

## Does mediolateral episiotomy decrease central defects of the anterior vaginal wall?

Cetin Cam · Mehmet Resit Asoglu ·  
Selcuk Selcuk · Turan Aran · Niyazi Tug ·  
Ates Karateke

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### Abstract

**Objective** This retrospective study investigates the effects of mediolateral episiotomy on the pelvic floor.

**Methods** Premenopausal women suffering from urinary incontinence/genital prolapse who delivered only by vaginal route were enrolled into the study. History of diabetes, morbid obesity (BMI > 40 kg/m<sup>2</sup>), vacuum/forceps extraction, perineal lacerations that warranted repair during labor and any pelvic surgery were the exclusion criteria. Evaluation of the patients included pelvic organ prolapse quantification scores, presence of stress incontinence, urethral hypermobility, and questionnaires were obtained for overactive bladder and anal incontinence symptoms. These data obtained from patients with the history of mediolateral episiotomy were compared with those of patients with no episiotomy or any other pelvic injury that warranted surgical repair.

**Results** Groups were identical by means of demographic data, POP-Q findings, signs and symptoms of the pelvic floor. However, in the MLE group, central defects on the anterior vaginal wall were less frequent.

**Conclusion** According to the results of this retrospective study, MLE seems to prevent central defects on the anterior vaginal wall. Prospective randomized studies are needed to draw a sufficient conclusion.

**Keywords** Episiotomy · Mediolateral episiotomy · Pelvic prolapse · Central defect

### Introduction

Episiotomy was first suggested by Ould more than 250 years ago [1] to prevent perineal/rectal trauma, and pelvic relaxation [2]. Although commonly used, maternal risks and benefits of episiotomy are still controversial and its practice varies widely. A recent Cochrane database systemic review showed that restrictive episiotomy policies appear to have a number of benefits compared to routine policies but it increases the risk of anterior perineal trauma [3]. Most research in the medical literature is focused on posterior perineal trauma, protection of the perineal body and anal sphincter incontinence. Interestingly, anterior perineal trauma during parturition is considered to be with ‘minimal morbidity’ [4]. Second stage of labor is not without harm for the anterior support of the vagina [5–7] and stretching of tissues of the anterior vaginal wall may result in anterior support defects, which are also called distention cystoceles [8].

Most of the data about routine episiotomy originate from clinical trials dealing with immediate maternal results and outcomes have not been followed up into the age range, in which women are most likely to have sequelae [9]. Inevitably, evidence regarding long-term sequelae of episiotomy is fair to poor.

In this retrospective study, we aimed to evaluate the long-term effects of mediolateral episiotomy (MLE) on anterior pelvic floor comparing data of women with episiotomy and women without episiotomy.

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C. Cam · M. R. Asoglu · S. Selcuk (✉) · T. Aran ·  
N. Tug · A. Karateke  
Department of Obstetrics and Gynecology,  
Zeynep Kamil Hospital, Burhanettin Ustunel C.,  
No:20, Uskudar, 34668 Istanbul, Turkey  
e-mail: md\_sel@hotmail.com

## Materials and methods

Premenopausal women with only vaginal deliveries were included into the study. A detailed history of the vaginal deliveries was obtained; parity, birth weight, and time from the first delivery are recorded. Histories of operative delivery, obstetric perineal lacerations, which required primary or secondary repair, and/or pelvic surgery, were the exclusion criteria.

All patients underwent supine stress test for stress incontinence and Q-tip test was performed to determine urethral hypermobility. Patients were questioned for overactive bladder symptoms (urgency, frequency, and waking to void at night) and symptoms of anal incontinence (flatal, fluid, and solid).

Patients underwent a pelvic examination for the assessment of their pelvic organ quantification (POP-Q) scores and related pelvic organ prolapse stages. POP-Q assessments were carried out by the principal author (CC), blinded to the history of the patients.

Symptomatic POP was defined as protrusion of any part of the pelvic organs at or beyond the hymenal ring.

Apical prolapse was referred to the downward displacement of the vaginal apex. Abnormal descents of the anterior and posterior vaginal walls were considered as anterior prolapse and posterior prolapse, respectively. Presence of more than one type of prolapse was accepted as mixed type prolapse. If anterior vaginal wall defects were detected, sagging vaginal sulci with still present vaginal rugae were classified as paravaginal defect, whereas the presence of a central bulge and diminished vaginal rugae indicated central defect. If loss of support appeared to arise from detachment of the anterior vaginal wall's apical segment from the apex, transverse defect was diagnosed.

Student *t*, Pearson Chi-Square, and Fischer's exact tests were used for statistical analysis as appropriate by using SPSS 11.5 software. Data were given as percentages or mean  $\pm$  standard deviation (SD). All presented *p* values were two-tailed and statistical significance was set at 0.05.

## Results

A total of 198 patients fulfilled the criteria of the study. Among these, 102 had a history of MLE, and 96 women reported no episiotomy in their past deliveries. The mean age of the patients with or without episiotomy was  $41.7 \pm 7.4$  and  $41.2 \pm 8.1$  years, respectively. Parity of the patients with MLE was  $3.2 \pm 1.9$ , whereas this was  $3.3 \pm 2.1$  in the other group. Body mass index of these patients was  $27.4 \pm 4.4$  and  $28.2 \pm 4.5$  kg/m<sup>2</sup>, respectively. Mean age at the first delivery of the groups was  $24.56 \pm 4.07$  and  $24.45 \pm 4.44$  years, respectively. There

were no significant differences by age, parity, body mass index, or mean age at the first delivery of the patients with or without a history of episiotomy (Student's *t* test,  $p > 0.05$ ). In the episiotomy group, 28 patients, and in the non-episiotomy group, 24 patients had a history of macrosomic infant ( $>4,000$ g); 7 patients in the episiotomy group and five patients in the non-episiotomy groups had chronic obstructive lung disease. No significant difference was found between the groups by means of parity, macrosomic delivery and the presence of chronic obstructive lung disease (Pearson Chi-Square test,  $p > 0.05$ ).

Statistically, the rates of symptomatic POP (isolated anterior, posterior, apical, and mixed types) did not differ between the groups (Pearson Chi-Square and Fisher's exact tests,  $p > 0.05$ ; Table 2). However, the rate of central defects on the anterior vaginal wall were significantly lower in women with a history of MLE than in the others (21 vs. 38%, respectively, Pearson Chi-Square test  $\chi^2 = 6.900$ ,  $p = 0.009$ ). The rates of paravaginal defects were 31 and 25% in the patients with or without a history of episiotomy and did not differ significantly (Pearson Chi-Square test,  $\chi^2 = 3.453$ ,  $p = 0.063$ ; Table 2). Rates of positive supine stress test and urethral hypermobility were 16 versus 14 and 37 and 25% in the episiotomy and non-episiotomy groups, respectively. The differences observed above were also not statistically significant (Pearson Chi-Square test,  $p_1 = 0.67$ ,  $p_2 = 0.063$ , respectively; Table 1). There were also no significant difference by means of overactive bladder symptoms (urgency, frequency and waking to void at night) and symptoms of anal incontinence (flatal, fluid and solid) between patients with a history of MLE and those without any episiotomy history (Table 2).

**Table 1** Pelvic floor findings of patients with MLE and those without a history of episiotomy (Pearson Chi-Square and Fisher's exact tests)

<i>n</i> (%)	With MLE ( <i>n</i> = 102)	Without episiotomy ( <i>n</i> = 96)
Isolated anterior prolapse	34 (33)	36 (38)
Isolated posterior prolapse	8 (8)	6 (6)
Isolated apical prolapse <sup>a</sup>	5 (5)	4 (4)
Mixed type prolapse	33 (32)	27 (28)
Central defect on anterior vaginal wall*	21 (21)	36 (38)
Paravaginal defect <sup>b</sup>	38 (37)	24 (25)
Positive supine stress test	16 (16)	13 (14)
Urethral hypermobility	38 (37)	24 (25)

<sup>a</sup> Fisher's exact test

<sup>b</sup> Unilateral or bilateral

\*  $p = 0.009$

**Table 2** Comparison of self-reported pelvic floor symptoms of patients with MLE and those without a history of episiotomy (data were given as percentages, Pearson Chi-square test,  $p > 0.05$ )

<i>n</i> (%)	With MLE ( <i>n</i> = 102)	Without episiotomy ( <i>n</i> = 96)
OAB symptoms		
Urgency	25 (25)	24 (23)
Frequency	25 (25)	23 (22)
Waking to void	15 (15)	14 (13)
AI symptoms		
Flatus	10 (10)	8 (8)
Fluid	6 (6)	5 (5)
Solid	2 (2)	1 (1)

OAB overactive bladder

AI anal incontinence

## Discussion

Data obtained from the cohort of women of this retrospective study show that having a history of MLE results in significantly less anterior defect in vaginal wall support, especially central defect. These findings may be contrary to the general opinion that routine use of episiotomy has no proven benefit [3].

Several studies presenting data about complications associated with routine use of episiotomy are cited in the textbooks [10] with nearly identical conclusion that the episiotomy is a risk factor associated with perineal damage and should be restricted [11–14]. For these reasons, the American College of Obstetricians and Gynecologists has concluded that the use of episiotomy should be restricted [15]. It should be noted that this consensus is based mainly on the performance of median episiotomy, whereas the current opinion is that midline episiotomy should preferred to MLE because of its easy repair, better healing with superior anatomical results, minimal post-operative pain, lesser blood loss and dyspareunia and extensions [10].

Although such a solid consensus about the performance of episiotomy exists, this issue has also its controversies. In a randomized controlled trial to compare the outcomes of routine versus restrictive episiotomy, the primary outcome was anal sphincter tearing (third or fourth degree) and the secondary outcome was pelvic floor symptoms up until 10 days postpartum. There was a small difference in the rate of anal sphincter tears (8.1% routine vs. 10.9% restrictive; OR 0.72, 95% CI 0.28–1.87). Prolonged catheterization was similar between the two groups as was urinary incontinence and fecal incontinence. The authors concluded that their study did not provide conclusive evidence that a policy of routine episiotomy is better or

worse than a restrictive policy [16]. In a recent Cochrane review to assess the effects of restrictive use of episiotomy versus routine episiotomy, eight randomized trials were included. Compared with routine use, restrictive episiotomy resulted in less posterior perineal trauma and no difference for severe vaginal or perineal trauma, but there was an increased risk of anterior perineal trauma with restrictive episiotomy [3].

Elusively, while anterior trauma during childbirth is considered to have minimal morbidity [4], posterior perineal trauma is set as the primary outcome measure in nearly all of the studies about episiotomy. This approach is contrary to the fact that anterior defects predominate in pelvic floor dysfunction [17, 18]. The anterior segment is often the most common site of initial prolapse and why the anterior segment is more susceptible to prolapse is unclear, but damage during childbirth as well as aging may be causative factors [19].

Although there is an agreement that vaginal delivery predisposes to prolapse, there is less agreement regarding changes in the pelvic structures that result in prolapse. It has been proposed that either an anterior prolapse may result from attenuation of the vaginal wall without loss of fascial attachments or loss of the connective tissue attachment of the lateral vaginal wall to the pelvic sidewalls [20]. With the attenuation of the vaginal wall without loss of fascial attachments, the vaginal wall appears smooth and without rugae, clinically presenting as a distension cystocele or ‘central defect’. In contrast, with the loss of connective tissue attachment of the lateral vaginal wall to the pelvic sidewalls, vaginal rugae are visible and clinically displaced or ‘paravaginal defect’ is diagnosed. It is obvious that the passage of the largest diameter of the fetal presenting part results in different types of damage at any point between the ischial spines to the pubis. On the other hand, the severity of clinically diagnosed anterior defects may not solely depend on the anterior support system. It has been shown that the presence of an apical defect correlates strongly with the most prolapsed portion of the anterior vaginal wall [21] and half of the observed variation in anterior compartment support could be explained by the status of the apical support [22]. More interestingly, in an operative case series of paravaginal defects, the site of defect was determined near the ischial spines in 96% of cases [23]. These facts may explain why no evidence could be demonstrated about the prevention of episiotomy from pelvic floor relaxation. Typically, episiotomy is completed when the head is visible during a contraction to a diameter of 3–4 cm [10], too late for any effect on possible damage of the largest diameter of the presenting part at the ischial or apical level. Thus, performing an episiotomy cannot prevent the apical defect and its effect on the severity of anterior prolapse. However, our

data show that, this timing of the episiotomy may have protective effect on anterior central defects while largest diameter of the presenting part distends or stretches the Level II of pelvic support system. Widening the diameters of the distal part of Level II and of the entire Level III, may reduce the degree of stretching of anterior and posterior vaginal walls. There are dissimilarities in connective tissue support at different levels of vaginal support, the posterior compartment is maintained by a complex interaction of connective tissue, and striated muscle [24] and the anterior vaginal wall may be less dense when compared with the posterior wall [19]. Furthermore, in the distal vagina, the dense connective tissue seen at the midline union of the perineal membranes through the perineal body can withstand significant stress [25].

A midline episiotomy and its extensions may disrupt these structures, whereas a mediolateral one may be less prone to harm the specific midline support seen in the posterior distal vagina. Of course, a MLE is not without harm for the posterior compartment but this risk is significantly lower than median episiotomy. It has been reported that, midline episiotomy may increase the risk of third-degree perineal tears in women six fold compared to MLE [26]. Another study showed that, women who had midline episiotomies were nearly 50 times more likely and women who had mediolateral episiotomies were over 8 times more likely to suffer a severe laceration than were women who did not undergo an episiotomy [27]. It should be noted that, a midline episiotomy does not have to extend to third or fourth degree laceration to cause perineal body damage and anal incontinence. In a retrospective cohort study to evaluate the relation between midline episiotomy and postpartum anal incontinence, women who had episiotomies had a higher risk of fecal incontinence compared with women with an intact perineum. Compared with women with a spontaneous laceration, episiotomy tripled the risk of fecal incontinence, and doubled the risk of flatus incontinence. A non-extending episiotomy tripled the risk of fecal incontinence and nearly doubled the risk of flatus incontinence compared with women who had a second-degree spontaneous tear [14].

Most of the studies about the outcome of episiotomies report short-term results and there is no solid evidence about long-term effects of both types of these incisions, either separately or comparatively. In a study to systematically review the best evidence available about outcomes of episiotomy, only 3% (26/986) of screened articles provided relevant data and the evidence was interpreted as insufficient to provide any guidance and evidence regarding long-term sequelae as unsatisfactory. It was stated that incontinence and pelvic floor outcomes have not been followed up into the age range in which women are most likely to have sequelae [9].

## Conclusion

Although commonly used, evidence about the benefits or risks of episiotomy is insufficient to create any conclusion. Nevertheless, the data obtained in this retrospective study may show that MLE is capable to prevent anterior prolapse without comprising the posterior support. Although denominated under the same terminology, it can be speculated that, midline and mediolateral episiotomies seem to be two distinct incisions performed on different localizations resulting in different outcomes. Prospective randomized studies are needed to draw a sufficient conclusion.

**Conflict of interest** None.

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