Obstetric Characteristics and Functional Outcomes in Women with Obstetric Anal Sphincter Injury

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ABSTRACT

Background: Obstetric anal sphincter injury is a complication of vaginal delivery, if left untreated, causes significant maternal morbidities; urinary problems and fecal/ flatus incontinence. The aim of this study was to determine the incidence and describe the obstetric characteristics and functional outcomes of women who had vaginal delivery at Paropakar Maternity and Women's Hospital Nepal and sustained Obstetric anal sphincter injury.

Methods: This retrospective descriptive study included women who had vaginal delivery, irrespective of parity, in the labor room or birthing unit of Paropakar Maternity and Women's Hospital from April 2018 to September 2020, and sustained Grade III or IV Obstetric anal sphincter injury after 28 weeks period of gestation. Maternal characteristics, obstetric details and perineal status after vaginal delivery were noted after review of hospital records. The patients were further inquired via telephone for their current status of fecal and/or urinary incontinence.

Results: The incidence of OASI was 106 (0.33%) among 31, 786 Nepalese women with vaginal birth over a 2-year period. The mean age women with Obstetric anal sphincter injury was 24.6 ± 4.3 years and 45(52.9%) cases belonged to Janajati ethnicity. Fifty two (61.2 %) were primipara and 77 (90.6%) had spontaneous vaginal deliveries. Episiotomy was not performed on most of the patients (63, 74.1%). Problems with flatus holding, stool holding and urine holding was reported by 28.3%, 13.2% and 22.6% women respectively.

Conclusions: The incidence of Obstetric anal sphincter injury among Nepalese women with vaginal birth over a 2-year period was 0.33%, which was lower than other South Asian studies. Grade III Obstetric anal sphincter injury was the frequent most type. The injuries were more common in women with Janajati ethnicity, primipara and women who did not have episiotomy. Problems with flatus holding and urine holding were present in almost one-fourth of the women with Obstetric anal sphincter injury at follow up.

Keywords: Augmentation; episiotomy; induction; obstetric anal sphincter injury.

INTRODUCTION

Obstetric anal sphincter injury (OASI) is a perineal tear extending into the anal sphincter and rectal mucosa during vaginal childbirth.[1, 2] It occurs in 5-7% of first vaginal deliveries.[3] It is associated with significant maternal morbidities such as dyspareunia, urinary problems, fecal and flatus incontinence.[4-6]

Recognized risk factors for OASI include Asian ethnicity, primiparity, midline episiotomy, occipito posterior position, induction/ augmentation of labor, and fetal macrosomia.[7-9] OASI is largely under-reported due to social stigma and embarrassment. Moreover, the consequences of OASI can be detrimental to the psychological, social, and sexual wellbeing of the patient. Additionally, it has become a common cause of litigation in obstetric practice.[10]

The aim of this study was to determine the incidence of OASI among women who had vaginal delivery at PMWH, a tertiary care center in Nepal and describe the obstetric characteristics and functional outcomes of the women with OASI.

METHODS

This descriptive study was conducted at Paropakar Maternity and Women's Hospital (PMWH) Thapathali,

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Kathmandu, Nepal, a tertiary referral center, after receiving ethical approval from its Institutional Review Board (IRB) [Ref No.61/397]. This government center serves primarily lower- and middle-class urban and rural population, as well as high-risk pregnancy referrals from towns and villages both inside and beyond the state. The number of deliveries at this institution is around 20,000 annually, and it has recognized postgraduate and fellowship programmes in obstetrics and gynecology.

The study included women who had vaginal delivery, irrespective of parity, in the labor room or birthing unit of PMWH from April 2018 to September 2020, and sustained Grade III or IV perineal tear after 28 weeks period of gestation. Delivery records were extracted from the confinement and admission record book as well as patient's charts from the record section of PMWH. Patients with incomplete records were not included. Maternal characteristics (such as maternal age, ethnicity, parity, gestation at birth), obstetric details (such as onset of labor, augmentation of labor, position of women during delivery, episiotomy, instrumental vaginal birth, length of first and second stage of labor, personnel conducting the delivery, birth weight) and perineal status after vaginal delivery were noted from the records. Furthermore, the patients who could be contacted via telephone were inquired for their current status of fecal and/or urinary incontinence after consenting from them.

Perineal tears were classified based on the American College of Obstetricians and Gynecologists (ACOG) guidelines. Patients with grade III or IV perineal tears were considered to have obstetric anal sphincter injury (OASI).[11,12] Following the hospital protocol and the policy of selective episiotomy, mediolateral technique was used in every instance where an episiotomy was performed. When the second stage lasted longer than two hours without regional anesthesia or three hours with regional anesthesia, it was considered as a prolonged second stage. The stimulation of uterine contractions after a woman had naturally started labor was considered as Augmentation of labor. [11, 12]

Data analysis was performed using SPSS version 20. Standard descriptive statistics was performed, with continuous variables expressed as mean ± SD or median (IQR) as appropriate. Categorical variables were expressed as number (%).

RESULTS

During the study period, a total of 106 women had OASI out of 31,786 deliveries, therefore the incidence of OASI was 0.33%. Clinical data were missing for 21 cases of OASI; therefore, they were not included in the study. Among 85 remaining cases, only 55 patients could be contacted and interviewed for their current status of fecal/urinary incontinence.

The mean age of the patients with OASI (n = 85) was 24.6 ± 4.3 years. A total of 64 patients (75.3%) had 3rd degree tear. Furthermore, there were 26 (30.6%) patients with Grade IIIA injuries and almost equivalent numbers with Grade IIIB injuries (n = 25, 29.4%). Grade IV injuries were present in 21 (24.7%). More than half of the cases belonged to Janajati ethnicity (45, 52.9%) and were primiparous (52, 61.2%). Induction/Augmentation had been done on 65 cases (76.5%), the commonest modality being oxytocin only (37, 56.9%). [Table 1]

A large majority of these women (77/85, 90.6%) had spontaneous vaginal deliveries with a mean birthweight of 3.26 ± 0.49 kg. There was a single case of vacuum delivery, and that had Grade IIIA tear. Episiotomy was not performed on most of the patients (n = 63, 74.1%). The median duration of second stage of labor in this study was 25 mins (15 – 46.5 mins). Twelve cases (14.1 %) had second stage labor more than 60 mins, out of which half (50.0%) developed Grade IV tear.

Table 1. Socio demographic and obstetric characteristics of the patients with OASI. (n = 85)

Characteristics	Total (n = 85)	Grade IIIA (n = 26)	Grade IIIB (n = 25)	Grade IIIC (n = 13)	Grade IV (n = 21)
Age, mean± SD	24.6 ± 4.3	23.9 ± 3.8	24.4 ± 4.5	25.9 ± 3.2	24.8 ± 5.2
Ethnicity					
Brahmin	13 (15.3)	6 (23.1)	6 (24.0)	0 (0.0)	1 (4.8)
Chhetri	17 (20.0)	2 (7.7)	5 (20.0)	4 (30.8)	6 (28.6)
Newar	6 (7.1)	1 (3.8)	2 (8.0)	1 (7.7)	2 (9.5)
Madhesi	4 (4.7)	3 (11.5)	0 (0.0)	0 (0.0)	1 (4.8)
Janajati	45 (52.9)	14 (53.8)	12 (48.0)	8 (61.5)	11 (52.4)

Table 1. Socio demographic and obstetric characteristics of the patients with OASI. (n = 85)

Characteristics	Total (n = 85)	Grade IIIA (n = 26)	Grade IIIB (n = 25)	Grade IIIC (n = 13)	Grade IV (n = 21)
Parity					
Primiparity	52 (61.2)	20 (76.9)	17 (68.0)	9 (69.2)	6 (28.6)
Multiparity	33 (38.8)	6 (23.1)	8 (32.0)	4 (30.8)	15 (71.4)
Induction/Augmentation, n (%)					
Done	65 (76.5)	19 (73.1)	17 (68.0)	12 (92.3)	17 (81.0)
Not done	20 (23.5)	7 (26.9)	8 (32.0)	1 (7.7)	4 (19.0)
Induction method*, n (%)					
Misoprostol only	10 (15.4)	2 (10.5)	2 (11.8)	4 (33.3)	2 (11.8)
Oxytocin only	37 (56.9)	13 (68.4)	8 (47.1)	4 (33.3)	12 (70.6)
Misoprostol and oxytocin	18 (27.7)	4 (21.1)	7 (41.2)	4 (33.3)	3 (17.6)
Active stage of labour (h), median (IQR)	3.0 (2.0 - 5.0)	3.2 (2.1 - 5.7)	3.0 (1.6 - 4.7)	3.4 (2.1 - 4.7)	3.0 (2.0 - 4.7)
Second stage of labour (min), median (IQR)	25 (15 - 46.5)	27.5 (20 - 45)	25 (12 - 46.5)	21 (14.5 - 34)	21 (13 - 82.5)
Episiotomy, n (%)					
Yes	22 (25.9)	7 (26.9)	8 (32.0)	2 (15.4)	5 (23.8)
No	63 (74.1)	19 (73.1)	17 (68.0)	11 (84.6)	16 (76.2)
Birth weight (g), mean ± SD	3.26 ± 0.49	3.38 ± 0.52	3.12 ± 0.54	3.17 ± 0.44	3.34 ± 0.39
Delivery method, n (%)					
Spontaneous	77 (90.6)	23 (88.5)	21 (84.0)	13 (100.0)	20 (95.2)
Forceps	7 (8.2)	2 (7.7)	4 (16.0)	0 (0.0)	1 (4.8)
Vacuum	1 (1.2)	1 (3.8)	0 (0.0)	0(0.0)	0 (0.0)

* Out of 65 patients who underwent induction/augmentation

Fifty-three patients could be contacted and interviewed regarding Fecal Incontinence (FI) symptoms. Problems with flatus holding (gas incontinence), stool holding (solid incontinence) and urine holding was reported by 15(28.3%), 7(13.2%) and 12 (22.6%) women respectively. The proportion of patients with incontinence was higher in patients with a history of Grade IIIC injuries.

Table 2. Functional outcomes of the patients with OASI at 6 months -1 year. (n = 53)

Characteristics	Total (n = 53)	Grade IIIA (n = 13)	Grade IIIB (n = 13)	Grade IIIC (n = 11)	Grade IV (n = 16)
Urine holding capacity					
Yes	41 (77.4)	9(69.2)	12 (92.3)	5 (45.5)	15 (93.8)
No	12 (22.6)	4 (30.8)	1 (7.7)	6 (54.5)	1 (6.2)
Flatus holding capacity					
Yes	38 (71.7)	10 (76.9)	10 (76.9)	6 (54.5)	12 (75.0)
No	15 (28.3)	3 (23.1)	3 (23.1)	5 (45.5)	4 (25.0)
Stool holding capacity					
Yes	46 (86.8)	13 (100.0)	12 (92.3)	8 (72.7)	13 (81.2)
No	7 (13.2)	0 (0.0)	1 (7.7)	3 (27.3)	3 (18.8)

DISCUSSION

The incidence of OASI among women with vaginal birth over a 2-year period was 0.33% according to this study. There are variations in the incidence of OASI in terms of geography, culture, and socioeconomic status. OASI incidence rates vary by country, such as 0.1% in Romania, 0.6% in Finland, 4.2% in Sweden, and 4.9% in Iceland.[13] A study done in India by Gundabattula et al. has reported the incidence of OASI was 2.1% of vaginal birth.[14] A meta-analysis conducted by Park, et.al that compared pooled incidence between Asian and White population reported a higher incidence in Asian population (6.48% vs. 4.49%).[15] In our study, more than half of the cases belonged to Janajati ethnicity (52.9%). This is one of the first studies to report the incidence based on ethnicity. Third degree tear was the commonest type according to our study, similar to study done by Ramage et al.[16]

A majority of our patients (61.2%) were primipara. Similar findings were observed in a case control study done by Ali et.al. in southwestern Uganda.[17] Another retrospective study conducted by Andre, et.al in Sweden showed that the risk of OASI was considerably raised by primiparity, artificial delivery, and excessive birthweight.[18] However, one of the studies have found no significant association between occurrence of anal sphincter injuries and primiparity.[19]

In our study, 65(76.5%) of them had induction or augmentation of labor and most of them (37, 56.9%) had augmentation with oxytocin only. Similar findings were found in a population-based, case-control study done by Rygh et.al that revealed women who had undergone augmentation with oxytocin and delivered vaginally with birth weight of less than 4000 grams were linked to an increased odds of obstetric anal sphincter injury.[20] Induction and augmentation were more common in primiparous women with obstetric anal sphincter injury, according to data from another study by Klokk et al.[21]

The median duration of second stage of labor in our study was 25 mins (15 – 46.5 mins). Twelve cases (14.1 %) had second stage labor more than 60 mins, out of which half (50.0%) developed Grade IV tear. Prolonged second stage of labor is defined as second stage of more than 1 hour in multipara and 2 hours in primipara. Many studies have described prolonged second stage of labor as one of the risk factors for OASI in all patient groups (Primi or multipara).[5,17,22]

In our study, most of the women (74.1%) who sustained anal sphincter injuries were without episiotomies. According to our hospital protocol, we do selective episiotomy, and all the episiotomies performed were mediolateral; however, the incision angle from the midline was not measured. Most of the studies showed mediolateral episiotomy decreases the risk of OASI especially in instrumental and difficult deliveries.[22] Similar findings were noted by Singh, et.al in his prospective study among 120,243 women from 18 tertiary care hospitals throughout India. The study revealed that mediolateral episiotomy significantly decreased incidence of third- and fourth-degree tears among nulliparous women.[23] The American and Canadian recommendations reported an increased incidence of OASI with midline episiotomies.[24,25] Cochrane systematic review of eight randomized controlled trials (six studies with mediolateral and two with median episiotomy practice) concluded that routine episiotomy was not justified.[26]

All the patients who sustained OASI in our study delivered a baby of weight less than 4kg (the highest being 3.75 kg). Many studies have suggested birthweight of 4kg or more as a risk factor of OASI. A study done by Segal, et.al among Indian women showed birth weight ≥ 4000 g and neonatal head circumference ≥ 35 cm as risk factors for OASI.[26] Similar findings were reported in studies from Africa that connected large fetuses of more than 3.5 kg with OASI.[27]

In our study, 77 (90.6%) who sustained OASI had spontaneous vaginal deliveries, which is contrary to most of the study findings, in which higher incidence of OASI were found among patients who had vacuum-assisted or instrumental vaginal deliveries.[28] Similarly, a systematic review done by Kapoor et.al, found that the incidence of OASI were significantly higher among patients with instrumental deliveries.[29]

In this study, among 85 patients who sustained OASI, only 53 (62%) could be contacted through telephone for finding out the incontinence rates. The incontinence was found in higher proportion among patients with grade III-C injuries. A study done by Reid et.al showed the burden of flatus incontinence and fecal incontinence being 52 (15.1%), and 36 (10.5%), respectively on follow up visits following primary repair of an OASI [30], which is similar to our study.

It is a retrospective, single center study and we could not reach to all the patients with OASI due to the incomplete medical records. Small sample size and no in-person follow up; and the challenge of carrying out in-depth discussions about this topic due to patients' discomfort were further limitations.

This research on OASI among Nepalese women will contribute in the development of evidence based clinical guidelines for our medical practitioners who provide obstetric care and standardized procedures and better patient outcomes will result from practitioners adopting these guidelines.

CONCLUSIONS

The incidence of OASI among 31, 786 Nepalese women with vaginal birth over a 2-year period was 106 (0.33%), which was lower than other South Asian studies. Grade III OASI was the frequent most type. The injuries were more common in women with Janajati ethnicity, primipara and women who did not have episiotomy. Problems with flatus holding and urine holding were present in almost one-fourth of the women with OASI at follow-up.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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