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Case series

The effect of total colectomy with posterior suture rectopexy in patients with internal prolapse and colonic inertia; A case series on 9 women

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ABSTRACT

Introduction and importance: The benefits of ventral mesh rectopexy, performed by laparoscopic method, simultaneous with total laparoscopic colectomy, for patients with internal rectal prolapse (IRP), have been shown previously. Considering the advantages of posterior suture rectopexy in patients with colonic inertia, we hypothesized that patients with IRP and colonic inertia may benefit from combination of posterior suture rectopexy with total laparoscopic colectomy, while this has not been evaluated, to date.

Case presentation: In the present study, we performed laparoscopic posterior rectopexy with total colectomy on 9 women with refractory constipation, who were indicated for surgical correction of chronic constipation, due to obstructed defecation syndrome and IRP grade 2 and 3; IRP was diagnosed based on the results of defecography and colonic inertia based on impaired colon transit time.

Clinical discussion: The results showed significant reduction in Wexner constipation score, form of stool, and patient assessment of constipation quality of life (PAC–QOL).

Conclusion: This case series suggest the feasibility and advantages of performing total laparoscopic colectomy and laparoscopic posterior suture rectopexy in patients with IRP and colonic inertia, indicated for surgical correction of constipation. In future, cohort and clinical trials can identify the superiority of this combinational method over each method alone.

1. Introduction

Chronic constipation is oftentimes diagnosed at gastrointestinal and surgical clinics, observed in 23.5 % of young adults, 19.7 % of women [1], and about 19 % of the older adults (aged 60–93 years) with divergent rates among countries (32 % in Africa and 13.6 % in Asia) [2]. Chronic constipation imposes great medical costs, impairs the patient's quality of life (QOL) and work productivity [3]; therefore, treatment of constipation is of great significance. The first–line treatment line for constipation includes modification of lifestyle, diet, and physical activity; if failed, pharmacological medications (like laxatives, fibers, prokinetics, secretor drugs, and serotonergic agonists) are prescribed for 4 weeks. And if the prolonged and intensive pharmacologic therapy or 3–month of pelvic floor behavioral therapy fails to improve the constipation symptoms, the patient is considered to have refractory chronic constipation and indicated for surgical intervention under specific conditions [4].

Colectomy, in forms of total, subtotal, or segmental, is the surgical method, performed for patients with chronic refractory constipation who have colonic inertia, documented by abnormal colonic transit time (CTT). While constipation is not the frequent reason for colectomy, the rate is on the rise with annually more colectomies performed for this indication [5]. However, like any other surgery, colectomy has its own limitations, complications, and problems; which is why several modifications, like modified anastomoses for total colectomy [6,7] and other surgical methods, like using staples [8], have been suggested.

Ventral mesh rectopexy, nowadays performed by laparoscopic or robotic method, is another treatment, indicated for patients with constipation, caused by obstructed defecation syndrome (ODS), underlying internal rectal prolapse (IRP) [9]. Combination of robotic– and laparoscopic–assisted ventral rectopexy with colectomy is reported as an uncomplicated successful surgical procedure with high safety rate for

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patients with IRP [10]. Laparoscopic ventral mesh rectopexy is superior to laparoscopic posterior sutured rectopexy, concerning recurrence rate [11]. But, the shorter duration of surgery and fewer complications make posterior suture rectopexy a better option, especially in cases with colonic inertia [12] and other patients who require colon resection at the same time.

Despite the advantages mentioned, the feasibility of the combination of posterior suture rectopexy technique with total colectomy has not been evaluated in patients who require surgery for treatment of constipation and prolapse. Therefore, we hypothesized that patients with IRP and colonic inertia may benefit from this combinational method, being technically easier, more cost benefit, with a shorter surgical duration, and fewer complications. Since, to date, no single study has evaluated the results of this combinational surgeries, total colectomy and posterior suture rectopexy, we decided to describe the effect of performing these two techniques simultaneously on patients with colonic inertia and IRP, who were indicated for surgical correction of constipation. In the present case series, we report the pre– and post–operative results of this surgical method with 6 months of follow–up, focusing not only on the gastroenterological variables, but also on the patient's QOL.

1.1. Case series

The study gained approval from the Ethics Committee of Iran University of Medical Sciences (IR.IUMS.REC.1403.149) and is reported in line with the PROCESS criteria [13]. A prospective study was conducted on 9 women with symptoms of chronic constipation and ODS who were diagnosed to have IRP grade 2 and 3 (based on the results of defecography) and colonic inertia (based on prolonged CTT), and were resistant to conservative treatment, thus, indicated for surgical correction. The duration of symptoms and medical history (medications received, underlying diseases, and previous surgeries) were recorded. Before surgery, all patients underwent colonoscopy and the results were recorded; also, the patient's body mass index (BMI) was recorded before surgery and the information about stool, including its form and constipation score were recorded, based on Bristol stool chart and Wexner constipation score (WCS), respectively, before and after surgery.

All patients underwent posterior suture rectopexy technique with total colectomy by laparoscopic technique, performed by a unique surgical team and were followed for 6 months. Total colectomy was performed classically by laparoscopic technique, during which the mesorectum was first released from the anterior surface of the presacral fascia and the dissection was continued until the end of the pelvic levator ani. Total colectomy was done by dissecting mesocolon at d2 dissection level using ligature and hemolock clips. After taking a sample (for pathologic examination), the ileorectal anastomosis was performed by 29 circular stapler. As the final part of the operation, the rectum was sutured continuously from distal to proximal with nonabsorbable sutures to the presacral fascia at a level higher than the initial position and fixed to the sacral promontory.

After surgery, postoperative complications, like obstruction, infection, hemorrhage, cardiovascular problems, reoperation, and urinary problem, were recorded. In addition, at the end of the study (6 months after the operation), the results of defecography, CTT, WCS, and stool form were recorded, along with the patient assessment of constipation quality of life (PAC–QOL) [14]; the Persian version, used in this study, has been validated previously [15]. This questionnaire evaluates the patient's QOL during the past 14 days through 28 questions (4 domains of physical discomfort, psychosocial discomfort, treatment satisfaction, and worries and discomfort). By scoring each question from 0 to 4 (Likert), the total score is obtained; the higher the total score, the greater negative effects it has on the patients' QOL.

The results of pre– and post–operative variables in the studied patients are shown in Table 1.

Age range of patients was 38 to 79 years (mean of 51.5 years). All patients had symptoms of chronic constipation and obstructed defecation syndrome for at least 4 years up to 15 years with a mean of 12.5 years. As shown in the table, all patients had impaired CTT with IRP score of II or III. Before surgery, WCS was 20, in all except two patients, who reported scores of 19 and 13, while the postoperative WCS of most patients ($N = 5$) reached 0, and in the other two patients reached 2 and 3; only two patients had a WCS score ≥ 10. Also, the stool form was grade I in all patients before the intervention, while after surgery, 3 reported grade III, one reported grade IV, one reported grade V, 3 reported grade VI, and one reported grade VII. These results indicate successful improvement in constipation, also reflected by the scores of PAC–QOL.

Considering the baseline characteristics of the patients, most ($N = 5$) were overweight (mean BMI of 23 kg/m^2), had history of surgery, and depression; two had DM, one HTN (controlled; all were receiving appropriate treatment for their diseases). Only 3/9 patients had no underlying diseases. The results of colonoscopy also showed melanosis in 4 patients and other problems in the rest (like solitary rectal ulcer, polyp, etc. showed in the table); only two patients had no pathology in colonoscopic examination.

2. Discussion

The current case series was the first to outline the preliminary outcomes of performing posterior suture rectopexy technique simultaneous with total colectomy in women with chronic constipation, caused by IRP and colonic inertia. The 9 patients, evaluated here, had clinical symptoms of ODS for an average of 12.5 years, in addition to impaired CTT, and IRP score of II or III. The high pre–operative WCS showed the severity of constipation in these patients. Although we did not collect the results of PAC–QOL before the surgical intervention, after surgery, most patients were satisfied with the surgical outcomes and the results of 6–month follow–up after the combinational surgery showed that constipation has been resolved in all patients, reflected by WCS scores of 0 or near 0 and high grades of stool form (based on Bristol stool chart). However, the IRP score did not change significantly after surgery, which might be because we performed the standard defecography using the radiologic method, which visualizes the anatomic problems; while, evaluating the functional defecography using the dynamic magnetic resonance imaging (MRI) could have shown the functional improvement in patient's conditions [16].

In the present study, we included patients with inertia and IRP, a specific group of patients, less frequently addressed in the literature. The findings we obtained are consistent with the previous evidence, indicating favorable results for posterior rectopexy in patients with IRP, considering improved function and satisfaction [17]. But rectopexy alone cannot solve the problem in patients who have colon inertia, as well, which is why we combined it with colectomy in this specific group of patients, the results of which suggested this combinational method as an optimal option for these patients. This is while most of the previous studies, available in the literature, have not considered patients with both conditions, have used either a single surgical method or reported the results of combining other surgeries and therefore not comparable to the current study.

Researchers have addressed the outcomes of combinational surgery of ventral, but not posterior, rectopexy with colectomy, as well. Wang et al. reported the results of abdominal ventral rectopexy with colectomy in 6 patients with IRP (4 robotic surgery and 2 laparoscopic surgery); 36 months of follow–up after surgery showed improved WCS, ODS, and PAC–QOL with no use of purgative drugs, no recurrence, and no novel constipation after the surgical intervention [10]. Another randomized clinical trial reported the outcome of abdominal rectopexy alone vs. its combination with sigmoidectomy for IRP, indicating diminished postoperative constipation for the combinational method [18]. Although the findings of both of these studies are consistent with that reported here, considering the benefit and safety of the

Table 1
The study variables before and after the surgery.

No	Baseline information						Colonoscopy findings	Pre–operative				Postoperative				
	Age	Duration of constipation (years)	Previous surgeries	Underlying diseases	Medications used	BMI, kg/m^2		IRP	Impaired colon transit time	Stool form	Constipation score	Complications	IRP	Constipation score	Stool form	PACQOL
1	44	6	2C/S, umbilical hernia surgery	Depression	Fluoxetine	28	2 polyps, complete polypectomy	II	+	I	20	partial obstruction, 7 days	II	0	VI	53
2	38	4	–	–	–	26	–	II	+	I	13	–	II	12	III	49
3	40	9	3 NVDs	–	–	28	Melanosis coli and internal hemorrhoid grade III	II	+	I	20	–	I	10	III	76
4	61	12	1 NVD	DM and depression	metformin, glibenclamide, nortriptyline, lorazepam	24	adenomatous polyp (1 cm) without dysplasia	II	+	I	20	–	II	0	IV	17
5	79	13	4 NVDs, hysterectomy	DM, hypothyroidism, HTN	Metformin, levothyroxine, metoral, losartan	23	Melanosis coli	III	+	I	20	–	II	0	VI	3
6	62	7	1C/S, 1 NVD	Depression	SSRI	20	Solitary rectal ulcer, melanosis coli	III	+	I	19	–	II	0	VI	40
7	50	15	2C/S, appendectomy, cholecystectomy, hemorrhoidectomy	Depression, hypothyroidism	SSRI, levothyroxine	26	Solitary rectal ulcer, 4 cm rectocele	II	+	I	20	– Burning sensation in bladder	II	0	VII	18
8	46	14	1C/S, 2 NVDs	Depression	SSRI	19	–	II	+	I	20	–	II	3	III	63
9	57	11	4 NVDs	–	–	27	Melanosis coli, grade II internal hemorrhoid	II	+	I	20	–	II	2	V	25

Abbreviations: BMI; body mass index, IRP; internal rectal prolapse, PACQOL; patient assessment of constipation quality of life, C/S cesarean section, NVD; normal vaginal delivery, DM; diabetes mellitus, HTN; hypertension, SSRI; selective serotonin reuptake inhibitors.

combinational surgery, the type and details of surgical methods used, duration of follow–up, as well as the patients' medical conditions differed among studies, resulting in no similar studies on the combinational method we used in the present study for patients with IRP and colonic intertia, to be comparable to our results.

Considering the high frequency of patients with ODS, the increasing use of total colectomy for this indication, the limitations and complications raised for this surgery [5], it is necessary to propose alternative surgical options for treatment of constipation in these patients. The present study suggested the efficacy, feasibility, and safety of combining laparoscopic posterior suture rectopexy with total colectomy in women with IRP and colonic inertia. However, this case series only included 9 patients, which prohibited statistical analysis for evaluating the association of variables and evaluating the statistically significant change in the clinical and patient–reported outcomes. Also, the short duration of follow–up limited us from commenting about the long–term results.

3. Conclusion

The present study showed the preliminary outcomes of combining posterior suture rectopexy with total colectomy in a series of 9 women who had IRP and colonic inertia for several years and were indicated for surgical treatment of constipation. However, the small number of patients prohibited us from drawing definite conclusions based on the results of case series. A larger cohort study with clear results should be performed, followed by randomized clinical trials, to comment about the superiority of this combinational surgical method over each surgery alone.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor–in–Chief of this journal on request.

Ethical approval

The present study was approved by the Ethics Committee of Iran University of Medical Sciences (IR.IUMS.REC.1403.149).

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Author contribution

All authors have contributed in idea formation, data collection, and/or interpretation of the results. Seyed Hamzeh Mousavie and Mahdi Alemrajabi wrote the manuscript and other authors critically revised the manuscript. The final version of the manuscript has been approved by all authors.

Guarantor

The corresponding author is “Mahdi Alemrajabi” and all authors are guarantors.

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Conflict of interest statement

The authors of the present study confirm that there are no conflicts of interest for this study.

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