Research Article

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A STUDY TO ASSESS THE PREDICTION OF PERINEAL TRAUMA DURING CHILD BIRTH USING STRIAE GRAVIDARUM AMONG THE POST NATAL MOTHERS AT SELECTED HOSPITALS, SASARAM, ROHTAS, BIHAR

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Abstract

Perineal trauma during childbirth poses significant maternal health concerns, resulting in both immediate and long-term complications such as pain, infection, incontinence, and psychological distress. This study aimed to evaluate the relationship between the severity of striae gravidarum and perineal trauma during vaginal delivery, as well as to explore associated demographic and obstetric factors. Conducted at Narayan Medical College & Hospital and Sadar Hospital, Sasaram, Bihar, the research employed a quantitative, non-experimental, descriptive correlational design involving 60 postnatal mothers selected through convenience sampling. Data collection tools included a demographic proforma, the Atwal Scale for striae gravidarum, and the Perineal Trauma Grading Scale. Results indicated that 35% of mothers had moderate striae and 45% experienced Grade 1 perineal trauma, with a weak positive correlation ($r = 0.621$) observed between striae severity and perineal trauma. Religion and socio-economic status showed significant associations with perineal trauma ($p < 0.05$), while birth weight was significantly associated with striae gravidarum; other demographic variables were not significant. The findings suggest that striae gravidarum could serve as a simple, non-invasive clinical indicator for identifying women at higher risk of perineal trauma, advocating for its inclusion in routine antenatal assessments to facilitate preventive interventions and improve maternal outcomes.

Keywords: Perineal trauma, Striae gravidarum, Vaginal delivery, Maternal outcomes, Risk prediction, Antenatal care

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INTRODUCTION

Perineal lacerations remain as the one of the most frequent complications of vaginal delivery worldwide. The World Health Organization estimates that more than 40 million women annually experience perineal trauma, ranging from superficial tears to severe obstetric anal sphincter injuries (OASIS). While first- and second-degree tears usually heal with minimal consequences, third- and fourth-degree tears may cause lifelong morbidities including urinary and fecal incontinence, sexual dysfunction, and psychosocial problems. In India, maternal morbidity remains high, with Bihar recording a maternal mortality ratio of 118 per 100,000 live births, significantly above the national average of 97.

Striae gravidarum, occurring in up to 90% of pregnant women, are dermal disruptions caused by stretching, hormonal changes, and altered collagen metabolism. Although considered a cosmetic concern, striae represent underlying connective tissue fragility. This fragility may predispose women to perineal tearing during childbirth. Several international studies have indicated a significant association between striae severity and perineal trauma, suggesting its clinical utility as a predictive marker.

This study addresses a research gap in Bihar by examining the predictive role of striae gravidarum in perineal trauma. Understanding this correlation may aid in early risk assessment, enhance clinical preparedness, and guide preventive measures. The study thus holds implications for both obstetric practice and nursing care, aiming to improve maternal outcomes and reduce birth-related complications.

MATERIALS AND METHODS

A Quantitative approach, Non-experimental descriptive correlational study was conducted to assess the relationship between striae gravidarum and perineal trauma during vaginal childbirth and to

explore its associations with the demographic and the obstetric variables. The study was conducted at Narayan Medical College & Hospital which is 1200 bedded hospital and Sadar Hospital with 250 beds, Sasaram, Bihar, where approximately more than 60 postnatal mothers gets registered every month. The samples for the were 60 postnatal mothers selected by convenient sampling. The selection criteria includes mothers aged between 18–40 years, with singleton pregnancy, cephalic presentation, and able to understand Hindi/English. The Exclusion Criteria includes mothers with Maternal complications (PIH, GDM), mal-presentation, analgesia used during labour and mother with fatal complications. A strcutured Questionnaire was used to assess the Demographic and clinical proforma of the mothers by Interview through the local language by the Investigators. Atwal Scale was used to assess the level of striae gravidarum and the Perineal trauma grading scale was used to assess the level of the perineal trauma among the post natal mothers.

The content of the tools were established on the basis of opinion of one medical expert and three nursing experts. Suggestions were incorporated in the tool. The reliability of the tool was established by test retest method. The r value obtained was 0.8 for both the tools, which indicates the positive correlation. The study was approved by the dissertation committee of Narayan Nursing College, Gopal Narayan Singh University, Bihar. Permission was obtained from the Medical superintendent of the selected hospitals. Informed consent was obtained from each participant for the study before starting data collection. Assurance was given to the subjects that anonymity of each individual would be maintained are free to withdraw from the study at any time. After obtaining formal approval from administration of Narayan Medical College & Hospital& Sadar Hopsital, the investigator explained the objectives and methods of data collection. Data collection was done within the given period of 1 week in all maternity units of the hospitals. The data collection was done during the day time. Self introduction about the researcher and details about the study was explained to the samples and their consent was obtained. Using the tool, both the variables the level of the striae gravidarum and the level of the Perineal trauma was assessed. The confidentiality about the data and findings were assured to the participants.Descriptive statistics such as frequency and percentage distribution was used to analyze the data collected. Inferential statistics- karl pearsons corelation,chi square was used to find out the association using the SPSS 29.0. The study was approved by the Institutional Ethics Committee (IEC No: NNC/Dean-PO/25).

RESULTS AND DISCUSSION
The analysis included demographic distributions, obstetric variables, level of the striae gravidarum and the perineal trauma among 60 postnatal mothers. Findings showed that the largest age group was above 30 years (36.7%), and the majority were Hindus (78.3%). Educational levels were low, with 50% having only primary or no schooling. Most participants (58.3%) resided in rural areas and followed vegetarian diets (58.3%). Work patterns varied, with 36.7% engaged in moderate activity (Table 01).

Perineal trauma analysis revealed that 45% experienced Grade 1 trauma, 30% had Grade 2 trauma, 25% had no trauma, and none suffered Grade 3 trauma (Table 2), (Figure 1). Moderate striae gravidarum was present in 35% of mothers (Table 3), (Figure 2). Statistical tests confirmed a weak but significant positive correlation (r = 0.621) between striae gravidarum severity and the perineal trauma. Religion and socio-economic status were found to be significantly associated with perineal trauma at $p < 0.05$. Birth weight was significantly associated with striae severity, while other demographic variables were found not be significant (Table 04), (Figure 03).

Table 01:- Frequency and percentage distribution of the demographic variable of the postnatal mothers

Description of the variable	Frequency (60) (n)	Percentage (%)
Age		
a. Less than 20 years	16	26.7%
b. 21-25 years	14	23.3%
c. 26-30 years	8	13.3%
d. Above 30 years	22	36.7%
Educational status		
a. Never went to school	15	25%
b. Primary school	15	25%
c. High school	8	13.3%
d. Intermediate	10	16.7%
e. Diploma / Graduate	12	20%
Religion		
a. Hindu	47	78.3%
b. Muslim	9	15%
c. Christian	4	6.7%
d. Others	0	0%
Locality		
a. Rural	35	58.3%
b. Urban	25	41.7%
Dietary pattern		
a. Vegetarian	35	58.3%
b. Mixed diet	25	41.7%
Work Pattern		
a. Sedentary	17	28.3%
b. Moderate	22	36.7%
c. Heavy	21	35%
Birth weight of the baby		
a. Below 2.5kg	18	30%
b. 2.6 to 3.0 kg	12	20%
c. 3.1 to 3.5 kg	18	30%
d. More than 3.5 kg	12	20%

Duration of Labour		
a. Below 10 hrs	22	36.7%
b. 10 to 15 hrs	21	35%
c. More than 15 hrs	17	28.3%
Socio-Economic Class		
a. upper class	12	20%
b. Upper middle class	12	20%
c. lower middle class	6	10%
d. upper lower class	18	30%
e. lower class	12	20%

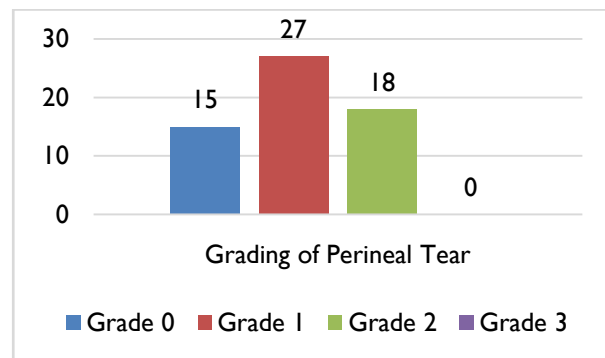| 2	Mild Striae Gravidae	19	31.7
3	Moderate Striae Gravidae	21	35
4	Severe Striae Gravidae	17	28.3

Fig 01: Distribution of Perineal Tear among the parturient mothers

Table 02: Distribution of Dependent Variable (DV) – Perineal Trauma

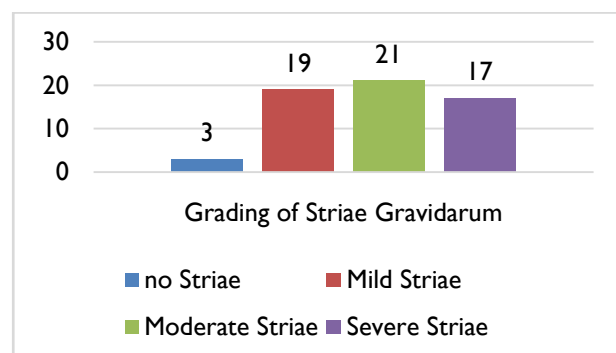| Sl.No	Perineal Tear Level	Frequency (n)	Percentage (%)
1	Grade 0 (no trauma)	15	25 %
2	Grade 1 (superficial trauma)	27	45%
3	Grade 2 Moderate Trauma)	18	30%
4	Grade 3 (Severe Trauma)	0	0%

Fig 02: Distribution of Striae Gravidarum among the parturient mothers

Table 3: Distribution of Control Variable (CV) – Striae Gravidarum

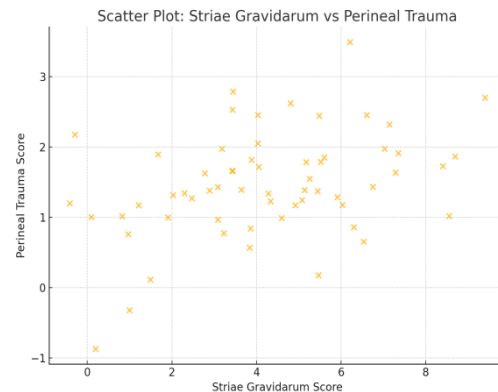| Sl. No	Perineal Tear Level	Frequency (n)	Percentage (%)
1	No Striae Gravidae	3	5

Fig 03: Scatter Diagram of perineal Tear vs. Striae Gravidarum among the parturient mothers

Table 04: Correlation Between Striae Gravidarum and Perineal Trauma

Sl. No	Variables	Mean	SD	r-value	p-value	Interpretation
1	Perineal Trauma	1.05	0.7399	0.621	p < 0.001	Moderate to Strong Positive Correlation (VHS)
2	Striae Gravidarum	4.633	2.5753			

*P<0.05(Significant), **P<0.01(Highly significant), ***P<0.001(Very highly significant)

This study demonstrated a significant relationship between striae gravidarum and perineal trauma among the postnatal mothers in Bihar at r value 0.621at p < 0.001. The findings were consistent with the study conducted by Osman et al. (2021), Omar et al. (2019), and Abbas (2020), which all highlighted striae as predictors of connective tissue fragility. The observed weak positive correlation (r = 0.621) indicates that increasing severity of striae is associated with higher grades of perineal trauma.

The demographic analysis highlights the vulnerability of rural, low-educated women, suggesting socio-economic disparities in maternal care. Religion and socio-economic status were significantly associated with trauma, reflecting how cultural practices and access to healthcare influence maternal outcomes. The lack of Grade 3 trauma in this study could be due to proactive episiotomy practices and lower birth weights.

ASSOCIATION

Table 05: The association between *striae gravidarum* and *perineal trauma*

Sl. No.	Findings	Statistical Value	Interpretation
1	Mean score of Perineal Trauma = 1.05 (SD = 0.7399)	_	Indicates most mothers had mild trauma.
2	Mean score of Striae Gravidarum = 4.633 (SD = 2.5753)	_	Suggests moderate levels were most common.
3	Correlation coefficient (r-value) = 0.621	$p < 0.001$	Moderate to strong positive correlation.
4	Correlation coefficient (r-value) = 0.621	$p < 0.001$	Association is statistically very highly significant.

Conclusion for Association - Women with more severe striae are more likely to have perineal trauma; striae may serve as a non-invasive predictor. The implications are twofold: clinical and nursing. Clinically, striae gravidarum may serve as a non-invasive, easily assessable tool for predicting perineal trauma risk. Nursing care can focus on antenatal perineal massage education, birth preparedness, and psychosocial support. This study also underscores the need for further large-scale, multicentric research to validate findings and establish clinical guidelines.

CONCLUSION

This study confirms that striae gravidarum can be a valuable clinical marker to predict perineal trauma during childbirth. Its simplicity and non-invasive nature make it practical for routine antenatal assessments. Nurses and midwives can be trained to use striae scoring as part of routine antenatal check-ups. Preventive measures such as perineal massage, skilled delivery practices, and selective episiotomy may help reduce trauma incidence. Policymakers should integrate striae assessment into national maternal health guidelines, especially in high-risk regions like Bihar. Future studies with larger sample sizes are recommended to reinforce these findings.

ACKNOWLEDGEMENT

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

AUTHOR CONTRIBUTION

Both are contributed equally

FINANCIAL SUPPORT

INFORM CONSENT

Informed consent was obtained from the patients.

ETHICAL CONSIDERATIONS

Ethical committee approval was obtained from Narayan Medical College & Hospital, a 1200-bedded hospital, and Sadar Hospital, a 250-bedded facility, both located in Sasaram, Bihar(IEC No: NNC/Dean-PO/25).

REFERENCES

1. Abbas, A. M. (2020). Atwal Striae gravidarum score for prediction of perineal tears during vaginal delivery: a cross- sectional study. *World Journal of Gynecology&Womens Health 4*(3). https://doi.org/10.33552/wjgwh.2020.04.000587
2. ACOG Practice Bulletin No. 198: Prevention and Management of Obstetric Lacerations at Vaginal Delivery. (2018). *Obstetrics and Gynecology*, *132*(3), e87–e102. https://doi.org/10.1097/aog.0000000000002841
3. Andrade, C. (2021). A Student's Guide to the Classification and Operationalization of Variables in the Conceptualization and Design of a Clinical Study: Part 1. *Indian Journal of Psychological Medicine*, *43*(2), 177–179. https://doi.org/10.1177/0253717621994334
4. Arnold, M., Saddler, K., & Leli, K. (2021). Obstetric lacerations: Prevention and repair. *Am Fam Physician*, *103*, PMID: 34128615. https://pubmed.ncbi.nlm.nih.gov/34128615/
5. Banu, M. A., Nargis, S., Rahman, M. M., Sina, M. M. I., Pervin, M., & Manjari, M. (2019). Prediction of perineal tear during childbirth by the assessment of striae gravidarum score. *Medicine Today*, *31*(2), 64–67. https://doi.org/10.3329/medtoday.v31i2.41945
6. Bhujabal, D., Rath, K., &Baxla, P. (2019). *Association of Striae Gravidarum Score with Perineal Trauma among Primi-para Mothers*. https://www.semanticscholar.org/paper/Association-of-Striae-Gravidarum-Score-with-Trauma-Bhujabal-Rath/1dbcd13da6aa84ea65f84943138f521b38b3bb6b
7. Bong, A. B., Bonnekoh, B., Schön, M. P., & Gollnick, H. (2005). Treatment of scalp angiosarcoma by controlled perfusion of A. carotis externa with pegylated liposomal doxorubicin and intralesional application of pegylated interferon alfa. *Journal of the American Academy of Dermatology*, *52*(2), S20–S23. https://doi.org/10.1016/j.jaad.2004.06.026
8. Creswell, J. W., & Creswell, J. D. (2022). The Selection of a Research Approach [E-book]. In

Research Design (6th ed., pp. 5–6). Sage Publications, Incorporated.

9. Goh, R., Goh, D., &Ellepola, H. (2018). Perineal tears – A review. *Australian Journal of General Practice*, 47(1–2), 35–38. https://doi.org/10.31128/afp-09-17-4333

10. Granovsky-Grisaru, S., & Elstein, D. (2006). Alfa-fetoprotein and albumin levels together are more predictive of severe fetal hydrops. *American Journal of Obstetrics and Gynecology*, 196(2), e21. https://doi.org/10.1016/j.ajog.2006.07.039

11. Kapadia, S., Kapoor, S., Parmar, K., Patadia, K., & Vyas, M. (2014). Prediction of perineal tear during childbirth by assessment of striae gravidarum score. *International Journal of Reproduction Contraception Obstetrics and Gynecology*, 208–212. https://doi.org/10.5455/2320-1770.ijrcog20140342

12. Khamseh, F. K., Zagami, S. E., & Ghavami, V. (2022). The Relationship between Perineal Trauma and Striae Gravidarum. *Iranian Journal of Nursing and Midwifery Research*, 27(5), 363–369. https://doi.org/10.4103/ijnmr.ijnmr_379_20

13. Matyashov, T., Pardo, E., Rotem, R., Lichtman, Y., Katz, M. E., Weintraub, A. Y., & Horev, A. (2022). The association between striae gravidarum and perineal lacerations during labor. *PLoS ONE*, 17(3), e0265149. https://doi.org/10.1371/journal.pone.0265149

14. Mayanglambam, P., & Negi, R. (2019). Prediction of perineal tear by striae gravidarum score. *International Journal of Academic Research and Development*, 103–105. https://www.researchgate.net/publication/331327400

15. Mazov, N. A., &Gureev, V. N. (2020). Problematic aspects in identifying priority areas of scientific research Источник: https://www.science-practice.ru/index.php/science/article/view/84. *Science Management: Theory and Practice*, 2(3), 37–51. https://www.science-practice.ru/index.php/science/article/view/84

16. Oumeish, O. Y., & Parish, J. L. (2006). Impetigo herpetiformis. *Clinics in Dermatology*, 24(2), 101–104. https://doi.org/10.1016/j.clindermatol.2005.10.009

17. Patel, N., Shah, N., & Desai, G. (2019, June 1). *Can perineal tear be predicted by severity of striae gravidarum score?* Document - Gale OneFile: Health and Medicine. https://go.gale.com/ps/i.do?id=GALE%7CA593352877&sid=googleScholar&v=2.1&it=r&linkaccess=abs&issn=23201770&p=HRCA&sw=w&userGroupName=anon%7Ed982502c&aty=open-web-entry

18. Priddis, H., Dahlen, H., & Schmied, V. (2012). Women's experiences following severe perineal trauma: a meta-ethnographic synthesis. *Journal of Advanced Nursing*, 69(4), 748–759. https://doi.org/10.1111/jan.12005

19. Ramar, C., Vadakektu, E., & Grimes, W. (2024). *Perineal tear* [English]. StarPearls Publishing. https://www.ncbi.nlm.nih.gov/books/NBK559068/

20. Soliman, M., Maged, A., Salama, S., Sharaf, M., Rasheed, M. A., Eltaieb, E., & Lotfy, R. (2024). The relation between development of vaginal and perineal lacerations during delivery and stria gravidarum: a cross sectional study. *Evidence Based Women S Health Journal*, 14(3), 355–361. https://doi.org/10.21608/ebwhj.2024.295572.1334

21. Thyer, B. (2001). Single System Design [E-Book]. In *The Handbook of Social Work Research Methods* (1st ed., pp. 239–241). SAGE. http://books.google.ie/books?id=WhD_kwntYOAC&pg=PR4&dq=0-7619-1905-8&hl=&cd=1&source=gbs_api

22. Ugwu, E. O., Iferikigwe, E. S., Obi, S. N., Eleje, G. U., &Ozumba, B. C. (2018). Effectiveness of antenatal perineal massage in reducing perineal trauma and post-partum morbidities: A randomized controlled trial. *Journal of Obstetrics and Gynaecology Research*, 44(7), 1252–1258. https://doi.org/10.1111/jog.13640