Original Research Article

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Clinical Outcomes of STARR in Obstructed Defecation Syndrome Secondary to Rectocele and Internal Rectal Prolapse

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Abstract

Background: Obstructed defecation syndrome (ODS is a disabling functional anorectal disorder that has a significant impact on quality of life, mainly caused by rectocele and internal rectal prolapse. Stapled trans-anal rectal resection (STARR) is a minimally invasive trans-anal approach to address this underlying anatomical deformity. This study aimed to assess the clinical results of STARR in patients with ODS secondary to rectocele and internal rectal prolapse.

Methods: A prospective observational study was conducted at Bangladesh Medical University, Dhaka, and Ibn Sina Specialized Hospital, Dhaka, from July 2022 to July 2025, on 42 patients with ODS secondary to rectocele and/or internal rectal prolapse who underwent STARR. The Revised Modified Longo ODS Score was used to assess patients preoperatively and at 3 and 6 months postoperatively. Operative profiles, postoperative complications, and factors associated with clinical outcomes were recorded and analyzed. Data were entered and analyzed on SPSS version 26.

Results: The mean age was 40.6 ± 14.2 years, with 69% females. Incomplete evacuation (95.2%) and straining (92.9%) were the commonest symptoms, and 71.4% had Grade III internal rectal prolapse. Mean ODS score decreased significantly from 15.2 ± 3.3 to 3.4 ± 0.9 at 6 months ($P < 0.001$), with 88.1% achieving a good outcome. Normal BMI, mild rectocele, Grade II/III prolapse, and absence of recurrence were associated with better outcomes.

Conclusion: STARR is an effective surgical procedure for ODS secondary to rectocele and internal rectal prolapse, with significant and lasting improvement in defecatory function. Optimizing outcomes is important and involves patient selection, especially in terms of BMI and disease severity.

Keywords: Obstructed defecation syndrome, STARR, rectocele, internal rectal prolapse, ODS score

Introduction

Obstructed defecation syndrome (ODS) is characterized as a functional anorectal disorder that involves a set of symptoms, including straining during bowel movements, a sensation of incomplete bowel evacuation, the need for digital assistance, spending an excessive amount of time on the toilet, and relying on laxatives or enemas to facilitate bowel emptying.[1] It is one

of the most common and difficult-to-treat forms of constipation seen in colorectal practice, and is estimated to occur in 3–25% of the general population, and is more common in women and middle-aged people.[2] The pathophysiological mechanisms of ODS are complex, but the anatomical abnormalities of the pelvic floor and rectum are a major causative factor. Rectocele (anterior herniation of the rectal wall into the vaginal vault) and internal rectal prolapse (IRP), also known as rectal intussusception, are the most commonly identified structural abnormalities associated with outlet obstruction.[3] Diagnosis of ODS is made by a combination of clinical assessment, anorectal manometry, defecography, and imaging of the pelvic floor. The ODS scoring system, initially proposed by Longo and subsequently modified, is a validated, quantitative tool for assessing symptom severity and treatment response in the four domains of evacuation difficulty, medication use, time consumed, and lifestyle impairment.[4,5] Conservative measures such as dietary fiber, biofeedback, and pelvic floor rehabilitation are first-line treatments for ODS. Traditional surgeries, including abdominal rectopexy and posterior colporrhaphy, may have inconsistent outcomes and significant morbidity, with some patients—particularly those with significant rectocele or high-grade IRP—requiring alternative surgical approaches.[6,7] In 2003, Longo introduced a transanal approach to the treatment of anterior rectocele and internal rectal prolapse, called stapled transanal rectal resection (STARR).[8] The transanal technique avoids an abdominal incision, shortens the length of hospital stay, and allows for a quick recovery after surgery. STARR has been adopted in specialized colorectal centers throughout Europe, Asia, and Latin America since its introduction.[9] Although STARR provides substantial symptom improvement, with clinical response rates of 70–90%, postoperative complications and recurrence remain concerns. Predictors of successful outcomes are not fully established. Patient factors such as age, sex, BMI, symptom duration, and prolapse grade, along with operative factors and complications, may influence treatment response and are important for optimizing patient selection and management.[1,10]

Methods

This prospective observational study was conducted at Bangladesh Medical University, Dhaka, and Ibn Sina Specialized Hospital, Dhaka, spanning from July 2022 to July 2025. The study included 42 patients who were clinically diagnosed with obstructed defecation syndrome (ODS) attributable to rectocele and/or internal rectal prolapse (IRP). These diagnoses were confirmed through clinical examination, defecography, and anorectal manometry. Patients with ODS score ≥8 who failed ≥6 months of conservative treatment and provided consent were included. Patients with fecal incontinence requiring separate surgery, inflammatory bowel disease, previous STARR, active anorectal sepsis, non-obstructive prolapse, complete uterovaginal prolapse, significant psychiatric comorbidity, or pregnancy were excluded. Variables included age, sex, BMI, symptom duration, prolapse and rectocele severity, complications, and relevant comorbidities. The primary outcome was the Revised Modified Longo ODS Score (0–24), assessing eight domains of defecatory dysfunction. The items are rated on a scale of 0 (no problem) to 3 (severe), with higher scores indicating more symptom burden. Baseline (preoperatively) and 3 and 6 months postoperatively scores were recorded. A good clinical outcome was defined as a ≥50% reduction in total ODS score at 6 months. Operative time, duration of hospital stay, postoperative complications, and recurrence were considered as secondary outcomes. SPSS version 26 was utilized for data entry and analysis. Continuous variables are presented as mean ± SD, while categorical variables are shown as frequencies and percentages. To compare ODS scores at various time intervals for data not following a normal distribution, the Wilcoxon signed-rank test was employed. The chi-square test or Fisher's exact test was applied

to evaluate the relationship between categorical predictor variables and clinical outcomes. A *P*-value of less than 0.05 was considered statistically significant [Figure 1].

RESULTS

The sociodemographic and anthropometric data of the 42 study participants are shown in Table 1. The mean age of the cohort was 40.6 ± 14.2 years, with the highest percentage (33.3%) being in the age group 31–45 years. Most of the participants were female (69%), and housewives were the largest occupational group (54.8%). The mean BMI was 25.4 ± 3.2 kg/m², 45.2% of whom were overweight and 16.7% obese [Table 1].

The mean symptom duration was 13.5 ± 4.7 months, with 54.8% of patients symptomatic for >12 months. The most common features were incomplete evacuation (95.2%), straining (92.9%), repeated toilet visits (81.0%), assisted evacuation (73.8%), and rectal bleeding (33.3%). Fecal incontinence and abdominal distention were uncommon [Figure 2].

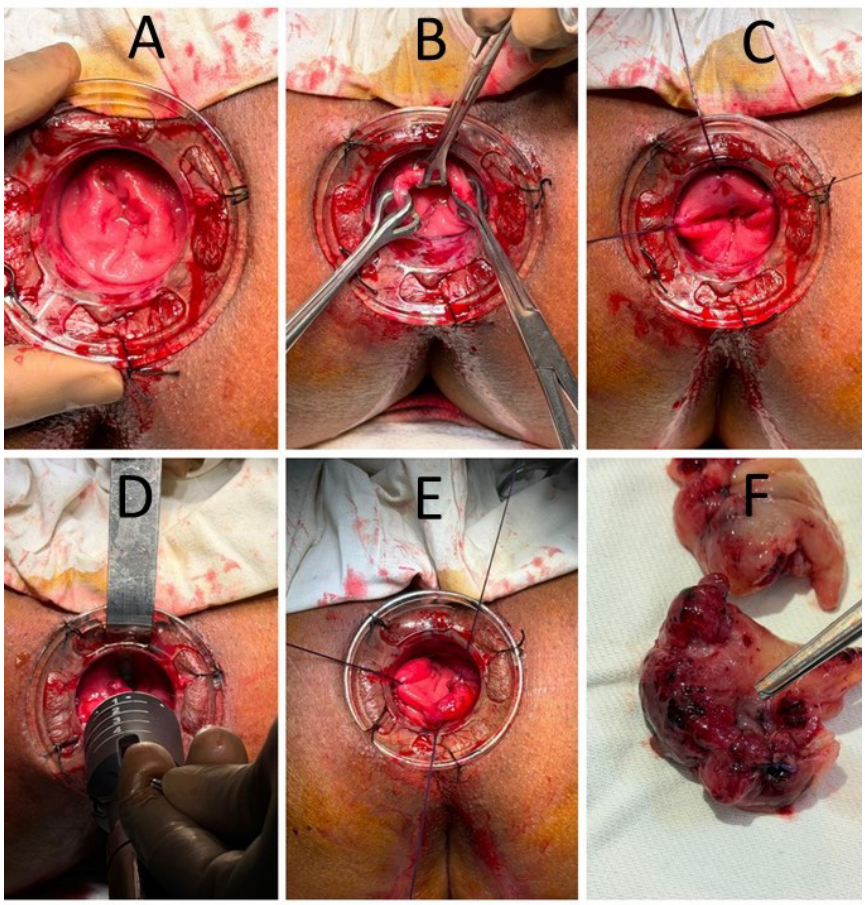


Figure 1: Operational steps of STARR. (A) Rectal internal prolapse (Preoperative), (B) Babcock's fixation of prolapsed segment in 3 positions, (C) Purstrings sutures taken and parachuting at 9.12 and 3 o'clock position, (D) Circular staplers used to resect and anastomose anterior prolapse, (E) Posterior rectal prolapse, (F) Resected rectal walls.

Table 1: Sociodemographic and anthropometric profile of the study population ($N = 42$)

Variable	Category	*n* (%)/Mean ± SD
Age (years)	Mean ± SD	40.6 ± 14.2
≤30 years	12 (28.6%)	
31–45 years	14 (33.3%)	
46–60 years	12 (28.6%)	
>60 years	4 (9.5%)	
Sex	Male	13 (31.0%)
Female	29 (69.0%)	
Occupation	Housewife	23 (54.8%)
Service holder	7 (16.7%)	
Business	5 (11.9%)	
Student	7 (16.7%)	
Height (meters)	Mean ± SD	1.58 ± 0.09
Weight (kg)	Mean ± SD	62.7 ± 7.1
BMI (kg/m²)	Mean ± SD	25.4 ± 3.2
BMI category	Underweight	2 (4.8%)
Normal weight	14 (33.3%)	
Overweight	19 (45.2%)	
Obese	7 (16.7%)	

About one-third of patients (31.0%) had a history of previous pelvic surgery, while 47.6% had no comorbidities. Among women, 51.7% were para ≥3 and 41.4% were postmenopausal. Only 16.7% had received preoperative biofeedback therapy, for a mean duration of 5.9 ± 1.5 months [Figure 3].

Grade III internal rectal prolapse was predominant (71.4%), followed by Grade IV (16.7%) and Grade II (11.9%). Moderate rectocele was most common (38.1%), followed by mild (23.8%) and severe (9.5%), while 28.6% had no rectocele. Partial uterovaginal prolapse was present in 41.4% of women, with a few cases showing cystocele, enterocele, or pelvic floor descent [Table 2].

The mean operative time was 116.4 ± 17.8 minutes, and the mean hospital stay was 2.9 ± 0.6 days. Perioperative complications occurred in 33.3% of patients. Common postoperative events included fecal urgency (73.8%), proctalgia (40.5%), urinary retention (35.7%), and minor rectal bleeding (33.3%). Anastomotic stenosis

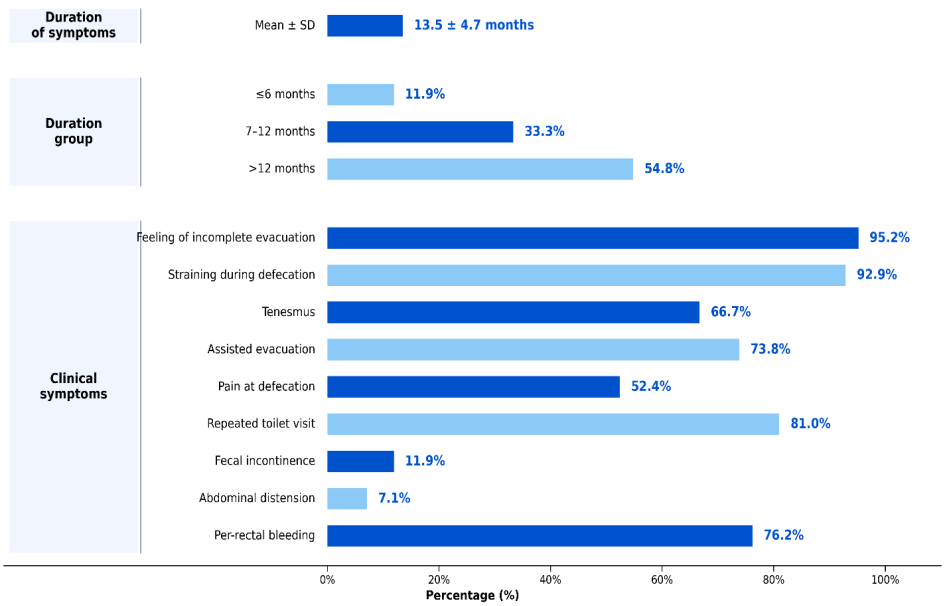


Figure 2: Clinical presentation of obstructed defecation syndrome.

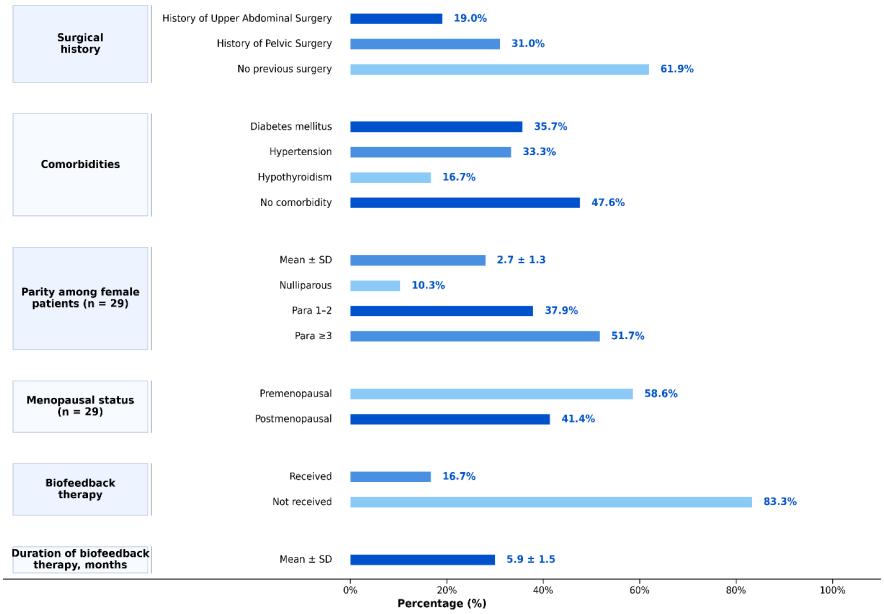


Figure 3: History, comorbidities, parity, menopausal status, and biofeedback therapy.

Table 2: Preoperative anatomical and pelvic floor findings of the study population

Variable	Category	*n* (%)
Internal rectal prolapse	Grade II	5 (11.9%)
Grade III	30 (71.4%)	
Grade IV	7 (16.7%)	
Rectocele	No	12 (28.6%)
Mild	10 (23.8%)	
Moderate	16 (38.1%)	
Severe	4 (9.5%)	
Uterovaginal prolapse (*n* = 29)	No	17 (58.6%)
Partial	12 (41.4%)	
Cystocele	Yes	6 (14.3%)
Enterocele	Yes	2 (4.8%)
Pelvic floor descent	Yes	6 (14.3%)

occurred in 9.5%, while recurrence was observed in 4.8% [Table 3].

All eight Revised Modified Longo ODS subscale scores and the total score significantly decreased at 3 and 6 months postoperatively ($P < 0.001$). The mean total score improved from 15.2 ± 3.3 at baseline to 4.4 ± 1.1 at 3 months and 3.4 ± 0.9 at 6 months, indicating progressive and sustained improvement after STARR [Table 4].

A good clinical outcome was achieved in 88.1% of patients. Normal BMI was significantly associated with better outcomes than overweight/obesity (100% vs. 80.8%; $P = 0.048$), while recurrence was negatively associated with good outcomes ($P = 0.011$). Age, sex, symptom duration, prolapse grade, rectocele severity, and perioperative complications were not significant predictors [Table 5].

A good clinical outcome was defined as ≥50% reduction in total Modified Longo ODS score at 6 months

Discussion

This study demonstrated that STARR is a very effective surgical procedure for ODS secondary

Table 3: Operative profile and postoperative complications of the study population

Variable	Category	*n* (%)/ Mean ± SD
Duration of operation (minutes)	Mean ± SD	116.4 ± 17.8
Duration of operation	≤100 minutes	10 (23.8%)
101–120 minutes	20 (47.6%)	
>120 minutes	12 (28.6%)	
Peroperative complication	Yes	14 (33.3%)
Hospital stay (days)	Mean ± SD	2.9 ± 0.6
Hospital (stay)	≤2 days	9 (21.4%)
3 days	27 (64.3%)	
≥4 days	6 (14.3%)	
Minor per-rectal bleeding	Yes	14 (33.3%)
Fecal urgency	Yes	31 (73.8%)
Acute urinary retention	Yes	15 (35.7%)
Proctalgia	Yes	17 (40.5%)
Anastomotic dehiscence	Yes	6 (14.3%)
Anastomotic stenosis	Yes	4 (9.5%)
Recurrence	Yes	2 (4.8%)
Dyspareunia (n = 29)	Yes	7 (24.1%)

Table 4: Revised Modified Longo ODS score before and after STARR

Variable	Category	Preoperative Mean ± SD	3-month Mean ± SD	6-month Mean ± SD	*P*-value
Medication to evacuate	Score Range 0–3	1.6 ± 0.7	0.4 ± 0.4	0.3 ± 0.4	<0.001
Difficulties in evacuating	Score Range 0–3	2.1 ± 0.6	0.7 ± 0.4	0.5 ± 0.4	<0.001
Digitization to evacuate	Score Range 0–3	2.0 ± 0.6	0.5 ± 0.5	0.4 ± 0.4	<0.001
Return to the toilet to evacuate	Score Range 0–3	1.9 ± 0.6	0.4 ± 0.5	0.3 ± 0.4	<0.001
Feeling of incomplete evacuation	Score Range 0–3	2.2 ± 0.5	0.6 ± 0.5	0.5 ± 0.4	<0.001
Straining to evacuate	Score Range 0–3	2.3 ± 0.5	0.7 ± 0.5	0.5 ± 0.4	<0.001
Time needed to evacuate	Score Range 0–3	2.0 ± 0.6	0.8 ± 0.5	0.7 ± 0.4	<0.001
Lifestyle alteration	Score Range 0–3	1.1 ± 0.4	0.3 ± 0.4	0.2 ± 0.3	<0.001
Total ODS score	Score Range 0–24	15.2 ± 3.3	4.4 ± 1.1	3.4 ± 0.9	<0.001

to rectocele and internal rectal prolapse, with a high clinical outcome rate of 88.1% (at 6 months, ≥50% reduction in the Revised Modified Longo ODS Score). The results are consistent with Ribaric et al., who indicated that STARR is a safe and effective surgical treatment in the armamentarium for ODS.[11] The predominantly female participants (69%) and the mean age of 40.6 years are consistent with Abd et al., which is known to occur more frequently in multiparous women of reproductive and perimenopausal age.[12] Among female patients, 51.7% were para

Table 5: Association between selected factors and good clinical outcome at 6 months

Variable	Category	Good outcome *n* (%)	Poor outcome *n* (%)	*P*-value
Overall outcome	Total	37 (88.1%)	5 (11.9%)	
Age group	≤45 years	24 (92.3%)	2 (7.7%)	0.421
>45 years	13 (81.3%)	3 (18.8%)		
Sex	Male	12 (92.3%)	1 (7.7%)	0.643
Female	25 (86.2%)	4 (13.8%)		
BMI category	Normal BMI	14 (100.0%)	0 (0.0%)	0.048
Overweight/obese	21 (80.8%)	5 (19.2%)		
Duration of symptoms	≤12 months	18 (94.7%)	1 (5.3%)	0.276
>12 months	19 (82.6%)	4 (17.4%)		
Internal rectal prolapse	Grade II/III	32 (91.4%)	3 (8.6%)	0.188
Grade IV	5 (71.4%)	2 (28.6%)		
Rectocele severity	No/mild	21 (95.5%)	1 (4.5%)	0.139
Moderate/severe	16 (80.0%)	4 (20.0%)		
Peroperative complication	No	26 (92.9%)	2 (7.1%)	0.291
Yes	11 (78.6%)	3 (21.4%)		
Recurrence	No	37 (92.5%)	3 (7.5%)	0.011
Yes	0 (0.0%)	2 (100.0%)		

≥3 and 41.4% were postmenopausal, highlighting the potential role of obstetric and hormonal factors in pelvic floor dysfunction. The high baseline ODS score (15.2 ± 3.3) significantly decreased to 4.4 ± 1.1 at 3 months and 3.4 ± 0.9 at 6 months ($P < 0.001$), confirming sustained improvement after STARR.[8] All subscales, such as evacuation difficulty, straining, digitization, and sensation of incomplete evacuation, demonstrated significant and marked improvements, in line with Videlock et al.[13] The clinical relevance of the finding that normal BMI was significantly associated with good clinical outcome at 6 months ($P = 0.048$) is clinically relevant. The good outcome rate was 100% for patients with normal BMI, and 80.8% for patients with overweight/obese BMI. The good outcome rate was 91.4% for Grade II/III Internal rectal prolapse and 71.4% for Grade IV Internal rectal prolapse. The good outcome rate was 95.5% for mild rectocele and 80% for Moderate and Severe rectocele ($P = 0.139$). These trends indicate that the severity of disease could be a factor in outcome, and larger studies may validate these as important predictors.[14–16] This finding reinforces the idea of including BMI optimization, categorization of rectocele, and internal rectal prolapse in the pre-operative counselling of patients who are being considered for STARR.[17] Minor per-rectal bleeding (33.3%) is a nearly universal immediate postoperative occurrence and is generally self-limiting.[18] Fecal urgency, the most functionally significant early complication, was seen in 73.8% of patients, a rate somewhat higher than the 40–65% range reported by Fawson et al., which may reflect differences in patient population, scoring definitions, or follow-up rigor.[19] Anastomotic dehiscence (14.3%) and stenosis (9.5%) occurred in a small proportion of patients. Proctalgia (40.5%) and urinary retention (35.7%) were also reported and were mostly managed conservatively. Recurrence occurred in 4.8% of patients and was significantly associated with poorer outcomes ($P = 0.011$). The mean operative time

(116.4 ± 17.8 minutes) and hospital stay (2.9 ± 0.6 days) support the minimally invasive and short-stay nature of STARR.[20,21]

Limitations of the Study

The limitations of this study include the relatively small sample size (n = 42), as well as the short follow-up period (6 months), which may limit the generalizability of the results and prevent the evaluation of long-term outcomes and late recurrence rates.

Conclusion

STARR is an effective treatment for obstructed defecation syndrome, achieving good clinical outcomes in 88.1% of patients at 6 months. It significantly improves ODS symptoms, with acceptable and mostly conservatively managed complications. Grade II/III internal rectal prolapse, mild rectocele, and absence of recurrence predict better outcomes. STARR is therefore a valid option after failed conservative therapy, with BMI optimization recommended before surgery.

Recommendations

Multicenter randomized controlled trials with larger numbers of patients and longer follow-up periods (at least 2 years) are recommended to definitively confirm the durability of STARR outcomes and validate BMI, rectocele severity, and prolapse grade as independent predictors of surgical success in ODS.

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