Frequency of Factors Leading to Obstetric Anal Sphincter Injury

Binyamin Butt,[1] Nazli Hameed,[2] Sadaf Mubeen,[3] Rashida Bashir,[4] Ayesha Nazir,[5] Marriam Nawaz[6]

Abstract

Objective: Determining the frequency of predisposing factors for obstetric anal sphincter injury in Pakistani women in Shalamar Hospital, Lahore.

Material and Methods: A Cross Sectional study carried out in Obstetrics and Gynaecology department, Shalamar Hospital, Lahore from 2nd December 2020 to 30th June 2021. 136 women underwent spontaneous vaginal delivery were included in the study. Patients were evaluated and factors leading to obstetric anal sphincter injury were recorded on especially designed proforma.

Results: 18 to 40 years patients with mean age of 27.801±2.41 years and mean weight was 64.544±5.24 Kg. Factors predisposing to obstetric anal sphincter injury were primiparity 51.5%, gestational diabetes 5.1%, induction of labour 22.8%, episiotomy 71.3% and macrosomia in 16.2% of the cases.

Conclusion: we concluded that primiparity, episiotomy, birthweight of the neonate and head circumference of the neonate lead to the increased incidence of obstetric anal sphincter injury among Pakistani women.

Keywords: Vaginal delivery, Obstetric anal sphincter injury, Factors

How to cite: *Butt B, Hameed N, Mubeen S, Bashir R, Nazir A, Nawaz M. Frequency of Factors Leading to Obstetric Anal Sphincter Injury. Esculapio - JSIMS 2023;19(04):453-456.*

DOI: https://doi.org/10.51273/esc23.251319416

Introduction

Incidence of obstetric anal sphincter injury (OASI) is 5.9% of vaginal deliveries and is one of the grave obstetrical complications[1]. It is the most important cause of anal incontinence and also leads to fecal urgency, dyspareunia and perineal pain. This causes short term and long term morbidity.[2,3,4] The most severe symptom after OASI is fecal incontinence and the mean prevalence is reported to be 39% (15–61%) .[5] Accurate diagnosis and proper repair of the injury is essential otherwise persistence of the defect will lead to long term anorectal symptoms and will affect the quality of life of the individual.[6]

Many risk factors have been established for OASIS which includes prolonged second stage of labour, primiparity, large size baby and use of instruments in vaginal delivery.[7] However, operative vaginal delivery with forceps of rvacuum has a higher risk of maternal morbidity. There is an increased risk of OASI, blood loss, pain in the perineum and urinary retention.[8] Other risk factors are Asian population, episiotomy with midline incision, fetal macrosomia and occiput posterior position of fetal head[9,10]. However, other factors, like Medio lateral episiotomy, age, induction of labor, maternal weight and use of epidural analgesia, show variations between populations and studies.[7,8,11]

Mahad A et al found in their study that performing routine episiotomy increased the incidence of OASIS mainly due to the extension of episiotomy especially in midline episiotomies.[12] Joris F, et al. has also demonstrated that frequency of gestational diabetes was 6%, induction of labor 22%, episiotomy 45% in patients with obstetrical anal sphincter injury.[13] It is reported by many studies that during vaginal delivery, Asian women are at a higher risk of OASI. For example, it is reported in two studies that the incidence of OASI is 2-3 times higher in Asian ethnicity as compared to other races[8,10] No such a study had prior been done in Asian race and negligible women are included from pakistan in this study. A few studies

1,4-6. Shalamar Hospital, Lahore
2. Department of Obstetrics and Gynaecology, Shalamar Hospital Lahore
3. Department of Urogyneacology Shalmar Hospital, Lahore

Correspondence:
Dr. Sadaf Mubeen, *Senior Registrar, Department of Urogyneacology, Shalamar Hospital Lahore, Pakistan. Email sadafmubeen@hotmail.com*

Submission Date: 25-07-2023
1st Revision Date: 10-08-2023
Acceptance Date: 15-12-2023

have probed the factors leading to OASI, among Pakistani women undergoing vaginal delivery. Therefore, we urged to determine the frequency of factors leading to obstetric anal sphincter injury in our Pakistani population.

Materials and Methods

From 2nd December 2020 to 30th June 2021, a Cross Sectional Study was done in Department of Obstetrics and Gynaecology, Shalamar Hospital, Lahore. 136 sample size was calculated using WHO sample size software with frequency of diabetes in pregnancy 6%,[13] and margin of error 4% and Confidence interval 95% Non-probability consecutive sampling was done. Women age 18-40 years, Parity 0-4 and women undergoing Vaginal delivery unassisted with instruments were included in the study. Dai handled cases, Precipitate labour and Preterm deliveries (less than 37 weeks of gestation) were excluded from the study. 136 patients fulfilling the inclusion criteria were included in the study after permission from the ethical committee and Informed consent. Age, parity and weight on weighing scale was noted. Patients were evaluated and factors leading to obstetric anal sphincter injury were noted and recorded on especially designed proforma. Data analysis was done with statistical analysis program (IBM-SPSS version 23). Percentage and frequency was computed for categorical variables like primiparity, gestational diabetes, induction of labor, episiotomy and fetal macrosomia. Mean ± SD was used for quantitative variables like age and weight. Parity was presented as frequency. With regard to age, parity and weight stratification was done to see the effect of these variables on factors. Post stratification variables using the chi-square test, $p \leq 0.05$ was considered statistically significant.

Results

Factors predisposing to obstetric anal sphincter injury were primiparity 51.5%, gestational diabetes 5.1%, induction of labour 22.8%, episiotomy 71.3% and macrosomia was 16.2% as shown in Table-1

Table 1: *Percentage of OASIS with risk factors.*

	FREQUECY		
	Yes	No	Percentage of OASIS
Primiparous	70	66	51.5%
Gestational diabetes	7	129	5.1%
Induction of labour	31	105	22.8%
Episiotomy	97	39	71.3%
Macrosomia	22	114	16.2%

Table 2: *Stratification of primiparity predisposing to obstetric anal sphincter injury with respect to age, parity and weight.*

		Episiotomy		P value
		YES	NO	
AGE	18-30	93 (77.5%)	27 (22.5%)	0.00
	31-40	4 (25%)	12 (75%)	
weight	<70	93 (76.2%)	29(23.8%)	0.00
	>70	4 (28.6%)	10 (71.4%)	
parity	0-2	91 (78.4%)	25 (21.6%)	0.00
	3-4	6 (30%)	14 (70%)	

Table 3: *Stratification of episiotomy predisposing to obstetric anal sphincter injury with respect to age, parity and weight tables-III*

		Primiparity		P value
		YES	NO	
AGE	18-30	70 (58.3%)	50 (41.7%)	0.00
	31-40	0 (0%)	16 (100%)	
weight	<70	70 (57.4%)	52 (42.6%)	0.00
	>70	0 (0%)	14 (100%)	

Discussion

The current study examined the factors predisposing to obstetric anal sphincter injury amongst Pakistani women in Shalamar Hospital, Lahore. 51.5 % of the women were primiparous. Variations in race especially Asian ethnicity has been linked to OASI. It has been found in different researches that OASI is more common in Asian women, with an increased risk of 1.5–4.6 fold.[14] The perineal skin barrier of Asian women is weak and mobility of vaginal compartments is also relatively decreased as compared to white women. This may be a cause of increased susceptibility to tears and injury during vaginal delivery.[14] A study was carried out in Canada which reported Asian ethnicity to be an independent risk factor for OASI.I15 Certain anatomical changes such has a shorter perineal body was observed in Asian women which could explain the higher incidence of OASI in Asian women.16 Studies that have investigated the risk of OASI in patients getting a mediolateral episiotomy has shown conflicting results. However, those patients who were given midline episiotomy had an increased risk of OASI.[17,18] In the present study, the incidence of episiotomy (mediolateral) as 71.3%, which might be a major cause of the high OASI rate. Preira et all found in their study that there was no substantail difference between non-episiotomy and selective episiotomy regarding OASIS. No RCT was able to con-

firm a benefit of the non-performance of episiotomies in the non-episiotomy arm.[22] The link between epidural analgesia and OASI still needs to be investigated as there are different results in different studies.[18] A cohrt study was conducted in women who delivered beyond 24 weeks. Use of epidural analgesia during pregnancy was significantly high among the OASI group.[19] The frequency of malpositioning of the fetus may increase with epidural analgesia as it affects the internal rotation, hence increasing the risk of operative vaginal delivery.[22] Epidural analgesia has a vital role in providing women with a healthy environment during labour. Its effects may enable a laboring woman to avoid the improper use of force that may contribute to OASI. The epidural analgesia is thought to help the mother to push properly as guided by the care providers, which may result in the reduction of the risk OASI. However, many women with epidural anesthesia may need an assisted delivery with instruments due to a lack of pushing force, which might also explain why women with epidural analgesia had a relatively higher OASI rate. A randomized controlled trial is needed to see the effect of epidural analgesia on perineal injuries. The effect of maternal BMI on OASI still remains a topic of discussion.[19] Many studies have found that a higher maternal BMI protects form OASI[23-25] or is not associated with OASI.[24] In the current study, a higher maternal BMI was a protective factor for OASI for all the study population except for the subgroup that had women with primiparity.

Conclusion

In conclusion, the incidence of obstetric anal sphincter injury among Pakistani women was found to be signicantly measure. Primiparity, use of episiotomy, head circumference of the neonate and neonatal birthweight contributed to the higher incidence of obstetric anal sphincter injury among Pakistani women. Proper antenatal counseling and antenatal classes are mandatory to keep women prepared for labour and the possible complications.

Conflict of Interest *None*

Funding Source *None*

References

1. Lincová M, Neumannová H, Mikysková I, Zikán M. Obstetric anal sphincter injuries - review of our date between 2015-2017. Ceska Gynekol. 2019;84(1):18-22.
2. ommesen D, Nohr EA, Qvist N, Rasch V. Obstetric perineal ruptures—risk of anal incontinence among primiparous women 12 months postpartum: a prospective cohort study. Am J Obstet Gynecol 2020; 222(2): 165.e1-165.e11
3. Richter HE, Nager CW, Burgio KL, Whitworth R, Weidner AC, Schaffer J, et al. Incidence and predictors of anal incontinence after obstetric anal sphincter injury in primiparous women. Female Pelvic Med Reconstr Surg. 2015;21(4):182–9.
4. Meyer I, Richter HE. Impact of fecal incontinence and its treatment on quality of life in women. Womens Health. 2015;11(2):225–38.
5. Aoki Y, Brown HW, Brubaker L, Cornu JN, Daly JO, Cartwright R. Urinary incontinence in women. Nat Rev Dis Primers. 2017;3:17042.
6. Richter HE, Nager CW, Burgio KL. Incidence and predictors of anal incontinence after obstetric anal sphincter injury in primiparous women. Female Pelvic Med Reconstr Surg. 2015;21(4):182–9.
7. Pergialiotis V, Bellos I, Fanaki M, Vrachnis N, Doumouchtsis SK. Risk factors for severe perineal trauma during childbirth: an updated meta-analysis. Eur J Obstet Gynecol Reprod Biol. 2020; 247: 94-100.
8. American college of obstetricians and gynecologists. Operative vaginal delivery. Obstet Gynecol. 2015; 126: e12-24.
9. Kapaya H, Hashim S, Jha S. OASI: a preventable injury? Eur J Obstet Gynecol Reprod Biol. 2015;185:9-12.
10. Sagi-Dain L, Sagi S. Morbidity associated with episiotomy in vacuum delivery: a systematic review and meta-analysis. BJOG. 2015;122:1073- 81.
11. Davies-Tuck M, Biro MA, Mockler J, Stewart L, Wallace EM, East C. Maternal Asian ethnicity and the risk of anal sphincter injury. Acta Obstet Gynecol Scand. 2015;94:308-15.
12. A Mahad, M Richard , N Joseph, M Joy. Risk Factors for Obstetric Anal Sphincter Injuries among Women Delivering at a Tertiary Hospital in Southwestern Uganda, Obstetrics and Gynecology International, vol. 2020, 7 2020.
13. Chen SJ, Chen CP, Sun FJ, Chen CY. Factors associated with obstetric anal sphincter injuries during vacuum delivery among Chinese women. Int J Gynaecol Obstet. 2019;145(3):354-60.
14. D'Souza, J.C.; Monga, A.; Tincello, D.G. Risk factors for obstetric anal sphincter injuries at vaginal birth after caesarean: A retrospective cohort study. Int. Urogynecol. J. 2019, 30, 1747–1753.

15. Albar, M.; Aviram, A.; Anabusi, S.; Huang, T.; Tunde-Byass, M.; Mei-Dan, E. Maternal Ethnicity and the Risk of Obstetrical Anal Sphincter Injury: A Retrospective Cohort Study. J. Obstet. Gynaecol Can. 2021, 43, 469 – 473.
16. Darmody, E.; Bradshaw, C.; Atkinson, S.D. Women's experience of obstetric anal sphincter injury following childbirth: An integrated review. Midwifery 2020, 91, 102820.
17. Werner CH, Schuler W, Meskendahl I. Midline episiotomy versus medio-lateral episiotomy. A randomized prospective study. Proceedings of 13th World Congress of Gynecology and Obstetrics (FIGO), Singapore. London: FIGO; 1991.
18. Sagi-Dain L, Sagi S. Morbidity associated with episiotomy in vacuum delivery: A systematic review and meta-analysis. BJOG. 2015;122:1073– 1081.
19. shkoli, T., Baumfeld, Y., Yohay, Z. et al. Is epidural analgesia an independent risk factor for OASIS? A population-based cohort study. Arch Gynecol Obstet (2023).
20. Jangö H, Langhoff-Roos J, Rosthøj S, Sakse A. Modifiable risk factors of obstetric anal sphincter injury in primiparous women: A population-based cohort study. Am J Obstet Gynecol. 2019;210:59.e1– 59.e6.
21. Loewenberg-Weisband Y, Grisaru-Granovsky S, Isocovich A, Samueloff A, Calderon-Margalit R. Epidural analgesia and severe perineal tears: A literature review and large cohort study. J Matern Fetal Neonatal Med. 2014;27:1864–1869.
22. Pereira, G.M.V., Hosoume, R.S., de Castro Monteiro, M.V. et al. Selective episiotomy versus no episiotomy for severe perineal trauma: a systematic review with meta-analysis. Int Urogynecol J 31, 2291–2299 (2020).
23. Pergialiotis V, Vlachos D, Protopapas A, Pappa K, Vlachos G. Risk factors for severe perineal lacerations during childbirth. Int J Gynecol Obstet. 2014; 125: 6–14.
24. Kapaya H, Hashim S, Jha S. OASI: A preventable injury? Eur J Obstet Gynecol Reprod Biol. 2015;185:9–12.
25. Hirayama F, Koyanagi A, Mori R, Zhang J, Souza JP, Gülmezoglu AM. Prevalence and risk factors for third- and fourth-degree perineal lacerations during vaginal delivery: A multi-country study. BJOG. 2012; 119: 340 –347.