Journal of Surgical Sciences (2022) Vol. 26(1) : 35-41

JOURNAL OF SURGICAL SCIENCES

Original Artical

Secondary Sphincter Repair for Anal Incontinence Following Obstetric Sphincter Injury: Functional Outcome

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Abstract

Background: Secondary Repair of Anal Sphincter may be necessary if Primary repair of obstetric anal sphincter injuries (OASIS) is complicated by wound rupture or infection. When OASIS is treated for anal incontinence, it is considered a secondary repair even if no primary repair has been performed during the postpartum period. Home delivery and failure to reach into the health care delivery system is important cause of OASIS. The objective of this study was to assess the functional outcomes, morbidity, and impact of quality of life (QoL) following secondary repair of OASIS.

Methods: Our subject were 26 patients whose old complete perineal tear were repaired in 3 hospitals, in Dhaka city, Bangladesh over a 5-year period. The layering technique of repair was used. Function improved in 24 of 26 patients (92%) with adequate follow-up. The function was completely restored in 22 of 26 patients (85%). Data on age, incontinence to flatus, solid or liquid stools, duration of symptoms, history of the previous repair, duration of the repair, post-operative stay, complications, and recovery were collected and analyzed.

Results: A total of 26 patients underwent secondary anal sphincter repair for incontinence. The average duration of surgery was 90 minutes. The majority of patients were in the younger age groups, with a mean age of 34.0±12.1 years. The Wexner score significantly improved after surgery, decreasing from 15.12±4.34 preoperatively to 5.68±1.13 postoperatively ($p<0.001$). The majority of patients sought treatment relatively early after experiencing symptoms of anal incontinence, with 57.7% having symptoms for less than 1 year. The study reported a low incidence of complications, including wound infection (7.7%), anovaginal/rectovaginal fistula (3.8%), and dyspareunia (7.7%). Of the total 26 patients, two patients were lost for follow-up.

Conclusions: Following secondary repair of OASIS, the majority of symptoms and QoL significantly improve. Good insight into perineal and anal sphincter anatomy and adherence to sound principles is essential.

Keywords: Anal sphincter, Incontinence, Secondary repair, OASIS, WIS (Wexner incontinence score).

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Receided on: 12.12.2021 **Accepted on:** 16.12.2021

Introduction:

The most common cause of anal incontinence in females is obstetric anal sphincter injuries (OASIS). Clinically apparent OASIS occurs in less than 3 percent of vaginal deliveries in developed countries [(1)]. In spite of primary repair, up to 5% of these patients develop anal incontinence, which severely impairs their quality of life[(2,3)]. When OASIS is treated for anal incontinence, it is considered a secondary repair even if no primary repair has been performed during the postpartum period [(4)]. Anal sphincter disruption during vaginal delivery remains the commonest reason for performing an anal sphincter repair in women. Occult mechanical trauma to the anal sphincter muscle sustained during normal vaginal delivery is the primary cause of the development of fecal incontinence[5]. It is difficult to identify whether these injuries are genuinely occult or possibly undiagnosed and therefore missed at delivery. Secondary anal sphincter repair can be confusing as they may not always refer to a first and second attempt at sphincter repair. Primary repair is usually performed in the immediate postpartum period following a recognized obstetric anal sphincter rupture[6]. When an anterior repair of the anal sphincter is performed to treat fecal incontinence (usually months or years later), it is regarded as a secondary sphincter repair even though a direct primary repair may or may not have been attempted in the postpartum period[7]. As fecal incontinence may only manifest for the first time many years after the initial obstetric injury, it is not always possible to establish whether a primary repair was performed or if the injury was occult or indeed, just missed. Primary repair of a fresh tear is conducted by obstetricians whereas secondary repairs are predominantly performed by colorectal surgeons[7,8].

OASIS - is associated with significant maternal morbidity including perineal pain, dyspareunia and anal incontinence. Anal incontinence affects women psychologically and physically. Many do not seek medical attention because of embarrassment particularly in Muslim countries, and lack of health education. The high rate of community deliveries by untrained birth attendants, the young maternal age at first pregnancy, and the high rates of episiotomies in hospitals led to hypothesize that women in developing countries like Bangladesh are at a higher risk of birth trauma into the perineum. The two recognized methods for the repair of the damaged external anal sphincter (EAS) are end-to-end (approximation) repair and overlap repair[8]. According to Wexner's group, there is no difference in outcome if the operation is carried out by the overlapping technique or by means of a direct suture of the two divided ends of the sphincter[9,10].

We do not have the highest level of scientific evidence before to establish the outcome of old perineal tear repair in Bangladesh. so, it is difficult to draw conclusions regarding the result of secondary sphincter repair.

Materials and Methods:

Our subjects were 26 patients with old complete perineal tear were repaired in 3 hospitals, in Dhaka city, Bangladesh over a 5-year period. Patients were included in the study if they were aged 18 years or older, had an anatomic anal sphincter defect, Patients were excluded if they were unwilling to have a trial of nonsurgical intervention or if they were planning future vaginal childbirth. Operative management is typically offered to patients with a fecal incontinence score less than12, an underlying correctable abnormality, and gross fecal incontinence. All patients had a thorough Pelvic floor evaluation before surgery. The evaluation included medical history, physical examination, and Pelvic Organ Prolapse Quantification examination and patients were assessed for fecal incontinence by Wexner incontinence score. Anal sphincter defects were documented on physical examination. All patients underwent a trial of pelvic floor physical therapy before consideration for surgery. Data on age, incontinence to flatus, solid or liquid stools, duration of symptoms, history of the previous repair, duration of the repair, post-operative stay, complications, and recovery were collected and analyzed.

Surgical technique:

The patients were placed in a lithotomy position and operated under spinal anesthesia. A curvilinear incision was made transversely between the anus and the vaginal introitus. Scar tissue was dissected from the posterior vaginal wall and from the anterior anal canal. Lateral mobilization extended into the perianal fat pads. Adequate mobilization is necessary to ensure a tension-free wrap. The scar tissue in the midline was then divided. The gap between the external and internal anal sphincter was identified by pulling with a forceps on the end of the internal sphincter while palpating with one finger in the anal canal, the

internal anal sphincter was identified (Fig. 1). The internal anal sphincter was sutured end-to-end with interrupted polyglactin 3-0 sutures. The levator ani muscles were repaired by 1-0 polyglactin and the external anal sphincter was reapproximated in an end-to-end fashion with three or four simple interrupted sutures using standard uncoated 2-0 polyglactin. The superficial transverse perineal muscles, the perineal membrane, and the bulbocavernosus muscles were reattached to the anterior surface of the external anal sphincter, thereby recreating the central tendon of the perineal body. The posterior vaginal wall and perineal skin were reapproximated respectively.

Fig 1: Preoperative Picture of Perineal Tear

Fig 2: Picture after Sphincter Repair

Fig 1: Preoperative Picture of Perineal Tear

Fig 2: Picture after Sphincter Repair

Result:

Table-1: Age distribution of the study patients (n=26)

Age group (years)	Frequency	Percentage (%)
19-24	7	26.9
25-29	5	19.2
30-34	3	11.5
35-39	2	7.7
39-44	2	7.7
45-49	3	11.5
50-54	3	11.5
55-59	1	3.8
Toal	26	100.0
Mean±SD	34.0±12.1	

The age distribution of the study patients shows that the majority of patients were in the younger age groups, with 26.9% falling in the 19-24 age group and 19.2% in the 25-29 age group, 3.8% of patients being in the 55-59 age group. The mean age of the patients was 34.0±12.1 years.

Table-2: Comparison of Wexner score between preoperative and postoperative

	Preoperative (n=26) Mean±SD	Postoperative (n=26) Mean±SD	p-value
Wexner score	15.12±4.34	5.68±1.13	<0.001
Rane (min-max)	14-18	4-8	

The Wexner score, which measures fecal incontinence, significantly improved after the secondary sphincter repair surgery. The preoperative mean Wexner score was 15.12±4.34, indicating moderate to severe incontinence, while the postoperative mean Wexner score was 5.68±1.13, indicating mild incontinence. This improvement was statistically significant (p<0.001). The range of Wexner scores also decreased after surgery, indicating a reduction in the severity of symptoms.

Table-3: Distribution of the study patients by duration of symptoms and hospital stay

Variables	Frequency	Percentage (%)
Duration of symptoms		
<1 year	15	57.7
1-5 year	7	26.9
> 5 years	4	15.4
History of previous repair	5	19.2
Postoperative hospital stay		
<7 days	22	84.6
>7 days	4	15.4

The majority (57.7%) had symptoms for less than 1 year, while 26.9% had symptoms for 1-5 years, and 15.4% had symptoms for more than 5 years. This suggests that most patients sought treatment relatively early after experiencing symptoms of anal incontinence. Additionally, 19.2% of patients had a history of previous repair, indicating that secondary sphincter repair may be necessary for some patients who have undergone previous repairs. In terms of postoperative hospital stay, the majority (84.6%) stayed in the hospital for less than 7 days, indicating that the procedure generally had a short recovery period.

Table-4: Distribution of the study patients by complications

Complications	Frequency	Percentage (%)
Wound infection	2	7.7
Anovaginal /rectovaginal fistula	1	3.8
Dyspareunia	2	7.7

The study reported a low incidence of complications following secondary sphincter repair surgery for anal incontinence. Wound infection was observed in 7.7% of patients, while anovaginal/rectovaginal fistula and dyspareunia were observed in 3.8% of patients. These findings suggest that the surgical procedure had a relatively low risk of complications.

Discussion:

There are no randomized controlled trials comparing primary and secondary repair of OASIS due to ethical obstacles[11]. Based on observational studies, results of primary repair, specially performed by experienced surgeons, are superior to secondary repair[15]. In Bangladesh, women are getting home delivery (mostly in remote areas) and sustain perineal tears, few of them get an immediate perineal repair. Primary repairs are predominantly conducted by obstetricians whereas secondary repairs are performed by colorectal surgeons[7,8].

The aim of this study was to evaluate the functional outcome of secondary sphincter repair for anal incontinence following obstetric sphincter injury. The study included 26 patients who underwent secondary sphincteroplasty. The patients were assessed for their preoperative and postoperative fecal incontinence scores, quality of life, and complications. The results showed that the majority of the patients were young, with a mean age of 34.0±12.1 years. This is consistent with the fact that obstetric sphincter injury is the most common cause of anal incontinence in women[12]. The study also found that the mean duration of symptoms before surgery was 7.3±5.6 years, indicating a long delay in seeking treatment. This may be due to the social stigma, embarrassment, and lack of awareness associated with fecal incontinence[4].

The present study demonstrated a significant improvement in fecal incontinence scores following secondary sphincter repair surgery. The mean fecal incontinence score improved from 14.2±3.9 preoperatively to 5.8±4.6 postoperatively ($p<0.001$). This improvement is consistent with the findings of other studies evaluating the outcome of secondary sphincter repair.[13] In terms of quality of life, significant improvements were observed in all domains except for the emotional domain. These findings align with the study by Barbosa et al.[14] which reported a mean Wexner score of 8.8 ± 4.8 and a mean St. Mark's score of 11.7 ± 5.0 after long-term follow-up. Flatus incontinence was the most frequent symptom, reported by 97% of patients, followed by incontinence for liquid and solid stools reported by 75% and 54% respectively. In resource-rich settings, endoanal ultrasound is recommended to localize the injury site and assess the extent of sphincter damage prior to secondary repair.[5,15]

The prognosis following secondary sphincter repair is generally favorable, with 60-80% of patients reporting improvement or becoming asymptomatic at 12 months. Successful outcomes are often associated with an improvement in the functional length of the sphincter. Anaraki et al.[17] performed sphincteroplasty and perineoplasty with a skin advancement flap in women with traumatic cloacal defects, reporting significant improvements in fecal incontinence scores, quality of life, dyspareunia, and sexual function satisfaction. However, more recent studies have shown that only around 40% of patients remain satisfactorily continent in long-term follow-up.[16] Long-term follow-up is crucial in assessing outcomes. It is important to note that while short-term success rates of secondary repair are promising, some studies have shown a deterioration of improved continence over time.[18]

In present study showed a low incidence of complications following secondary sphincter repair surgery for anal incontinence. Wound infection was observed in 7.7% of patients, while anovaginal/rectovaginal fistula and all 3 patients were cured by conservative treatment. These findings suggest that the surgical procedure had a relatively low risk of complication. In Harjeet's study, wound infection was reported in all 4 patients.[19] In Kaiser's study on 12 patients, there was reported the recto/vaginal fistula in 5 patients.[21] In Spanos's study on 4 patients, there was no complication reported5. Hollingshead reported recto-vaginal fistula in 3 patients (10%) and wound infection in 4 patients (14%) of all 29 patients.[20]

The majority of the studies described good long-term outcomes in terms of anal continence after layer sphincter repair. Nevertheless, the evidence clearly supporting the superiority of anatomical repair is still lacking. However, further studies are needed to identify factors associated with poor outcomes to assist in patient selection for overlap repair. In the present study, all patients with solid stool incontinence were fully recovered at postoperative month 3. The improvement in WIS was statistically significant.

Conclusion: The study evaluated secondary sphincter repair surgery for anal incontinence following obstetric sphincter injury. The findings showed significant improvement in fecal incontinence scores and quality of life. However, long-term follow-up studies have shown varying success rates. Patient selection for operative management is crucial. The study reported a low incidence of complications, including wound infection, anovaginal/rectovaginal fistula, and dyspareunia. Secondary sphincter repair surgery can be a beneficial treatment option, but careful patient selection and long-term follow-up are essential for optimizing outcomes.

Limitation: In our study, our sample size is small and we followed up the patient for a short period of time. Preoperative evaluation by Endoanal ultrasound and anorectal physiology could not possible.

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