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CLINICAL ARTICLE

Anal incontinence and fecal urgency following vaginal delivery with episiotomy among primiparous patients☆

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ABSTRACT

Objective: To investigate anal incontinence following mediolateral or lateral episiotomy during a first vaginal delivery. *Methods:* The present prospective follow-up study enrolled primiparous patients who underwent vaginal delivery including mediolateral or lateral episiotomy between April 1, 2010 and March 31, 2012. Participants completed interviews before delivery, and were given anal-incontinence questionnaires to be returned for analysis at 3 months and 6 months postpartum. Anal incontinence was defined as a St Mark's incontinence score above four and individual anal-incontinence components were analyzed separately; results were compared between the two episiotomy techniques. *Results:* Questionnaires were returned by 300 and 366 patients who underwent mediolateral and lateral episiotomies, respectively; baseline characteristics were similar. Anal incontinence at 3 months and 6 months was recorded among 21 (7.0%) and 9 (3.0%) patients who underwent mediolateral and 27 (7.4%) and 20 (5.5%) who underwent lateral episiotomy, respectively. The study was underpowered to confirm equivalence between the groups; however, no statistically significant differences were observed in the rates of anal incontinence, flatus, solid or liquid incontinence, and de novo incontinence. Fecal urgency ($P=0.017$) and de novo fecal urgency ($P=0.008$) were more prevalent among patients who underwent lateral episiotomies at 6 months. *Conclusion:* Anal incontinence was comparable between primiparous patients who underwent mediolateral or lateral episiotomy. The association between lateral episiotomy and fecal urgency merits further scientific interest.

1. Introduction

Disorders of defecation are some of the most severe adverse events associated with childbirth. Anal incontinence, the involuntary loss of flatus, liquid, or solid stool, is a distressing and debilitating condition with considerable impact on occupational, social, and sexual quality of life [1]. It has been demonstrated that younger women with stronger anal sphincters and pelvic floor muscles can compensate for damage to the anal sphincter, pelvic floor integrity, or innervation [2]. Consequently, it is important to study minor symptoms of anal incontinence following delivery including flatus incontinence and fecal urgency [2]. Fecal urgency, the inability to suppress the sensation to defecate for longer than 15 minutes [3], has been proven to be closely associated with external anal sphincter dysfunction; therefore, it should be evaluated following delivery [4,5]. Further, the impact of isolated fecal urgency on quality of life has been demonstrated to be comparable to that of isolated fecal incontinence [6].

A recent review reported significant variations in the prevalence of postpartum anal incontinence, with higher prevalence among patients who had an episiotomy during delivery [7]. This variation can arise from differences in techniques employed, inconsistent definitions of anal incontinence, and from non-validated questionnaires being used to gather data. The most frequently used scoring system globally for anal incontinence severity is the Wexner score [5]. However, the St Mark's score [3] has been recommended for the follow-up of patients who experience a traumatic delivery [4] owing to it including items assessing fecal urgency, which is commonly associated with external anal sphincter injury. However, few studies so far have utilized this scoring system in evaluating anal incontinence following delivery [4,8,9].

Mediolateral episiotomy has previously been found to not impair anal continence; however, no protective effect has been demonstrated [10]. In a previous study, the use of mediolateral episiotomy corresponded to increased risk of anal incontinence in multiparous patients but this was not the case among nulliparous patients [10]. A Dutch retrospective cohort study reported that mediolateral episiotomy reduced the risk of fecal

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incontinence following obstetric anal sphincter injury (OASI) compared with no episiotomy [11].

To the best of our knowledge, the rate of anal incontinence following lateral episiotomy has never been reported despite the technique being commonly practiced in many countries (mainly in Scandinavia [primarily Finland], Austria, Greece, Turkey, and Israel). A study from the UK [12] reported that lateral episiotomy is often performed unintentionally, with professionals beginning cutting the episiotomy laterally from the midline. Further, a study examining European institutions demonstrated different episiotomy types being performed interchangeably [13].

Data from retrospective studies of lateral episiotomy outcomes [14,15] and a randomized controlled trial comparing the incidence of OASI after lateral and mediolateral episiotomy [16] have suggested equivalence in the OASI rate; however, comparisons of functional outcomes are lacking.

The aim of the present study was to report the 3- and 6-month postpartum anal-incontinence rates among primiparous patients who underwent lateral or mediolateral episiotomy during delivery. The secondary aim was to evaluate and compare the overall incontinence rates and individual aspects of anal incontinence between the two groups.

2. Materials and methods

The present study was a prospective follow-up study of a randomized trial [16] that compared the OASI rate following vaginal delivery among primiparous patients who underwent mediolateral or lateral episiotomy.

All nulliparous patients admitted for vaginal delivery to the Department of Obstetrics and Gynecology at the University Hospital in Pilsen (part of the Charles University in Prague, Czech Republic) between April 1, 2010 and March 31, 2012, were considered for inclusion in the parent study [16]. Patients with no prior perineal surgery, no extensive congenital anomalies, negative HIV and hepatitis B serology test results, and no lesions or extensive varicose veins of the vulva were eligible to participate in the study. The study was approved by the institution ethics committee and all participants provided written informed consent prior to enrollment.

The methods of the parent randomized study have been described in detail previously [16]. Briefly, prior to delivery, participants were randomized to undergo either mediolateral or lateral episiotomy, if necessary, as assessed by healthcare staff attending the delivery; indications for episiotomy at the study institution have been described previously [17] and the episiotomy rate was 27.1% [16]. Additionally, all participants provided further oral consent for episiotomy before it was performed.

Mediolateral episiotomy was defined as an incision to the perineum from the midline of the posterior fourchette directed towards the ischial tuberosity, with a minimum angle of 60°. Lateral episiotomy originated 1–2 cm laterally from the midline of the posterior fourchette, with the incision directed towards the ischial tuberosity. Manual perineal protection was practiced at each delivery as described previously [18]. Perineal trauma was evaluated using bi-digital examination of the anterior part of the anal sphincter following delivery. Suturing by a trained obstetrician followed all episiotomies as described in the parent study [16].

At enrollment, participants were interviewed regarding any prenatal anal incontinence or fecal urgency episode experienced (never, rarely, sometimes, or always). Participants then received questionnaires for assessing anal incontinence that incorporated Wexner and St Mark's scoring systems. Questionnaires were distributed with prepared envelopes so that participants could return completed questionnaires by 3 months and 6 months after delivery. Any participants not returning questionnaires were contacted by telephone and/or email to be reminded. Participants not sending both questionnaires or not providing sufficient answers to calculate anal-incontinence scores were excluded.

The primary outcome was anal incontinence measured by St. Mark's score. Patients with a St Mark's score above four were identified as having anal incontinence. The cut-off value was selected based on previous data [4]. Patients with a St Mark's score above eight were considered to have severe anal incontinence [4]. Secondary outcomes included the occurrence of fecal incontinence [5] and Wexner scores [4].

The parent study was powered to compare the rate of OASI [16]. Consequently, the present study was underpowered to demonstrate the equivalence of mediolateral and lateral episiotomy in terms of the incidence of anal incontinence. Based on the published literature, the expected anal-incontinence rate following delivery with mediolateral episiotomy was 11% at 3 months [19–21] and 7% at 6 months [21]. This would result in a study requiring at least 615 or 409 participants, respectively for each time point, for each arm to yield 80% power at a two-sided α level of 0.05 with a limit of tolerance of $\pm 5.0\%$.

The prevalence and incidence of anal incontinence, including its individual aspects, were reported at 3 months and 6 months and differences between the mediolateral and lateral episiotomy groups were identified; where prenatal anal incontinence data were available, subanalyses were performed comparing incontinence before and after delivery. Basic statistical values were calculated using SAS version 9.4 (SAS Institute, Cary, NC, USA). The Wilcoxon signed-rank test was used to compare non-parametric data and categorical variables were described using contingency tables and were analyzed using the χ^2 test and Fisher exact test; $P<0.05$ was considered statistically significant.

3. Results

There were 790 participants in the parent trial; fully completed questionnaires were returned by 300 patients who underwent mediolateral episiotomy and 366 patients who underwent lateral episiotomy (Fig. 1). Additionally, 484 (72.7%) participants from the present study had prenatal anal incontinence and fecal urgency data available for comparison (229 [76.3%] patients in the mediolateral episiotomy group, and 255 [69.7%] in the lateral episiotomy group). There were no differences in the two groups' baseline data (Table 1).

Across the whole study population, 48 (7.3%) and 29 (4.4%) patients experienced anal incontinence at 3 months and 6 months, respectively, with very low rates of severe anal incontinence observed across all groups (Table 2). No statistically significant differences were observed between the mediolateral episiotomy and lateral episiotomy groups for any primary outcome measures.

The sub-analysis of 484 patients with prenatal anal incontinence data available demonstrated that rates of anal incontinence before and after delivery were similar between the two groups (Table 3). Among the 30 (6.2%) patients who experienced prenatal anal incontinence, 17 (57%) and 23 (77%) were continent at 3 months and 6 months, respectively. The rates of resolved anal incontinence did not differ between the two groups (Table 3).

In the fecal-urgency sub-analysis, among the 24 (5.0%) patients who experienced prenatal fecal urgency; 18 (75%) and 20 (83%) patients reported this was resolved at 3 month and 6 months, respectively (Table 4), with no differences recorded between the groups. The incidence of fecal urgency was mostly similar between the two groups; however, the 6-month incidence of fecal urgency was significantly higher in the lateral episiotomy group ($P=0.017$), as was the 6-month incidence of de-novo fecal urgency ($P=0.008$).

4. Discussion

In the present prospective follow-up study, the only statistically significant difference observed between patients who underwent lateral or mediolateral episiotomy was the prevalence and incidence of fecal urgency at 6 months, which was higher among patients in the lateral episiotomy group. Patients in the lateral episiotomy group did demonstrate

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