

Fecal Continence Outcome After Immediate Primary Repair in Emergency Obstetric Related Anal Sphincter Injuries: A Single Surgical Center Experience

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Abstract

Background: Obstetric anal sphincters injury is a commonest cause of fecal incontinence in female. Primary repair failure rate ranges from 20% to 50%. Majority cases required delayed sphincter reconstruction. The role of colorectal surgeon in acute setting remains controversial and outcome undetermined.

Purpose: Main objective of this study is to determine the overall anal incontinence incidence rate and our outcome with early involvement in acute emergency setting of immediate primary repair in perineal injury.

Methods: A Retrospectives observational study analyze fecal incontinence rate after immediate primary sphincters repair by single center Surgical team for obstetric delivery related anal sphincter injury from year 2017 until 2023.

Results: A total of 120 cases of cases were identified and analyzed. Severity injury of Grade 3a consist of 19 cases (15.8%), Grade 3b 49 cases (40.8%), Grade 3c 32 cases (26.7%), 4th degree injury 20 cases (16.7%) respectively. A total of 98.3% cases were asymptomatic and complete fecal continence during follow up. Fecal Incontinence incidence rate from failure of repair was only 1.7%. There was no significant difference in between the different grade of severity perineal tear ($p=0.18$) and the methods of repair ($p=1.00$) with the fecal incontinence event.

Conclusion: Earlier collaboration and involvement of colorectal and obstetrics specialty in immediate primary repair in acute setting demonstrate a lower failure rate and better functional outcome.

Keywords: Obstetric anal sphincters injury, Immediate primary repair, Anal incontinence, Colorectal surgery.

Introduction

Fecal Incontinence symptoms is severely affecting the psychosocial and quality of life for the patients. Obstetric anal sphincter injuries (OASI) incidence ranges from 0.5 to 10% in vaginal deliveries. Injuries to both the external anal sphincter and Internal anal sphincter and anorectal mucosa in perineal tear carries more than 50% morbidity rate of fecal incontinence. Obstetrics incontinence cases usually delayed presentation to Colorectal unit and requires an elective secondary anal sphincter repair. The outcome of secondary repair remains unfavorable. [1-5] The role of colorectal surgeon in acute setting of obstetric anal sphincter injuries remain controversial as majority of cases were attended by obstetric specialty.

Article by Jain et al in 2022 [7] reported 41.4 percents rate of secondary failure after acute repairs. A study by Hayes et al [8], demonstrate a better outcome with 65 percents asymptomatic population after immediate sphincter repair by a general Surgeon. Only 16 percents of subjects reported severe distressing incontinence experience. Hypothesis postulated if immediate emergency primary repair by a colorectal unit well exposed to anal sphincter anatomy would have a better outcome. As early as in year 1999 publication by Cook and colleagues [9],

from Ireland discussing the roles of colorectal surgeon for the acute repair. They demonstrated only 5% of their cases underwent primary repair developed incontinence after a year follow up. However, Articles by Oh and Young et al [10] reported that two-third of colorectal surgeon participate in a survey reported low exposure to obstetric perineal injuries during their fellowship training. Another limitation for the involvement of a Colorectal surgeon is due to different local protocols and the number of colorectal surgeons' availability. Ropers et al [6] conducted a survey found that fifty percents of the respondents only involved in the repair less than a case per year.

Our surgical training center with availability of colorectal specialty services has been practicing immediate emergency primary repair with conjoint collaboration with obstetricians for obstetrics anal sphincters injury. This study is to demonstrate our single centre experience of the outcome of early involvement of Colorectal surgeon in acute setting of the perineal injury. The study main objective is to determine the overall fecal Incontinence incidence rate from failure of repair. The secondary aim is to assess the relation between the Wexner

fecal Incontinence Score, the different grade of severity perineal tear, the risk stratified age group and the methods of repair.

Study design

This is a Retrospectives observational study on the fecal incontinence incidence rate for 120 cases of immediate primary repair performed for emergency obstetric delivery anal sphincter injury in a single center Surgical unit.

We initially identified 154 cases with Obstetric anal sphincter injury post deliver whom underwent immediate primary repair was for the year 2017 until 2023. The data information regarding the grade of injuries, surgical repair techniques, the type of incontinence and severity Wexner Incontinence Score assessment, subjects' satisfaction, and endoanal sonographic finding were extracted from medical records in Hospital Informative Database System. 34 cases with incomplete documentation with missing data, defaulted were excluded. (Fig. 1) The study is register with national medical research registry and Ethics committee, Register ID: NMRR ID-24-00083-6QQ, Research ID: RSCH ID-23-06031-UNZ.

Severity of Obstetric anal sphincter injury (OASI)

The grade of injury is classified according to Sultan classification and Royal College Obstetrics and Gynecology 2007 recommendation. Grade 3a is define as less than 50 percents involvement <50% External anal sphincter and Grade

3b when more than 50% involvement. The involvement of Internal anal sphincter is classified as Grade 3c, whereas involvement of whole anal sphincter complex and anal mucosa classified as Fourth degree injury.

Surgical Procedures

The acute injuries were attended and repair within six to twelve hours of injury as an emergency setting by a surgeon with colorectal surgery experienced. A standardize strategy for repairs implemented. The anal mucosa is repaired with absorbable polyglactin 3/0 interrupted suture, and internal anal sphincter with polydioxanone 3/0 end-to-end interrupted. The repair of external anal sphincter muscle is performed with polydioxanone 3/0 sutures either by overlapping technique or end-to-end technique per surgeon experience and preferences. All the cases were treated with standardize therapy of laxative, wound care advice, antibiotics and two months to six months outpatient clinic follow up.

Statistical analysis was performed using IBM SPSS Statistics version 29.0.2.0 (20). Quantitative data calculation and expressed as mean \pm standard deviation (SD). Qualitative variables are reported with frequency and percentages. Statistical analysis with Fisher exact test was performed to compare the differences between the grade of injuries, age group, method of repair with functional outcome.

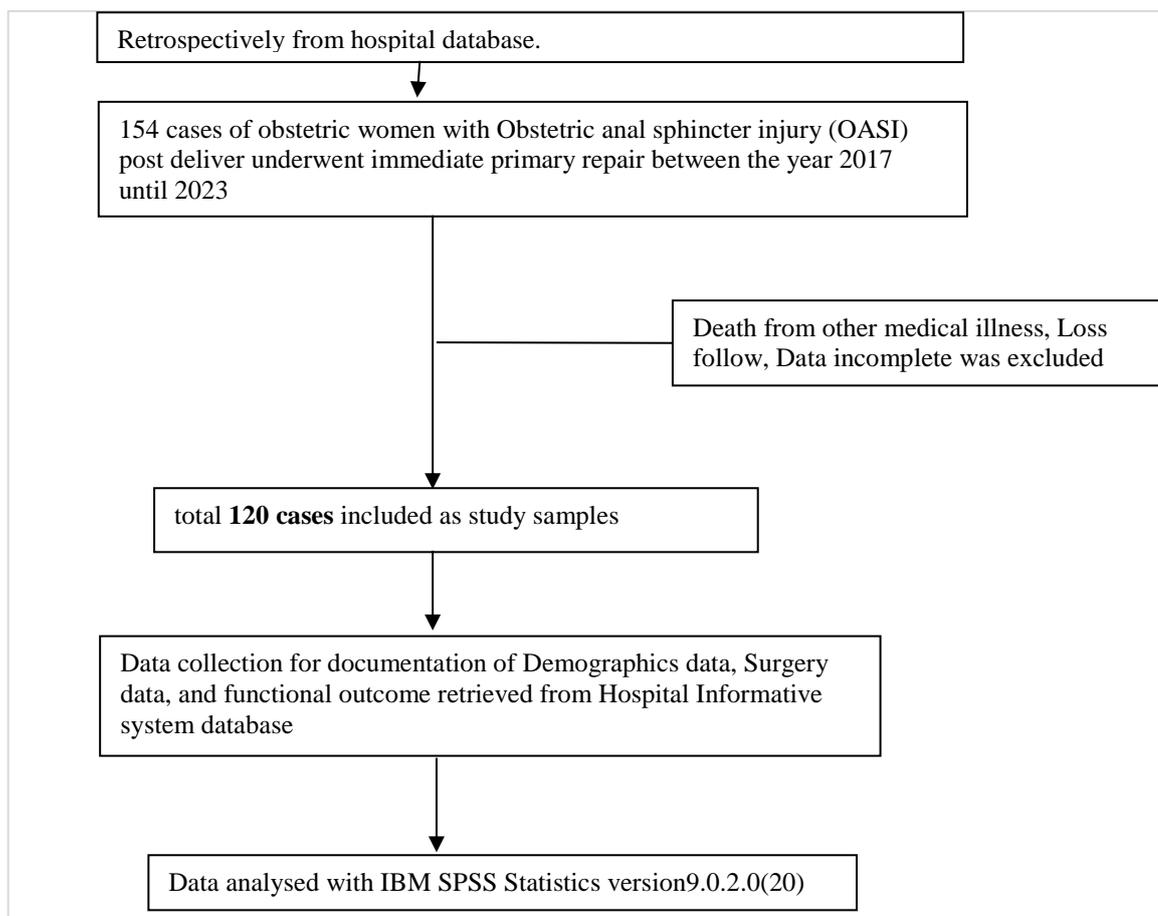


Figure 1: Flow chart of population selection inclusion in the study.

Results

Age:

The mean age of cases with perineal tear was 29.43 (SD: 5). The youngest age reported at 19 years old and eldest at 40 years old. High risk pregnancy age group of more than 35 years old consist of 19 patients (15.8%). There was no statistically significant association between the two group. (p=1.00).

Grade of Obstetric anal sphincter injury:

Grade 3a consist of 19 cases (15.8%), Grade 3b 49 cases (40.8%), Grade 3c 32 cases (26.7%), 4th degree 20 (16.7%) respectively. The Grade 3a and 3b in consider as Minor tear group, whereas Grade 3c and Fourth (4th) degree tear consider as Major tear group as the extend of the anatomy disruptions. Minor perineal tear (3a and 3b) consists of 68 cases (56.7%), while major tear injury contributed 52 cases (43.3%) in the data.

Table 1: Age, Severity of injury and method of repairs (n=120)

Variable	Value, cases n (%)	P values
Age		
<35	101 (84.5%)	p=1.00
≥35	19 (15.8%)	
Mean	29.42	
Youngest at 19 years old, Eldest at 40 years old		
Grade of injury		
3a	19 (15.8%)	
3b	49 (40.8%)	
3c	32 (26.7%)	
4 th degree	20 (16.7%)	
Severity of tear		
Minor tear (3a and 3b)	68 (56.7%)	p=0.18
Major (3c and 4 th degree)	52 (43.3%)	
Methods of repair of external anal sphincter		
Overlapping	65 (54.2%)	p=1.00
intermediate	55 (45.8%)	

Discussion

Anal incontinence symptoms tremendously affecting the quality of life, psychosocial, lifestyle and mental health of the individuals. The commonest cause of anal incontinence in women is due to delivery related anal sphincter injuries. Obstetrics anal incontinence incidence secondary to failure of primary repair ranges from 20% up until 50%. The trend of Wexner severity score strongly correlates with the increasing grade of perineal Injury and age group. [11-20].

Our retrospective observation study demonstrates a good anal continence outcome that surpass our expectation as compare to existing publish articles for the immediate primary repair by colorectal team for obstetric anal sphincter injuries in acute setting. [2,9,10,11,14]. The intermediate-outcome of follow up cases until 3 to 6 years demonstrated promising results of 98%

Continence outcome:

A 98.3 % of our patient were complete continence and asymptomatic during follow up Fecal Incontinence incidence rate occur only in 2 cases or 1.7%. Majority of patients (98.3%) satisfied with the post operative outcome. One subject with Severity of perineal tear Grade 3c, and the latter with severity of Fourth degree tear. Both the cases with anal incontinence complaint of the score of 8 and 10 respectively and persistent symptomatic in 5th year and 6th year post injury respectively. Both underwent elective secondary sphincter repair. There was no significant different between the severity of perineal tear with the outcome of anal incontinence, (p=0.18).

Surgical technique:

External anal sphincter repair with overlapped technique 65 (54.2%) and end-to-end 55 (45.8%) cases. There was no statistically significant association between methods of overlapping or end-to-end repairs with the outcome incidence of anal incontinence, (p=1.00).

Table 2: anal continence outcome during follows up.

Variable	Value, cases n (%)
Anal incontinence symptoms	
Asymptomatic, No incontinence	118 (98.3%)
Faecal Incontinence	2 (1.7%)
Months from injury	
36	36 (30.0%)
48	36 (30.0%)
60	28 (23.3%)
72	20 (16.7%)
Patients' satisfaction with outcome	
Yes	118 (98.3%)
No	2(1.7%)
Wexner Incontinence score	
0 - asymptomatic	118 (98.3%)
8	1 (0.83%)
10	1 (0.83%)
Mean score	0.15
Standard deviation (SD)	1.164

of asymptomatic. The anal incontinence incidence rate of 1.7% is 3-fold lower comparison to the standard of existing articles. [2,3,5,16] There are presents of only two cases (0.8%) with fecal incontinence identified in the group with more than 5 years from the repair.

The role of colorectal surgeon in acute setting of obstetric anal sphincter injuries remain controversial. In majority of centers, the repairs were attended by obstetrician due to their accessible in the delivery suite and operating theater. Roper et al [6] and Oh et al [10] conducted their survey found out majority of the consultants lack of involvement in acute repair and exposure during the training. Majority of anorectal surgeon in from Venara [21] articles active involvement in the Fourth-degree injury repair due to its known poor continence outcome.

Our center as a colorectal specialty training center for the fellowship trainees and surgeons with regular exposure and experience in Pelvic floor and anorectal work has an upper hand in handling the repair in emergency situation. The familiarity of anatomical structure and the adequacy of reconstruction of the muscle's layers contribute a better surgical outcome. Collaborations and conjoint of training experience and skills of both obstetrician and colorectal surgeons produce better surgical outcome in acute situation. Thus, a better functional outcome and threefold reduction in anal incontinence event.

Okeahialam [22], Ong [23], Gold [26] and El-Gazzaz [17] mention in their articles related with obstetric anal sphincter incontinence recommended overlapping method for the repair of external anal sphincter. Cochran database review in 2013 otherwise conclude differently as the were no difference in outcome for long term functional outcome.

Our study demonstrated that there was no significant difference ($p=1.00$) in between the different grade of severity perineal tear, the risk stratified age group and the methods of repair with functional outcome. Our result shown similar results as the Cochran database. However, the statistic power is low due to our small samples size.

Objective assessment of the structural integrity changes in endoanal ultrasound has better assessment of the repair. Few authors Frigerio [20], Soerensen [19], Wasserberg[25] and Gold et al [26] demonstrated a significant correlation between the persistent present of structural defects and Internal anal sphincter with worse functional outcome.

Selective Assessment with Endoanal ultrasound for symptomatic subjects was performed. The subject with Severity tear Grade 3c had a Wexner score of 8 but endoanal ultrasound did not visualized anatomical structure defect of the anal sphincter. The second case with history of Fourth degree tear experience fecal incontinence symptoms with the Wexner score of 10 presence of thinning of anterior site of external anal sphincter without major structural defect. The integrity and functional status of the muscle may not relate to the anatomical structural.

The strength of our study is our pilot data for the outcome of acute primary repair by colorectal surgical team. The main limitation of our study is the lack of comparative control group. The selection of retrospective approach for our study justified by the difficulty to randomize in acute emergency status with lifesaving situation. Future prospective study with larger sample size and comparison-controlled arm may reduce the bias and potentially demonstrates a significant statistical result.

Conclusion

Earlier collaboration and involvement of colorectal and obstetrics specialty in immediate primary repair in acute setting demonstrate a lower failure rate and better functional outcome.

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