Association between Perineal Tear during Vaginal Delivery And Striae Gravidarum Score

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Abstract

Background: Perineal tear is common during vaginal delivery varied from minor superficial mucosal lacerations to major tears involving the musculature of the perineum. Striaegravidarum (SG) are stretch marks occurred during pregnancy that may be an indicator of poor skin elasticity. The most common injury during vaginal birth is a perinealtear. **Aim**: The study aimed to assess the association between perineal tear during childbirth and striaegravidarum score. **Research design**: A cross-sectional descriptive research design was used. **Setting:** The study was conducted in the Obstetrics and Gynecology departments at Beni-Suef University Hospital and Helwan General Hospital, Helwan. **Sample:** A purposive sample included 300 pregnant women admitted for vaginal delivery was selected. **Tools:** Three tools were used as the following: **Tool 1:**A structured interview questionnaire, **Tool 2**: Initial assessment sheet and **Tool 3**: Atwal numerical scoring system. **Results:** In the current study more than half of the studied pregnant women developed perineal tear, second degree perineal tears had the highest percentage of perineal tears followed by third, first and fourth degree perineal tears. The mean length of perineal tear was 5.21±2.36. More than two third of the studied women with perineal tear had single tear and less than one third of them had two perineal tear. There was strong relation was observed between perineal tear during labor and striaegravidarum score. Conclusion: There was significantly association between perineal tear during vaginal delivery and striaegravidarum score. **Recommendation:** All categories of health professionals can utilize the striaegravidarum score as a simple and noninvasive technique to better classify women at risk for perineal tear.

 Keywords: Perineal tear, Vaginal Delivery, striaegravidarum score.

Introduction:

During vaginal delivery, perineal tear(PT)can range from modest superficial mucosal lacerations to extensive tears affecting the perineum and rectum musculature **(1)**. PT can result in a range of consequences, including bleeding, dyspareunia, perineal abscess, rectovaginal fistula, and incontinence, all of which are harmful to women's physical, psychological, and quality of life **(2).**

During vaginal birth, the foetal head presses heavily on the vaginal and perineal tissues. Even with a little infant and a seemingly simple birth, this could result in tissue tears. Others, despite huge babies or malpresentation, can deliver with an intact perineum**(3).**

Striaegravidarum (SG) is a physiological skin change that many pregnant women experience during pregnancy. SG islinear lesions frequently found on the abdomen, breasts, buttocks and thighs. The type

and amount of collagen in connective tissue are considered to determine the individual's elastic Index**(4).**Stretch marks called striaegravidarum (SG) occur during pregnancy and can indicate a lack of skin elasticity. The elastic index of an individual is determined by the kind and amount of collagen in connective tissue. A complicated network of crossing tiny lines makes up the skin's surface. Biopsy tissue samples from striaegravidarum show disorder, shortening, and weakening of the elastic fibre network when compared to tissue samples from normal skin **(5).**When compared to women with higher striaegravidarum, those who do not have striaegravidarum may have a lower risk of developing perineal tear during birth. According to Evidence-Based Nursing, episiotomy should not be given as a rule, although it is impossible to entirely control episiotomy due to a lack of a standardized instrument to assist

midwives in making decisions about whether or not to give episiotomy **(6).** Striaegravidarum can be used as an additional way for identifying women who are more prone to undergo perineal damage during delivery, despite the fact that there are multiple factors that contribute to the formation of perineal tear during labour. Midwives in distant health centres without advanced facilities can use striaegravidarum score as an additional non-invasive technique to detect whether women are at higher risk of perineal injury **(7).**

SG generally begins after the 24th week of pregnancy on the hips, buttocks, belly, breasts, and thighs. The prevalence of SG varies, ranging from 43 percent to 88 percent **(8).**

The severity of SG was assessed using Atwal's numerical rating technique. This rating is based on four common SG regions that have been seen (abdomen, hips, buttocks, and breast). The final score for each body part is determined by the quantity and colour of SG, which runs from 0 to 6. The TSS (total striae score) is a number that ranges from 0 to 24. Mild striae were found in women with a TSS of 12 or less, moderate striae in women with a TSS of 13-18, and severe striae in women with a TSS of >18 **(9).**

A relationship was established in a prior study on this topic between the degree of PT and the severity of SG. SG on the hips and breasts, in particular, revealed the prevalence of first- and second-degree PT **(10).** Nurses and midwives can determine the severity of SG with no special equipment or training, using noninvasive, simple observation and can aid in making decisions regarding the woman's care throughout labour **(11).**Moreover, the maternity nurses can stitch and suture most perineal first and second degree rips and episiotomies. A physician should be seen if there is a suspicion that the rupture includes the anal sphincter muscles, is a grade three or four perineal rip, or is extremely serious,

such as one that bleeds so much that suturing is difficult (**12).**

Significance of the study:

In low-income country, vaginal birth is prevalent. Following vaginal delivery, perineal tear is prevalent, as are major short- and long-term morbidities(Atwal et al., 2006). Assessing the SG score may be a useful tool for predicting the occurrence of perineal injury. Although episiotomy appears to be effective in preventing PT, it is still disputed whether episiotomy should be used for this purpose because episiotomy is related with morbidity (**13**). Therefore the current study was performed to assess the association between perineal tear during labor and SG score.

Aim of the study

To assess the association between perineal tear during childbirth and striaegravidarum score through the following objectives:

- Assess the striaegravidarum score among pregnant women.

- Assess the perineal tear during childbirth.

- Investigate the association between perineal tear during childbirth and striaegravidarum score.

Research questions:

1. What is the striaegravidarum score among pregnant women?

2. What is the degree of perineal tear during childbirth?

3. Is there an association between perineal tear during childbirth and striaegravidarum score?

Subjects and Methods:
Research design:

Across-sectional descriptive research design was used to achieve the objective of the study. The researcher examined the result and exposures in the research participants at the same time in a cross-sectional study. This form of research can be used to identify community features, but it cannot be utilized to determine cause-and-effect links between variables. This strategy is frequently used to infer possible links or to collect early data to

enable additional research and experimentation.

Setting:

The current study was conducted in the study was conducted in the Obstetrics and Gynecology departments at Beni-Suef University Hospital and Helwan General Hospital, Helwan. These settings were selected due to they had higher pregnant women' attendance rate, serves the biggest region of the population from regions and provide free services to pregnant women who are resident in the previously selected settings.

Sample:

A purposive sample included 300 pregnant women admitted for vaginal delivery was selected to achieve the aim of this study within six months who were available at the time of collecting data and met inclusion criteria.

Inclusion criteria included:

1. Multipara

2. Pregnancy of Singleton

3. Full-term (37- 40 weeks)

Exclusion criteria included:

1. Previous history of caesarean section

3. Pretermlabor

4. Malpresentation

5- Foetalmacrosomia

6- Women are suffering from chronic diseases such as diabetes and hypertension

Tools of data collection:

Three tools were used as the following:

Tool (1): A structured interview questionnaire: was developed by the researchers; it was written in simplified Arabic language**, (6 items),** included demographic data of the pregnant women such as age, educational level, occupation, residence, gravidity, weight gain during pregnancy (Kg), and newborn weight (Kg).

Tool (2): Initial assessment sheet: It was adopted form **(14)** and modified by researcher in English language to assess perineal tear. It contains four

items: information about the degree, location, number, and length. A metal graded and sterilizing ruler was used to measure the length of the perineal tear.

Tool (3):Atwal numerical scoring system:

Using the numerical scoring system of **(9)** it was utilised to assess the severity of striaegravidarum. The striaegravidarum is the most usually observed striae in this scale, which is based on observation of four locations (abdomen, hips, buttocks and breast). The scale is based on the number of SG at each body site (0 = no striae, 1 = 1-4 striae, 2 = 5-10 striae, 3 = more than 10 striae) and the color of the SG, which ranges from pale to purple (0 = no redness, 1 = pink, 2 = dark red, 3 = purple). Silvery white striae were not included in this study because they were deemed ancient striae that had formed prior to pregnancy.

Scoring system:

Each body site's number and color are factored into the overall score, which

ranges from 0 to 6. As a result, the TSS for each of the four body sites varied from 0 to 24. Mild striae were defined as a score of 12 or less, moderate striae as 13-18, and severe striae as a score of 18 or more. Each study participant was tested for PT after vaginal birth.

Validity of the tools:

The content validity of the tools, its clarity, comprehensiveness, appropriateness, and relevance were reviewed by three experts' professor in Obstetrics and Gynecology nursing field. Modifications were made according to the panel judgment to ensure sentence clarity and content appropriateness.

Reliabilityof the tools:

The Cronbach's α test was used to assess the reliability of the first tool which was 0. 87, the second tool's reliability was 0.89 and the third tool's reliability was 0.84.

A pilot study

To assess the clarity and feasibility of the research method, a pilot study was

conducted on 10% (30 pregnant women) of the entire sample. To build the final form of the tools, modifications were made. Pregnant women who participated in the pilot study were not included in the study.

Methods of data collection:

The official letters were obtained to conduct the study. The researchers explained the aim of the study at the beginning for all participants, so they were reassured that all gathered information would be confidential. - The study was conducted in the previously mentioned settings for a period of six months (from September 2020 to February 2021).

 Data collection: -

- Official permission was obtained from the previous selected settings' administrators and the manager of the Obstetrics and Gynecology departments. Permission was also acquired from the Obstetrics and Gynecology department's head nurse. Each pregnant woman gave her consent orally. The researchers visit

pregnant women's places of childbirth to assess the child' weight.

- The researchers attended to the previous selected settings of the study two times / a week from nine am to two pm. The subjects at first were determined through previous inclusion criteria, and the data were collected by using study tools. The participants took approximately 30-40 minutes to complete the tools.

    An interview questionnaire was used to collect demographic data. The TSS was computed for each pregnant woman using the Atwal numerical scale, which was used to assess the total striaegravidarum score by evaluating the four body parts presented in the Atwal SG score (abdomen, hips, buttocks, and breast). The score is based on the following factors: (a) the color of the SG, which ranges from light to purple (0=no redness, 1=pink, 2=dark red, 3=purple) and (b) the number of striae signs (0=no striae signs, 1=1-4 striae,

2=5-10 striae, 3=more than 10 striae). The final grade for each body site is based on quantity and color and ranges from 0 to 6. As a result, the TSS was created.Pregnant women with a TSS score of up to 12 were judged to have mild SG, those with a TSS score of 13-18 were thought to have moderate SG, and those with a TSS of more than 18 were regarded to have severe SG.

 -The partogram was used to follow all pregnant women in the study until the second stage of labour. The active approach was used to examine the birth canal after the placenta was delivered. Any perineal tear was recorded in terms of its severity, location, quantity, and duration. A metal graded and sterilized ruler was used to measure the length of the perineal tear. There were no more vaginal or cervical tears found. There were no more vaginal or cervical tears found.

Ethical considerations:

 Before the research started, Approval of the Ethical Research Committee of the Faculty of Nursing was obtained before conducting the study. The researchers met both medical and nursing directors of the selected settings to clarify the purpose of the study and take their approval. Oral consent was obtained from all the pregnant women to gain their cooperation. The aim of the study was explained and the expected outcomes from the implementation of the study were included in this letter to obtain permission for data collection. The objective of the study was explained to pregnant women. The researchers informed the pregnant womenthat, the study was voluntary; they were allowed to refuse to participate in the study. Women who were pregnant had the right to withdraw from the study at any time and for any reason. Pregnant women were told that their personal information would be kept private and onlyutilized for research purposes.

Administrative design:

Administrative permission was obtained through an issued letter from the Dean of Faculty of Nursing to the Directors of the Obstetrics and Gynecology departments at Beni-SuefUniversity Hospital and Specialized Obstetrics and Gynecology Hospital, Port Saidto achieve the current study.

Statistical analysis:

Statistical Package for Social Science (SPSS) version 23 was used to summarize the data in terms of mean, SD, frequency, and percentages, which were then displayed in tables. The variables that were statistically significant in the PT and SG scores were investigated. P-values less than 0.05 were deemed statistically significant (S), while p-values more than 0.05 were deemed statistically insignificant (I) (NS).

Results:

Table 1 Illustrated that the pregnant women' mean age was 25.52 years, mean gravidity was 2.32,The average

newborn birth weight was 2.98 kg, while the average weight growth was 9.82 kg. Regarding residence, (56%) of them were living in rural areas, (46%) of them were educated to the secondary level, and 68% of them were housewives.

Figure 1 According to the overall striae score, the pregnant women were divided into four categories: those without striae, those with mild striae, those with moderate striae, and those with severe striae. It was determined that a large majority of pregnant women (41%) had moderate striae, whereas only 12 percent and 14 percent of pregnant women, respectively, had no striae and severe striae.

Table 2 Shows that more than half of the studied pregnant women (56%) developed perineal tear, while 44% of them not developed. Second degree perineal tears had the highest percentage of perineal tears (54%) followed by third, first and fourth degree perineal tears (24.1%, 16% &

5.9 respectively). The mean length of perineal tear was 5.21±2.36. More than half of the studied women had single perineal tear (68.7%). Also, less than one third of them had two perineal tear (28.25%).

Table3 Illustrated that perineal tear and striaegravidarum score had a statistically significant (p0.001) relationship.

Table 4 revealed a statistically significant link between striaegravidarum severity, gestational age, gravidity, weight growth during pregnancy, newborn birth weight, place of residence, educational level, and occupation.

Table 1: Distribution of the studied pregnant women regarding their demographic and obstetrical characteristics (n=300)

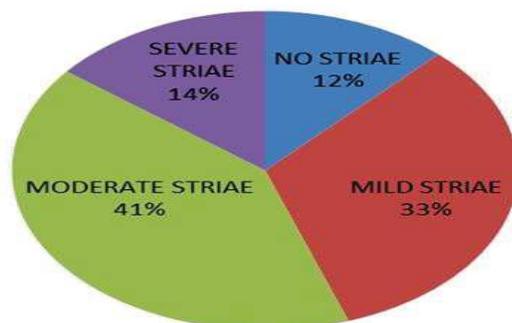| Variables	Mean	Standarddeviation
Age(years)	25.52	2.67
Gravidity	2.32	1.13
Weight.gain(Kg)	9.82	2.24
Newbornweight.(Kg)	2.98	0.23
	No	**%**
Residence		
Urban	132	44%
Rural	168	56%
Educational level		
Primary	105	35%
Secondary	138	46%
University	42	14%
Occupation		
Working	96	32%
Housewife	204	68%

STRIAE SCORE

Figure 1: Distribution of the studied pregnant women regarding their Severity of striaegravidarum (n=300)

Table (2): Distribution of the studied pregnant women regarding their perineal tear (n=300)

Variables	Frequency	(%)
Perinealtear		
Yes	168	56%
No	132	44%
Degree of perineal tear (n=168)		
First degree	27	16.0%
Second degree	91	54%
Third degree	40	24.1%
Fourth degree	10	5.9%
Length of perineal tears (cm)	5.21±2.36	
Number of perineal tears(n=168)		
Single tear	116	68.7%
Two tears	47	28.25%
Three tears	5	3.1%

Table(3):Relation between striae gravidarum and perineal tear among the studied pregnant women (n=300)

Striaegravidarumscore	No perineal tear (n=132)		Perinealtear(n=168)		P-value
	No	%	No	%	
Mild striae	69	52	27	16	
Moderate striae	50	38	91	54	< 0.001
Severe striae	13	10	50	30	

P-value was computed by Chi-square test; 0.05 was accepted as level of significance

Table(4): Relation between total score of striaegravidarum and pregnant women' demographic variables

Variables	X2	P-value
Age	4.23	P<0.001
Gravidity	7.78	P<0.001
gaining weight during pregnancy	9.23	p<0.001
newborn birth weight	8.09	p<0.001
Residence	12.3	p<0.001
Educational level	23.7	p<0.001
Occupation	21.6	p<0.001

Discussion:

Perineal tears occur frequently mild mucosal lacerations to severe mucosal lacerations during vaginal birth. Serious injuries involving the perineum and rectum musculature. Vaginal lacerations during birth can be predicted using striaegravidarum.

Using Atwal's score system, the current study found that a large number of pregnant women were in the moderate striae group. This could be explained by the women's average age in the study, which is 25.52 years, and the age-dependent

reactions of maternal skin caused by pregnancy hormones. Moreover, Connective tissue in younger women has more collagen and less cross-linking, making it more vulnerable to partial ripping caused by the stretch associated with SG development **(15).** These findings are similar to the result Women with SG were younger than women without SG (26.743.57), according to a research by **(14)**titled "Prediction of perineal damage during labour by assessment of striaegravidarum score."

Furthermore, the high proportion of pregnant women with moderate striaegravidarum could be due to racial differences that could influence the occurrence of SG. This was to evaluate the severity of SG, because the amount and color of striae at four body regions, the abdomen, breasts, hips, and buttocks, determine Atwal's score. As a result, we employed Atwal's score in the study because it was thought to be more accurate in assessing SG.

This result is similar to the study of **(16)** who studied "Striaegravidarum as a predictor of delivery vaginal lacerations" who reported that prevalence of SG was higher among American pregnant women. **(17)**.Also, studied "Inprimipara, the prevalence of striaegravidarum and its risk factors are investigated." who observed that a rate of about two thirds of Thailandian women was in the moderate striaegroup.

Similarly, (18) found rates of majority among a cohort of 587 Iranian women were in the moderate striaegroup. The high frequency of SG in the current study could be related to the study participants' features, as they were all multipara and young in age**,(19).**

The current study's findings revealed that more than half of the studied pregnant women developed perineal tear. This result is similar to **(14)** and found that more than one third of the pregnant women developed perineal tear.

According to the findings of this study, the second degree perineal tears had the highest percentage of perineal tears followed by third, first and fourth degree perineal tears. This might be due to the fact that, different obstetric practices must be considered.

In the same line(11) mentioned that second degree tears accounted for the majority of tears (40.6 percent). The incidences of class A, B, and C third-degree tears were 4.1, 1.1, and 2.1 percent, respectively. A fourth-degree perineal tear was contracted by only two women (0.35 percent).Also, study conducted in the Sweden by (20) reported a 78.3 percent incidence of second degree perineal tears in an interventional study's control group.

The results of the present study illustrated that that there was a highly statistically significant relation was observed between perineal tear and striaegravidarum score. These results were supported by (14) who studied "Using the striaegravidarum score to predict perineal damage during labour"and revealed that Total StriaeScore was a substantial independent predictor of the probability of perineal tears. Similarly, in this regard (21) observed that PT was found to be statistically significant associated with the severity of SG. Also, (18)noticed that a link was found between the breast SG score and the occurrence of perineala nd vaginal tears.

The present study revealed that there was a highly statistically link between the severity of striaegravidarum and the severity of the condition. and all variables of demographic data among pregnant women.(9)who conducted a study titled with "Association between striaegravidarum severities and Obstetric Anal Sphincter Injuries," and found that SG was substantially associated with maternal age.

Also, on the same line (22) reported in a study about "Association of StriaeGravidarum Score with Perineal Trauma among Primi-para Mothers" demonstrated a statistically significant

link between striaegravidarum score and episiotomy, as well as episiotomy and perineal tear.

Previous studies done by **(23)**revealed the occurrence of striae was linked to maternal age, baseline and delivery BMI, neonatal birth weight, length, and head circumference.

Conclusion:

The study findings indicated that the results support the research aim of women with moderate/severe striae during pregnancy being warned about the likelihood of perineal tears during vaginal delivery, based on the results and questions of the current study. Perineal tear and striaegravidarum score were found to be associated during birthing.

Recommendation:

Based on the current study results, the following recommendations are proposed:

- The striaegravidarum score can be used by all types of health workers as a simple and noninvasive tool to better classify

women at risk for perineal tear. It requires no specific equipment or training, thus it can be performed by medical interns or nurses.

- In the clinical environment of women undergoing labour, striae scoring should be included as part of the obstetric evaluation. It is suggested that medical interns and nurses be trained to evaluate SG using the Atwal grading system which reflected the accuracy of Atwal scoring system.

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