Original Article

Functional Outcome of Laparoscopic Ventral Mesh Rectopexy in Internal Rectal Prolapse

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ABSTRACT:

Background: *In recent decades, a variety of surgical techniques have been developed to restore defecatory function in individuals with Obstructive Defecation Syndrome (ODS), either transanal, perineal, or abdominal. Nevertheless, none of these has been suggested as the best surgical technique to date. One of such transabdominal techniques for pelvic anatomic repair is laparoscopic ventral mesh rectopexy (LVMR), which was initially presented by D'Hoore in 2004. A related indication for LVMR is high-grade internal rectal prolapse (IRP) and/or complex rectocele with uncontrollable ODS symptoms. Additionally, it permits rectocele, enterocele, and vault prolapse correction while maintaining the pelvic floor's neuromuscular function, which improves the functional complaints related to the IRP.*

Methods: *The Department of Colorectal Surgery at BMU, Dhaka, undertook this prospective observational study between March 2023 and February 2024. The study comprised patients over 30 who had symptomatic internal rectal prolapse and had not responded to conservative treatment with laxatives and pelvic floor exercises. Patients with incomplete families were also disqualified. After outlining the specifics of the treatment, including its benefits and drawbacks, informed written consent was acquired. A thorough physical examination, a complete colonoscopy, and an MR defecography were performed. A pre-made SPSS data sheet was used to record the results of the surgical surgery, each operative complication, the length of the procedure, the type of mesh, any further procedures, and the postoperative recuperation.*

Results: *LVMR was performed on 19 people in our study who had ODS as a result of IRP. 73.68% of participants were over 41, 79% were female, and 73.68% had a normal BMI. The most common symptoms were fecal incontinence (21.05%), incomplete evacuation (84.21%), straining (63.16%), and assisted evacuation (100%). 52.63% had had surgery in the past. According to results from magnetic resonance defecography (MRD), 36.84% had Grade 3 IRP and 47.37% had Grade 4 IRP. With few difficulties and no conversion to open surgery, the average operative time was 125±16.29 minutes. The long-term effectiveness of the surgery was demonstrated by the mean ODS score, which considerably (p value < 0.0001) improved from 21.0 ± 1.8 preoperatively to 15.47 ± 1.35 at 3 months and further dropped to 10.37 ± 1.61 at 6 months (p value < 0.0001). Most patients (n=12) were discharged after 3 days, reflecting a relatively short hospital stay and favorable recovery outcomes.*

Conclusion: *For patients with ODS brought on by IRP, LVMR is a safe and efficient surgical technique. It provides good functional outcomes with few problems. However, more extensive research is required to identify the best course of treatment for IRP.*

Key Words:
Laparoscopic Ventral Mesh Rectopexy (LVMR), Internal Rectal Prolapse (IRP), Obstructive Defecation Syndrome (ODS), Functional Outcome

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Introduction

Obstructed Defecation Syndrome (ODS) is a complex clinical subtype of functional constipation characterized by the impaired evacuation of stool from the rectum, affecting approximately 7% of the adult population.1 The etiology involves a combination of functional and anatomical abnormalities, most notably internal rectal prolapse (IRP), rectocele, pelvic floor dyssynergia, and perineal descent.2 ODS predominantly affects middle-aged women and is associated with risk factors including irritable bowel syndrome (IBS), prior pelvic surgeries (such as hysterectomy), pelvic organ prolapse (POP), and polypharmacy.2,3 Clinical presentation typically includes excessive straining, prolonged defecation time, a sensation of incomplete evacuation, and the necessity for digital maneuvers (rectal or vaginal digitation) to facilitate stool passage.2

ODS is frequently described as an "iceberg syndrome," where overt anatomical defects may mask occult conditions such as anismus, slow-transit constipation, pudendal neuropathy, and psychological distress, all of which can adversely affect surgical outcomes.4 Consequently, meticulous patient selection is paramount.5 Diagnostic evaluation necessitates a comprehensive clinical assessment—including digital rectal and vaginal examinations—supplemented by specialized investigations such as anorectal manometry, colonic transit studies, and Magnetic Resonance Defecography (MRD).6

While conservative management remains the primary intervention, approximately 20% of patients require surgery.6 For high-grade IRP (Oxford Grade III–IV) refractory to conservative measures, Laparoscopic Ventral Mesh Rectopexy (LVMR) has become a preferred transabdominal approach .7-11 LVMR corrects anatomical descent while avoiding posterior rectal mobilization, thereby preserving autonomic innervation and reducing the risk of de novo constipation.7 However, functional improvements vary, and long-term data regarding recurrence and mesh-related complications remain limited.8,9 This study aims to evaluate the functional outcomes of LVMR in patients with IRP using the Modified Longo's ODS (MODS) score to assess its efficacy in clinical practice.

Methodology

This prospective observational study was conducted at the Department of Colorectal Surgery, Bangladesh Medical University (BMU), between March 2023 and February 2024. Using purposive sampling, 19 patients with ODS secondary to high-grade IRP who failed conservative therapy (laxatives and pelvic floor exercises) were enrolled. Symptomatic IRP (with or without associated rectocele or fecal incontinence), age >30 years, and failure of a 6-month trial of conservative management were included. Patients with external rectal prolapse, pelvic floor dyssynergia (anismus) responsive to biofeedback, chronic pelvic pain, malignancy, inflammatory bowel disease (IBD), pregnancy, or those unfit for general anesthesia were excluded.

Result: Table 1 shows that the age distribution of participants shows that the majority were between 41 to 50 years old, representing 57.89% of the total. Participants aged between the mean age of the participants was 49.32 year.

Table 1: Age distribution of the respondents (n=19)

Age (years)	Frequency	Percentage (%)
31-40	5	26.32
41-50	11	57.89
>50	3	15.79
Mean ± SD	**49.32 ± 7.62**	

n = Number of subjects

The most frequently reported symptom in patients of IRP, were Assisted evacuation, affecting 100% of participants. Feeling of incomplete evacuation was also common, reported by 84.21% of respondents, while 63.16% reported increased straining.

Table 2: Distribution of our patients on symptoms of IRP (n=19)

Symptom	Frequency	Percentage (%)
Feeling of incomplete evacuation	16	84.21
Straining	12	63.16
Assisted evacuation	19	100
Pain at defecation	07	36.84
Repeated toilet visit	06	31.58
Fecal incontinence	04	21.05
Abdominal Distension	03	15.79
Per-Rectal Bleeding	02	10.53

n = Number of subjects

Table 3: Comparison of MODS Longo's score before and 3rd month after operation (n=19)

ODS score	Preoperative	Postoperative 3rd month	P value
Medication to evacuate (enemas or suppositories)	2.21 ± 0.71	1.47 ± 0.7	0.0009
Difficulties to evacuate	2.42 ± 0.77	2.26 ± 0.73	0.083
Digitation to evacuate	2.79 ± 0.42	1.89 ± 0.57	0.001
Return to toilet to evacuate	2.53 ± 0.51	1.89 ± 0.74	0.002
Feeling of incomplete evacuation	2.95 ± 0.32	1.53 ± 0.7	0.001
Straining to evacuate	2.63 ± 0.6	2.53 ± 0.61	0.163
Time needed to evacuate	2.84 ± 0.37	2.21 ± 0.63	0.0008
Lifestyle Alteration	2.68 ± 0.48	2.58 ± 0.51	0.1628
Mean MODS score	**21.05 ± 1.78**	**15.47 ± 1.35**	**0.0001**

n = Number of subjects

P value ≤0.05 was considered statistically significant. Paired t -test was done to measure the level of significance.

MODS scores before LVMR and after 3rd months of surgery demonstrates an improvement in patient symptoms. The mean MODS score dropped from 21.05 ± 1.78 preoperatively to 14.68 ± 1.41 postoperatively at 3rd months, indicating a substantial reduction (26.57%) in the severity of symptoms. Key aspects such as the need for medication to evacuate, digitation to evacuate and feelings of incomplete evacuation all showed marked improvement.

Table 4: Comparison of MODS Longo's score before and 6th month after operation (n=19)

ODS score	Preoperative	Postoperative 3rd month	P value
Medication to evacuate (enemas or suppositories)	2.21 ± 0.71	0.58 ± 0.51	0.0001
Difficulties to evacuate	2.42 ± 0.77	2.11 ± 0.81	0.055
Digitation to evacuate	2.79 ± 0.42	0.16 ± 0.37	0.0001
Return to toilet to evacuate	2.53 ± 0.51	0.53 ± 0.51	0.0001
Feeling of incomplete evacuation	2.95 ± 0.32	0.74 ± 0.45	0.0001
Straining to evacuate	2.63 ± 0.6	2.47 ± 0.61	0.083
Time needed to evacuate	2.84 ± 0.37	0.37 ± 0.5	0.0001
Lifestyle Alteration	2.68 ± 0.48	2.53± 0.51	0.0828
Mean MODS score	**21.05 ± 1.78**	**10.37 ± 1.61**	**0.0001**

P value ≤0.05 was considered statistically significant.

Paired t -test was done to measure the level of significance.

MODS Longo's scores before and after 6th months of surgery shows a significant improvement in patient symptoms. The mean MODS score dropped from 21.05 ± 1.78 preoperatively to 10.37 ± 1.61 postoperatively at 6th months that is 50.61% reduction indicating overall improvement in the severity of symptoms. Key aspects such as the need for difficulty in evacuation, and lifestyle alteration a showed no significant improvements. Additionally, lifestyle alterations caused by the condition were notably lessened post-surgery.

Table 5: Comparison of MODS score of our patients (n=19)

	MODS score (mean ± SD)	P value
Pre-operative	21.05 ± 1.78	
At 3rd month	14.68 ± 1.41	0.0001
At 6th month	10.37 ± 1.61	0.0001

n = Number of subjects

P value ≤0.05 was considered statistically significant Paired t -test was done to measure the level of significance.

Postoperative MODS scores of patients at two follow-up intervals shows progressive reduction in MODS scores. The mean MODS Longo's score at the 3rd month post-surgery was 14.68 ± 1.41 indicating a significant initial improvement from the preoperative scores. By the 6th month, the mean MODS score further decreased to 10.37 ± 1.61 showing continued and substantial symptom relief over time. The difference was again statistically significant (<0.0001).

Discussion

Laparoscopic ventral mesh rectopexy (LVMR) is increasingly used for external and internal rectal prolapse (ERP, IRP), symptomatic rectocele, and pelvic organ prolapse (POP), though its efficacy in ODS due to IRP remains debated. In this observational study of 19 patients at BSMMU, the majority were middle-aged women, consistent with the higher prevalence of pelvic floor disorders in females.10-13 Most patients presented with high-grade IRP, rectocele, and symptoms of incomplete evacuation, straining, and fecal incontinence, aligning with previous reports.14,15

All patients had failed conservative management, including pelvic floor exercises and biofeedback. Preoperative MR defecography allowed accurate assessment of IRP severity and associated multicompartment pelvic defects, guiding surgical planning.16 LVMR was completed laparoscopically in all cases, with a mean operative time of 125 ±16 min and minimal perioperative complications. Mesh type and fixation varied, with no mesh-related

complications observed during the study period. Postoperative recovery was rapid, with a mean hospital stay of 2.9 ±0.57 days. Minor complications included transient urinary complaints, port-site infections, and pelvic pain, while major complications were rare.17,18 Functional outcomes, assessed using the Modified Longo's ODS score, demonstrated significant improvement, with mean scores decreasing from 21.05 ±1.78 preoperatively to 10.37 ±1.61 at six months, reflecting substantial symptom relief. Enema use, digitation, and incomplete evacuation improved markedly, while persistent straining and evacuation difficulty in a few patients likely reflected long-standing disease or concomitant slow-transit constipation .19,20 No recurrences were observed during the six-month follow-up, though long-term recurrence rates in IRP may range 20–30%.21,22

Overall, LVMR is effective for IRP-associated ODS, offering significant functional improvement, minimal impact on continence, low complication rates, and rapid recovery. The MODS Longo's score proved a useful, standardized tool for preoperative assessment, postoperative monitoring, and patient counseling. Long-term follow-up and larger studies are needed to evaluate durability, recurrence, and optimization of outcomes in patients with IRP.23,24

Conclusion

LVMR is a safe and effective surgical option for IRP causing ODS, resulting in significant symptom relief and improved MODS Longo's scores. While some subjective symptoms such as straining may persist, the procedure offers low morbidity, preserves continence, and allows standardized evaluation using the MODS Longo's score. Careful preoperative assessment, patient selection, and postoperative follow-up are essential to optimize outcomes

Limitations

While this study provides valuable insights, it is limited by a lack of long-term follow-up to assess the durability of the observed outcomes. Additionally, the unavailability of anal manometry and colonic transit studies precluded the integration of objective physiological data into our analysis.

Ethical Issues: Ethical clearance was taken from IRB.

Conflict of Interest: There is No conflict of interest.

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