



Relationship between Episiotomy and Fecal Incontinence After Delivery

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Abstract

Introduction: Fecal incontinence (FI) is an embarrassing problem that reduces a woman's quality of life. The literature has shown that women with obstetric trauma, especially by episiotomy, suffer damage to both the internal and external anal sphincters. We aimed to determine the relationship between episiotomy and FI in women after delivery.

Methods: In this study, 71 females with previous vaginal deliveries were investigated by endoanal ultrasonography. The degree of FI was measured using the incontinence score of Wexner. The number of episiotomies was measured for each patient.

Results: The mean Wexner score was 9.0 ± 0.7 in the incontinent patients. The mean number of normal vaginal deliveries was 3.48 ± 0.3 , and 33.8% of the patients had a history of a hemorrhoidectomy. Among the patients, 70% had undergone one or more prior episiotomies during their deliveries.

Conclusion: Episiotomy could be one of the risk factors for the development of FI, but we did not find any significant difference in Wexner scores between patients with or without a history of episiotomy. Endoanal sonography seems an effective tool for evaluating and predicting anal injury following an episiotomy in some critical cases.

Keywords: Episiotomy, Anal, Fecal incontinence, Iran

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Introduction

Fecal incontinence (FI) is the involuntary loss of feces at an unsuitable and unpredictable moment that usually occurs at least twice a month. It represents a social and hygienic problem that principally affects the elderly female population secondary to certain anatomical and physiological

factors, and can have a devastating effect on a woman's quality of life. Obstetric trauma induces incontinence via two key mechanisms. One is the direct disruption of the sphincter muscles, and the other is traction neuropathy of the pudendal nerves (1). Vaginal delivery, macrosomia with dystocia, instrumental delivery, and a prolonged second stage of labor are factors that increase the risk of

sphincter injury (2). Endoanal ultrasonography (EAUS) seems to be an effective tool for evaluating FI and identifying sphincter defects. A ruptured external anal sphincter has irregular edges and mixed echogenicity in keeping with scarring and is often associated with internal anal sphincter defects. However, the number of women who complain of FI seems not to be in an exact correlation with the prevalence of sphincter injuries (3).

The National Institutes of Health supports the notion that obstetric anal sphincter injury increases the risk of anal incontinence in multiparous women (4). Incorrect episiotomy can be one of the most modifiable risk factors for anal incontinence and anal sphincter injury (5). Expansion of the perineal tissue during dystocia is one of the most important indications for making an episiotomy. It is not approved that episiotomies in spontaneous vaginal births can prevent third or fourth degree perineal laceration or ease wound repair (6).

In our previous study, we found that the majority of anal sphincter disruptions concerned the external anal sphincter, which is close to the site of the episiotomy (7). Study findings regarding the association between episiotomy and anal incontinence vary widely. Some studies (8, 9) declared incorrect episiotomy to be a significant risk factor for anal incontinence. In one study, the frequency of episiotomies conducted during labor was significantly greater ($P < 0.05$) among women who had anal incontinence compared to those who were continent (8). In the second study (9), the authors reported that the odds of anal incontinence for women who had undergone an episiotomy during labor were 1.7 (95% CI, 1.1-2.6) times greater compared to those women who did not have an episiotomy.

On the other hand, some studies have reported a lack of an association between episiotomy and anal incontinence (10). The restrictive versus routine use of the episiotomy could be an issue and it seems the restrictive use is more advisable for the vaginal health of women compared to routine use. However, the use of an episiotomy remains a routine practice in vaginal deliveries and is done in up to 35% of births (11).

There is a significant association between obstetric anal sphincter injury due to an incorrect episiotomy and anal incontinence. Furthermore, endoanal ultrasound sonography is an accurate method for assessing anal incontinence. In this study, we aimed to examine this possible long-term sequela of obstetric trauma, i.e., the development of FI later in life following episiotomy during vaginal delivery.

Methods and Patients

A total of 71 female patients underwent EAUS for evaluation of episiotomy and fecal incontinence (FI) between January 2017 and December 2017 in the colorectal subspecialty department of Shahid

Faghihi Hospital, Shiraz, Iran. Informed consent was obtained from the patients who accepted to participate. All patients had a history of more than one vaginal delivery and the type of the episiotomy used was the mediolateral form.

Endoanal manometry and ultrasonography were done, and the results were evaluated by a colorectal surgeon. The age, obstetric history, and degree of FI (using Wexner's Incontinence Scale where 0 signifies complete continence and 20 denotes complete incontinence) were recorded for each patient. The anal sphincter maximum squeezing pressure, mean resting pressure (MRP), and angle of sphincter injury were also evaluated. Power analysis revealed that the sample size could provide a power value of at least 80%.

The exclusion criteria were those patients with radiation injury, low colorectal anastomosis, ulcerative colitis, Crohn's disease, neurological or endocrine disease, certain previous surgeries (like perineoplasty, sphincterotomy, sphincteroplasty, or pelvic floor repair), diabetes mellitus neuropathy, rectal prolapse, rectal cancer, and cervical or vaginal cancer.

Anal manometry was performed using a special sphinctrometer system (Version 1.51). This device allows quick and precise measurements of the anal sphincter muscle tone during relaxation and squeezing conditions. The measured value can be read off the device after inserting a specific sensor (type BF) into the anal canal. The sphinctrometer's effective range was from 0 to 300 mmHg. A two-dimensional endoanal ultrasound machine (Merline Type 1101, 2050 model 360-degree rotating endoprobe transducer with a range between 3.75 and 20 MHz) was used together with a Bruel and Kjaer Medical Ultrasound Scanner (Herlev, Denmark). The female patients were subjected to a meticulous clinical examination including bidigital palpation of the anal sphincter, with one well-lubricated gloved finger being positioned in the anal canal and the other in the vagina. This maneuver allows the thickness of the perineal body to be estimated and the potential for the contraction of the anterior sphincter to be gauged.

To perform the EAUS, an endoprobe covered with the middle finger of a disposable latex surgical glove was introduced into the rectum after the application of ultrasound gel to both surfaces. Using the two buttons in the proximal part of the endoprobe handle, the ultrasound image was shown in the upward and downward directions through the anal canal in a panoramic view.

The anal canal was divided into three levels in the view of the colorectal surgeon performing EAUS: (i) upper-level anal canal that is characterized by the U-shaped puborectalis muscle sling and opens anteriorly, (ii) middle-level anal canal where the internal anal sphincter (IAS) is usually at its maximum thickness, and (iii) lower-level anal canal,

which is determined by the greatest thickness of the subcutaneous external anal sphincter and the thinnest part of the IAS. Bowel preparation products were not routinely used ahead of the examination.

Endoanal manometry was done for all patients by the same colorectal nurse specialist, while EAUS was performed by a single colorectal surgeon. The results were evaluated by two colorectal surgeons experienced in EAUS. The study was approved by the Ethics Committee of Shiraz University of Medical Sciences (No. 10834).

Statistical Analysis

All statistical analyses were done by SPSS software (version 16, Chicago, IL, USA). Data were analyzed using the Mann-Whitney U test and Chi-squared test. A p-value of less than 0.05 was considered statistically significant.

Results

In our study, the mean age of 71 females was 48.0±1.5 years. Overall, 40 patients were incontinent and 31 patients were continent. The mean Wexner score was 9.0±0.7 among the incontinent patients. The mean number of normal vaginal deliveries was 3.48±0.3. The mean duration of the disorder was 54.3±13.2 months. Approximately 70% of the patients had undergone one or more prior episiotomies during delivery and 10% had an abortion in their past medical history.

As we expected, the mean resting pressure, squeezing pressure, and MRP were significantly different between the continent and incontinent patients (P=0.025, P=0.007, and P<0.001, respectively) (Table 1).

Episiotomy, FI Symptoms, and Sphincter Defect Angle

Fifty patients had at least one episiotomy in their history. There was no significant difference in the number of episiotomies between the continent and

incontinent patients (P=0.383). We found that there was a considerable correlation between incontinence and the number of normal vaginal deliveries (P=0.010). However, the correlation between incontinence and the number of abortions (P=0.146) or episiotomies (P=0.095) was not meaningful. There was a considerable difference between the resting pressure, squeezing pressure, and MRP among incontinent patients with and without a history of episiotomy (P<0.05; Table 1), but there was an inconsiderable difference among continent patients in this regard (P>0.05). The external anal sphincter angle was in the range of 0–190°, and there was no significant difference in this parameter among incontinent patients (mean: 83.8±5.3°) with and without a history of episiotomy (P>0.05).

Discussion

Anal incontinence is an embarrassing clinical issue for women of all ages. Obstetric trauma is a major etiological factor in the development of FI. An essential issue during normal vaginal delivery is to prevent obstetric anal trauma (11). Therefore, physical examination of the anal canal would be mandatory to evaluate continence status and if there is any doubt, EAUS can be helpful (3). All incontinent patients who were included in our study suffered from a sphincter injury detected by EAUS.

In this study, 31 subjects were asymptomatic and over 70% of the patients had evidence of episiotomy; 56% of patients had associated external and internal sphincter disruption according to sonographic and manometric evidence. However, they had no severe complaint about incontinence.

There are many factors associated with symptom severity in women presenting with FI, including a history of episiotomy (12). Episiotomy can be one of the factors involved in the development of anal incontinence. However, our results indicate no significant difference between patients with or without episiotomy based on Wexner scores.

Table 1: Data from patients in clinical continent and incontinent groups (Mean±SE of mean)

Patient groups	Incontinent		P value	Continent		P value
	Patients without episiotomy (10)	Patients with one episiotomy at least (30)		Patients without episiotomy (11)	Patients with one episiotomy at least (20)	
Age (years)	55.9±4.7	46.5±2.0	0.058	47.0±4.3	46.8±2.0	0.914
Wexner score	8.8±1.6	9.1±0.8	0.634	0	0	NS
Duration of disease (months)	99.8±44.2	39.1±8.8	0.259	0	0	NS
Resting pressure (mmHg)	8.0±2.2	17.1±1.9	0.018	17.4±2.8	22.2±2.3	0.261
Squeezing pressure (mmHg)	44.0±7.2	73.4±6.5	0.020	91.4±12.8	88.8±7.2	0.792
MRP (mmHg)	9.1±2.7	22.1±2.5	0.008	26.5±3.0	33.3±2.7	0.079
PBT (mm)	7.5±0.9	9.4±0.5	0.072	9.9±0.4	9.9±0.4	0.427
Angle of sphincter s(°)	89.9±12.3	81.8±5.8	0.508	0	0	NS

NS; non-significant (P>0.99)

It seems that a compensatory mechanism such as involuntary biofeedback therapy helps such women to improve their continence status, specifically among those who are young. However, the longtime follow-up may reveal more complaints of FI among those reaching old age. In this study, no significant difference was observed between the continent and incontinent patients in terms of the number of episiotomies ($P=0.383$). As an important issue, an episiotomy sometimes is not able to protect the perineum and sphincters during delivery and may lead to anal continence impairment (5). The thinning of the perineal body is a well-known clinical finding among incontinent women with an anterior sphincter defect. However, to define “normal,” we used the results from the study by Zettersrom et al. (13), who investigated 13 asymptomatic primigravida patients in the first trimester with no EAUS evidence of anal sphincter defect and calculated an average perineal body thickness (PBT) of 12 mm.

We found that there were considerable relationships between FI and the number of normal deliveries. However, there was no evidence that the incontinence status was also related to sphincter damage or pudendal nerve neuropathy ($P=0.018$). Regarding the effect of vaginal delivery on FI, many studies proved that primiparous women with persistent symptoms of altered fecal continence experience deterioration after a second vaginal delivery. According to previous reports, the incidence of anal sphincter injury is 11–35% after the first delivery (14).

Regarding the effect of episiotomy on FI, a recent study revealed a significant association between perineal trauma due to episiotomy and FI (8). Schlömer et al. (8) showed that the chance of developing FI in association with episiotomy was more than threefold. Furthermore, in another study, women who underwent an episiotomy were 1.74 times more likely to suffer anal incontinence compared with women who did not undergo episiotomy (9).

There was a significant correlation between PBT and the angle of sphincter injury and this was significantly different among the women on a case by case basis and in the course of time ($P=0.008$ Pearson, Spearman=0.082). This correlation seems reasonable but was not demonstrated in the Zetterstrom et al. (13) study, where no correlation between PBT and the extent of sphincter defect was found. A possible explanation for the conflicting findings is the fact that, in the mentioned study, the mean age of the patients was lower (39 vs. 48 years). With aging, a perineal body with an external sphincter defect probably attenuates and the edges of the ruptured sphincter become separated.

Finally, there was no statistically significant correlation between the degree of PBT and FI, which may be due to the multifactorial etiology of FI. It seems that EAUS should be used as an effective tool to evaluate and predict FI in selected cases.

Despite these clinically important findings, we should consider the risks, benefits, and alternatives for episiotomy use and maintain the integrity of the perineum in order to reduce perineal trauma and thus FI. Providers should discuss the signs and symptoms of anal incontinence with all parous women to identify and ameliorate this health issue and maximize the well-being of women. There are some other factors such as aging, change in diet and bowel habits, and previous history of anorectal surgery, hemorrhoids, or irritable bowel syndrome that could be the cause of fecal incontinence.

Studies of higher quality that include standardized definitions of perineal trauma and anal incontinence are needed in order to clarify the association between perineal trauma and anal incontinence. In addition, further studies are required to recognize effective interventions to inhibit perineal trauma.

Limitations

Unfortunately, women do not volunteer to report their symptoms, making the actual incidence of FI difficult to comprehend. It should be noted that all deliveries had been conducted in teaching hospitals, where there are differences in experience relative to private hospitals.

Conclusion

Without attention to the number of episiotomies, the effect of episiotomy seems to be one of the risk factors for the development of FI among women. Concomitant defects in the internal sphincter may compromise surgical outcomes and therefore provide important information for pre-operative counseling. In some cases, sonographic evaluation can be a useful tool for predicting the dangerous effect of vaginal deliveries.

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