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# Frequency of Obstetrical Anal Sphincter Injuries in Nulliparous Women Undergoing Normal Vaginal Delivery in Tertiary Care Hospital at Khyber Pakhtunkhwa

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## ABSTRACT

Obstetric Anal Sphincter injury is one of the most devastating complications of vaginal delivery. The incidence is higher in instrumental deliveries, but OASI can be avoided with proper techniques, such as mediolateral episiotomy, and pre-assessment of fetal head position, such as vertex mal-presentation and progress of labour. **Objectives:** To find the frequency of Obstetric anal sphincter injury during normal vaginal deliveries in nulliparous female from August 2023 to September 2024. **Methods:** It was a cross-sectional study conducted in the Gynaecology and Obstetrics Department, Lady Reading Hospital.The study included 162 nulliparous women with Cephalic presentation undergoing Normal Vaginal Delivery, among them the patient with Obstetric Anal Sphincter Injury were identified to find the frequency.The data were collected by a structured questionnaire and analyzed with SPSS version 26.0. **Results:** Out of the total 162 populations, 6 (3.92%) individual had their OASIs. Five individuals had 3rd while one individual had a 4th-degree injury.The mean age was 26.33 years with a standard deviation of 4.73. The oldest mother was 38 years old, and the youngest was 18 years old. BMI from 18.5 to 21.9 (Kg/m2) was more frequent in a population of 67. Regarding the presentation of the fetus's head at birth, 146 presented Cephalic, 5 as transverse and 11 as oblique on presentation. **Conclusions:** It was concluded that the study shows the frequency of Obstetric Anal Sphincter injuries as 6 out of 162 individuals, having injuries of different degrees.

## INTRODUCTION

Obstetric anal sphincter injuries (OASIS) occur after vaginal delivery.The internal and external anal sphincter and the anal mucosa are affected by these injuries, in more severe cases, which are referred to as third- and fourth-degree perineal lacerations [1].OASIs are multifactorial among adolescents; it is dependent on maternal as well as fetal conditions. Diabetic mothers were considered at high risk [2]. In mothers of late age at first birth, increased blood pressure and birth weight of the baby were considered independent risk factors [3]. The risk of OASI can be evaluated before delivery by checking the mother's height, performing an ultrasound of the fetus' weight, determining the position of the occiput, and evaluating episiotomy performance [4]. Two independent risk factors in women who have undergone previous vaginal delivery are only one previous vaginal delivery and the weight of the baby. The other risk factors were episiotomy and vacuum-assisted vaginal delivery [5-7]. Fecal incontinence is one of the consequences of OASI. The obstetric anal sphincter injury can be diagnosed with an ultrasound or a patient experiencing anal incontinence [8, 9].To avoid injuring the obstetrical anal sphincter, it is recommended to select a delivery style that reduces the amount of trauma that occurs during the birth process.For instance, select a vacuum delivery rather than a forceps delivery, and take into consideration the mediolateral episiotomy technique

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[10, 11]. Obstetrical anal sphincter injury can be prevented by identifying risk factors. Both antenatal and intrapartum obstetrical practice can lessen the injury, as prenatal massage from the last stage of pregnancy can improve the elasticity of muscles and give the perineum space to stretch [12]. Repair of third- and fourth-degree lacerations should follow a systematic approach, progressing from deep to superficial structures: the anorectal mucosa, anal sphincter complex, rectovaginal fascia, perineal body musculature, perineal skin, and vaginal muscular and epithelium [13].A single continuous stitch is the most effective method of treatment for lacerations of the second degree. Lacerations of the anal sphincter complex require additional expertise, exposure, and lighting; it is recommended that attempts be made to relocate the procedure to the operating room [14]. This study was conducted to cover a population gap, as such a study had not been conducted in our demographics, and to see the frequency of OASIs in our ethnic group. In addition to this, our study has focused particularly on nulliparous women. Normal vaginal delivery was the focus of the current study. This study aims to determine the frequency of OASIS in women who are undergoing the normal vaginal delivery. By taking into consideration the risk factors that have been demonstrated in earlier research, this study also assists in determining which pregnant women are at risk for OASIS.

## METHODS

A cross-sectional study was carried out including 162 individuals to assess the frequency of Obstetrical Anal Sphincter Injuries in nulliparous women, in the Department of Gynaecology and Obstetrics, Lady Reading Hospital-MTI, Peshawar. The study was conducted from August 2023 to September 2024. A non-probability consecutive sampling technique was used. The Ethical Approval of this research was obtained from IRB Lady Reading Hospital (LRH) Medical Teaching Institute (MTI), and the reference number was 727/LRH/MTI. The inclusion criteria used include All pregnant women having single intrauterine pregnancy, normal vaginal delivery without instrumentation, only Primary-Gravida, no Previous History of 3rd or 4th Degree Tear, no Previous recto vaginal fistula repair, and patients delivered in Hospital Setting. The Exclusion criteria include the Fetus having a breech presentation, and women not willing to give consent were excluded from the study. Using the WHO sample size calculator, the sample size of the study was found, keeping the confidence interval as 95%, 7% absolute precision and a previously reported frequency of 29.2%. The sample size was 162 patients. After obtaining approval from the ethical committee of the hospital, the patients who were fulfilling the selection criteria, in the Gynaecology and Obstetrics Outpatient Department (OPD), LRH Peshawar. A Consultant Gynaecologist interviewed the patients along with the researcher. The aim of the study was discussed and explained to the patients, and then informed consent was taken. Demographics such as age, weight, height, period of gestation, and parity were noted. A detailed medical history was obtained, and a meticulous physical examination was performed. Relevant baseline labs, including CBC, RFTs, LFTs, ELECTROLYTES, FBS, VIRAL PROFILE, and U/S ABDOMEN, were sent to rule out any other pathology or multiple pregnancies. The researcher collected data and entered it into questionnaires. Confidentiality was ensured by masking the names of patients, and it was used for research purposes. Data entry and analysis were carried out using SPSS version 26.0. For quantitative variables like age, BMI, POG, fetal position during labor, and parity mean and standard deviation were calculated. Frequency and percentage were calculated for categorical variables like gender and type of previous delivery. The BMI, gestational age at delivery, and fetal presentation at birth were stratified and shown in tables. Finally, the mode of induction of labour was measured as frequency.

## RESULTS

The mean age of the population was 26.33 with an SD of 4.73. The youngest among the mothers was 18 years old, while the oldest was 38 years old. The weight and height of mothers are used in measuring BMI (Kg / $m^2$) among them 21 mothers have BMI less the 18.5 (Kg / m2), 67 mothers have BMI from 18.5 to 21.9 (Kg / $m^2$), 59 have a BMI range from 22 to 24.9 (Kg / $m^2$), while 12 mothers have BMI of 25 to 30 (Kg / m2). And only one mother has a BMI of more than 30 (Kg / $m^2$) (Table 1).

**Table 1:** Demographics Presentation of participants (n=162)

| Variables | Mean ± SD/ n (%) |
|---|---|
| Age (Years) | 26.33 + 4.73 |
| Minimum | 18.00 |
| Maximum | 38.00 |
| **BMI (Kg / $m^2$)** | |
| Less the 18.5 | 21 (12.96%) |
| 18.5 to 21.9 | 67 (43.35%) |
| 22 to 24.9 | 59 (36.41%) |
| 25 to 29.9 | 12 (7.4%) |
| More Than 30 | 1 (0.61%) |

Only term mothers were included in the study, which was divided into two groups: those with gestational age at delivery from 37 to 42 weeks, which had 155 individuals, and those with gestational age at delivery more than 42 weeks, which had 7 individuals. The presentation of the fetus's head at birth is shown in Figure 3: 146 presented cephalic, 5 presented transverse, and 11 presented oblique (Table 2).

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**Table 2:** Gestational Age at Delivery and Fetal Presentation at Birth

| Variables | | Number of Mothers |
|---|---|---|
| Gestational Age at Delivery | 37 to 42 weeks | 155 |
| | More than 42 weeks | 7 |
| **Variables** | | |
| Fetal Presentation at birth | Cephalic | 146 |
| | Transverse | 5 |
| | Oblique | 11 |

Out of the total 162, population, 6 (3.92%) individual had their OASIs. 5 individuals had 3rd degree and only one had a 4th-degree injury. So the total frequency of OASI in our study population was 6 out of 162 primigravida mothers (Table 3).

**Table 3:** Frequency of OASIS

| Frequency of OASIS | | |
|---|---|---|
| Total Number of NVDs (162) | Yes | No |
| 3rd Degree | 5 | – |
| 4th Degree | 1 | – |
| Total | 6 (3.92%) | 156 |

## DISCUSSION

Our study was conducted on a very specific population i.e. primigravida, full-term having a normal vaginal delivery.It was conducted in a closed, monitored environment.The frequency of total OASIs is 9 out of 162 primigravida mothers.A study by Sørbye *et al.*, shows that women from South Asia had the highest incidence of OASI at 6.2%, followed by those from Southeast Asia, East Asia, and the Pacific at 5.7%, and Sub-Saharan Africa at 5.2% [15].Kwok and fellows studied the prevalence of OASI in nulliparous women as 7.8% undergoing normal vaginal delivery [16]. According to a study by Marschalek, migrant women encounter a novel physical and social environment, where limited language proficiency significantly hinders social integration, leading to inadequate health literacy and suboptimal care post-migration [17].Longo and his co-worker studied risk factors that prone the patient to OASIs undergoing normal vaginal delivery.They observed that the risk was twice for vacuum delivery in nulliparous women and the risk decreased with previous vaginal delivery and also in spontaneous vaginal delivery.Epidural Anesthesia was considered preventive as it lowered the incidence of OASIS.Malpresentation of the fetal head and circumference of the fetal head were considered fetal risk factors [18].Johannesson *et al.*,studied the mixed response of women regarding the role of physiotherapy in recovery from obstetric anal sphincter injury some women felt difficulty and tiresome about therapy, while others were very happy with the outcome and find themselves lucky to have it [19]. A study shows that Anal sphincter rips are frequently overlooked after delivery, and even when they are identified, they are frequently not well healed, leaving a high percentage of residual abnormalities following reconstruction, according to mounting data. Between 25% and 50% of individuals will continue to experience anal incontinence even after initial repair and postpartum diagnosis [20].Antonakou, studied that women suffering from anal incontinence after OASIs feels awkward and ashamed and hesitate to seek medical attention and the condition is termed as OASIs syndrome [21].In a cohort study, Eggebø and fellows, showed that lateral episiotomy is associated with a lower incidence of OASIs in nulliparous women [22].It is a study that mediolateral or lateral episiotomy is preventive for OASIs, decreasing the prevalence by 45%, while Forceps delivery is associated with a higher incidence of OASIs, the risk of OASIs is reduced to half by using vaccume instead of forcep delivery (aOR=1.92, 95% CIs=1.79–2.05)[23].The strength of our study was that it focused on single intrauterine primigravida females delivering babies via normal vaginal delivery in term babies. So, it helps us access the accurate frequency of this group and provides ground for further study.The study's limitation is that it didn't provide an association with BMIs or age, and other confounders were not controlled.

## CONCLUSIONS

It was concluded that the frequency of obstetrical anal sphincter injuries in women undergoing normal vaginal delivery for nulliparous women in our study is 6 out of 162, (3.92%). However, further research is required in the field with controlled confounding factors.

## Authors Contribution

Conceptualization: NF
Methodology: NF, NA, AS
Formal analysis: NF, PR, AF
Writing review and editing: AF

All authors have read and agreed to the published version of the manuscript

## Conflicts of Interest

All the authors declare no conflict of interest.

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