Admitted pregnant women were randomly allocated into two groups. The first group underwent routine prophylactic mediolateral episiotomy when crowning had occurred. In the second group episiotomy was carried out to facilitate vaginal delivery just when specified maternal or fetal indications had occurred based on the decision of the physician.

Perineal injuries were assessed in all cases, separately by two gynecology and obstetrics specialists.

Laceration length was measured and documented in centimeter. Furthermore, laceration severity was degreed as grades 1-4 respectively representing mucosal involvement, deep mucosal tearing with intact anal sphincter, anal sphincter involvement with intact rectal mucosa, and anal sphincter involvement with rectal mucosa tearing.

The intensity of pain felt during the first 24 and 48 hours after delivery was assessed in all patients by Visual Analog Scale (VAS) charts.<sup>19</sup> Those who needed emergency cesarean section were excluded.

In order to compare the effect of episiotomy between two studied groups, Apgar scores of neonates were recorded at the first and fifth minutes by a pediatrician.

Data was analyzed by Student's *t* and

chi-square tests to compare laceration length and mucosal injury frequency, respectively. Laceration severity and post-delivery pain were evaluated by Kruskal-Wallis test. All analyses were performed by SPSS<sub>15</sub>.

**Results**

In this study, all pregnant women in the first group (routine episiotomy) and 3 (%7.5) from the second group (restrictive episiotomy) undergone episiotomy. Indicated episiotomy in the second group was due to irregular heart beat during delivery detected by the physician. The characteristics of studied pregnant women and their neonates in the two studied groups are presented in Table 1.

The prevalence of different laceration

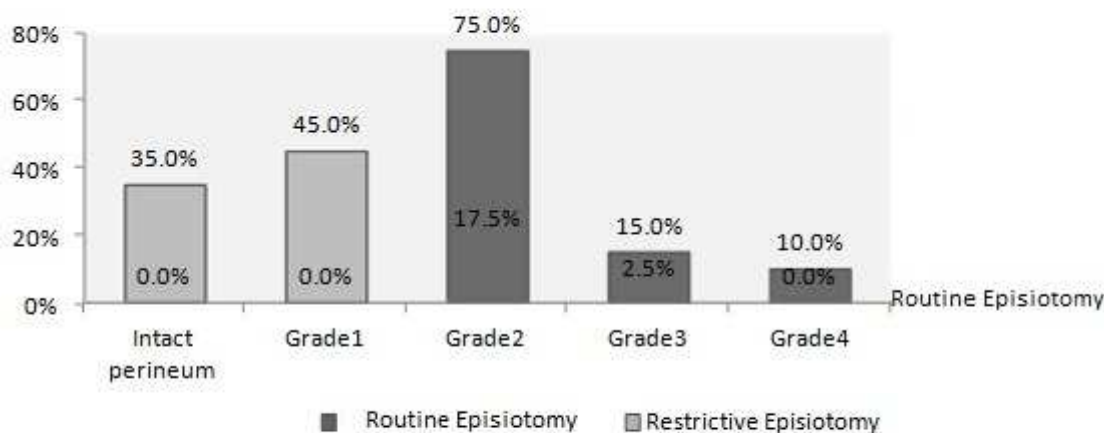
grades in the two studied groups is presented in Figure 1. As Figure 1 shows, 35% of mothers in the second group had intact perineum. There were statistically significant differences among our cases considering perineum laceration grade (CI = %95, p = 0.026). Third grade laceration was the most severe when episiotomy was avoided (1/40; 2.5%).

Maximum pain severity in the two studied groups is presented in Figure 2. According to VAS, avoiding episiotomy would result in less severe pain immediately, 24 and 48 hours after vaginal delivery compared to routine mediolateral episiotomy. While anterior laceration was not observed in any cases following routine episiotomy, it occurred in 3 (7.5%) of restricted cases (p > 0.05).

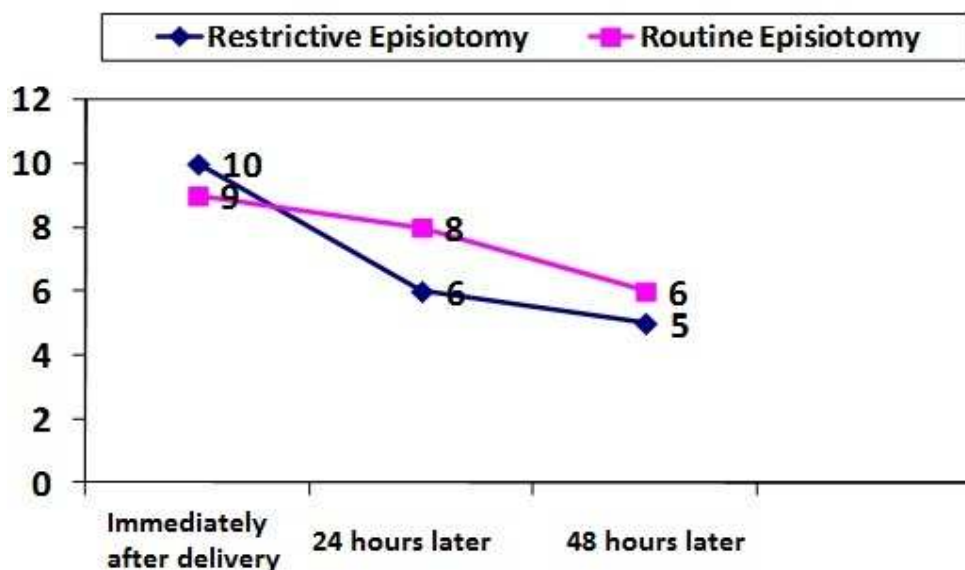
**Table 1.** The characteristics (mean ± SD) of pregnant women and their neonates in routine (Group 1) and restrictive (Group 2) episiotomy groups

	Group 1 N = 36	Group 2 N = 36	P-value
Age (year)	26.4 ± 5.7	26.1 ± 6.1	NS
Gestational age at delivery (week)	39.2 ± 1.04	38.6 ± 1.81	NS
Birth weight (g)	3108.7 ± 163.2	3030.7 ± 196.9	NS
Head circumference (cm)	34.82 ± 1.54	34.78 ± 1.73	NS
Laceration length (cm)	3.68 ± 0.47	1.21 ± 1.1	p < 0.05
Apgar scores at the first minute	8.8 ± 0.36	8.6 ± 0.62	NS
Apgar scores at the 5 <sup>th</sup> minute	9.8 ± 0.36	9.72 ± 0.59	NS

NS: Not significant



**Figure 1.** The prevalence of different laceration grades in routine and restrictive episiotomy groups (p < 0.05 in all grades)



**Figure 2.** Maximum pain severity according to Visual Analog Scale (VAS) charts in routine and restrictive episiotomy groups ( $p < 0.001$ )

## Discussion

The current study was performed to compare complications following routine and restrictive episiotomy among primigravida patients in Isfahan. The findings demonstrated that the rate of episiotomy indication was low in the restrictive group. In addition, the rate of maternal short-term complications, such as perineum laceration and pain severity, was less in restrictive episiotomy group than the routine group. However, neonatal complications in neonates with estimated birth weight (EBW)  $< 4000$  g was similar in the two groups, i.e. neonatal complication rate was not higher in the restrictive group. The results of this study indicated primigravida patients to have optimum chance of retaining an intact perineum if episiotomy is carried out only when considered to be essential. Our findings were in accordance with a few studies that have compared restrictive and routine episiotomy. In a similar study in Tehran, Moini et al. reported the total rate of severe perineal tears in routine episiotomy to be significantly higher than restrictive episiotomy. They concluded that routine episiotomy is associated with an increased risk of severe perineal tears and subsequent complications especially pain,

dyspareunia, and incontinence.<sup>10</sup> In this study, we did not study the long-term complications of episiotomy which is considered as the limitation of the present study. According to the results of Argentine Episiotomy Trial Collaborative Group, the main outcome measure was severe perineal trauma. Severe perineal trauma was uncommon in both groups but was slightly less frequent in the restrictive group (1.2% vs. 1.5%). Anterior perineal trauma was commoner in the restrictive group but posterior perineal surgical repair, perineal pain, healing complications, and dehiscence were all less frequent in the restrictive group. Finally, they concluded that routine episiotomy should be abandoned and that episiotomy rates above 30% were not recommended.<sup>11</sup>

In another study in Colombia by Rodriguez et al., the outcome of selective vs. routine episiotomy for the prevention of third- or fourth-degree lacerations in nulliparous women was investigated and the rate of third- or fourth-degree perineal lacerations was 14.3% and 6.8% in selective and routine episiotomy, respectively. They concluded that elective episiotomy is useful in reducing perineal lacerations specially the risk of third-degree lacerations.<sup>20</sup>

On the other hand, Murphy et al. performed a multicenter pilot randomized controlled trial in Ireland to investigate the primary (third or fourth degree laceration) and secondary (postpartum hemorrhage (PPH), neonatal trauma and pelvic floor symptoms) outcomes of routine versus restrictive use of episiotomy. In contrast to our results, they did not indicate any significant difference in both primary and secondary outcomes between two mentioned methods.<sup>21</sup> Danecker et al. found that restrictive protocols could reduce episiotomy by 36%. In their study, 29% had intact perineum following restrictive method.<sup>16</sup> In some European countries, these protocols were more efficient than the United States during the last 18 years.<sup>1,22</sup> In Sweden, episiotomy rate is reported to be less than 9% since 2002.<sup>22</sup> In our study, clinically indicated episiotomy was detected only in 7.5% of deliveries. This rate was lower than that recommended by Argentine Episiotomy Trial Collaborative Group.<sup>11</sup>

Randomized controlled trials (RCTs) comparing restrictive use of episiotomy and routine use of episiotomy during spontaneous vaginal birth have suggested significant benefits in adopting a restrictive policy, specifically a reduction in posterior perineal tears.<sup>2</sup> In this study, the mean length of perineal posterior laceration was significantly lower in restrictive episiotomy group. Similar to the study performed by Morhe et al.,<sup>23</sup> in less than half of our cases, perineum was intact following restrictive method.

Expectedly, performing episiotomy only in indicated cases will lead to less severe, if any, lacerations. After establishing several protocols to limit routine episiotomy, 3<sup>rd</sup> and 4<sup>th</sup> grade perineal lacerations have been decreased in the United States (from 42% in 1980 to 15% in 1998).<sup>1</sup> The obtained data from our study and another study in Iran<sup>10</sup> indicate similar results.

Nager et al. reported a significant increase in the length of perineal posterior laceration following episiotomy in primiparous women. They also found that episiotomy and forceps play a significant role in increasing posterior laceration length.<sup>19</sup>

Episiotomy evidently reduces the risk of anterior perineal tears.<sup>1</sup> Therefore, avoiding episiotomy would increase the rate of anterior laceration. It should be mentioned that anterior lacerations are less severe and have fewer complications than posterior lacerations in midline episiotomy.<sup>24,25</sup> Danecker et al. showed that implementing episiotomy indications could decline its rate to 30%. Although in their study anterior lacerations became more prevalent when episiotomy was avoided, this group consisted of more cases with intact perineum.<sup>16</sup> In this study however, the rate of anterior laceration was not significantly different between the two studied groups. Carroli and Mignini<sup>2</sup> and the Argentine Episiotomy Trial Collaborative Group<sup>11</sup> demonstrated anterior laceration to be higher in restrictive episiotomy.

Although some studies reported decreased post-delivery pain and dyspareunia using restrictive episiotomy, others disagreed.<sup>13,14</sup>

In another study using antenatal dilators, less pain was experienced after delivery as a result of routine episiotomy avoidance.<sup>3</sup> Similar to Moini et al.,<sup>10</sup> we found that compared to routine episiotomy, restrictive episiotomy would result in less severe pain immediately, 24 and 48 hours after vaginal delivery. In contrast, Carroli and Mignini did not observe differences in most pain measures between the two studied groups.<sup>2</sup>

Based on a randomized controlled trial performed in Germany by Danecker et al., it can be concluded that restrictive episiotomy has no effects on Apgar scores, at neither the first nor the fifth minute.<sup>16</sup> Moini et al. reported similar results.<sup>10</sup> The discrepancy observed between the current study and mentioned research may be due to geographical and ethnical variations.

Unfortunately, our study only assessed early complications. Therefore, further studies with larger sample sizes are necessary to sort indications on episiotomy in different gravid women by importance. Up to now, no study has been conducted on late complications of second deliveries in cases with or without the history of previous episiotomy. We recommend obstetricians to develop a standard or

guideline for performing episiotomies. In addition, patients need to be followed for long-term morbidities such as pelvic organ prolapse.

### Conclusion

Due to low maternal complications of restrictive episiotomy, avoiding routine episiotomy

in unnecessary conditions increases the rate of intact perineal and minor perineal trauma and reduces postpartum delivery pain with no adverse effects neither on maternal nor neonatal morbidities. It is necessary to establish some documented protocols to decide in which cases, when and how to perform episiotomy.

### Conflict of Interests

Authors have no conflict of interests.

### Authors' Contributions

All the authors have carried out the study, participated in the design of the study and data collection, performed the statistical analysis and wrote the manuscript. ADS drafted and edited the manuscript. All authors have read and approved the final manuscript.

### References

- Weeks JD, Kozak LJ. Trends in the use of episiotomy in the United States: 1980-1998. *Birth* 2001; 28(3): 152-60.
- Carroli G, Mignini L. Episiotomy for vaginal birth. *Cochrane Database Syst Rev* 2009; (1): CD000081.
- Kok J, Tan KH, Koh S, Cheng PS, Lim WY, Yew ML, et al. Antenatal use of a novel vaginal birth training device by term primiparous women in Singapore. *Singapore Med J* 2004; 45(7): 318-23.
- de Tayrac R, Panel L, Masson G, Mares P. Episiotomy and prevention of perineal and pelvic floor injuries. *J Gynecol Obstet Biol Reprod (Paris)* 2006; 35(1 Suppl): 1S24-31. [In French].
- Hartmann K, Viswanathan M, Palmieri R, Gartlehner G, Thorp J, Jr., Lohr KN. Outcomes of routine episiotomy: a systematic review. *JAMA* 2005; 293(17): 2141-8.
- Korczynski J. Routine episiotomy in modern obstetrics. Is it necessary?. *Przegl Lek* 2002; 59(2): 95-7.
- Onwuhafua PI. Childbirth in Germany and Nigeria compared. *Niger J Med* 2006; 15(4): 387-92.
- Hargrove A, Penner K, Williamson T, Ross S. Family physician and obstetrician episiotomy rates in low-risk obstetrics in southern Alberta. *Can Fam Physician* 2011; 57(4): 450-6.
- Graham ID, Carroli G, Davies C, Medves JM. Episiotomy rates around the world: an update. *Birth* 2005; 32(3): 219-23.
- Moini A, Yari RE, Eslami B. Episiotomy and third- and fourth-degree perineal tears in primiparous Iranian women. *Int J Gynaecol Obstet* 2009; 104(3): 241-2.
- Routine vs selective episiotomy: a randomised controlled trial. Argentine Episiotomy Trial Collaborative Group. *Lancet* 1993; 342(8886-8887): 1517-8.
- Signorello LB, Harlow BL, Chekos AK, Repke JT. Midline episiotomy and anal incontinence: retrospective cohort study. *BMJ* 2000; 320(7227): 86-90.
- Grant A, Gordon B, Mackrodat C, Fern E, Truesdale A, Ayers S. The Ipswich childbirth study: one year follow up of alternative methods used in perineal repair. *BJOG* 2001; 108(1): 34-40.
- Lundquist M, Olsson A, Nissen E, Norman M. Is it necessary to suture all lacerations after a vaginal delivery? *Birth* 2000; 27(2): 79-85.
- Groutz A, Cohen A, Gold R, Hasson J, Wengier A, Lessing JB, et al. Risk factors for severe perineal injury during childbirth: a case-control study of 60 consecutive cases. *Colorectal Dis* 2011; 13(8): e216-e219.
- Dannecker C, Hillemanns P, Strauss A, Hasbargen U, Hepp H, Anthuber C. Episiotomy and perineal tears presumed to be imminent: randomized controlled trial. *Acta Obstet Gynecol Scand* 2004; 83(4): 364-8.
- Baker PN, Kenny LC. *Obstetrics by Ten Teachers*. 19<sup>th</sup> ed. London: Hodder Arnold; 2011.
- DeCherney AH, Nathan L. *CURRENT Diagnosis & Treatment Obstetrics & Gynecology*. 10<sup>th</sup> ed. Norwalk: Appleton & Lange; 2006.
- Nager CW, Helliwell JP. Episiotomy increases perineal laceration length in primiparous women. *Am J Obstet Gynecol* 2001; 185(2): 444-50.

20. Rodriguez A, Arenas EA, Osorio AL, Mendez O, Zuleta JJ. Selective vs routine midline episiotomy for the prevention of third- or fourth-degree lacerations in nulliparous women. *Am J Obstet Gynecol* 2008; 198(3): 285-4.
21. Murphy DJ, Macleod M, Bahl R, Goyder K, Howarth L, Strachan B. A randomised controlled trial of routine versus restrictive use of episiotomy at operative vaginal delivery: a multicentre pilot study. *BJOG* 2008; 115(13): 1695-702.
22. Ola ER, Bello O, Abudu OO, Anorlu RI. Episiotomies in Nigeria--should their use be restricted? *Niger Postgrad Med J* 2002; 9(1): 13-6.
23. Morhe ES, Sengretsi S, Danso KA. Episiotomy in Ghana. *Int J Gynaecol Obstet* 2004; 86(1): 46-7.
24. Robinson JN, Norwitz ER, Cohen AP, Lieberman E. Predictors of episiotomy use at first spontaneous vaginal delivery. *Obstet Gynecol* 2000; 96(2): 214-8.
25. Shiono P, Klebanoff MA, Carey JC. Midline episiotomies: more harm than good? *Obstet Gynecol* 1990; 75(5): 765-70.