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Role of Measuring the Perineal body Length as a Predictor of Labor progress and Obstetric Trauma

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Abstract

Background: Perineal trauma is associated with a high prevalence of certain health problems. Perineal pain is the most significant with its impact on daily activities. Episiotomy is usually performed for the sake of protection against these complications. Longer perineum is associated with increase in the duration of the second stage of labor. The study aimed to evaluate the relationship between the length of perineal body and duration of the second stage of labor, the need for episiotomy and the possibility of perineal and vaginal tears needing repair. **Methods:** This study was conducted at Maternity Hospital, Faculty of Medicine, Zagazig University. All patients were subjected in the following : Complete history taking. Complete general examination. 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 centre of the anal orifice. Measurement were performed by trained research nurses using standard tape in dorsal lithotomy position. **Results:** The present study shows that regarding perineal length, it ranged between 2.5 and 4.5 with mean (3.49± .614). The present study shows that regarding perineal length categories, Perineal length >4was 17 (37.0%) and Perineal length <4 was 29 (63.0%). This work showed that there was statistically significant difference between Cases with Perineal length >4 and Cases with Perineal length <4 regarding perineal tear. The percentage of perineal tear was statistically lower among Cases with Perineal length >4 than Cases with Perineal length <4 (5.9%, 48.3%) p value= 0.003. The current study showed that there was statistically significant difference between Cases with Perineal length >4 and Cases with Perineal length <4 regarding need of episiotomy. The percentage of need of episiotomy was statistically lower among Cases with Perineal length >4 than Cases with Perineal length <4 (64.7%, 86.2%) p value= 0.048. This work showed that women with shortened perineal body length (<4 cm) had a higher chance of a perineal laceration. **Conclusion:** Regarding incidence of perineal length > 4 was about one third in our patients. 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.

Key words:perineal body length- the second stage of labor- 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 ***(1)***.

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

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severity of postnatal perineal pain is directly related to the degree and complexity of the genital tract injury sustained [(2)].

Episiotomy is usually performed for the sake of protection against these complications. 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. However, these indications have not yet been clearly specified [(3)].

Longer perineum is associated with increase in the duration of the second stage of labor. Obstetricians should expect the need of episiotomy when confronted with circumcised primigravida with long perineum. However, if the perineum is short they should not be deceived, short perineum is more probably torn [(1)].

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 [(4)].

The length of the perineum, however, was first cited in the literature as a cause of traumatic vaginal delivery by ***Nichols and Randall in*** [(5)].

Rizk et al., [(6)]were the first to study the effect of perineal length and anal position on vaginal delivery in 212 primigravida with singleton term pregnancy. They reported that the incidence of episiotomy, perineal tears and instrumental delivery were increased in patients with a perineal length of <4 cm. The above authors suggested that this measurement can identify primigravida who are at risk of perineal injury during vaginal delivery and in whom elective episiotomy is beneficial. The same finding was supported by two other observational studies [(1)].

The study aimed toevaluate the relationship between the length of perineal body and duration of the second stage of labor, the need for episiotomy and the possibility of perineal and vaginal tears needing repair.

Patients and Methods

I. Technical design:

Setting: This study was conducted at Maternity Hospital, Faculty of Medicine, Zagazig University.

Sample size:

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

Study design:

A prospective hospital-based observational cohort study

Inclusion Criteria:

- Inclusion criteria was being a low risk parturient women (no maternal or fetal risk-factors) women admitted in the first stage of labor and accept to participate.
- All parturient women with malposition (ocipitoposterior), malpresentations, preterm labor, multiple pregnancies, and previous vaginal surgery.

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Exclusion Criteria:

- Women who were prepared for doing CS.

II. Operational design:

Type of study :A prospective hospital-based observational cohort study.

Methods :

All patients were subjected in the following:

1. Informed consent.
2. Complete history taking.
3. Complete general examination.
4. Antenatal care.
5. 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 centre of the anal orifice. Measurement 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.

III. Statistical analysis

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

Results:

This table shows that age ranged between 17 and 40 with mean (27.32± 6.55).

Regarding weight, it ranged between 63 and 100 with mean (78.21± 9.83) and height ranged between 153 and 178 with mean (165.54± 6.46).

Regarding occupation, no was 38 (82.6%) and yes was 8 (17.4%).

Regarding special habit, was 42 (91.3%) hadn’t a special hapit and 4 (8.7%) was smoking **Table (1)**.

Regarding onset of labour, PRETERM was 6 (13.0%) and TERM was 40 (87.0%).

Regarding membrane condition, Intact was 33 (71.7%) and ROM was 13 (28.3%) **Table (2)& figures (1, 2).**

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This table shows that regarding labour progress, NORMAL was 42 (91.3%) and PRECIPTATE was 4 (8.7%) **Table (3)& figure (3).**

Regarding Time of 2nd stage, long was 18 (39.1%) and short was 28 (60.9%).

Regarding need of episiotomy, no was 10 (21.7%) and yes was 36 (78.3%).

Regarding perineal length categories, Perineal length >4was 17 (37.0%) and Perineal length <4 was 29 (63.0%).

Regarding perineal length, it ranged between 2.5 and 4.5 with mean (3.49± .614) **Table (4)& figures (4, 5).**

The percentage of onset of labour was statistically lower among Cases with Perineal length >4 than Cases with Perineal length <4 (5.9%, 17.2%) p value= 0.027.

The percentage of membrane condition was statistically lower among Cases with Perineal length >4 than Cases with Perineal length <4 (p value= 0.027).

The percentage of perineal tear was statistically lower among Cases with Perineal length >4 than Cases with Perineal length <4 (5.9%, 48.3%) p value= 0.003**Table (5)& figures (6, 7).**

The percentage of time of 2nd stage was statistically higher among Cases with Perineal length >4 than Cases with Perineal length <4 (70.6%, 20.7%) p value= 0.001.

The percentage of need of episiotomy was statistically lower among Cases with Perineal length >4 than Cases with Perineal length <4 (64.7%, 86.2%) p value= 0.048 **Table (6)& figures (8, 9).**

Table (1): Demographic data among the studied cases.

		Rang	Mean ± SD
Age		17 - 40	27.32± 6.55
Weight		63 - 100	78.21± 9.83
Height		153 - 178	165.54± 6.46
Occupation	**NO**	38	82.6
	YES	8	17.4
Special habit	**NO**	42	91.3
	SMOKING	4	8.7
Gravidity	**G2**	9	19.6
	G3	4	8.7
	G4	3	6.5
	G5	2	4.3
	G6	2	4.3
	PG	26	56.5
Parity	**0**	26	56.5
	1	9	19.6
	2	4	8.7
	3	3	6.5
	4	2	4.3
	5	2	4.3

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Table (2): History of onset of labour and membrane condition among the studied cases.

		No.	%
onset of labour	PRETERM	6	13.0
	TERM	40	87.0
membrane condition	Intact	33	71.7
	ROM	13	28.3

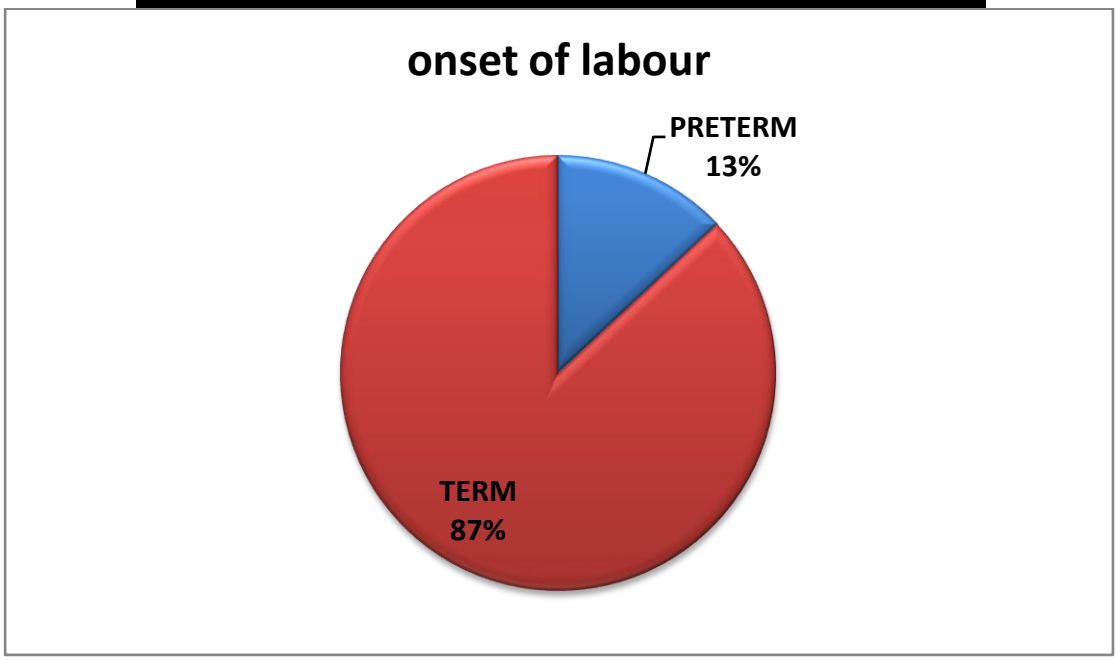


Figure (1): onset of labour among the studied cases.

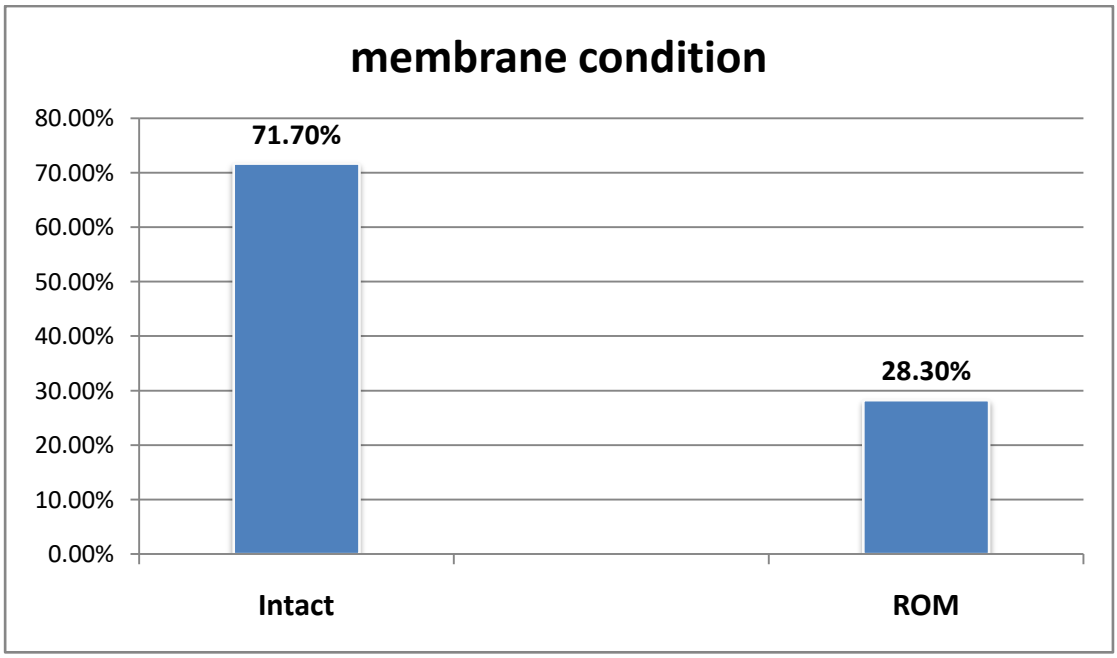


Figure (2): membrane condition among the studied cases.

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Table (3): labour progress among the studied cases.

		No.	%
labour progress	**NORMAL**	42	91.3
	PRECIPTATE	4	8.7

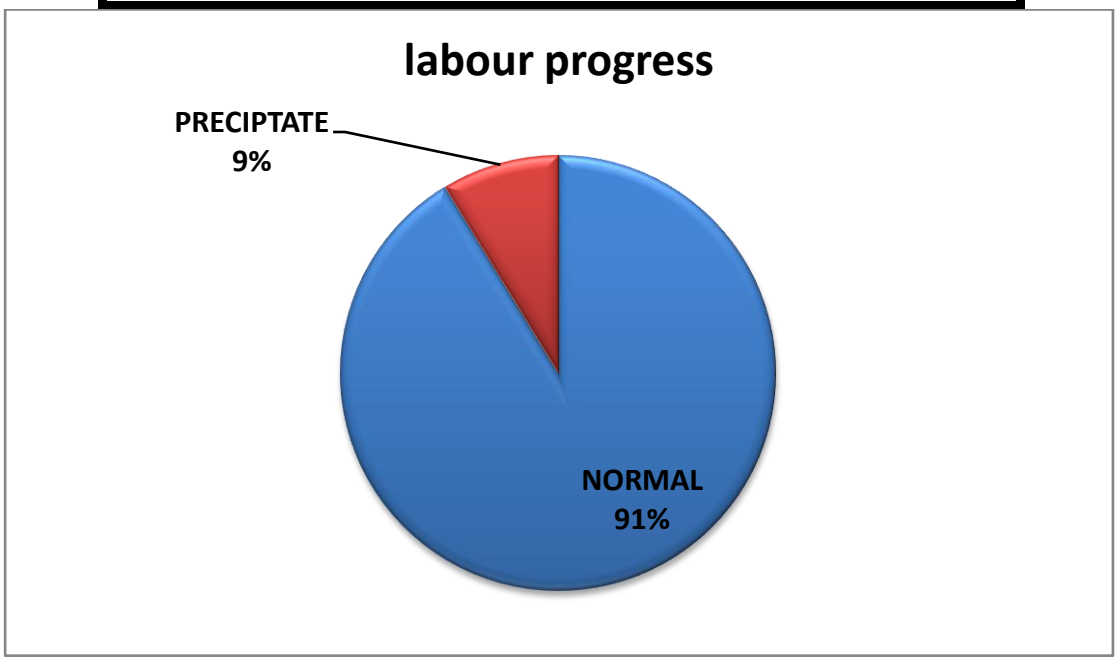


Figure (3): labour progress among the studied cases.

Table (4): Time of 2nd stage, need of episiotomy and perineal length and perineal length categories among the studied cases.

		No.	%
Time of 2nd stage	**LONG**	18	39.1
	SHORT	28	60.9
need of episiotomy	**NO**	10	21.7
	YES	36	78.3
perineal length categories	**Perineal length >4**	17	37.0
	Perineal length <4	29	63.0
perineal length	**Rang**	**Mean ± SD**	
	2.5 – 4.5	3.49± .614	

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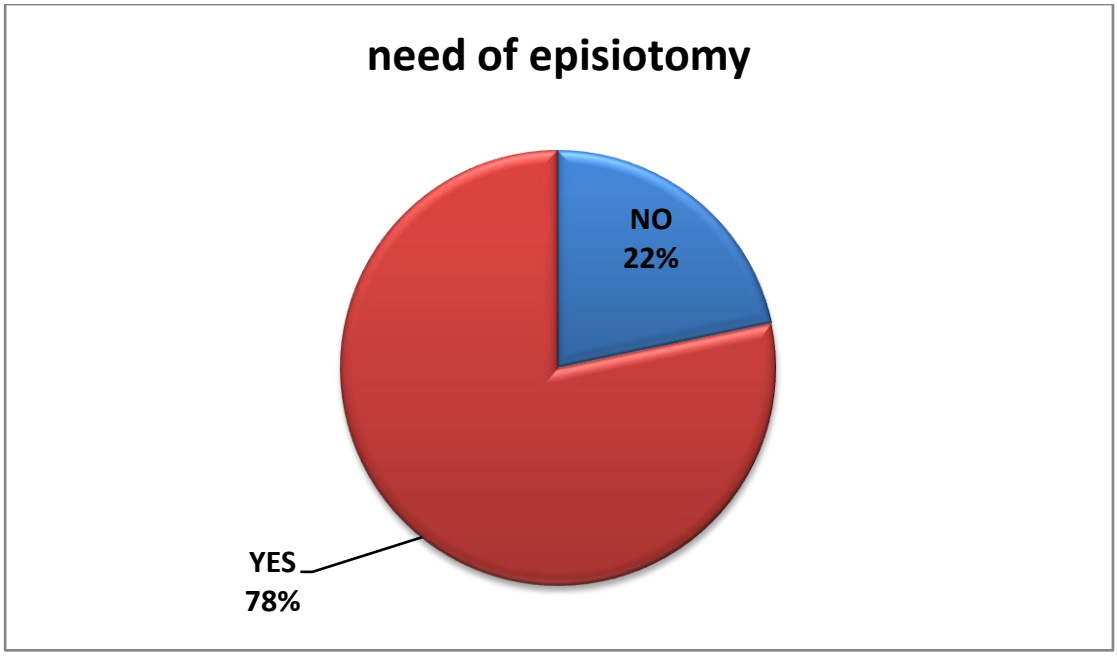


Figure (4): need of episiotomy among the studied cases.

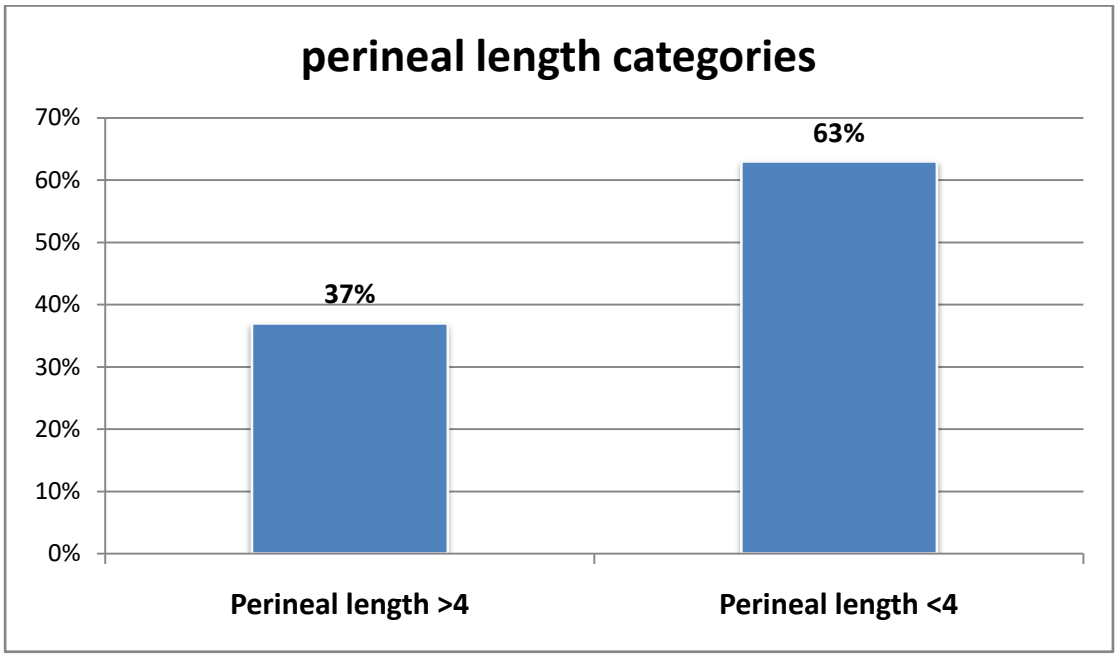


Figure (5): perineal length categories among the studied cases.

Table (5): Comparison between Cases with Perineal length >4 and Cases with Perineal length <4 regarding onset of labour, membrane condition and perineal tear.

			Cases with Perineal length >4	Cases with Perineal length <4	X^2	P. value
onset of labour	PRETERM	No.	1	5	1.219	.027
		%	5.9%	17.2%		

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	TERM	**No.**	16	24		
		%	94.1%	82.8%		
membrane condition	**Intact**	**No.**	16	17	1.219	.027
		%	94.1%	58.6%		
	ROM	**No.**	1	12		
		%	5.9%	41.4%		
perineal tear	**NO**	**No.**	16	15	8.765	.003
		%	94.1%	51.7%		
	YES	**No.**	1	14		
		%	5.9%	48.3%		

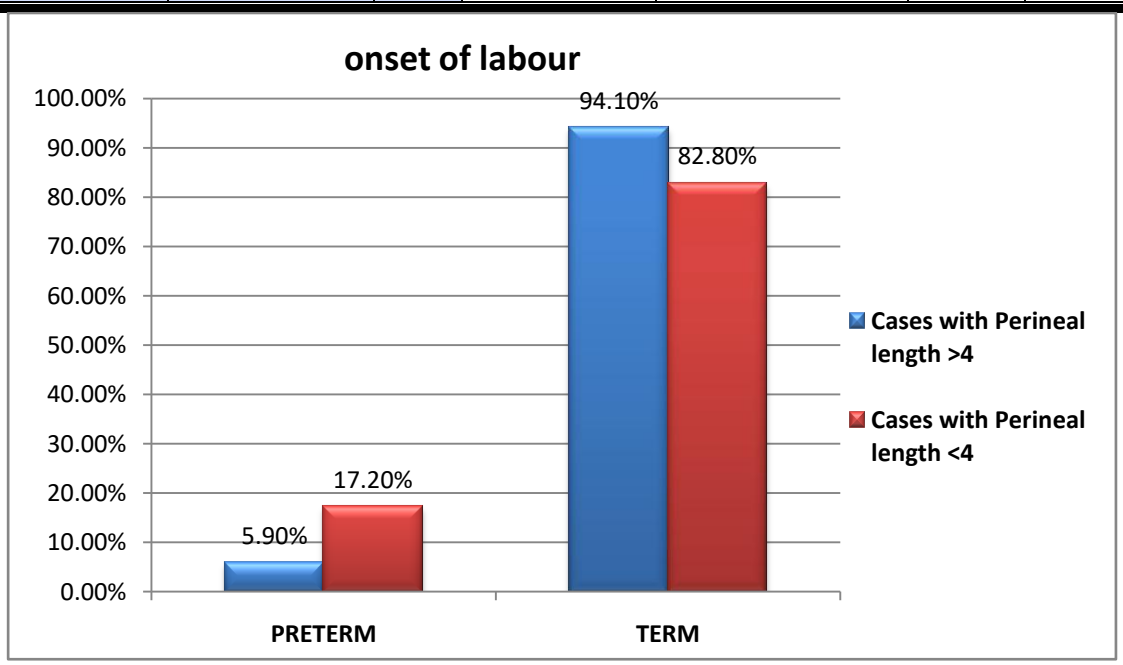


Figure (6): Comparison between Cases with Perineal length >4 and Cases with Perineal length <4 regarding onset of labour.

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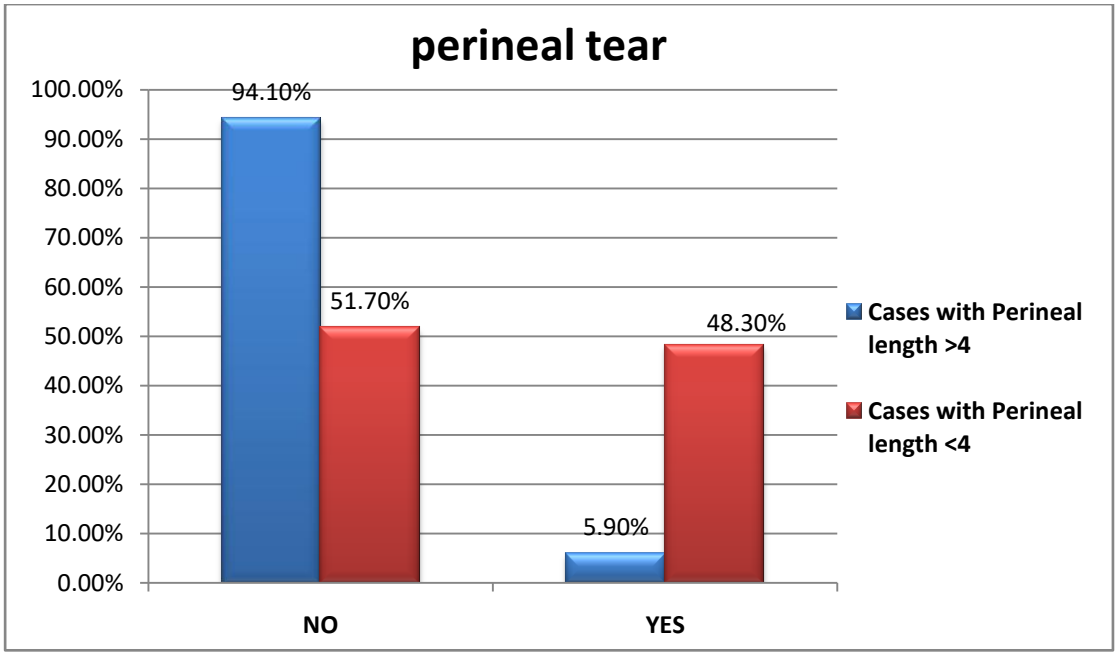


Figure (7): Comparison between Cases with Perineal length >4 and Cases with Perineal length <4 regarding perineal tear.

Table (6): Comparison between Cases with Perineal length >4 and Cases with Perineal length <4 regarding time of 2nd stage and need of episiotomy.

			Cases with Perineal length >4	Cases with Perineal length <4	X^2	P. value
time of 2nd stage	LONG	No.	12	6	11.203	.001
		%	70.6%	20.7%		
	SHORT	No.	5	23		
		%	29.4%	79.3%		
need of episiotomy	NO	No.	6	4	2.912	.048
		%	35.3%	13.8%		
	YES	No.	11	25		
		%	64.7%	86.2%		

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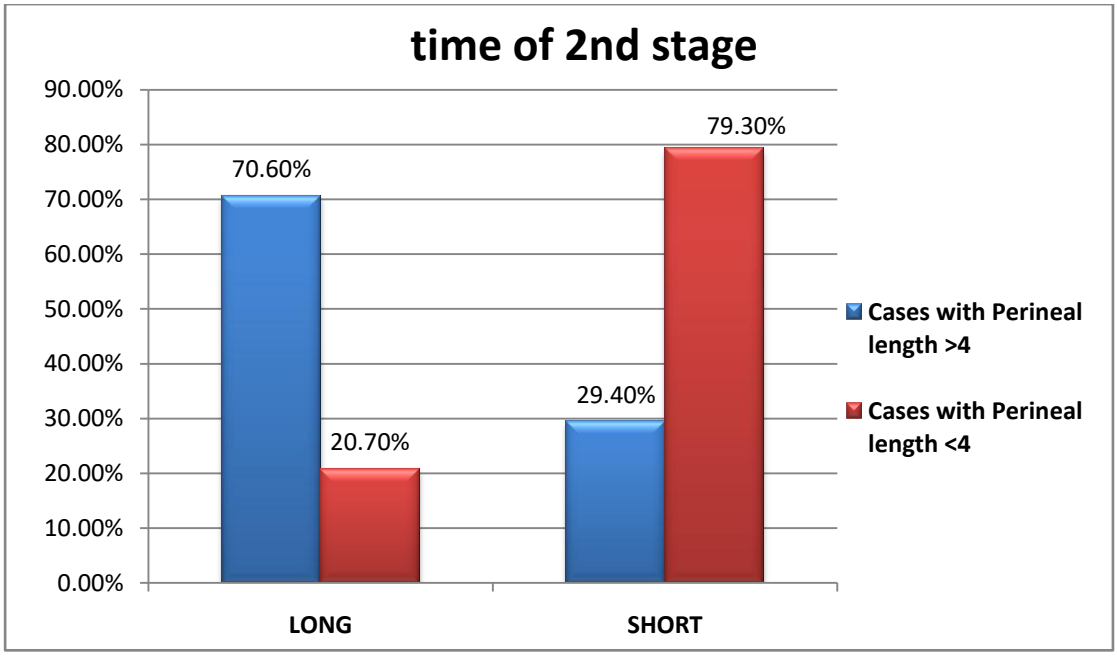


Figure (8): Comparison between Cases with Perineal length >4 and Cases with Perineal length <4 regarding time of 2nd stage.

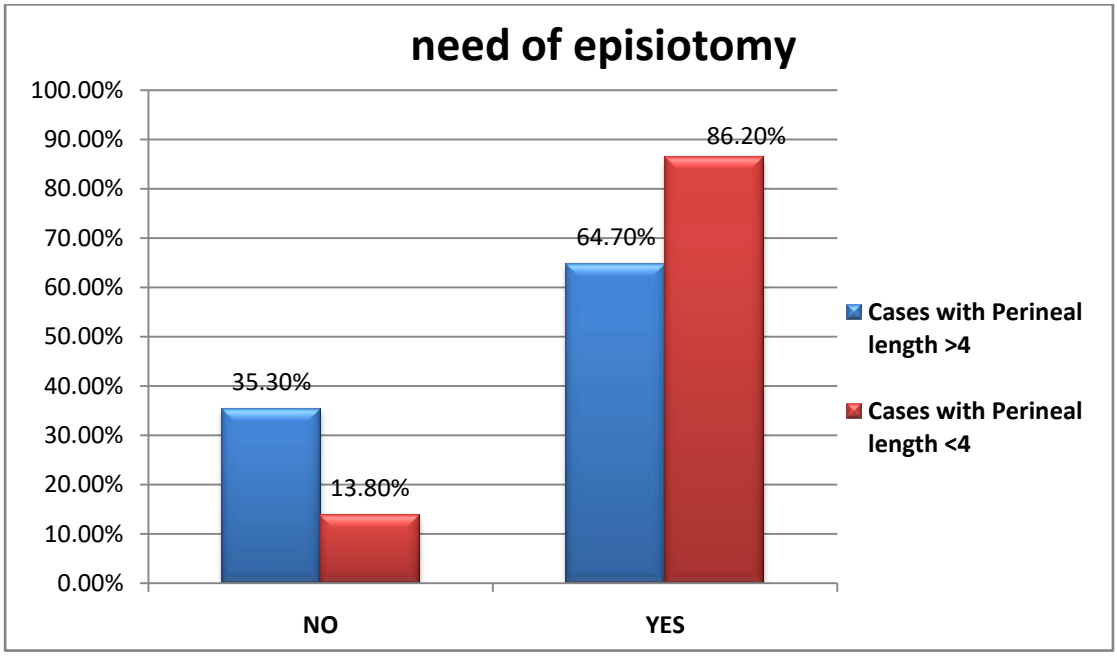


Figure (9): Comparison between Cases with Perineal length >4 and Cases with Perineal length <4 regarding need of episiotomy.

Discussion

The present study shows that regarding perineal length, it ranged between 2.5 and 4.5 with mean (3.49± .614).

MbouaBatoum et al., [7] found average perineal body length was 3.2 cm.

This was less than the average perineal body reported in other western studies as 3.7 cm by **Lane et al.,** [8] 3.9 cm by **Deering et al.,** [9] and 4 cm by **Tsai et al.**[10]This difference may be due to racial differences between the studied populations.

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The present study shows that regarding perineal length categories, Perineal length >4was 17 (37.0%) and Perineal length <4 was 29 (63.0%).This classification according to**Farghaly et al. [1].**

This work showed that there was statistically significant difference between Cases with Perineal length >4 and Cases with Perineal length <4 regarding perineal tear. The percentage of perineal tear was statistically lower among Cases with Perineal length >4 than Cases with Perineal length <4 (5.9%, 48.3%) p value= 0.003.

This agrees with the study of **Eid et al. [11]** who found that there was statistically significant difference in the incidence of perineal tears between both groups, it was significantly higher in the group of perineal body ≤ 4 cm than that is in the group of perineal body > 4 cm.

This agrees with***Rizk et al.,*** **[6]**who reported that the incidence of perineal tears were increased in patients with a perineal length of <4 cm.

This result was contradict with the result of **Walfisch et al. [2]**, from Soroka University medical center, who made a prospective study on 300 women to assess the association of perineal lacerations during delivery, It was found that perineal lengths (≤ 4 cm) have increased incidence of perineal tears than that in with perineal lengths (> 4 cm).

This also coincides with the results of **Aytan et al. [12],** from Ankara, he made a prospective study on 400 nulliparous women admitted in labor, to determine the patient-related factors associated with severe perineal lacerations in nulliparous women, in their study there was increased risk of perineal tears in the group of patients with perineal lengths ≤ 3cm, they found that the perineal length was to be the only factor associated with lacerations in a statistically significant manner in the whole group . It may be that a short perineal body is indicative of either a smaller bony pelvis or a smaller vaginal opening.

The current study showed that there was statistically significant difference between Cases with Perineal length >4 and Cases with Perineal length <4 regarding need of episiotomy. The percentage of need of episiotomy was statistically lower among Cases with Perineal length >4 than Cases with Perineal length <4 (64.7%, 86.2%) p value= 0.048.

This agrees with***Rizk et al.,*** **[6]**who reported that the incidence of episiotomy were increased in patients with a perineal length of <4 cm.

This agrees with the study of **Aguiar et al. [13]**who 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.

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).

Previous studies did include episiotomy with perineal tears in one category and demonstrate an inverse relationship between perineal length and perineal/vaginal tears needing repair. The difference in the relation between episiotomy and perineal length between the current and previous studies may be attributed to the actual need of episiotomy with long perineum. Long perineum may be associated with shorter genital hiatus. A factor that was previously identified as one of the determinant of the need for episiotomy affects the possibility of obstetrical trauma **[6]**.

However, malpractice of elective episiotomy in primiparas by young obstetricians may share in that difference. In the current study (77.2%) of primiparae have done episiotomy during their deliveries. Previous studies suggested that observation of more trauma with short perineum may be attributed to that the short perineal body is indicative of either a smaller bony pelvis or a smaller vaginal opening **[14]**.

This contradicts with **Smithet al. [15]** who aimed to describe the range of perineal trauma in women with a singleton vaginal birth and estimate the effect of maternal and obstetric characteristics on the incidence of perineal tears. They conducted a prospective observational study on all women with a planned singleton vaginal delivery between May and September 2006 in one obstetric unit, three

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freestanding midwifery-led units and home settings in South East England. They found that there was no evidence that episiotomy was associated with either an increased or decreased risk for OASIS.

The use of episiotomy is controversial—while there is no evidence to support the use of routine episiotomy to protect from severe perineal tears [16], a recent systematic review shows that women receiving mediolateral episiotomy are less likely to suffer from a severe BPT ([17]. Selective episiotomy practices are recommended and the WHO states that fewer than 10% of vaginal births should receive an episiotomy. Nonetheless, routine use of episiotomy is still common [18].

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., [9]** which showed that women with shortened perineal body length (<2.5 cm) had a higher chance of sustaining a perineal laceration.

Lane et al., [8]who assessed the relation between perineal body length and the risk of perineal laceration. They found that, there was an association of perineal body length with lacerations.

A study by **Tsai et al., [10]** failed to show a relationship between perineal body length and severe lacerations.

Conclusion:

Regarding incidence of perineal length > 4 was about one third in our patients. 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.

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