Original Article

Laparoscopic Ventral Mesh Rectopexy In Rectal Prolapse : A Two Year Study

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Abstract:

Background and Purpose: An autonomic nerve-sparing rectopexy technique was first documented by D'Hoore *et al* in 2004. This procedure is a comparably novel method adopted rapidly and reported good outcomes and postoperative function. The objective of the study was anatomical correction of prolapse and evaluation of functional outcomes.

Material and Methods: The present study was conducted in the department of General and Minimal Access Surgery in a tertiary care hospital. This was a prospective cohort study of patients presenting with a complete rectal prolapse over a period of 2 years from May 2019 to April 2021.

Results: The mean age of patient in our study was 42.21 years, with range of age varying from 29-60 years of age. Most of our patients 25/35 were in the age group of between 41-50 years. Out of a total 28 (80%) were females and most female patients were middle aged, multiparous, with history of vaginal delivery. The mean BMI of patients in our study was 28.2. Most patients 16(45.71%) in our study had a grade V prolapse, followed by grade IV prolapse. The mean operative time in our study was 106.2 minutes. The mean estimated blood loss in our study was 24.71 ml, and the mean hospital stay in our patients was 3.43 days. Most of our patients were discharged between 3-4 days. 12 patients (34.28%) patients in our study developed minor complications postoperatively. There were no major complications and no mortality was recorded. Recurrence was noted in two patients.

Conclusion: The management of rectal prolapse is correction of physical abnormality and the functional outcome. We found laparoscopic ventral mesh rectopexy apt at both the fronts. However, larger study with longer follow up is needed to validate our findings.

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INTRODUCTION

It is considered that a sliding hernia via a pelvic fascial defect or rectal intussusception causes rectal prolapse. Laxity of the pelvic floor, a weak sphincter complex, a redundant recto sigmoid colon, a deep Douglas' pouch, pudendal neuropathy, and a loose rectal fixation may all contribute to Rectal Prolapse. Currently, a pelvic floor problem is thought to be the most probable cause. [1-2]Up to >90% of patients with rectal prolapse are women over the age of 50 who have given birth vaginally. Male Rectal Prolapse patients are often younger (20-40 years old) and the incidence declines with age. Psychiatric individuals and the elderly inhabitants of nursing homes also have a higher frequency of rectal prolapse. [1]

Surgical techniques include either a perineal or abdominal approach, [1] and while Rectal Prolapse is fundamentally a benign illness, surgical care should be customized to balance the risk of perioperative invasiveness against the possible improvement in quality of life. [3] The majority of surgeons favor abdominal treatments because they are more successful and have lower recurrence rates, especially in elderly patients also. [4] However, general anesthesia, which is required for abdominal procedures, may raise some risks for elderly individuals with rectal prolapse. Less intrusive and possibly helpful are perineal techniques. Berman originally described laparoscopic rectopexy in 1992 [5]; since then, it has developed as an effective therapy for rectal

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Keywords

Mesh Rectopexy, Rectal prolapse, Nerve sparing rectopexy

prolapse.[3] Modern laparoscopy and general anesthesia have made the abdominal approach more acceptable to elderly individuals. [4] Laparoscopic Rectal Prolapse procedures are presently accessible for the abdominal approach, despite the fact that traditional open operations have been conducted. [6] According to studies, laparoscopic surgery provides benefits over open surgery, such as reduced discomfort, a shorter hospital stay, and a quicker recovery. [7]

A strategy for autonomic nerve-sparing rectopexy was initially published by D'Hoore et al in 2004, [8] based on the notion of rectovaginopexy outlined by Silvis et al in 1998. [9] In this operation, the dissection is purely ventral from the rectovaginal space to the pelvic floor; there is no lateral or dorsal mobilization. Mesh sutured to the anterior aspect of the rectum connects the rectum to the sacrum. Ventral dissection and mesh placement provide several benefits. [10]

i) A supra-anal rectocele may be rectified;
ii) The rectovaginal septum is strengthened, preventing anterior recto-rectal intussusception, which may be an underlying mechanism leading to complete rectal prolapse; and
iii) A colpopexy is done. The autonomic nerves are preserved by avoiding any lateral or posterior mobilization. This is a relatively innovative technique that has been quickly embraced, and several prospective studies have demonstrated positive results and postoperative function. [2] In addition, 4% of mesh-related complications have been documented. [11]

MATERIAL AND METHODS

The present study was carried out in The Department of General and Minimal Access Surgery at the Sher-i-Kashmir Institute of Medical Sciences (SKIMS), Soura as a project handled by the principal author. This was a prospective cohort analysis of individuals who presented with a full rectal prolapse between May 2019 and April 2021. Regarding functional issues, individuals in this cohort had a variety of symptoms, including mass per rectum, obstructed defecation, faecal incontinence, urgency, leakage, urinary complaints, and pelvic discomfort.

Prior to surgery, all patients gave their informed consent after receiving a thorough explanation of the procedure's advantages and potential risks. Only individuals with verified Complete Rectal Prolapse on clinical examination and defecography were included in the research. From May 2019 to April 2021, Laparoscopic Ventral Mesh Rectopexy was performed on all 35 patients diagnosed with Complete Rectal Prolapse. The study's primary purpose was the anatomical repair of prolapse, while its secondary objective was the assessment of functional outcomes.

Pre-operative evaluation

On first presentation, a thorough history and physical examination were completed on all patients. All patients were clinically assessed in both the supine and squatting positions. If prolapse was not apparent in the supine position, the patient was instructed to "bear down" in a squatting posture. To determine colon redundancy, a barium enema was performed on all patients. A flexible sigmoidoscopy was done the same day, if required. In female patients, a comprehensive obstetric history was obtained, including the number of pregnancies, labor complications, birthweight of the infant, and obstetric injuries, in order to conduct additional tests, if required, and determine a definitive justification for surgery. Selected individuals with a clinical diagnosis of internal or external prolapse underwent defecating proctograms, a dynamic magnetic resonance imaging (MRI) proctogram, and lower gastrointestinal endoscopy. This research assessed functional results before and after surgery as its outcome measure.

We evaluated faecal incontinence using the faecal incontinence severity index (FISI) and constipation using the Wexner scoring system. Incontinent patients had a FISI score of 8 or higher, whereas constipation was characterized as a Wexner score of 5 or higher. Using a disease-specific personal questionnaire, an objective evaluation of patient satisfaction after the surgery was performed.

Inclusion Criteria

- Adult patients (age >18 years)
- Medically fit patient
- Full thickness rectal prolapse

Exclusion criteria

- Patient not fit for general anesthesia
- Triple compartment syndrome
- Recurrence after surgery

Follow-up and post-surgical evaluation

Three, six, and twelve months postoperatively, anorectal function was evaluated using the FISI and Wexner constipation scores. The patient was clinically assessed at 3 and 6 months. After 12 months and beyond, a telephone interview utilizing a personal questionnaire was conducted as a follow-up.

Statistical examination

A biomedical statistician was responsible for the statistical analysis. The Mann-Whitney U-test was employed to analyze unpaired data, while the Wilcoxon signed rank test was used to analyze paired data (two-sided p-test).

AIMS AND OBJECTIVES

1. To know the hospital based incidence and demography of patients with rectal prolapse.
2. Laparoscopic ventral mesh rectopexy (VMR) in the management of rectal prolapse vis a vis Safety, Ease of the procedure, Intraoperative, Hospital stay and Complications postoperatively.
3. Rate of recurrence at a mean follow up of 6 months.
4. Patient satisfaction on follow up based on scores and detailed questionnaire.

RESULTS

This was a prospective cohort study of patients presenting with a complete rectal prolapse over a period of 2 years from May 2019 to April 2021.In

terms of the functional disorders, patients in this cohort presented with a combination of symptoms like mass per rectum, obstructive defecation, fecal incontinence, urgency, leakage, urinary complaints, and pelvic pain. 35 patients with rectal prolapse, after proper evaluation were subjected to surgery, the analytical results obtained are shown in table 1.

Table 1: Various parameters

Period of study	2 years
No. of patients	35
Mean age (in years)	42.21
Gender distribution (M/F)	7/28
Mean BMI	28.2
Mean operative time (in minutes)	106.2
Mean estimated bleed (in ML)	24.71
Mean hospital stay (in days)	3.43
Follow up (in months)	6month (minimum)
No. of recurrences	2

The mean age of patient in our study was 42.21 years, with range of age varying from 29-60 years of age. Most of our patients 25/35 were in the age group of between 41-50 years. Most of the patients in our study were female. Out of a total of 35 patients,28 (80%) were female, whereas 7(20%) were male. Most female patients were middle aged ,multiparous, with history of vaginal delivery in most of them. The mean BMI of patients in our study was 28.2,with BMI ranging from 21 to 34. (table-1)

We distributed our patients on the basis of different grades of prolapse, as per the Oxford prolapse grading system. Most patients 16(45.71%) in our study had a grade V prolapsed, followed by grade IV prolapsed.

Table 2: Previous pelvic surgical history

Type of surgery	Females	Males
Tubal Ligation (open)	7 (25%)	NA
Hysterectomy (Open)	5 (17.85%)	NA
Ovarian cystectomy	2 (7.14%)	NA
No pelvic surgery	14 (50%)	7(100%)
Total	28 (100%)	7 (100%)

Fourteen females in our study group had undergone pelvic surgeries previously.7 (25%) had undergone tubal ligation surgery (open),5 (17.85%) had undergone hysterectomy(open) while as 2 (7.14%) had undergone ovarian cystectomy (laparoscopic). whereas the other 14 females in the study group and all the male patients had no history of any previous pelvic surgery. (Table-2)

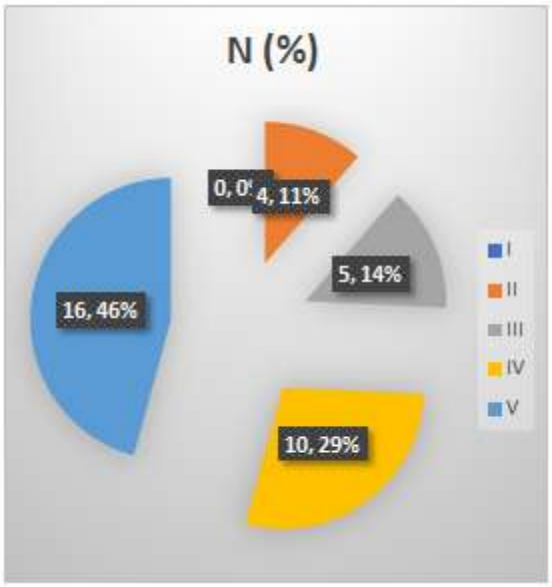

Figure1: Pie chart depicting grade of prolapse

The mean operative time in our study was 106.2 minutes. The range of operative time was between 62 minutes to 166 minutes. In the initial cases we noted that the operative time was higher but as we went on doing more and more cases, the operative time decreased significantly. The mean estimated blood loss in our study was 24.71 ml, with a range of between 7-152 ml. Most patients had bleeding approximately between 10-40 ml. The mean hospital stay in our patients was 3.43 days, with a minimum stay of 2 days and a maximum stay of 8 days. Most of our patients were discharged between 3-4 days.(Table-1) 12 patients (34.28%) patients in our study developed minor complications postoperatively,1 patient (2.85%) developed wound infection (port site).2 patients developed upper respiratory infection (hospital acquired),4 patients developed acute constipation postoperatively, whereas 5 patients (14%) developed urinary tract infection. There were no major complications and no mortality was recorded. No mesh related complication like mesh erosion, infection or perforation was reported.

Recurrence was noted in two patients. In one patient recurrence occurred at six months of surgery and in another patient at eight months postoperatively. Both patients were found to be having redundant sigmoid colon. These patients were subsequently planned for sigmoid resection.

DISCUSSION

Surgery for rectal prolapse has three objectives: first, the repair of the physical defect; second, the restoration of bowel function; and third, the avoidance of future functional issues. For the treatment of rectal prolapse, many abdominal and perineal treatments have been reported, with perineal techniques now reserved for high-risk patients who cannot tolerate extensive abdominal surgery. [12] Nonetheless, the risk of long-term recurrences and chronic incontinence is greater than with abdominal surgeries. Abdominal technique is now regarded as the standard

of therapy and is used whenever possible. [13] Rectopexy with sutures or mesh, colonic resection, or a combination resection-rectopexy approach are abdominal surgeries. In the past, these procedures were performed using an open approach; more recently, less invasive techniques have been used. In a randomized, controlled research, laparoscopic rectopexy was shown to be associated with decreased postoperative discomfort, faster recovery, and a shorter hospital stay. In addition, there were considerably fewer surgical problems compared to open procedures. [14] Laparoscopic surgery is now regarded as the standard method and is usually advised for all situations. Recurrence rates for abdominal surgeries including sigmoid resection with or without rectopexy range from 2% to 5%. This method also includes the danger of anastomotic leakage and incontinence after bowel resection, especially in older patients. [15]

In the past, mesh rectopexy entailed circumferential mobilization of the rectum up to the pelvic floor, with mesh implanted ventrally or posteriorly. Full rectal mobilization has been related with autonomic nerve injury and decreased recto sigmoid motility, both of which result in the onset of or a worsening of constipation. [16]

In 2004, D'Hoore et al. referred to "nerve-sparing ventral rectopexy" as a treatment for rectal prolapse. The distinctive feature of laparoscopic ventral rectopexy is that only the front rectum is mobilized, keeping the autonomic innervation intact. [5] This procedure has acquired universal support and is considered by many to be the "gold standard" for the treatment of pelvic organ prolapse. [17] The combined advantages of laparoscopic technique and ventral rectopexy have made the treatment safe and successful, with minimum postoperative functional impairment.

We conducted a prospective study in our institution from May 2019 to April 2021,to study the demographic factors, risk factors associated with rectal prolapsed as well as to establish the feasibility and effectiveness of laparoscopic ventral mesh rectopexy in the management of rectal prolapsed. Our study comprised of a total of 35 patients, 80% of our patients were middle aged females (mean age 42.21 years), almost all the female patients were multiparous. Our study included 20% male patients, we observed that the male patients in our study were comparatively younger as compared to female patients. Most patients (almost 75%) had grade IV/V prolapse (oxford grading), signifying that most of the patients report late to hospital for treatment.

There was a high female preponderance and most patients in our study were female, middle aged and multiparous, which implies these factors as high risk for the development of rectal prolapse. these findings were similar to those reported by Garley AD et al [4] and Rickert A et al [18]

Similarly, Garley AD et al [4] reported that the male patients with rectal prolapsed tend to be younger age group as compared to female patients, our findings are also similar in this regard.

Laparoscopic ventral mesh rectopexy was done in all patients, there were no conversion to open surgery.

The mean operative time in our study was 106.20 minutes, the estimated mean blood loss was 24.7 ml. Similar findings were reported by Siproudhis et al. [19]

The mean hospital stay post operatively in our study was 3.43 days with a range of 2-8 days, similar stay rates in laparoscopic ventral mesh rectopexy were reported by Graf et al. [20]

Laparoscopic techniques have not made any significant difference on recurrence rates which continue to range from 0% to 10% in a follow up of 8-30 months. [21] Several studies have found a recurrence incidence of around 5% after LMVR. Most recurrences happen during the first two to three years. [5,17] Recurrence risks are comparable to those reported for other abdominal surgeries (2% to 9%). 92 In the current study, 5.71 percent (2/35) of patients had recurrence, which is consistent with earlier research.

Compared to posterior rectal dissection, ventral mesh rectopexy has been demonstrated to be related with a decreased prevalence of new-onset constipation and a higher improvement in pre-existing constipation. Three randomized studies have shown that avoiding lateral and posterior dissection improves constipation. [22,23] In addition, studies that included faecal incontinence data demonstrated an improvement in symptoms after the LMVR. It has also been noted that the rate of new-onset faecal incontinence following LMVR is minimal. [5] The findings indicate that most problems with LMVR are minimal. Our functional outcomes closely resemble those of previous investigations. Pre-existing constipation improved in 80% of cases while as11.42% (4/35) patient developed new onset constipation.

Previously, rectopexy surgery was thought to cause kinking of redundant sigmoid colon over the fixed rectum, resulting in worsening of preexisting or new onset constipation. [24] For this reason, resection-rectopexy was advocated for patients with redundant sigmoid. Nevertheless, D'Hoore et al. [5] demonstrated that the denervation of the rectum caused by its circumferential mobilization was responsible for the majority of post-rectopexy functional issues. Similarly, redundant sigmoid was found in 19 of 35 patients in the current study; nevertheless, the majority of patients had better constipation scores in the follow-up, and no new cases of constipation were recorded.

The mesh-related problems were initially of concern to us, and they were also mentioned to the patients. Yet, the technique was confirmed to be safe in the current study. No mesh-related complication: Infections, erosions, or perforation was observed. Coating the mesh with peritoneum inhibited adherence of the small intestine. In this research, patients were not examined for postoperative dyspareunia or sexual dysfunction.

Consensus is increasing that rectal prolapse is a component of multi-compartment pelvic floor dysfunction. [25] Thirty-five percent of prolapse cases are accompanied by urine incontinence, and fifteen percent of patients complain of severe genital prolapse. [26] Fixing the posterior vaginal fornix to the mesh's lowest portion offers extra support for the pelvic floor during ventral mesh rectopexy. This results in the repair of an existing or prospective genital prolapse by suspending

the middle compartment. [5] A posterior rectopexy, in contrast, just reinforces the posterior compartment. Large rectoceles may be repaired by distal attachment of the mesh to the pelvic floor. It also results in a shallow, suspended Douglas pouch, immediately rectifying any related enterocoele or sigmoidocoele. It indicates that sparing the rectal autonomic nerves improves the result of surgery for constipation. Our results reveal a significant improvement in faecal incontinence ratings over the follow-up period.

Laparoscopic ventral rectopexy seems to be a safe and successful surgical treatment for full-thickness rectal prolapse, particularly in Indian patients with a sigmoid colon that is large and redundant. Nevertheless, given the small sample size and short follow-up period, this must be confirmed in a bigger research with a longer follow-up period. For proof of level I, prospective randomized studies are necessary.

CONCLUSION

To conclude, we observed that rectal prolapse is prevalent mostly in middle aged, multiparous females, and that the laparoscopic ventral mesh rectopexy is safe, feasible and easy to perform with low complication and recurrence rates. One noteworthy point is that the management of rectal prolapse is not only the correction of physical abnormality but the functional outcome is very important part. The ideal procedure has to address both issues. We found laparoscopic ventral mesh rectopexy apt at both the fronts. However, larger study with longer follow up is needed to validate our findings.

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