

## Research Article

## Posterior Mesh Rectopexy versus Resection Rectopexy in Complete Rectal Prolapse



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### Abstract

**Background:** Rectal procidentia (rectal prolapse) is a disabling condition. Surgical repair is the treatment of choice for candidates who have a full thickness rectal procidentia. Multiple procedures exist for the repair of rectal procidentia, however; none of them is most effective. **Methods:** This study was carried out at Minia University Hospital as a prospective non randomized study that compared laparoscopic posterior mesh rectopexy (Group A; n = 20) with Recto-sigmoidectomy (Group B; n = 20) for complete rectal prolapse as regards complications; functional outcomes (constipation and continence) and sexual functions after surgery. **Results:** The female to male ratio was 3: 2 and their ages ranged from 19-70 years with mean of 41.2 years. The operative time in the resection rectopexy group was significantly longer than the rectopexy group. No significant difference between the two groups regarding intraoperative complications (bleeding only). Resection rectopexy group had statistically significant drop in the constipation score than Posterior mesh rectopexy group with a mean score of 16.9 point(pre) and 2.3point(post) versus a score of 10.3point(pre) and 4.3point(post) respectively. There is no incontinence occurred in mesh rectopexy group but in resection rectopexy group; there were 6 patients developed incontinence with a range 0-20 point and mean 5.4 point The P-Value was 0.007 and it is statistically significant. Sexual functions are preserved in both groups. **Conclusion:** Although recto-sigmoidectomy seems to affect the continence, it improves constipation scores more significantly in patients with chronic constipation than the posterior mesh rectopexy. Sexual functions will be preserved in both operations.

**Keywords:** Rectal procidentia; Constipation; Fecal incontinence; Rectosigmoidectomy, Posterior mesh rectopexy.

### Introduction

Rectal prolapse is a disabling condition that negatively affect quality of life<sup>(1)</sup>. Rectal prolapse is either complete (full-thickness prolapse) or partial (mucosal prolapse); can also be classified into internal or external<sup>(2)</sup>. The incidence is higher in females, with a peak in the seventh decade<sup>(3)</sup>. Patients usually complain of fecal incontinence, which is thought to be a result of a chronic stretch of the anal sphincter and continuous stimulation of the recto-anal

inhibitory reflex by the prolapsed tissue<sup>(4)</sup>. Other symptoms include constipation, pain, bloody or mucous rectal discharge<sup>(5)</sup>. The abdominal approach is usually associated with better functional outcomes and lower recurrence while the perineal approach is usually reserved for patients with multiple comorbidities<sup>(6)</sup>.

Controversies exist regarding the best approach for laparoscopic rectopexy. Although laparoscopic posterior sutured rectopexy (LPSR) has

been widely used; more recently; laparoscopic mesh rectopexy (LMR) has gained widespread popularity<sup>(7)</sup>. In posterior mesh rectopexy; circumferential mobilization of the rectum distally to the levator ani musculature is done followed by fixation of the posterior wall of the rectum to the sacral promontory with mesh<sup>(8)</sup>. In Resection rectopexy; rectopexy is combined with recto-sigmoidectomy, this procedure is recommended for patients with an elongated sigmoid colon with significant constipation<sup>(9)</sup>.

### Patients and Methods

This study is a comparative prospective non randomized study comparing laparoscopic posterior mesh rectopexy and resection rectopexy in forty adult patients admitted at Minia University Hospital with complete rectal prolapse in the period from June 2020 to June

2022 as regards complications, functional outcomes (constipation and continence) and sexual functions after surgery. Patients were divided into 2 equal groups: group A; posterior mesh rectopexy group and group B; rectopexy with recto-sigmoidectomy. Patients above 18 years old with complete rectal prolapse or recurrence after perineal approaches were included. Unfit patients and those who refused surgery were excluded. Patients were examined for prolapsed mass with or without straining (in complete rectal prolapse there is a mass showing concentric mucosal folds usually protruding more than 5 cm) (Figure1,2), patulous anus, scar of previous operation, resting tone (Internal sphincter integrity), squeeze tone (external sphincter integrity), rectal mass, rectocele, muscular defects, soft tissue scarring and pin prick touch.



**Figure (1,2): Complete rectal prolapse.**

Laboratory Investigation included CBC, coagulation profile, liver and renal function tests. Radiological Investigations included barium study of the colon to detect redundancy of sigmoid colon, CT with contrast of the abdomen and pelvis to help in diagnosis of associated pelvic organ prolapse (i.e. cystocele, rectocele, enterocele, vault or cervical prolapse) and to exclude other lesions, colonoscopy for detection of other lesions (i.e. neoplasms, hemorrhoids, polyps) which may be the cause of repeated straining. Laparoscopic posterior mesh

rectopexy and rectopexy combined with recto-sigmoidectomy were analyzed for the following variables: time of operation, intraoperative complications, hospital stay, postoperative complications, constipation score by using the Cleveland Clinic Constipation Score<sup>(10)</sup>, fecal incontinence score by using the Cleveland Clinic Florida Fecal incontinence Score<sup>(11)</sup> and sexual function by using the Brief Sexual Function Inventory (BSFI) Test in males<sup>(12)</sup> and follow up including full thickness or mucosal recurrence, changes in bowel habits, fecal continence and sexual function.

### Surgical Technique

#### (A) Technique of Laparoscopic posterior rectopexy with mesh<sup>(13)</sup>:

The peritoneal cut for mobilization of the rectum begins on the right side of the base of the mesosigmoid immediately lateral to the inferior mesenteric artery (figure 3). Care must be taken to avoid injury of the presacral nerves underneath Waldeyer's fascia. It was important to identify the left ureter to avoid its injury. The

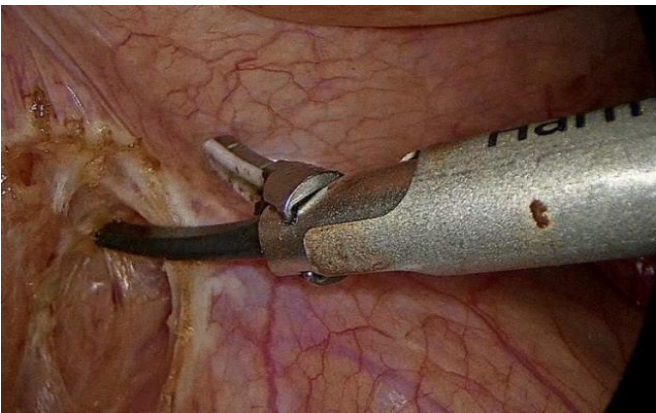


Figure (3): mobilization of the rectum.

mesh is positioned as the short limb lies transversely behind the rectum at the level of the promontory, encircling posterior and lateral rectal walls forming incomplete wrap, then the mesh is fixed to the presacral fascia (figure 4). The wings of the mesh (the two lateral ends) are fixed to the lateral rectal wall. Finally, the peritoneum is closed and the abdomen is reinflated.

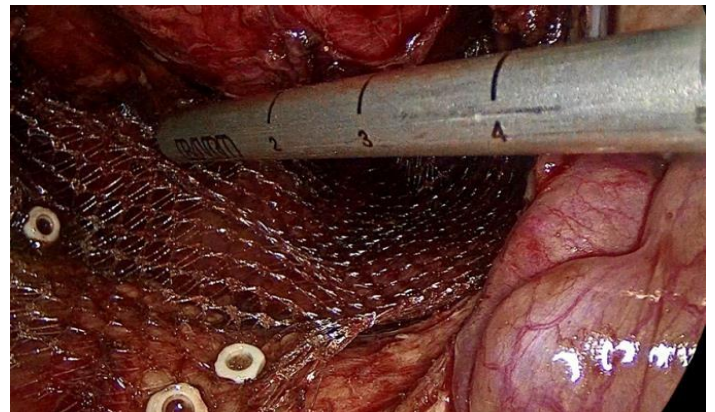
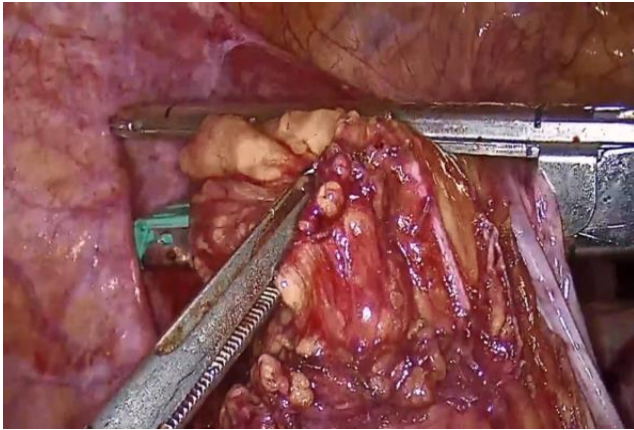


Figure (4): The mesh is fixed to the presacral fascia.

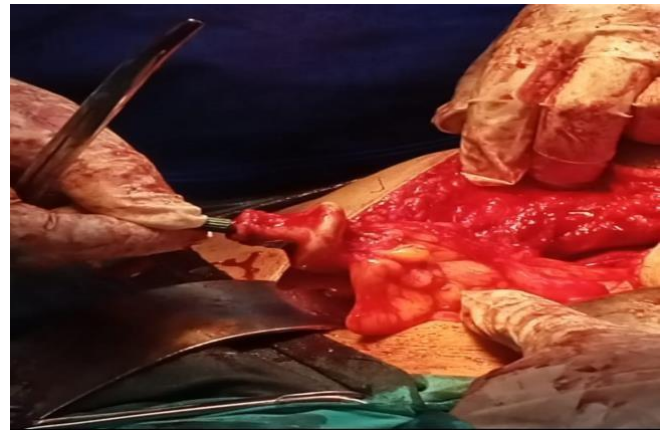
#### (B) Technique of posterior sutured rectopexy combined with rectosigmoidectomy<sup>(13)</sup>:

Mesosigmoideum is dissected in the area of the expected resection border up to the colon with the LigaSure and the intestine is skeletonized tubularly up to the lower distal resection border in the transition to the upper middle third of the rectum, then the intestine is set down in one stroke by a linear stapler. Pfannenstiel incision is performed and wound protector/retractor is inserted and the measured colon is resected

(Figure 5). The colorectal anastomosis is performed using a circular stapler 28mm, 29mm or 31mm by suturing the anvil part to the proximal end and inserting it to the trochar at the distal end (Figure 6). Then, the upper end is pulled in the direction of the promontory and sutured here directly to the promontory with 2 simple interrupted stitches. Finally, the peritoneum is closed and the abdomen is reinflated.



**Figure (5) :resection of the colon.**



**Figure (6): suturing the anvil part.**

**Statistical analysis:**

Data were analyzed using SPSS (statistical package of social science) software program version 21. Quantitative data were presented as Mean and SD while qualitative data were presented as frequency distribution. Chisquare test, Mann-Whitney test and paired t test was used to test the significant differences. P value less than 0.05 considered as cutoff for significance.

**Results**

This is a prospective non randomized study included 40 adult patients with complete rectal prolapse admitted at Minia University Hospital in the period from June 2020 to June 2022. Among 40 patients in this study sample included 24(60%) females and 16(40%) males with female to male ratio 3: 2 and age ranged from 19- 70 years with mean age of 41.1 years. No

significant difference between the 2 groups as regard age and gender (p=0.3, 0.1; respectively).

Operative time in resection rectopexy group was significantly longer than the mesh rectopexy group, intra-operative bleeding occurred in 2 patients (10%) in mesh rectopexy group, versus 4 patient(20%) in resection rectopexy group and it is statistically insignificant. By comparing the change of constipation scores among the two groups revealed that resection rectopexy group had more drop in the constipation score than posterior mesh rectopexy group (p=0.0001); this means that both operations can significantly improve constipation symptoms in patients .Sexual functions will not be significantly affected after both procedures (p=0.1). Resection rectopexy can significantly affect the continence but it will be preserved in mesh rectopexy (p=0.007).

**Table (1): Age and gender distribution of the study participants:**

Data		Posterior Mesh Rectopexy N=20	Resection Rectopexy N=20	P
Age	Range	19-70	28-70	0.3
	Mean±SD	41.2±19.3	42.2±15.007	
Gender	Male	6 (30%)	10 (50%)	0.1
	Female	14 (70%)	10 (50%)	

**Table (2): Comparison between PMR and LRR according to operative time, pre and post-operative constipation scores, sexual scores, fecal incontinence score and intraoperative complications:**

Parameters	Post. Mesh Rectopexy (N=20)	Lap.Resection Rectopexy (N=20)	P-Value
Operative Time (hours)	1.09±0.14 (1-1.3)	2.15±0.30 (2-3)	0.0001*
Pre-operative constipation score	10.3±5.7 (0-20 )	16.9±6.3 (10-27)	0.0001*
Postoperative constipation score	4.3±2.5 (0-8)	2.3±3.2(0-10 )	0.0001*
Sexual score	33.6±3.3 (30-40 )	36.2±5.6 (30-44 )	0.1
Fecal incontinence score	Zero (zero)	5.4±8.5 (0-20 )	0.007*
Complication, bleeding only	10%	20%	0.3

**NOTE:** Denoted as mean ± standard deviation (range).

### Discussion

Regarding demographic data, there were 24 females and 16 males with age ranged from 19-70years with mean age of 31.1 years. The female to male ratio was 3: 2 in the total group of patients. So, we found a female preponderance in our study. In Chawda & Joshi study, which assessed the demographic features of all the 14 study subjects who presented with RP; they observed that the mean age of the subjects was 48.42 years .There was a male preponderance observed in this study, which is against a well established female preponderance in the disease. The observed M:F ratio was 1.8:1 <sup>(14)</sup>. As regard operative time; it was shorter in mesh rectopexy group than in resection rectopexy . This may be attributed to the fact that there is no time needed in the resection, stapling and anastomosis as in the sigmoidectomy group. In Gallo et al. study which studied the functional outcomes after laparoscopic sigmoidectomy; The mean operative time was 173.7 ± 15.3 minutes with range (150–200 minutes)<sup>(15)</sup>. In Dyrberg et al., which studied the functional outcome of laparoscopic posterior rectopexy in a consecutive series of adult patients with full-thickness rectal prolapse; the Median duration of surgery was 82 min (66–102). The shorter operating time in this study may be due to the fact that the rectum was only mobilized posteriorly and laterally and no bowel resection was done <sup>(15)</sup>. Other studies had longer reported operating time from 110 to 174.3 min<sup>(16)</sup>. As regard intraoperative complications; presacral bleeding which may result from placement of sutures in the presacral fascia and consequent

injury to the presacral veins may be controlled by tying down the sutures and applying direct manual pressure. For persistent bleeding, thumbtacks may be required. Such bleeding is almost always preventable by placing the sutures under direct vision, and therefore assiduously avoiding vessels<sup>(17)</sup>. In the current study, there is no significantly difference in both operations regarding the intraoperative bleeding. Laparoscopic rectopexy results in lesser postoperative pain, lesser hospital stay, and better patient satisfaction<sup>(18)</sup>. Varma & Steele, proposed that bleeding was more with techniques that involve resection as Altemeier procedure& resection-rectopexy<sup>(19)</sup>. In the current study, both groups had improvement in the constipation score and showed that resection rectopexy group had significant drop in the constipation score than Posterior mesh rectopexy group with a mean of 16.9(pre) and 2.3(post) versus 10.3(pre) and 4.3(post) respectively (P=0.0001).

Regarding continence, our study showed that there was no incontinence occurred in mesh rectopexy group but in resection rectopexy group; there were 6 patients developed incontinence with range 0-20 points and mean 5.4 points according to Wexner Score (P=0.007). So; sigmoidectomy seems to be significantly associated with more incidence of incontinence. In 2017, a meta-analysis of 14 non-comparative studies pooled the outcomes of resection rectopexy and mesh rectopexy and demonstrated that such procedures were associated with 73.9% improvement in obstructed defecation, 60.2% improvement in fecal incon-

tinence, and recurrence rate of 5.8% in patients with complete rectal prolapse. Moreover, the weighted median postoperative CCIS and CCCS from the non-comparative studies were 11.5 and 6.5, respectively<sup>(20)</sup>. The meta-analysis of ABD-ELFATTAH et al., showed a significant positive result regarding the improvement of constipation postoperatively after laparoscopic suture rectopexy, posterior laparoscopic Mesh rectopexy and laparoscopic resection rectopexy, with significant *p*-values of <0.0001 meaning that there was a significant improvement after LSR, posterior LMR and LRR. In contrast, ABD-ELFATTAH et al., 2022. showed a significant positive result regarding the improvement of continence postoperatively after laparoscopic Resection rectopexy, posterior and ventral laparoscopic Mesh rectopexy, meaning that there was a significant improvement of continence after LRR, posterior and ventral LMR<sup>(18)</sup>. Another study reported that fecal incontinence improved in 92.8% in laparoscopic resection rectopexy without mesh while in mesh rectopexy it was improved in 100% of cases<sup>(21)</sup>.

Posterior mesh rectopexy is argued to be associated with high rates of de novo constipation as well as worsening of preexisting constipation as shown in Brown & Ellis study; nevertheless, Hajibandeh et al., meta-analysis found comparable outcomes of posterior mesh rectopexy and sutured rectopexy<sup>(22)</sup>. As regard impact on sexuality, there has been a lot of debate regarding the dissection and the division of the lateral ligaments which contain the parasympathetic nerves supplied from the lateral pelvic plexus. Young males have an excellent outcome after rectopexy if the lateral ligaments are preserved and with ventral rectopexy, as seen in recent publications<sup>(23)</sup>. Our study showed that there was no sexual dysfunction in all patients of both groups. Another study concluded that there is a risk of sexual morbidity in young males in laparoscopic posterior rectopexy, but can be minimized by carefully avoiding the pelvic nerves during dissection<sup>(24)</sup>. Yakut et al., concluded that posterior mesh rectopexy and resection procedures were effective surgical operations for the treatment of rectal prolapse but that extensive pelvic dissection during the

posterior rectopexy might affect sexual function in male patients<sup>(25)</sup>. The follow-up in the present study is too short to estimate the true incidence of recurrent prolapses, but so far, no recurrences have been found until the end of the study; a range of follow up of 1-2 years, and most recurrences usually appear within two to three years<sup>(26)</sup>. Long-term studies have shown that recurrence rates after complete rectal prolapse repair increase over the years<sup>(27)</sup>.

## Conclusion

Rectal prolapse is predominant in females. Regarding the intraoperative complications, there are no differences between both operations. Operative time is significantly longer in resection rectopexy than posterior rectopexy. Recto-sigmoidectomy improves constipation scores more significantly in patients with chronic constipation than posterior mesh rectopexy. Sexual functions can be preserved in both operations. Rectosigmoidectomy will significantly affect the continence, so; this issue must be considered before doing sigmoidectomy and all the necessary investigations should be done to patients.

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