Outcomes of episiotomy and perineorrhaphy in vaginal delivery at the National Hospital of Obstetrics and Gynecology

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Summary

Objective: To evaluate the outcomes of episiotomy and perineal suturing in vaginal delivery at the Obstetrics and Gynecology Hospital. *Subject and method:* This is a prospective descriptive study involving all vaginal delivery patients who underwent episiotomy and perineal suturing at the National Hospital of Obstetrics and Gynecology from November 1, 2023 to December 31, 2023. *Result:* A total of 384 women were included in the study, with an average age of 28.32 ± 5.12 years (the youngest being 15 years and the oldest 42 years. The age under 35 years accounted for the majority of 88.3%. The proportion of primiparous was 55.73%, while 44.27% were multiparous. The incidence of mothers with diabetes was the highest, accounting for 13.5% of the total study population. The indication for perineal incision was predominantly maternal, accounting for 88.52%. There were 15 cases with a third-degree perineal tear, accounting for 3.90%. Of these, the rate of injury after forceps delivery was 100%. There were 4 cases of hematoma and 1 case of infection post-episiotomy. The rate of third-degree perineal injury when fetal weight was >3500g and BPD > 95mm were 31.2% and 73%, respectively. *Conclusion:* Episiotomy and perineorrhaphy remain common procedures in vaginal deliveries in Vietnam. Most cases do not result in complications, and the perineum typically tears only to a physiological degree, specifically to degree II, with a low rate of complex tearing. Our study indicates that forceps delivery increases the risk of more severe perineal injuries. Moreover, third-degree tears are associated with infants weighing over 3500grams and BPD more than 95mm.

Keywords: Episiotomy, perineorrhaphy, vaginal delivery.

I. BACKGROUND

Episiotomy and perineorrhaphy is a surgical procedure performed at the perineum and posterior vaginal wall during the second stage of labor[1]. When there are risks of excessive stretching, the vulva and perineum may sustain uncontrolled tears, even extensive tearing that can damage the surrounding muscles. To minimize such injuries, in necessary cases aimed at widening the soft tissues of the birth canal, obstetricians or midwives may proactively perform a perineal incision during the delivery stage to facilitate the process, allowing for easier fetal descent, reducing trauma to the fetal head, and avoiding the risks of complex perineal tears[2].

Despite the clear benefits, this procedure also has some disadvantages and side effects for the mother, including prolonged pain and edema at the suture site after the postpartum period, hematoma leading to an increased risk of infection at the suture site, greater blood loss in mothers undergoing the procedure, and other complications arising from incorrect timing and technique of the incision and suturing[3].

***Received**: 24 October 2024, **Accepted**: 26 November 2024*
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Currently, there are numerous research studies worldwide on this topic, and the rate of episiotomy is showing a significant downward trend. In the United States, from 2000 to 2003, the episiotomy rate was 35%, which dropped to 15% by 2011[4]. In France, from 2013 to 2017, the rate of episiotomy decreased from 21.6% to 14.3% for all vaginal deliveries[5].

In Vietnam, episiotomy is considered a routine obstetric procedure in hospitals and medical facilities. According to author Nguyen Tuan Viet at the National Obstetrics and Gynecology Hospital (2015), this rate was 92%[6]. However, there are currently not many research studies in Vietnam on the benefits or harms of episiotomy.

The National Hospital of Obstetrics and Gynecology is currently the leading maternity and gynecology hospital in the country, especially in Northern Vietnam. Each year, the hospital provides medical examinations and delivery services for thousands of pregnant women in Hanoi and surrounding areas. Therefore, we conducted the study titled "Outcomes of episiotomy and perineorrhaphy in vaginal delivery at the National Hospital of Obstetrics and Gynecology.

II. SUBJECT AND METHOD

2.1. Subject

Pregnant women who deliver via vaginal birth at the National Hospital of Obstetrics and Gynecology.

Gestational age of at least 34 weeks, as determined by the first-trimester ultrasound.

Live fetus without congenital anomalies.

Fetal weight over 2000 grams.

Pregnant women who underwent episiotomy and perineorrhaphy.

Exclusion criteria:

Women with abnormal pregnancies.

Incomplete medical records.

Patients who refused to participate.

Study design: This is a prospective descriptive study conducted on women who delivered vaginally at the National Hospital of Obstetrics and Gynecology and met the inclusion criteria.

Sample size:

The sample size for a cross-sectional descriptive study is calculated using the following formula:

$$n = Z^2_{1-\alpha/2}\frac{p(1-p)}{d^2}$$

Where:

n: Minimum required sample size.

Z: Z-score for a 95% confidence level, $Z_{1-\alpha/2}$ = 1.96.

p: Episiotomy rate at the National Hospital of Obstetrics and Gynecology, reported as 92% in 2016 by Nguyen Tuan Viet, so p=0.92.

Desired precision, d=0.05.

Substituting into the formula:

n= (1.96^2)x 0.92 x 0.15/0;05^2 = 212

To align with the number of deliveries at the National Hospital of Obstetrics and Gynecology during the study period and to improve representativeness, we chose a sample size of 400 participants.

Research content and indicators:

Patient characteristics in the study group:

Age.

Height.

Parity (number of deliveries).

Maternal medical conditions.

Pregnancy outcomes:

Indication for episiotomy.

Newborn weight at birth.

Biparietal diameter.

APGAR score after birth.

Degree of perineal injury.

Uterine management.

Postpartum complications.

Study period: From November 1, 2023, to December 31, 2023.

Study location: Delivery Department, National Hospital of Obstetrics and Gynecology.

Collection Method: Data is collected through observation and information from medical records.

Create research records based on the research objectives and the variables being studied.

Selecting the pregnant women who meet the inclusion criteria for the study.

Observe the labor process and perineal incision.

Evaluate the outcomes post-episiotomy and perineorrhaphy.

Collecting information according to a predefined template.

Processing and analyzing the data.

Data processing and analysis: Collected data will be entered and processed on SPSS 20.0 software.

Research ethics: The study was approved by the Ethics Committee of the National Hospital of Obstetrics and Gynecology, approval number 3099, dated August 16, 2023.

III. RESULT

Table 1. Episiotomy rate of vaginal delivery

	Total	Percentage (%)
Episiotomy	384	96
Without episiotomy	16	4
Total	400	100

Comments: In our study, the episiotomy rate was 96%.

Table 2. Patient characteristics

Characteristics	Group	Number	Percentage (%)
Age	<35	339	88.3
	≥35	45	11.7
	Total	384	100
Height (cm)	<150	35	9.1
	≥150	349	90.89
	Total	384	100
Parity	Primiparous	214	55.73
	Multiparous	170	44.27
	Total	384	100
Maternal diseases	Diabetes	52	13.5
	Hypertension	12	3.1
	Cardiovascular diseases	3	0.78

Comments: A total of 384 subjects were included in the study, with an average age of 28.32 ± 5.12 years (the youngest being 15 years old and the oldest 42 years old). The age group under 35 accounted for the majority at 88.3%. The percentage of primiparous and multiparous were 55.73% and 44.27%, respectively. Mothers with diabetes accounted for a significant proportion, with 52 cases, representing 13.5% of the total study subjects.

Table 3. Pregnancy outcomes

Characteristics	Group	n	Percentage (%)
Episiotomy indication	Maternal	328	85.42
	Fetal	53	13.8
	Procedure	3	0.8

Characteristics	Group	n	Percentage (%)
Fetal weight	<3500g	352	91.7
	≥3500g	32	8.3
BPD	<95mm	369	96.1
	≥95mm	15	3.9
Apgar score	4-7	4	1.05
	8-10	380	98.95
Perineal tear severity	Third degree	15	3.90
Uterine control	Yes	228	59.38
	No	156	40.62
Post-episiotomy complications	Hematoma	4	1.04
	Infection	1	0.26

Comments: In the 384 cases indicated for episiotomy, maternal-related accounted for 88.52%. Third-degree tears occurred in 3.90% of cases, particularly in forceps-assisted deliveries. There were 4 cases of hematoma and 1 case of infection post-episiotomy.

Table 4. Association between pregnancy outcomes and degree of perineal injury

Perineal tear classification	Second-degree tear	Third-degree tear	p
	n, %	n, %	
Indication			
Due to maternal	328 (100%)	0 (0%)	
Due to fetal	41 (77.36%)	12 (22.64%)	
Due to forceps	0 (0%)	3 (100%)	
Birth weight			
< 3500g	350 (99.4%)	2 (0.6%)	<0.01
≥ 3500g	22 (68.8%)	10 (31.2%)	
Biparietal diameter			
< 95mm	368 (99.7%)	1 (0.3%)	<0.01
≥ 95mm	4 (26.7%)	11 (73%)	
Total	372 (96.9%	12 (3.1%)	

Comments: The results in Table 3 indicate that the rate of third-degree tears occurred after forceps delivery was 100%, due to fetal was 22.64%. The incidence of third-degree tears occurred in infants with a birth weight > 3500g and a biparietal diameter (BPD) > 95mm were 31.2% and 73%, respectively.

IV. DISCUSSION

4.1. Episiotomy rate of vaginal deliveries

Our study involved a total of 400 participants, among which 384 women underwent episiotomy. Based on the study objectives and selection criteria,

we focused on the 384 women who received episiotomy for the study.

Among the 400 women who delivered at the National Maternity Hospital, the episiotomy rate was 96%. This indicates that Vietnam has one of the highest episiotomy rates globally and within Asia. This result is comparable to other Asian countries such as Hong Kong (78-92.7%)[7], Taiwan (100%)[8], and Cambodia (94.5%)[9]. However, this rate is significantly higher than in some other countries, including the United States (63%)[10], China (45%), France (44.7%)[5], and is lowest in Sweden (9.7%). Differences in episiotomy rates between countries may result from variations in women's physical conditions, health status, medical perspectives, and healthcare consultation systems specific to each country.

According to a study by Chuilon AL et al. (2010) in France, the episiotomy rate among women of Asian descent was significantly higher compared to women of other ethnic backgrounds[11].

This result aligns with the findings of Nguyen Tuan Viet (2016) at the National Maternity Hospital, where the episiotomy rate was 92%[6]. This may be attributed to Vietnamese women's generally smaller physique compared to women in other countries. With better nutrition and prenatal care, fetal weights tend to be larger, leading doctors and midwives to prefer episiotomy to facilitate delivery and prevent complications for both the mother and the baby. With proper skills and technique, episiotomy, when indicated and well-timed, has shown to yield good outcomes, resulting in better stitching quality and fewer complications. This may explain the high episiotomy rate at the National Maternity Hospital and other hospitals across Vietnam.

4.2. Characteristics of patients

The age range of the study participants is from 15 to 42 years, with an average age of 28.32 ± 5.13 years. Among them, the group of patients under 35 years old represents the highest proportion at 88.30%. Except for the case of a 15-year-old mother, this is the reproductive age group consistent with recommendations from reproductive health organizations worldwide, including Vietnam. According to a report by Shmueli[12] in the European Journal of Obstetrics and Gynecology, younger or older mothers tend to experience more complex perineal tears due to less elasticity in the pelvic floor muscles. Therefore, older or very young mothers, especially older primiparas, require careful and precise perineal incision and suturing to avoid complex tearing complications.

In the study group, 90.89% of women had a height above 155cm. Height is an indirect measure of pelvic size, which is important in determining the method of delivery. Research by Vasanthi Balamurugan (2020)[9] indicates that shorter women (usually under 150cm) have a higher risk of complications, including higher rates of cesarean sections, particularly in emergencies due to stalled labor or fetal distress. However, maternal height is not an independent risk factor but should be considered alongside other factors such as age and BMI. In addition, these factors only affecting overall labor prognosis but not perineal incision and suturing.

In Table 1, the rate of primiparas is 55.73%, while multiparas account for 44.73%. This aligns with findings by Nguyen Tuan Viet (2015)[6], which reported 56.09% for primiparas and 43.91% for multiparas. This suggests that primiparas' perineum has not yet adequately stretched, and perineal incision is aimed at protecting soft tissues and pelvic floor muscles from uncontrolled complex tears.

Among the 384 patients, comorbidities were most common in mothers, particularly diabetes mellitus at 13%, followed by hypertension and cardiovascular diseases. According to research by Mayer R. and Levin G. (2022)[13], comorbidities during pregnancy (diabetes and hypertension) are risk factors for anal sphincter injury during childbirth.

4.3. Pregnancy outcomes

Regarding the pregnancy outcomes of the women included in the study, the majority of indications for episiotomy were maternal-related at 87.24%, followed by fetal-related causes at 11.98%, and procedural reasons at 0.8%. Concerning birth

weight, we divided the cases into two groups based on the 3500-gram threshold, with 8.3% of infants weighing over 3500 grams. According to a study by Gillian M. Maher (2023)[14], fetal weight over 3500 grams is a factor leading to third- and fourth-degree perineal tears. In addition to fetal weight, large biparietal diameter (BPD) is also a risk factor for perineal injury. We used a threshold of 95mm, with 3.89% of cases having a BPD more than 95mm, as studies have shown that infants with a BPD larger than 95mm often increase the duration of labor and raise the risk of perineal injury.

Based on the table, 98.95% of infants had a normal Apgar score after episiotomy. The episiotomy facilitates the passage of the fetus, reducing the pushing time and thus preventing fetal distress, skull trauma, and brain complications. This result aligns with findings by Carrolli[15], indicating that episiotomy is necessary to shorten the second stage of labor to prevent fetal distress. These are significant indicators of the role of episiotomy in labor.

According to the results in Table 2, the majority of perineal injuries were second-degree at 96.88%, likely because episiotomy involves cutting part of the bulbospongiosus, superficial and deep transverse perineal muscles, along with the vaginal wall and perineal skin. Therefore, second-degree injuries after episiotomy are physiological. Episiotomy significantly reduces complications for the fetus and largely prevents complex perineal tears. However, in our study, 3.12% of cases experienced third-degree injuries. This result is higher than that of Nguyen Tuan Viet (2015)[6]. However, many factors can affect the degree of injury. According to Lagana AS[16], in a study of 4,011 women in Serbia, episiotomy may reduce the frequency of tears, but this procedure is not associated with the degree of perineal injury. The degree of injury mainly depends on fetal weight, BPD, and maternal age.

According to our findings, the majority of women experienced no complications after episiotomy, with 4 cases of hematoma (1.03%) and 1 case of infection.

4.4. Association between pregnancy outcomes and perineal injury severity

Evaluating the perineum after episiotomy is crucial for assessing the procedure's effectiveness. As shown in Table 3, the study results indicate that the rate of third-degree injury in the forceps group is 100%, while in the fetal-related group, it is 22.64%. However, due to the small sample size, no significant difference was found. The forceps procedure helps the mother complete labor more quickly, and the combination of episiotomy and forceps use facilitates the physician's maneuvering, reducing delivery time and avoiding many fetal complications. A report by Zhu L et al. (2015)[17] showed that combining episiotomy and forceps significantly reduces blood loss, injury severity, and limits fourth-degree tear complications and postpartum pain. However, physicians must exercise caution as this can cause additional trauma to the mother's reproductive tract. This finding aligns with the 2008 study by Chigbu et al.[18], which reported that forceps deliveries result in more complex perineal injuries compared to other vaginal deliveries.

Our study also shows that third-degree injury is closely related to infants weighing more than 3500 grams and having a biparietal diameter more than 95mm, with $p<0.01$. Therefore, accurate and meticulous diagnosis of fetal weight and biparietal diameter plays a crucial role in managing perineal injury during labor.

V. CONCLUSION

Episiotomy and perineorrhaphy remain common procedures in vaginal deliveries in Vietnam. Most cases do not result in complications, and the perineum typically tears only to a physiological degree, specifically to degree II, with a low rate of complex tearing. Our study indicates that forceps delivery increases the risk of more severe perineal injuries. Moreover, third-degree tears are associated with infants weighing over 3500grams and BPD more than 95mm.

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