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Research Article

Short Term Outcomes of Laparoscopic Ventral Mesh Rectopexy for Rectal Prolapse

Mohamed Ibrahim*, El Ashraf M Thabet and Salah S Soliman

Department of General Surgery, Fayoum University Hospital, Fayoum, Egypt

***Corresponding Author:** Mohamed Ibrahim, Associate Professor of General Surgery, General Surgery Department, Fayoum University Hospitals, Fayoum, Egypt.

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Abstract

Objective: Although rectal prolapse recurrence remains one of the encountered complications after abdominal approaches; this reported rate is still far less than the reported one for the perineal counterparts. Both constipation and the faecal incontinence remain common adverse postoperative outcomes of the different abdominal rectopexy approaches; we aimed to evaluate those outcomes of the laparoscopic ventral mesh repair on the short term basis.

Methods: From April 2015 to March 2017, a prospective descriptive case series study was carried out on 40 consecutive patients presented with isolated complete rectal prolapse underwent laparoscopic ventral mesh repair in the general surgery department of fayoum university hospital.

Results: The mean age of the patients was 43± 1.8 years with a range from 18 to 65 years, while the female patients were 25 representing 62.5%, the male patients were 15 representing 37.5%. All of the included patients were presented with isolated non-recurrent complete rectal prolapse, operated via the laparoscopic abdominal approach with a conversion rate of 5% (2 cases) and a recurrence one of 2.5% (one case), the mid-range follow up was 15 months (range from 6 to 24 months) with morbidity rate of 12.5% (5 cases) and no mortality. The mid-range of the operating time was 105 min (range from 60 to 150 minutes) and mean length of hospital stay was 3±1.4 days (range from 2 to 7 days). Using the preoperative and the postoperative specific scores for constipation and faecal incontinence, constipation was improved in 75% (9 from 12 cases), and faecal incontinence improved in 87.5% (7 from 8 cases.

Conclusion: Laparoscopic ventral mesh rectopexy has a recurrence rate of 5%, similar to that of posterior rectopexy. Its results regarding the correction of the preoperative constipation, faecal incontinence and avoidance of worsening or de-novo appearance of those complications are superior to those of the posterior rectopexy.

Keywords: *Rectal Prolapse; Laparoscopy; Rectopexy; Prolapse Mesh Repair*

Background

There are many described surgical and minimal invasive procedures for the management of rectal prolapse searching for the ideal one that can achieve the highest success rate and the lowest morbidity [1]. Generally, abdominal procedures achieve more advanced results than those of the perineal counterparts regarding the long-term recurrence rates and correction of incontinence [2]. The posterior rectopexy procedures were found to achieve less satisfactory outcomes regarding the resolution of constipation and also frequently induce this complication *de-novo* [3]. This complication was regarded to the entailed traditional portion of the operation that includes the postero-lateral dissection and rectal mobilization producing rectal denervation and subsequent detrimental rectal inertia [4]. Resection rectopexy has been utilized as a mitigation procedure for this complication; this procedure has achieved better results but on the expense of expo-

sing patient to the risk of anastomotic leakage [5]. Nerve-sparing ventral rectopexy appears to avoid those complications more than both the posterior approach and the resection rectopexy [6]. The laparoscopic approach has been proven to be superior to open rectopexy in many works, with fewer complication rate, shorter hospital stay decreased postoperative pain and faster recovery [7]. The continuous improvement in the laparoscopic safety and operative time has extended its feasibility in the more elderly patients [8]. Therefore, abdominal approach seems to be the best surgical options for the long-term cure rates, ventral rectopexy has less constipation as an adverse outcome, and the laparoscopic one achieves the lowest morbidity [5,9]. We aimed to evaluate those outcomes of the laparoscopic ventral mesh repair on the short term basis.

Methods

From April 2015 to March 2017, a prospective descriptive case series study was carried out on 40 consecutive patients presented with isolated complete rectal prolapse; they were evaluated, consented, and surgically managed via the nerve-sparing laparoscopic ventral rectopexy in the general surgery department of fayoum university hospital. The diagnosis of complete rectal prolapse was made clinically and preoperative colonoscopy was done for all patients to exclude the possible coincident organic diseases. Recurrent cases, those presented with associated organic pathologies together with the complex cases with uterine prolapse were excluded. Anorectal function was assessed preoperatively, 3, 6 and 12 months postoperatively by patient questionnaire using the Wexner Constipation Score and Faecal Incontinence Severity Index (FISI); constipation was defined as Wexner score > 5 and incontinence as FISI score > 10. Postoperative recurrence was defined by clinical, radiological evidence together with the associated clinical symptoms.

All patients were operated through the classic operative steps of the ventral laparoscopic rectopexy with anterior surgical dissection only avoiding both lateral and posterior dissections leaving the lateral ligaments and autonomic innervation intact respectively thus preventing recurrence and de-novo constipation. Non-absorbable mesh was fashioned as 2 by 10 cm strip, secured to the seromuscular layer of the anterior aspect of the rectum and to the presacral fascia with two to three non-absorbable sutures. Data of the study variables and postoperative complications were collected, coded and analyzed using SPSS software version 25 under windows 7. Different statistical tests were used for data analysis; for quantitative parametric data, we have used the In-depended student t-Test to compare measures of two independent groups and Paired t-test in comparing two dependent groups. For quantitative non-parametric data, we have used Mann-Whitney test in comparing two independent groups (Non-paired variables) and Wilcoxon tests used in comparing two dependent groups (Paired variables). The P value ≤ 0.05 was considered the cut-off for significance.

Results

The mean age of the patients was 43 ± 1.8 years with a range from 18 to 65 years, while the female patients were 25 representing 62.5%, the male patients were 15 representing 37.5% with a female to male ratio of 1.7: 1. All of the included patients were operated via the laparoscopic abdominal approach with a conversion rate of 5% (2 cases) due to difficult dissection planes and a recurrence one of 2.5% (one case) 6 months postoperatively, this case was successfully managed via the laparoscopic ventral rectopexy, the mid-range follow up was 15 months (range from 6 to 24 months) with no mortality and overall morbidity rate of 12.5% (5 cases) summarized in table 1. There were neither postoperative mesh-related complications nor sexual dysfunction.

Complications	Number of cases (%)
Port-site infection	1 case (2.5%)
Port-site haematoma	1 case (2.5%)
Prolonged ileus	2 cases (5%)
Urinary retention	1 case (2.5%)
Total	5 cases (12.5%)

Table

The mid-range of the operating time was 105 min (range from 60 to 150 minutes) and mean length of hospital stay was 3 ± 1.4 days (range from 2 to 7 days). Using the preoperative and the postoperative corresponding scores for both the constipation (Wexner score > 5) and faecal incontinence (FISI > 10), constipation was encountered in 30% (12 cases) preoperatively that was improved within 3 to 4 months in 75% (9 from 12 cases) and induced in 3.5% (one from 28 cases), also faecal incontinence encountered in 20% (8 cases) preoperatively, improved in 87.5% (7 from 8 cases) and induced in 6.25% (two from 32 cases) in the same postoperative period.

Discussion

The advent of the nerve sparing abdominal ventral mesh rectopexy for rectal prolapse has achieved a noticeable regression in the rate of postoperative constipation morbidity [4,10]; the result of many clinical studies is the best witness to that clinical fact and assuming this surgical technique as the current best practice for rectal prolapse [11]. Limited anterior mobilization has showed favourable outcomes in many aspects achieving remarkable superiority besides eliminating to some extent the unfavourable morbidity of the other techniques [12]. The first of all, this surgical technique as one of the abdominal procedures still has a considerable low recurrence rate when compared with those of the perineal procedures [13].

The second advantage being one of the abdominal procedures is the achieved excellent postoperative continence improvement; 60.2% mean rate of improvement with a range from 45.6 to 74.9% [14,15].

The reported median value of the new-onset or worsening faecal incontinence is 7.5% with a range from 3.1 to 14.5% [16,17].

In our study, faecal incontinence was encountered in 20% (8 cases) preoperatively, improved in 87.5% (7 from 8 cases) within 3 to 4 months and induced in 6.25% (two from 32 cases).

Many randomized controlled trials have reported not only the multiple advantages of a laparoscopic approach to prolapse as a minimal invasive technique producing less postoperative pain, shorter hospital stay, and faster recovery, but also fewer surgical complications expanding the surgical safety of the abdominal approaches for the more elderly patients [18,19].

Although the classic posterior rectopexy corrects prolapse and subsequently relieves constipation in some patients; it still frequently worsens or induces de-novo constipation leaving about 50% of the patients suffering from severe form of this complication [20].

Many reasons have been suggested in literature to explain this postoperative morbidity; kinking of a redundant sigmoid colon that may produce a mechanical obstruction is one of those mentioned reasons, others have regarded it to the posterolateral mobilization which may interrupts the sympathetic innervation of the rectum, producing what is called "hindgut denervation inertia" and distal slow transit [4,21].

Resection rectopexy has avoided this complication by getting rid of the denervated part of the hindgut; however the risk of anastomotic leakage and the threat to continence remain the major downsides of this surgical technique [5,22]. The other avoidance mean is the advanced nerve-sparing ventral rectopexy technique which entails a limited anterior rectal mobilization preserving the lateral ligaments and the sympathetic innervation of the rectum [23]. The reported mean rate of constipation improvement in previous works is 73.9% with a range from 65.9 to 81.9% and a median rate of new onset or worsening of this complication of 4.5% with a range from 2.4 to 11.5% [15,24].

Our study results have encountered constipation in 30% (12 cases) preoperatively that was improved within 3 to 4 months in 75% (9 from 12 cases) and induced in 3.5% (one from 28 cases).

The mean complication rate in systematic reviews was estimated to be 15% with a range from 10.2 to19.7%; urinary tract infection was the most frequent complication that was followed by wound infection [15,24]. Mesh-related complications were reported to be seen in around 1.1% of the patients including erosion, stricture, fistula formation, adhesions, chronic pelvic pain, inflammation, infection, and detachment; which have raised many unanswered questions about the suitable type of mesh for rectopexy [25].

However, synthetic mesh still has the advantage of high tensile strength, availability, cost effectiveness and different varying results regarding the failure rate (lower, equal and higher) when compared with biologic mesh [26]. Our patients have suffered from a morbidity rate of 12.5% (5 cases) and no mortality. Prolonged ileus was the most frequent complication encountered in 2 cases (5%).

Our recurrence rate was 2.5% (one case) in the mid-range follow up of 15 months (range from 6 to 24 months). In many studies, the median recurrence rate was reported to be around 5.5 with a range from 0 to 14% [24].

Many causes were suggested as the responsible factors for this reported recurrence; those factors can be divided into technical category including for example the inadequate ventral dissection, improper mesh fixation to the rectal wall, and detachment of the mesh from sacral promontory [27] and clinical category including elderly patients more than 70 years with higher preoperative incontinence score and prolonged pudendal nerve motor latency [28].

Nowadays, most of the abdominal rectopexy operations are completed safely with the laparoscopic approach that was estimated in the systematic reviews to represent around 95% of all performed abdominal operations; however there is still a reported conversion rate from 0% to 12% [24] compared with our conversion rate of 5% (2 cases).

The median operative time was 110 minutes with a range from 60 to 198 minutes in many previous studies and the median length of hospital stay was 2 days with a range from 1 to 7 days [29,30]. The mid-range of our operating time was 105 min (range from 60 to 150 min) and the mean length of hospital stay was 3 ± 1.4 days (range from 2 to 7 days).

Our results has been reported on the short-term basis of 1 year duration which needs further follow-up as the initial improvement in the constipation and faecal incontinence not necessary sustained with the long-term duration due to the expected continuous pelvic floor function deterioration over time in those patients.

Conclusion

Laparoscopic nerve sparing abdominal ventral mesh rectopexy is considered as the current best surgical management for rectal prolapse with low recurrence rate and a noticeable safety with a low postoperative morbidity profile and excellent results regarding the postoperative improvement in constipation and faecal incontinence. It represents a significant advance in the surgical management of the rectal prolapse.

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