Perineal Body Length as a Predictor of Labor Progress

Ali El-Shabrawy Ali, Waleed Abdallah Abdel-Salam, Ahmed Mohamed El-Sayed Abdallah, Alaa Eldin Abdelsalam Ahmed, Mostafa Abdo Ahmed

Department of Obstetrics & Gynecology, Faculty of Medicine – Zagazig University, Egypt. Corresponding Author: Ahmed Mohamed El-Sayed Abdallah, Mobile: (+20) 01000262668,

Email: Elmodeer90@icloud.com

ABSTRACT

Background: Trauma to the genital tract does occur in about two thirds of women during the first and subsequent deliveries and the majority of these traumas require suturing. There is a continuous inverse relationship between the rate of episiotomy and the rate of spontaneous trauma. Perineal trauma is associated with a high prevalence of certain health problems. Perineal pain is the most significant with its impact on daily activities.

Objective: The aim was to assess the relationship between the length of perineal body and mode of delivery, need for episiotomy and possibility of perineal and vaginal tears needing repair.

Patients and Methods: This study was conducted at Maternity Hospital, Faculty of Medicine, Zagazig University. All patients were subjected to the following: Complete history taking, complete general examination and antenatal care. Procedure: The perineum was measured as the distance from the fourchette (the mid-point of the posterior edge of the vaginal interoitus at the muco-cutaneous junction) to the center of the anal orifice. Measurement was performed by trained research nurses using standard tape in dorsal lithotomy position.

Results: This study showed that perineal tear, was present among 32.6% of the studied group. This study showed that need for episiotomy was 78.3%. The percentage of perineal tear was statistically lower among cases with perineal length > 4 cm than cases with perineal length < 4 cm (5.9% and 48.3%). The percentage for need of episiotomy was statistically lower among cases with perineal length > 4 cm than cases with perineal length > 4 cm than cases with perineal length < 4 cm (64.7% and 86.2%). Women with shortened perineal body length (< 4 cm) had a higher chance of a perineal laceration.

Conclusion: Longer perineum is associated with increase in the duration of the second stage of labor. The incidence of episiotomy and perineal tears were increased in patients with a perineal length of <4 cm.

Keywords: Perineal body length, Episiotomy, Perineal tears.

INTRODUCTION

Trauma to the genital tract does occur in about two thirds of women during the first and subsequent deliveries and the majority of these traumas require suturing. There is a continuous inverse relationship between the rate of episiotomy and the rate of spontaneous trauma. Perineal trauma is associated with a high prevalence of certain health problems. Perineal pain is the most significant with its impact on daily activities. Additional health issues, like blood loss, bowel and urinary dysfunction, sexual problems, fatigue and depression have been also reported. The severity of postnatal perineal pain is directly related to the degree and complexity of the genital tract injury sustained. Episiotomy is usually performed for the sake of protection against these complications. Nevertheless, it is not allowed to do this protection. Episiotomy by itself represents a trauma and its suturing may convey more pain to the new mothers. Meta-analysis of data from six randomized controlled trials recommended that episiotomy should not be a routine practice and its use should be restricted to certain specific fetal and maternal indications⁽¹⁾.

However, these indications have not yet been clearly specified. Perineum is the fibro-muscular structures which are situated between the vaginal orifice and the anus. The functional importance of the perineum has been largely neglected by the clinicians, however its importance in the diagnosis and classification of pelvic organ prolapse has been appreciated near the end of the 20th century. Objective measurements of the perineum have been included by the International Continence Society (ICS) in its new standardized terminology of pelvic organ prolapse and pelvic floor dysfunction. The length of the perineum, however, was first cited in the literature as a cause of traumatic vaginal delivery by **Nicholas and Randall**⁽²⁾.

Vaginal birth has been associated with pelvic floor dysfunction. Past studies indicating that maternal expulsive efforts and perineal trauma are risk factors for postpartum pelvic floor disorders. Perineal and introital stretch in the second stage is thought to contribute to pelvic floor muscle damage. However, with the exception of overt levator damage and third and fourth degree perineal lacerations, the relationship of perineal injury to postpartum pelvic floor dysfunction has not been consistently demonstrated $^{(3, 4)}$.

Rizk and Thomas ⁽⁵⁾ were the first to study the effect of perineal length and anal position on vaginal delivery in 212 primigravidae with singleton term pregnancy. They reported that the incidence of episiotomy, perineal tears and instrumental delivery were increased in patients with a perineal length to what extent having scared lesions of FGC that affect the process of labor, which is not much studied. WHO Study Group on Female Genital Mutilation and Obstetric



This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY-SA) license (<u>http://creativecommons.org/licenses/by/4.0/</u>)

Outcome demonstrated the increased incidences of caesarean section, postpartum hemorrhage, perineal tearing and recourse to episiotomies in circumcised females ⁽⁶⁾.

This work aimed to evaluate the relationship between the length of perineal body and mode of delivery, the need for episiotomy and the possibility of perineal and vaginal tears needing repair.

PATIENTS AND METHODS

A prospective hospital-based observational cohort study was conducted at Maternity Hospital, Faculty of Medicine, Zagazig University.

Sample size:

Using OPEN-EPI, the sample size was calculated to be 46. Assuming that Mean \pm SD of the second stage of labor in pregnant females with perineal length > 4 cm and < 4 cm were 36.7 \pm 13.05 and 26.9 \pm 10.4 respectively at 95% and 80% power of test.

Inclusion Criteria: A low risk parturient women (no maternal or fetal risk-factors) admitted in the first stage of labor and accepted to participate in the study. All parturient women with malpositions (ocipitoposterior), malpresentations, preterm labor, multiple pregnancies, and previous vaginal surgery).

Exclusion Criteria: Women who were prepared for doing CS.

All patients were subjected to the following:

- **1.** Complete history taking.
- 2. Complete general examination.
- 3. Antenatal care.
- 4. Procedure: The perineum was measured as the distance from the fourchette (the mid-point of the posterior edge of the vaginal interoitus at the muco-cutaneous junction) to the center of the anal orifice. Measurements were performed by trained research nurses using standard tape in dorsal lithotomy position.

Personal, medical and obstetric data together with the above measurement were recorded in a special data collection sheet. Labor was managed according to the hospital guidelines and the progress was guided by the partogram. These data successfully recorded comprised the duration of the second stage of labor, the need for episiotomy, the occurrence of perineal/vaginal tears, which needed to be repaired, and the method of delivery.

Ethical consent:

An approval of the study was obtained from Zagazig University Academic and Ethical Committee. Every patient signed an informed written consent for acceptance of the study. This work has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for studies involving humans.

Statistical analysis

The collected data were tabulated and analyzed using SPSS version 16 software (Spss Inc, Chicago, ILL Company). Categorical data were presented as number and percentages. Chi square test (X²), or Fisher's exact test (FET) were used to analyze categorical variables. Quantitative data were tested for normality using Kolomogrov Smirnove test assuming normality at P > 0.05. Quantitative data were expressed as mean \pm standard deviation, median and range. Student "t" test was used to analyze normally distributed variables among 2 independent groups. The accepted level of significance in this work was stated at 0.05 (P ≤ 0.05 was considered significant).

RESULTS

There were no statistically significant difference between cases with perineal length > 4 cm and cases with perineal length < 4 cm regarding demographic data (Table 1).

			Cases with Perineal length > 4 cm	Cases with Perineal length < 4 cm	T.test	P. value
Age Mean ± SD		28.29 ± 7.76	26.75 ± 5.80	.763	.449	
Weight	Mean ±	SD	77.82 ± 10.23	78.44 ± 9.76	206-	.838
Height	Mean ±	SD	163.82 ± 5.67	166.55 ± 6.77	-1.397-	.170
	No	No.	14	24	.001	.972
Occupation		%	82.4%	82.8%		
Occupation	Yes	No.	3	5		
		%	17.6%	17.2%		
	No	No.	16	26	.269	.604
Special habit		%	94.1%	89.7%		
	Smoking	No.	1	3]	
		%	5.9%	10.3%		

Table (1): Comparison between cases with perineal length > 4 cm and cases with perineal length < 4 regarding demographic data

There was no statistically significant difference between cases with perineal length > 4 cm and cases with perineal length < 4 cm regarding history of HTN, anemia and DM (Table 2).

https://ejhm.journals.ekb.eg/

			Cases with Perineal length > 4 cm	Cases with Perineal length < 4 cm	X ²	P. value
	No	No.	11	24	1.920	.166
TITNI		%	64.7%	82.8%		
ΠΙΝ	Yes	No.	6	5		
		%	35.3%	17.2%		
	No	No.	10	13	.840	.359
Anomio		%	58.8%	44.8%		
Anemia	Yes	No.	7	16		
		%	41.2%	55.2%		
	No	No.	14	24	.001	.972
DM		%	82.4%	82.8%		
DM	Yes	No.	3	5	1	
		%	17.6%	17.2%		

Table (2): Comparison between cases with perineal length > 4 cm and cases with perineal length < 4 cm regarding medical disorder

The percentage of onset of labour was statistically lower among cases with perineal length > 4 cm than cases with perineal length < 4 cm (5.9% vs 17.2%) p value = 0.027. The percentage of membrane condition was statistically lower among cases with perineal length > 4 cm than cases with perineal length < 4 cm (p value = 0.027). The percentage of perineal tear was statistically lower among cases with perineal length > 4 cm than cases with perineal length < 4 cm (p value = 0.027). The percentage of perineal tear was statistically lower among cases with perineal length > 4 cm than cases with perineal length < 4 cm (p value = 0.003).

Table (3): Comparison between cases with perineal length > 4 cm and cases with perineal length < 4 cm regarding onset of labour, membrane condition and perineal tear

			Cases with Perineal length >4	Cases with Perineal length <4	\mathbf{X}^2	P. value
	Preterm	No.	1	5	1.219	.027
Onset of		%	5.9%	17.2%		
labour	Term	No.	16	24		
		%	94.1%	82.8%		
	Intact	No.	16	17	1.219	.027
Membrane condition		%	94.1%	58.6%		
	Rom	No.	1	12		
		%	5.9%	41.4%		
	No	No.	16	15	8.765	.003
Perineal tear		%	94.1%	51.7%		
	Yes	No.	1	14		
		%	5.9%	48.3%		

The percentage of labour progress was statistically lower among cases with perineal length > 4 cm than cases with perineal length < 4 cm (82.4% vs 96.6%) p value = 0.039 (Table 4).

Table (4): Comparison between cases with perineal length > 4 cm and cases with perineal length < 4 cm regarding labour progress

			Cases with Perineal length >4	Cases with Perineal length <4	X ²	P. value
	Normal	No.	14	28	2.721	.039
Lahaun		%	82.4%	96.6%		
	Precipitate	No.	3	1		
progress		%	17.6%	3.4%		
		%	64.7%	86.2%		

The percentage of time of 2nd stage was statistically higher among cases with perineal length > 4 cm than cases with perineal length < 4 cm (70.6% vs 20.7%) p value = 0.001. The percentage of need of episiotomy was statistically lower among cases with perineal length > 4 cm than cases with perineal length < 4 cm (64.7%, 86.2%) p value = 0.048 (Table 5).

https://ejhm.journals.ekb.eg/

			Cases with Perineal length > 4 cm	Cases with Perineal length < 4 cm	X ²	P. value
	Long	No.	12	6	11.203	.001
Time of		%	70.6%	20.7%		
2nd stage	Short	No.	5	23		
		%	29.4%	79.3%		
	No	No.	6	4	2.912	.048
Need of		%	35.3%	13.8%		
episiotomy	Yes	No.	11	25		
		%	64.7%	86.2%		

Table (5): Comparison between cases with perineal length > 4 cm and cases with perineal length < 4 cm regarding time of 2nd stage and need of episiotomy

Mean value of perineal length was statistically higher among no than yes. P = 0.012 (Table 6).

Table (6	6): Com	parison	between	cases need	of e	pisiotomy	and	perineal len	gth
----------	---------	---------	---------	------------	------	-----------	-----	--------------	-----

		Need of ep	T tost	D voluo	
		No	Yes	1. 1851	1. value
Perineal length I	Mean \pm SD	$3.76 \pm .631$	$3.42 \pm .598$	1.548	.012

DISCUSSION

This study showed that perineal tear, was present among 32.6% of the studied group. This agrees with **Farghaly** *et al.* ⁽¹⁾ who found that the rate of perineal tears was 30%. This is lower than that reported by **Mboua Batoum** *et al.* ⁽⁷⁾ who revealed that the rate of perineal tears in Cameroonian primiparous women was up to 59.7%.

This study showed that the need of episiotomy was 78.3%. This is higher than that revealed by **Farghaly** *et al.* ⁽¹⁾ who found that the rate of episiotomies was 30%.

The present study showed that perineal length ranged between 2.5 and 4.5 cm with a mean of $3.49 \pm .614$). **Mboua Batoum** *et al.* ⁽⁷⁾ found average perineal body length was 3.2 cm.

Regarding perineal tear, this work showed that there was statistically significant difference between cases with perineal length > 4 cm and cases with perineal length < 4 cm. The percentage of perineal tear was statistically lower among cases with perineal length > 4 cm than cases with perineal length < 4 cm (5.9% vs 48.3%) p value= 0.003. This agrees with the study of **Eid** *et al.* ⁽⁸⁾ who found that there was statistically significant difference in the incidence of perineal tears between both groups, which was significantly higher in the group of perineal body \leq 4 cm than that in the group of perineal body > 4 cm.

The current study showed that there was statistically significant difference between cases with perineal length > 4 cm and cases with perineal length < 4 cm regarding need of episiotomy. The percentage of need of episiotomy was statistically lower among cases with perineal length > 4 cm than cases with perineal length < 4 cm (64.7% vs 86.2%) p value = 0.048. This agrees with **Rizk** *et al.* ⁽⁹⁾ who reported that the incidence of episiotomy was increased in patients with

a perineal length < 4 cm. Moreover this agrees with the study of **Aguiar** *et al.* ⁽¹⁰⁾ who aimed to collect data on rates of BPT in low- and middle-income countries (LMICs), through a systematic review and metaanalysis. They found that the chance of having an episiotomy is high in births happening in medical facilities, and primiparous women are at a higher risk for all types of BPT. But, this disagrees with the study of **Farghaly** *et al.* ⁽¹⁾ who found that the rate of episiotomy was higher among women with longer perineum (≥ 4 cm). However, among those who did not have episiotomy. The incidence of obstetric trauma needed repair was higher among the group of women with short perineum (< 4 cm).

This work showed that women with shortened perineal body length (< 4 cm) had a higher chance of a perineal laceration. This corroborates the retrospective study by **Deering** *et al.* ⁽¹¹⁾ which showed that women with shortened perineal body length (< 2.5 cm) had a higher chance of sustaining a perineal laceration.

Lane *et al.* ⁽¹²⁾ who assessed the relation between perineal body length and the risk of perineal laceration found that, there was an association of perineal body length with lacerations.

CONCLUSION

Longer perineum is associated with increase in the duration of the second stage of labor. The incidence of episiotomy and perineal tears were increased in patients with a perineal length of < 4 cm.

REFERENCES

1. Farghaly T, Shaaban O, Amen A *et al.* (2017): Evaluating the Role of Measuring the Perineal Length as a Predictor of Progress of Labor and Obstetrical Trauma. Open Journal of Obstetrics and Gynecology, 7: 464-472.

- 2. Nicholas D, Randall C (1989): Vaginal Surgery. 3rd Edition, Williams and Wilkin, Baltimore. https://www.amazon.com/Vaginal-Surgery-David-H-Nichols/dp/0683064940
- **3.** Rogers R, Leeman L, Borders N *et al.* (2014): Contribution of the second stage of labour to pelvic floor dysfunction: a prospective cohort comparison of nulliparous women. BJOG., 121 (9): 1145–53.
- 4. Handa V, Blomquist J, McDermott K (2012): Pelvic Floor Disorders after Vaginal Birth Effect of Episiotomy, Perineal Laceration, and Operative Birth. Obstet Gynecol., 119: 233–239.
- Rizk D, Thomas L (2000): Relationship between the Length of the Perineum and Position of the Anus and Vaginal Delivery in Primigravidae. International Urogynecology Journal and Pelvic Floor Dysfunction, 11: 79-83.
- Eliminating WHO (2008): 6. Female Genital Mutilation—An Interagency Statement OHCHR. UNAIDS, UNDP, UNECA, UNESCO, UNFPA, UNICEF, UNIFEM. World UNHCR, Health Organization, Geneva. https://apps.who.int/iris/handle/10665/43839

- 7. Mboua Batoum V, Ngo Um Meka E, Essiben F et al. (2021): Perineal body length and prevention of perineal lacerations during delivery in cameroonian primigravid patients. doi: 10.1002/ijgo.13580. https://pubmed.ncbi.nlm.nih.gov/33404071/
- 8. Eid I, Birch D, Sharma A *et al.* (2011): Complications associated with adjustable gastric banding for morbid obesity: a surgeon's guides. Can J Surg., 54 (1): 61-6.
- **9. Rizk D, Abadir M, Thomas L** *et al.* (2005): Determinants of the length of episiotomy or spontaneous posterior perineal lacerations during vaginal birth. Int Urogynecol J., 16: 395-400.
- **10.** Aguiar M, Farley A, Hope L *et al.* (2019): Birthrelated perineal trauma in low- and middle-income countries: a systematic review and metaanalysis. Matern Child Health J., 23: 1048- 1070.
- **11.** Deering S, Carlson N, Stitely M *et al.* (2004): Perineal body length and lacerations at delivery. The Journal of Reproductive Medicine, 49: 306-10.
- 12. Lane T, Chung P, Yandell P *et al.* (2017): Perineal Body Length and Perineal Lacerations During Delivery in Primigravid Patients. Baylor University Medical Center Proceedings, 30 (2): 151–153.