ORIGINAL ARTICLE

Outcomes of Laparoscopic Posterior Rectopexy Combined with Transperineal Levatorplasty in Management of Rectal Intussusception with Descending Perineum Syndrome

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Abstract

Background: ***One complication of fecal evacuation is rectal intussusception (RI), which goes by several names: internal intussusception, internal procidentia, occult rectal prolapse, intrarectal prolapse, and other similar terms.***

Aim and objectives: ***To detect the outcomes of laparoscopic posterior rectopexy combined with transperineal levatorplasty in the management of patients complaining of RI associated with descending perineum syndrome.***

Subjects and methods: ***This prospective study was conducted on 53 patients, who were selected from attendants to the General Surgery outpatient clinic, General Surgery department, Al-Azhar University Hospitals, from December 2022 to December 2024.***

Results: ***Significant improvements were noted in fecal incontinence and constipation. The Cleveland Clinic Incontinence Score(CCIS) showed a median preoperative score of 14.5, dropping to a median of 0 postoperatively, with 78.6% of patients showing improvement(49.1% fully continent, 28.3% with minor issues). This improvement was more pronounced in younger patients, with older age correlating with persistent incontinence(p=0.048). For constipation, the median Wexner Score decreased between 6.5-2, with 77.1% of patients experiencing amelioration(35.8% cured, 15.1% improved).***

Conclusion: ***Our study contributes important data to the evolving landscape of pelvic floor reconstructive surgery. The integration of laparoscopic posterior rectopexy with transperineal levatorplasty not only restores the anatomical position of the rectum but also reinforces the pelvic floor, leading to significant improvements in quality of life. As surgical techniques continue to evolve, the emphasis on a holistic approach addressing both structure and function will remain paramount in achieving optimal outcomes for patients suffering from complex pelvic floor disorders.***

Keywords: Laparoscopic posterior rectopexy; Transperineal levatorplasty; Rectal intussusception

1. Introduction

One complication of fecal evacuation is rectal intussusception (RI), which goes by several names: internal intussusception, internal procidentia, occult rectal prolapse, intrarectal prolapse, and other similar terms.[1]

Rectal intussusception has come a long way in terms of both diagnosis and therapy since it was initially described. Nevertheless, a lot of concerns remain unresolved, and the optimal course of treatment is not yet apparent.[2]

Not much is known about the causes or pathophysiology of RI. One school of thinking holds that RI develops into rectal prolapse over time, while the other holds that RI is a complication of other pelvic floor dysfunctions.[3]

Possible causes of RI include abnormalities of connective tissues or improper attachment of the rectum to the sacrum. The prevalence of rectal intussusception in people with defecation difficulties ranges from 12 to 31%.[4]

Defecography reveals rectal intussusception in 20–50% of asymptomatic volunteers, according to studies. Rectorectal intussusception and low-grade rectal intussusception are the same thing, although high-grade RI is more severe.[5]

In terms of diagnosis, MRI defecography or evacuation proctography is considered to be the gold standard. Perineal descent, puborectalis length, and anorectal angle are all measured. Rectocele and other anatomical anomalies can be easily detected with this diagnostic method.[4]

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Rectopexy of the abdomen region can be accomplished in a number of ways, including via excision, biologic or prosthetic mesh, or suture. Ventral and posterior approaches, as well as open and laparoscopic methods, are possible.[6]

The purpose of this research was to identify the results of transperineal levatorplasty in conjunction with laparoscopic posterior rectopexy for the treatment of patients with descending perineum syndrome presenting with RI.

2. Patients and methods

This prospective study was conducted on 53-patients, were selected from attendants to General Surgery outpatient clinic, General surgery department, Al-Azhar University Hospitals from December 2022 till December 2024.

Ethical consideration:

We discussed the study's goals and methodology, as well as the risk-benefit analysis, with potential participants before we admitted them. Pupils gave their informed permission.

Inclusion criteria:

Patients aged more than 18 years old, both males and females, are fit for laparoscopic surgery, patients are fit for general anesthesia, and all patients must be diagnosed clinically and radiologically as rectal intussusception with descending perineum syndrome and have failed previous conservative treatment.

Exclusion criteria:

Age less than 18years old, history of previous surgical treatment for rectal intussusception, anorectal and colonic findings unrelated to rectal intussusception and descending perineum syndrome, i.e., cancer rectum, patient who is unfit for laparoscopic surgery, patient who is unfit for general anesthesia, and pregnant females.

Work Up:

A thorough history and present history were taken from each patient (Constipation or symptoms of difficult evacuation, fecal incontinence, bleeding per rectum or bloody mucous discharge, and anal pain).

Discomfort in defecating or otherwise removing waste. Preoperative constipation was defined as a score of 5 or above on the Wexner Constipation Scoring System, which has a minimum score of 0 and a maximum score of 30.[7]

The Jorge-Wexner score, also known as the Cleveland Clinic Incontinence Scale (CCIS), is the gold standard for gauging the success of incontinence surgery treatments for people with fecal incontinence. A total of 0–20 (where 0=perfect continence and 20=complete incontinence) is returned by this scoring method after cross-tabulating frequencies and various anal incontinence presentations (Gas, Liquid, Solid, Pad use, Need for lifestyle modifications). Incontinence prior to surgery was defined as a score of 5 or higher on the Wexner CCIS scale.[8]

General and local examination: Inspection, Palpation, Auscultation, Percussion, and digital rectal examination (DRE) were done. Colonoscopy and MRI defecography were also done.

Colonoscopy:

The presence of neoplasms or inflammatory bowel disease must be eliminated prior to rectal prolapse surgery. In addition, single rectal ulcers, which often indicate surgical therapy, are present in 10%-15% of individuals. This was done to rule out any unrelated illnesses, such as rectal cancer.

MRI defecography:

To catch all the important steps of feces step by step, brief radioscopic sequences and radiographs are used to video complete, uninterrupted evacuation: (i) when the rectum is filled with contrast while at rest; (ii) when the anal sphincters and pelvic floor muscles are contracted to their greatest capacity; (iii) when straining is being done but evacuation is not yet complete; (iv) when evacuation is underway; and (v) when resting, after evacuation is complete.

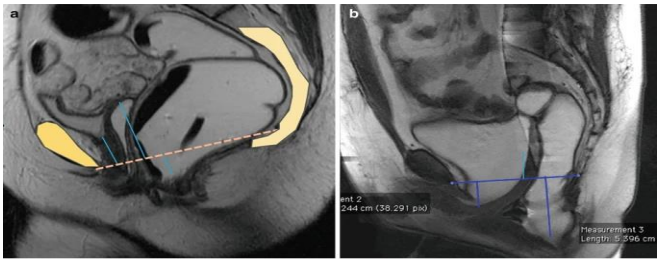

Figure 1. MRI defecography was performed on a patient undergoing an evacuation due to perineal descent in both the anterior and posterior compartments. a)The sagittal plane in a state of rest. (b) 'Pelvic floor descent' magnetic resonance fecography.

Among the parameters that are measured are the anorectal angle (ARA), which is an indirect measure of the activity of the puborectal muscles (average resting value=95-96 degrees, more acute during straining and more obtuse during relaxation), and the craniocaudal movement of the anorectal junction (ARJ), which represents the elevation and descent of the pelvic floor (normally less than 3.5cm relative to the resting position) during straining.

The effectiveness of this examination relies on the patient being calm and cooperative, thus it's important to explain the technique in a compassionate way to alleviate any fears or shame the patient may have.

When it comes to detecting and treating anatomical problems, pelvic organ prolapse, pelvic floor disorders, and other conditions that can affect the lower GI tract's function, these photos can be invaluable.

Surgical technique:

Laparoscopic posterior rectopexy:

Prior to the initiation of general anesthesia, all patients were administered a prophylactic antibiotic. A modified lithotomy posture with a Trendelenburg tilt was used to position the patient. The Veress needle was used in the closed approach to produce pneumoperitoneum. One 10 mm and three 5 mm ports were utilized.

The camera with a 30° telescope was attached to the 10mm umbilical port, which was positioned slightly to the right of the umbilicus. The working ports on the right and left sides of the body were each 5mm lower than the Para rectus.

Traction of the sigmoid colon was accomplished using an additional 5 mm port located in the suprapubic or left lumbar area. Starting at the sacral promontory, a peritoneal incision was created and continued all the way to the recto-vesical or recto-vaginal pouch.

A plane was penetrated that extended from the visceral layer of pelvic fascia that covers the mesorectum in the front to the presacral fascia that covers the presacral nerves in the back. All the way down to the pelvic floor, posterior mobilization was performed.

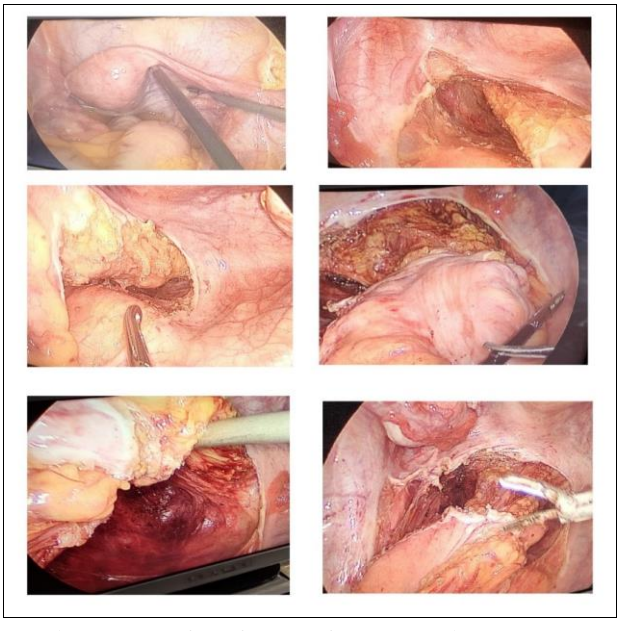

Figure 2. The deeper hypogastric nerves and more laterally positioned ureters are preserved by a superficial incision that is advanced caudally over the mesorectum's boundaries towards the pouch of Douglas. Careful hemostasis is necessary to maintain dissection in the mesorectal plane.

The hypogastric nerves and ureters were located and safeguarded. In order to reach the recto-vesical (or recto-vaginal) pouch, the procedure involved incising the left lateral peritoneal reflection and then extending the rectosigmoid.

There was a connection between the dissection planes on the right and left. In order to protect the lateral ligaments and nerves from damage, minor dissection was done on the right and left sides of the pelvis near the rectum.

The deep recto-vesical (or recto-vaginal) space was obliterated with minimal anterior incision. The 10mm camera port was used to insert a 15cm×10cm polypropylene mesh that was constricted at the tail end into the pelvis.

With great precision, the polypropylene mesh was positioned over the sacrum, extending caudally all the way to the levator ani. To secure the polypropylene mesh to the presacral fascia, it was either tacked or sewn along a 1-cm lateral to the midline, with the most proximal stitching occurring at the sacral promontory.

Each person's needs were taken into account when cutting the extra mesh and trimming the proximal corners. Two or three rows of polypropylene or PDS stitches were used on each side of the rectum to secure the mesh to its sidewall. Through the process of suturing back the divided peritoneal folds, the mesh is extra-peritonealized.

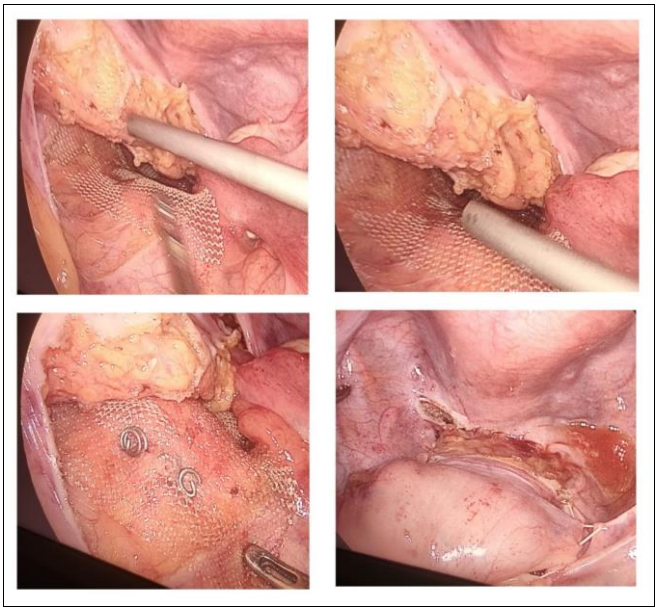

Figure 3. Tackering the mesh to the presacral fascia followed by peritoneal closure.

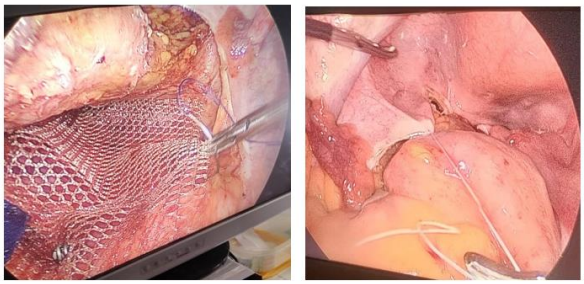

Figure 4. Two or three stitches were used on each side of the rectum to secure the mesh to its walls. Through the process of suturing back the divided peritoneal folds, the mesh is extra-peritonealized.

Transperineal levatorplasty:

A transverse perineal incision was done while the patient was in the lithotomy position. To successfully expose and plicate the levator ani muscles in males, the plane of dissection must be carefully determined to prevent harm to the urethra, prostate, and neurovascular systems. Dissecting the perineal body and subcutaneous tissue allows access to deeper tissues. Dissection begins immediately above the surviving external anal sphincter to reveal the levator ani muscles, primarily the pubococcygeus and iliococcygeus.

The levator muscles are able to be mobilized adequately in this plane, and the sphincter is protected from harm.

Deeper dissection into the pre-rectal area may be necessary to mobilize the rectum and support the pelvic floor in cases with substantial perineal descent or rectal intussusception. To prevent rectal injury, one must use caution. Be careful not to injure the perineal nerves, urethra, or bulbospongiosus muscle. Make sure the external anal sphincter stays intact.

To ensure proper hemostasis, diathermy was used to create a plane in females between the posterior vaginal wall and the external anal sphincter.

Rectocele, perirectal fascia, and levator ani were exposed by extending the dissection to the vaginal apex. When the lower rectum's longitudinal muscles diverged, it was determined that the rectocele had reached its upper limit. Beginning here, the repair was plicated in a midline fashion from proximal to distal until the rectocele was completely removed, the rectum's longitudinal muscle was approached, and the internal anal sphincter was rebuilt distally.

Sharp dissection was employed close to the rectum to prevent accidental rectal perforation in cases where deep dissection was necessary. A technique called an overlapping repair was used to approximate the external anal sphincter. This involved mobilizing and wrapping the two ends of the sphincter that had been ruptured.

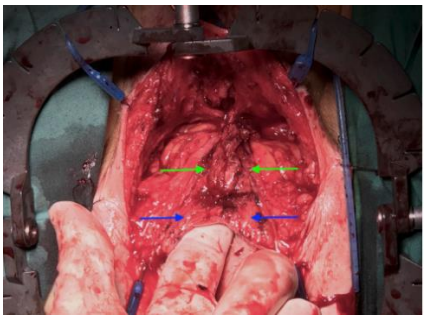

Figure 5. The external anal sphincter was approximated by mobilizing and wrapping the disturbed ends of the sphincter around each other (blue arrows) after the longitudinal muscles of the rectum were approximated (green arrows).

Postoperative Complications:

While generally low, potential complications can include infection, bleeding, and issues related to bowel function, such as constipation or transient fecal incontinence.

Statistical methods:

For all statistical calculations, the software SPSS (Statistical Package for the Social Sciences, SPSS Inc., Chicago, IL, USA) version 20 was utilized. When dealing with parametric data, quantitative information was given as the mean±standard deviation (SD). When dealing with non-parametric data, the median and range were used. Results from qualitative analyses were presented as percentages and frequencies. We used the Student's t-test to see how much the group changed.

3. Results

Table 1. Demographic data of the studied patients.

DEMOGRAPHIC DATA		NO=53
AGE	Mean±SD	50.70±13.90
	Range	28-71
GENDER	Female	34(64.2.0%)
	Male	19(35.8%)
FOLLOW UP	Mean±SD	17.55±2.01
	Range	6-18

According to Table 1, there were 19 males (35.7%) and 34 females (64.2%), ranging in age from 28 to 71. The mean±SD of the follow-up period, which varied from 6 to 18 months, was 17.55±2.01, (table 1).

Table 2. Incontinence in the patients under study before, throughout, and after six, twelve, and eighteen months

INCONTINENCE		NO=53
PRE	Median (IQR)	14.5(0-18)
	Range	0-20
6 MONTHS	Median (IQR)	0(0-5)
	Range	0-16
12 MONTHS	Median (IQR)	0(0-4)
	Range	0-15
18 MONTHS	Median (IQR)	0(0-3)
	Range	0-12
FRIEDMAN TEST		24.133
P-VALUE		0.000 (HS)

P-value <0.05 indicates significance (S); P-value

<0.01 indicates high significance (HS); P-value >0.05 indicates non-significant (NS)

According to the preceding table, the incontinence level ranged from 0 to 20 with a median (IQR) of 14.5 (0-18) prior to surgery. It then decreased after 6 months to range from 0 to 16 with a median (IQR) of 0 (0-5), at 12 months to range from 0-15 with a median (IQR) of 0 (0-4), and at 18 months to range from 0-12 with a median (IQR) of 0 (0-3). The difference was highly statistically significant, with a p-value <0.001, (table 2; figure 6).

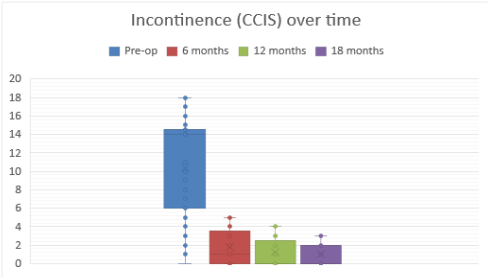

Figure 6. Incontinence among the studied patients pre, six, twelve, and eighteen months Follow-up.

Table 3. Constipation among the studied patients pre, six, twelve, and eighteen months Follow-up

CONSTIPATION (WEXNER)		NO=53
PRE	Median (IQR)	6.5(3.5-16)
	Range	2-19
6 MONTHS	Median (IQR)	3(2-5.5)
	Range	2-12
12 MONTHS	Median (IQR)	2(2 - 5)
	Range	1-12
18 MONTHS	Median (IQR)	2(1-4)
	Range	0-10
FRIEDMAN TEST		33.522
P-VALUE		0.000 (HS)

P-value <0.05 indicates significance (S); P-value<0.01 indicates high significance (HS); P-value>0.05 indicates non-significant (NS).

The previous table shows that, constipation was ranged preoperative from 2 to 19 with a median (IQR) of 6.5(3.5-16) decreased after 6 months follow up to range between 2-12 with median (IQR) of 3(2–5.5), also decreased at 12-months to range from 1-12 with median (IQR) of 2(2-5) and decreased also at 18 months to range from 0-10 with median (IQR) of 2(1-4) with a difference that is very statistically significant (p-value <0.001).(table 3; figure 7).

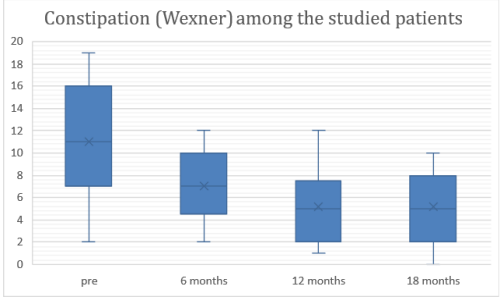

Figure 7. Constipation among the studied patients pre, six, twelve, and eighteen months Follow-up

Table 4. Incontinence and constipation results among the studied patients.

		NO.	%
INCONTINENCE (CCIS)	Fully continent	16	30.0%
	Degrees of incontinence	37	70.0%
	Cured	26	49.10%
	Improved	15	28.3%
	Persistent symptoms	11	20.8%
CONSTIPATION (WEXNER)	Free of constipation	19	35.8%
	Degrees of constipation	35	66.0%
	Cured	19	35.8%
	Improved	8	15.1%
	Persistent symptoms	7	13.2%

In the 16 patients who were entirely continent (30.0%), no negative effects were observed. 37 patients (70.0%) had some level of incontinence before to surgery. All except 11 individuals (20.8%) experienced a significant improvement in continence. 15 patients (28.3%) had only mild incontinence (score<5), whereas 26 of the 53 patients (49.1%) became completely continent. Fecal incontinence did not worsen or develop in any of the patients.

Postoperative Wexner scores showed a considerable improvement in participants who had preoperative constipation. Prior to surgery, 35 patients (66.0%) experienced constipation. Constipation was resolved in 19 patients (35.8%) and improved in 8 patients (15.1%) at 6 months after surgery, for a total of 27 out of 35 constipated patients (77.1%) who saw significant improvement. From 12 to 5.5, the median preoperative Wexner score dropped dramatically. Seven patients (13.2%) continued to experience constipation; no new or worsened instances were observed, (table 4; figure 8).

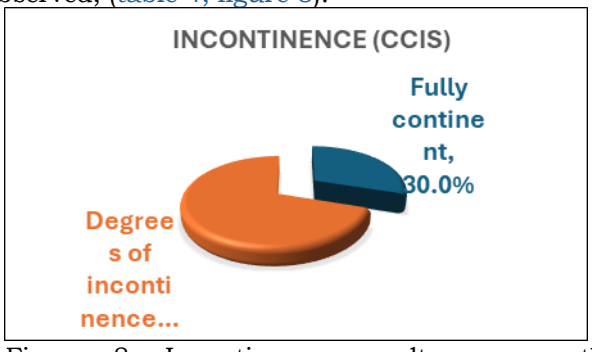

Figure 8. Incontinence results among the studied patients.

Table 5. Post operative outcomes.

POSTOPERATIVE OUTCOMES	TOTAL NO.		
RECURRENCE	53	Complete	2(3.8%)
		Partial	3(5.7%)
		No	48(90.6%)
CONSTIPATION	35	Improved	16(45.7%)
		Complete resolution	13(37.1%)
		Not improved	6(17.1%)
INCONTINENCE	19	Improved	4(36.36%)
		Complete resolution	7(63.64%)
		Not improved	8(42.11%)
SEXUAL AFFECTION	53	No	53(100%)
		Yes	0(0.0%%)
OVERALL SATISFACTION	53	Totally satisfied	43(81.1%)
		Fairly satisfied	10(18.9%)

Based on the data from our patients, there were 35 patients with constipation prior to surgery. After surgery, there were 13 patients (37.1%) with complete resolution, 16(45.7%) had improved regarding constipation symptoms, while 6(17.1%) stated that constipation was not improved.

In terms of incontinence, 19 patients were affected preoperatively. Post-operatively, 7 out of these 19(36.84%) achieved complete resolution, 4(21.05%) improved, while 8(42.11%) did not see improvement. No patients reported sexual affection issues post-surgery, and overall satisfaction was high with 81.1% reporting total satisfaction, (table 5; figure 9).

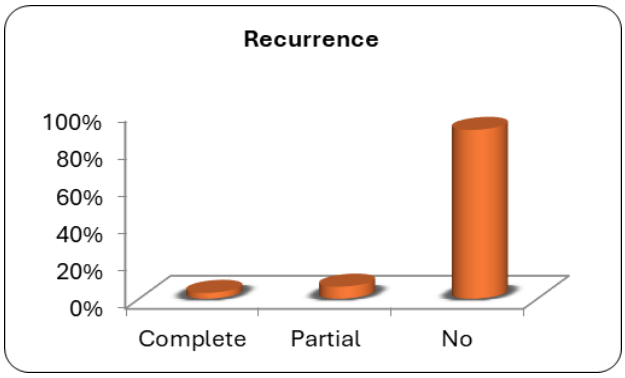

Figure 9. Recurrence results.

4. Discussion

Complex pelvic floor dysfunction and severe impairment in quality of life describe the problematic clinical entity known as rectal intussusception with descending perineum syndrome.

Isolated posterior rectopexy stabilizes the rectum but fails to address pelvic floor laxity, leaving patients at risk for persistent ODS and recurrence. Levatorplasty, by contrast, narrows the pelvic hiatus and restores levator ani tension, addressing the muscular weakness central to DPS.[9]

The average age of the 53 patients in our study was 50.70±13.90 years. In our series, 64.2% of the participants were female and 35.8% were male, which contradicts certain findings from Western cultures that show that full rectal prolapse mostly affects older women. (with reported female-to-male ratios ranging from 7:1 to 62% female in studies by El-Dhuwaib et al.[10]

This difference may be partially explained by regional etiological factors such as chronic straining and underlying pelvic floor disorders.

In our study, 15.1% of patients experienced recurrence, which is slightly higher than the recurrence rates reported in similar studies.

Dyrberg et al.,[11] noted a recurrence rate of 11.1% following laparoscopic posterior rectopexy.

Preoperatively, our patients exhibited a median incontinence score (CCIS) of 14.5 (range 0–20), which significantly decreased postoperatively to a median of 0 (range 0–3) at 18 months.

This substantial improvement is in agreement with previous studies that have reported fecal incontinence improvement rates ranging from 56% to 90% following laparoscopic posterior rectopexy.[11]

Byrne et al.,[12] found an overall reduction in Wexner incontinence scores postoperatively, confirming the positive impact of rectopexy on fecal incontinence.

A primary objective of the combined procedure is the restoration of fecal continence. In our study, significant improvements in incontinence were observed, and nearly 78.6% of patients experienced marked improvement.

Constipation, as measured by the Wexner score, significantly improved postoperatively in our study. The median Wexner constipation score declined from 6.5 (range 2–19) preoperatively to 2 (range 0–10) at 18 months.

This aligns with previous research indicating that laparoscopic rectopexy alleviates constipation symptoms in the majority of patients.[11]

The improvement in constipation may be attributed to the combined effect of restoring normal rectal positioning and the added benefit of levatorplasty, which reinforces pelvic floor support and improves evacuation dynamics.

In summary, our study's outcomes marked improvements in both fecal incontinence and constipation, acceptable recurrence rates, and high overall patient satisfaction are consistent with the broader body of literature.

The significant improvements in continence and the substantial decrease in constipation symptoms underscore the efficacy of combining anatomical repair with functional reinforcement.

4. Conclusion

Our study contributes important data to the evolving landscape of pelvic floor reconstructive surgery. The integration of laparoscopic posterior rectopexy with transperineal levatorplasty not only restores the anatomical position of the rectum but also reinforces the pelvic floor, leading to significant improvements in quality of life.

As surgical techniques continue to evolve, the emphasis on a holistic approach addressing both structure and function will remain paramount in achieving optimal outcomes for patients suffering from complex pelvic floor disorders.

Disclosure

The authors have no financial interest to declare in relation to the content of this article.

Authorship

All authors have a substantial contribution to the article

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Conflicts of interest

There are no conflicts of interest.

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