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Risk Factors for Birth Related Perineal Truama among Low Risk Parturient Women and Nursing Implications

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Abstract: *Perineal trauma related to vaginal delivery may occur spontaneously during vaginal birth or when a surgical incision (episiotomy) is intentionally made to enlarge the diameter of the vagina outlet.*
The aim *of the study was to determine the incidence of perineal trauma among low risk parturient women, find out the harmful and non harmful practices behind the occurrence of perineal trauma, and conducting a work shop for nurses working in labor unit about measures used to prevent perineal trauma.*
Subjects and methods*, a cross sectional design was used. The sample included 500 parturient women admitted to labor room without obstetrical or medical complications. Data collection lasted 7 months, by using interview questionnaire, maternal assessment record, summary of labor sheet, and partograph.*
Results *the incidence of perineal trauma was 43.0% (27.0% perineal tear & 16.0% episiotomy), 57.0% had their perineum intact (32.4% had first degree tear with no suture, and 24.6% had completely intact perineum). Women age, parity, short birth interval, previous perineal trauma were significantly associated with perineal trauma (p=0.00). There was direct proportion with increase the frequency and number of vaginal examination, applying fundal pressure during the second stage of labor, no psychological support, not done correct pushing after complete cervical dilatation, and not done panting and slow delivery of the head and the occurrence of perineal trauma.*
Conclusion *almost three fifths of women had intact perineum "complete intact perineum and first degree tear" and the rest were exposed to perineal tear and episiotomy. Risk factors significantly shown to be associated with perineal trauma were; previous perineal trauma and perineal management technique.*
Recommendation *more publication and follow up for nursing protocol for the prevention of perineal trauma should be adopted based on the identified risk factors and taking into consideration the importance of perineal management techniques and avoidance of unnecessary vaginal examination and fundal pressure during the second stage of labor.*
Key words: *episiotomy, perineal tear, risk factors.*

I. Introduction

One of the most commonly reported maternal health problems after birth is perineal pain, a symptom highly associated with sustaining perineal trauma during a vaginal birth.[4] It is estimated that approximately 70.0% of women who have a vaginal birth will sustain perineal trauma which requires suturing.[14] Trauma to the external genitalia can occur spontaneously during a vaginal delivery or as a consequence of a surgical incision (episiotomy) to enlarge the vaginal opening to facilitate birth.

The full extent of genital tract trauma is unknown for several reasons, including under reporting of some types of trauma, incomplete assessment by clinicians, practice variations regarding which forms of trauma need suturing and differences in classification.[1] Midwives and obstetricians in the UK are expected to document the extent of perineal trauma sustained using a classification system which divides trauma into four types according to the tissues and structures involved.[21-18]

Trauma can be classified from a first degree tear which denotes injury to the perineal or vaginal skin only, to a fourth degree tear which is the most severe degree of perineal injury that extends to involve the anal sphincters and anal epithelium.[19] It is essential that clinicians are able to accurately identify and document the extent of trauma to ensure that a woman receives the most appropriate management. Moreover, it is also important that clinicians are able to repair the trauma sustained using suturing methods and materials associated with less short-term perineal pain as recommended by Cochrane systematic reviews.[13-12]

Among various obstetric parameters, primiparity, assisted forceps delivery, persistent occipito posterior position and birth weight of more than 4000 gm were previously found to be significantly associated with severe perineal tears. Other, less established, risk factors include maternal age; postdate pregnancies, induction of labor, a prolonged second stage of labor, precipitate labor, epidural anesthesia and various maternal birth positions .[19] Randomized controlled trials (RCTs) have failed to demonstrate a significant reduction in perineal trauma in women who received an episiotomy compared with women who did not.[5]

Clinical diagnosis of obstetric anal sphincter injury (OASIS) comprising a third or fourth degree perineal tear occurs in about 3% of women after having their first baby, and 0.8% of women who have previously had at least one baby.[16]

Pain and discomfort related to perineal trauma have been reported to interfere with women's daily activities postpartum, such as sitting, walking and lifting the baby. Pain related to perineal trauma and suturing is known to have a negative impact on sexual activities in the first year after childbirth. [16] Midwives utilize a variety of hand techniques in the second stage of labor, in the belief that these may help lower genital tract trauma rates following vaginal birth. Nevertheless, no evidence is available on how best to reduce perineal trauma after normal spontaneous vaginal childbirth. [1]

II. Significance of the study

There are almost no up-to-date data on the current risk factors for severe perineal tears. The establishment of such risk factors may enable earlier identification of patients at risk and the use of preventive measures. This study was carried out on 500 parturient women, selected purposively from labor unit at Zagazig university hospital, to find out the incidence of perineal trauma and associated harmful and non harmful risk factors among low risk parturient women. and conducting a work shop for nurses working in labor unit about measures used to prevent perineal trauma.

Aim of this study

1- Determine the incidence of perineal trauma among low risk parturient women.
2- Find out the harmful and non harmful practices behind the occurrence of perineal trauma.
3- Conducting a work shop for nurses working in labor unit about measures used to prevent perineal trauma .

III. Patients and methods

Design:

Cross sectional design was adopted in this study.

Setting:

The current study was conducted in labor ward at the maternity department at Zagazig University Hospital. It is a teaching hospital and the rate of spontaneous vaginal delivery turnover was satisfactory for the study. The total delivery number during the current study period was 500 parturient women.

Subjects:

The study population consisted of all parturient women attending the study setting during the study period (7 months). The sample consisted of 500 parturient women undergoing spontaneous vaginal delivery. A consecutive sampling technique was used; eligible women were recruited in the sample, until the required sample size was fulfilled.

Inclusion criteria:

1. Multipara.
2. Single fetus with vertex presentation.
3. Gestational age more than or equal to 37 weeks.
4. Women undergoing normal spontaneous vaginal delivery.
5. No previous cesarean section.
6. No arrangement for cesarean section in the current pregnancy.

Tools of data collection:

I) **An interview questionnaire:** It included data about

- **Personal data:** such as age, education, socioeconomic status, and occupation.
- **Obstetrical history**: such as gravidity, parity, number of previous abortion, birth interval, mode of termination of the previous delivery, number of living children, complication of the last delivery, degree of perineal trauma, previous history of episiotomy or perineal trauma.
- **Current pregnancy history:** included data about gestational age, history of antenatal care and problems encountered during the present pregnancy.

II) Maternal assessment record. It included the findings of

- **General examination on admission to labor room**: such as vital signs and blood pressure, anthropometric measurements as (weight, height, body mass index, ….etc
- **Abdominal examination:** to determine fetal position and presentation, lie and attitude. Fetal heart rate was

assessed. Also to assess the frequency, duration and intensity of uterine contractions.

- **Ultrasonography**: was done to assess the gestational age, fetal viability, Amniotic fluid index (AFI) and fetal presentation, position and weight as well as placental localization.
- **Local examinations: (**P.V examination): It was done to determine the condition of vulva and vagina, perineal assessment whether it was soft or rigid, its thickness, cervical dilatation and effacement, membrane condition as well as pelvic capacity.

III) Partograph:

The Partograph was used for women who had normal vaginal delivery to evaluate fetal and maternal condition and to evaluate the labor progress during the active phase of the first stage of labor.

IV) Summary of labor sheet:

It involved data about the researcher observations during the first stage of labor. Harmful practices such as; unnecessary P.V examination, pushing down during the first stage of labor, lack of social support during second stage of labor, use of fundal pressure and negligence of perineal management techniques were all recorded.

V) To fulfill the third objective, it was necessary to conduct a workshop for nurses working in labor unit (20 nurses) during the three shifts about measures used to prevent perineal trauma.

The above mentioned workshop was planned for one day with the objective of upgrading nurses knowledge and practice about measures used to prevent perineal trauma. Data show was presented by the researcher including the scope of knowledge about perineal trauma, and followed by demonstration and redemonstration (using simulator) about perineal management technique. In addition a simple but inclusive pamphlet about this important subject was distributed to the participants.

IV. Administrative design & ethical consideration:

An official permission was granted by submission of an official letter from the Faculty of Nursing to the responsible authorities of the study setting to obtain their permission for data collection.

All ethical issues were taken into consideration during all phases of the study: the research maintained an anonymity and confidentiality of the subjects. The inclusion in the study was totally voluntary. The aim of the study was explained to every woman before participation and an oral consent was obtained. Women were assured that the maneuver will cause no actual or potential harm to her or her baby and that professional help will be provided for her and for her baby whenever needed.

Preparatory phase:

During this phase, the researcher reviewed local and international literature to get more knowledge about the study. This also helped in designing the study tools. The tools were tested for content validity by five experts in the field of obstetrics and gynecological nursing. The recommended modifications were done and the final form was ready for use.

Pilot study:

A pilot study was conducted on 50 parturient women to assess the applicability of the data collection tools, arrangements of items, estimate the time needed for each interview and the feasibility of the study and acceptance to be involved in the study. Any necessary modifications were done.

Field study:

Data collection took a period of seven months from first of July 2013 to the end of January 2014. After getting the official permission the pilot testing of the study tools was done and analyzed. The researcher started the data collection during three days/week from 9 am to 4 pm. After obtaining parturient woman's acceptance to participate in the study the researcher started to collect data through three phases: 1) interviewing, 2) assessment and 3) evaluation.

Statistical design:

After data were collected it was revised, coded and fed to statistical software IBM SPSS version 16. The given graphs were constructed using Microsoft excel software. All statistical analysis was done using two tailed tests and alpha error of 0.05. P value less than or equal to 0.05 was considered to be statistically significant.

Level of significance for all statistical tests done, the threshold of significance was fixed at the 5% level (p-value). A p-value > 0.05 indicates non significant result and the p-value < 0.05 indicates a significant

results and the p-value is the degree of significance. The smaller the p-value obtained, the more significant is the result, the p-value being the probability of error of the conclusion.

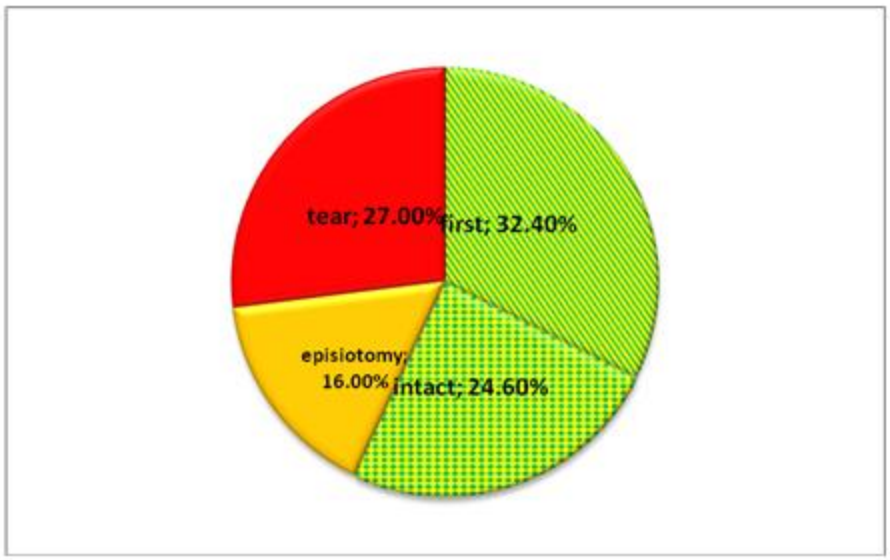

Figure 1: The incidence of perineal trauma among the studied sample (N= 500)

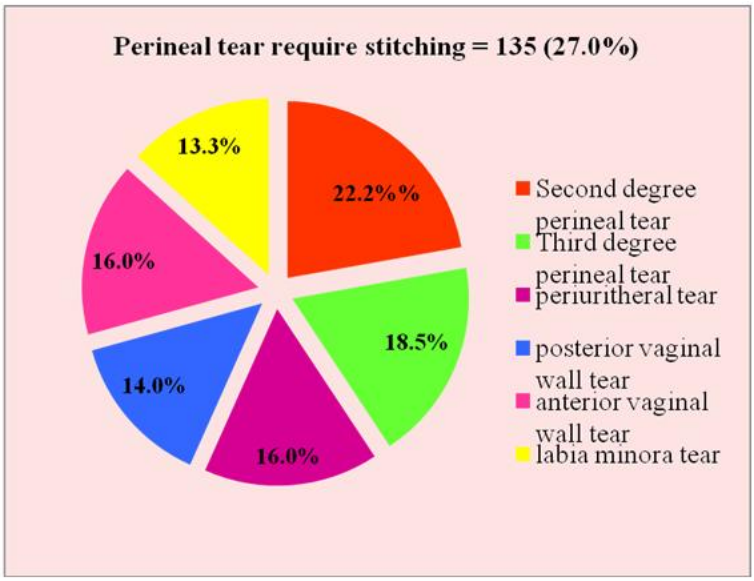

Figure 2: Types and degrees of perineal tear among the studied sample (n=500)

Table 1: Distribution of Women Perineal Condition According to the Patient Characteristics (n=500)

Patient Characteristics	PERINEAL CONDITION						X^2 (P)
	INTACT (N=285)		TEARS (N=135)		EPISIOTOMY (N=80)		
	No	%	No	%	No	%	
Age							
▪ 20-	160	56.0	25	18.5	36	45.0	52.5 0.00**
▪ 30+	125	44.0	110	81.5	44	55.0	
Occupation							
▪ Housewife	100	35.0	100	74.0	50	63.0	61.6 0.00**
▪ working	185	65.0	35	26.0	30	37.0	
Parity							
▪ 2-3	150	52.6	40	29.6	34	42.5	19.8 0.00**
▪ 4+	135	47.0	95	70.4	46	57.5	
Birth interval							
▪ ≤2 years	230	80.5	75	55.5	60	75.0	33.8 0.00**
▪ >2 years	55	19.5	60	44.5	40	25.0	
Presence of perineal tear during the last delivery							
▪ Yes	125	44.0	120	89.0	44	55.0	76.4 0.006*
▪ No	160	56.0	15	11.0	36	45.0	

Table 2: Distribution of Women Perineal Condition According to the Harmful and Non Hurmful Practices Performed During Labor

HARMFUL AND NON HURMFUL PRACTICES	INTACT (285)		TEARS (135)		EPISIOTOMY (80)		X^2	P-VALUE
	NO	%	NO	%	NO	%		
Vaginal examination								
▪ Every half hour	215	75.4	118	87.4	45	56.2	26.4	0.00**
▪ Everyone hour	70	24.6	17	12.6	35	43.8		
Total number of PV								
▪ 1-5	240	84.2	45	33.3	25	31.2	13.8	0.01*
▪ More than 10	45	15.8	90	66.7	55	68.8		
Applying fundal pressure								
▪ Done	50	17.5	110	81.5	60	75.0	189.1	0.00*
▪ Not done	235	82.5	25	18.5	20	25.0		
Bearing down during first stage								
▪ Done	100	35.1	90	66.7	60	75	60.3	0.00*
▪ Not done	185	64.9	45	33.3	20	25		
Perineal resistance								
▪ Soft	170	59.6	105	77.8	54	67.5	13.5	0.00*
▪ Rigid	115	40.4	30	22.2	26	32.5		

Table 3: Distribution of Women Perineal Condition According to the Harmful and Non-Harmful Practices Performed During Labor

HARMFUL AND NON HURMFUL PRACTICES	INTACT (285)		TEARS (135)		EPISIOTOMY (80)		X2	P-VALUE
	NO	%	NO	%	NO	%		
Psychological Support								
HARMFUL AND NON HURMFUL PRACTICES								
Vaginal examination								
▪ Every half hour								
▪ Everyone hour								
Total number of PV								
▪ 1-5								
▪ More than 10								
Applying fundal pres	115	40.3	119	88.1	50	62.5	86.5	0.00*
▪ Done								
▪ Not done								
Bearing down during stage								
▪ Done								
▪ Not done								
Perineal resistanc								
▪ Soft								
▪ Rigid								
▪ None								
▪ Sufficiency	170	60.7	16	11.9	30	37.5		
Correct pushing during bearing down effort								
▪ Done	285	100	20	14.8	35	43.8	331.2	0.00*
▪ Not done	0	0.00	115	85.2	45	56.2		
Panting and slow delivery of fetal head								
▪ Done	155	54.4	15	11.1	25	31.2	74.5	0.00*
▪ Not done	130	45.6	120	88.9	55	68.8		
Maintain head flexion								
▪ Done	280	98.2	119	88.1	45	56.2	110.8	0.00*
▪ Not done	5	1.8	16	11.9	35	43.8		

V. Results

Figure 1 illustrates that almost three fifths (57.0%) of women had intact perineum (a perineum which is not sutured). Of those 24.6% had completely intact perineum and 32.4% had first degree ″less than one centimeter″ that is why it was not sutured and left the perineum intact. Meanwhile, perineal trauma constituted more than two fifths of the sample (43.0%), 16.0% had episiotomy and 27.0% had other degree of perineal tear.

Figure 2 indicates that the most common degree of perineal tear was the second (22.2%) and third (18.5%) degree, followed by equal percentages of peri-urethral tear and anterior vaginal wall tear (16.0%). The least type of perineal tear was that of posterior vaginal wall tear (14.0%).

Table 1 shows the distribution of women perineal condition according to the patient characteristics. It was observed that the participant's age ranged between 20-33 years. The majority (81.5%) of women who had perineal tear were in the age group of 30-33 years. Meanwhile, working women (65.0%) were significantly more likely to have an intact perineum compared to housewives (35.0%). Differences observed are statistically significant regarding to the age and occupation (P=0.00).

The same table also reveals that, women who had para 4^{+} were more likely to have episiotomy and perineal tears than those with para (2-3), (70.4% & 57.5% vs. 29.6% & 42.5% respectively). In addition, women who had short birth interval (≤2 years) were more likely also to have episiotomy and perineal tears than those with long birth interval (55.5% & 75.0% vs. 44.5% & 25.0% respectively). Differences observed are statistically significant (p=0.00) regarding to parity and birth interval.

The same trend was also observed increase in the percentages of women who had perineal tear or episiotomy concerning the presence of previous perineal tear compared with those who had no perineal tear (89.0%, 55.0% vs. 11.0%, 45.0% respectively).

Table 2 indicate that, the lesser frequency of vaginal examination the more presence of intact perineum, and the difference observed is statistically significant (p=0.00). Also the majority of women who had intact perineum (82.5%) had no fundal pressure done for them, while these who had fundal pressure were exposed to more perineal tear and episiotomy (81.5% and 75.0% respectively). Meanwhile, women used to bear down during the first stage of labor and before complete cervical dilatation were significantly less likely to have intact perineum than those who postponed this to the second stage of labor (35.1% vs. 64.9% respectively), with statistical significant difference (p=0.00).

Concerning perineal resistance, women who had rigid perineum were significantly less likely to have intact perineum compared to those who had soft perineum (40.4% vs. 59.6%), (p=0.00) as regard previous perineal tear and perineal resistance.

Table 3 demonstrates that, the women who had no or insufficient psychological support were significantly more likely to be exposed to perineal trauma than those who had psychological support (88.1% vs.11.9% respectively). The difference observed is statistically significant (p=0.00). The same table reveals that using correct pushing during bearing down effort is significantly associated with lesser birth trauma (p=0.00).

Table 3 also reflects, slow delivery of the head or its slow extension after crowning with panting exercise from the woman, and maintaining head flexion (54.4% and 98.2% vs 45.6% and 1.8% respectively) is significantly (P=0.00) associated with the presence of intact perineum.

VI. Discussion

The present study results revealed that more than two fifths of the studied sample was exposed to perineal trauma. Of those about one fourth were exposed to perineal tear and 16.0% had episiotomy.This results agree with ***Lesley et al., [16]*** in South East England, found in similar study of women who delivered spontaneously, that 45.0% had a perineal trauma. Similarly, ***ACOG., [2]*** reported 39.0% incidence of episiotomy and 3.0% third degree perineal tears. This results disagree with ***Wu L., [25]***who found that 53.3% were exposed to perineal trauma and 46.7% had an intact perineum. Moreover, ***Sheiner et al., [22]*** found a higher incidence of episiotomy (32.0%) and 28.0% of the spontaneous perineal tears required suturing. The discrepancies between the previous results could be attributed to differences in sample size and its selection criteria.

The present result shows that there was a statistically significant association between women age, parity and the condition of the perineum. Thus women with older age group and para 4 were significantly more likely to have perineal trauma. This finding is not in accordance with ***Sheiner et al., [22]*** who reported that younger maternal age and one para was considered as a risk for perineal trauma during childbirth and therefore deserve special attention. Meanwhile, working women were significantly more likely to have an intact perineum (p=0.00). In the same respect, ***Goldman et al., [9]*** study which examine the perineal trauma rates, found that educational level and occupation play a role in reducing the perineal trauma. The researcher views that perineal trauma common in non-working mothers might be due to sedentary life and lack of activity of non- working mothers.

This study result revealed that women with short birth interval and those who had previous episiotomy or tear were significantly more likely to encounter perineal trauma. This finding is supported by ***Lowenstein et al., [17]*** who found that the shorter birth interval the more exposure to perineal trauma. Moreover, ***Landy et al, [15]*** reported that perineal trauma increases the risk of spontaneous perineal trauma at the second delivery. Also, ***Bick D et al., [4]*** reported that women who experience perineal tears during first delivery are more than three times likely to sustained perineal trauma at birth of their second baby. In addition, ***Chang et al., [6]*** and ***Baghurst et al., [3]*** reported that, having perineal trauma at the first delivery increases the risk of spontaneous perineal

trauma at the second delivery. This is quite expected since the perineal scar of the previous perineal trauma might reduce the strength of the pelvic floor muscles and increases its rigidity. Concerning perineal condition, women who had rigid and thick perineum were significantly less likely to have intact perineum compared to those who had soft and thin perineum. This was expected and may be an important reason for episiotomy to prevent imminent tear.

Moreover, it was evident in the present result that a statistically significant relation was detected between multiple vaginal examinations and the occurrence of perineal trauma. In the same line ***Smith.,*** [23] reported that there are some practices that should be avoided during labor as unnecessary pushing during the first stage of labor and multiple vaginal examinations as these irritating the perineal tissues and exhausting the mother during labor. Moreover, women who were not exposed to fundal pressure during the second stage were significantly more likely to have an intact perineum. These results agreed with the ***World health organization*** [24] report which recommended avoiding routine use of fundal pressure during labor.

The present study result revealed that women who have inadequate psychological support during their labor were more likely to have perineal trauma during their childbirth. This finding was supported by ***Hodnett et al.,*** [10] who emphasized that there is good evidence that women who receive continuous one to one support throughout their labor have better outcomes in terms of reduced analgesia requirement, decreased frequency of operative delivery and perineal trauma. On the same context ***Cunningham et al.,*** [7] asserted that every effort should be made to ensure that all laboring women receive psychological effort, not only from those close to them but also from experienced caregivers.

Regarding the use of correct spontaneous pushing with each uterine contractions during the second stage of labor, the present result revealed that the majority of women in the intact perineum group pushed correctly with uterine contractions compared to the minority in both groups (episiotomy and tears) and the difference was statistically significant.

This finding is in agreement with ***Hodnett et al.,*** [10] who highlighted that unnecessary pushing before the parturient woman feels an urge to push or before the head is reasonably low and is mostly rotated into the optimal orientation for birth may contribute to perineal tearing whereas spontaneous pushing with each uterine contraction when the head is on the perineum increases the chance for intact perineum. ***Alber et al.,*** [1] found no evidence of an association between directed pushing and perineal trauma. This is in contrast with one study concluding that directed or Valsalva pushing was associated with an increased risk of a tear requiring a suture. [20]

According to ***Zaitoun*** [26] the gradual extension of the head may be aided by doing upward pressure on the perineum by one hand and downward pressure on the occiput by the fingers of the other hand, so as to control the movement of extension and prevent perineal trauma (***Ritgen maneuver).*** Also allowing the head to extend only between uterine contractions while the woman is panting during its delivery will prevent perineal trauma. This corresponds well with the present finding that shows a significant association between controlling the crowning, preventing the rapid extension of the head and the occurrence of perineal trauma.

VII. Conclusion

Almost three fifths of women had intact perineum "complete intact perineum and first degree tear" and the rest were exposed to perineal tear and episiotomy. Risk factors significantly shown to be associated with perineal trauma were; previous perineal trauma and perineal management technique.

VIII. Recommendation

More publications and follow up for nursing protocol for the prevention of perineal trauma should be adopted based on the identified risk factors and taking into consideration the importance of perineal management techniques and avoidance of unnecessary vaginal examination and fundal pressure during the second stage of labor.

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