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Rectal Prolapse in 12 Patients Treated by Posterior Prolene Mesh Rectopexy and Sigmoid Colon Resection

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What is already known on this topic?

- *Various surgical techniques exist for rectal prolapse including abdominal and perineal approaches. Posterior prolene mesh rectopexy is a method used to secure the rectum and prevent recurrence. Some patients with rectal prolapse also undergo sigmoid colon resection to address associated functional issues like constipation. Despite surgical advancements, recurrence and complications remain concerns.*

What this study adds on this topic?

- *Our outcomes of 12 patients who underwent posterior prolene mesh rectopexy combined with sigmoid colon resection evaluated the effectiveness and safety of this combined approach in managing rectal prolapse. It contributes to surgical decision-making by assessing whether both of these procedures offers additional benefits in select cases.*

Abstract

Objective: The aim of this study was to evaluate morbidity, mortality, postoperative function, and recurrence in patients treated by posterior prolene mesh rectopexy and sigmoid colon resection for complete rectal prolapse (CRP), focusing on postoperative patient satisfaction, recurrence, and functional outcomes.

Methods: In this retrospective study, we evaluated the outcomes of 12 patients treated with posterior prolene mesh rectopexy and sigmoid colon resection between 2018 and 2022. Perioperative data were noted. At follow-up, functional results, patient satisfaction and recurrence were determined. Twelve patients were assessed at a median interval of 32 months.

Results: None of the patients developed intraabdominal infections. One patient had postoperative pulmonary emboli, which resolved with medical therapy expressed constipation. All of the patients expressed full satisfaction with the result of the operation in the follow-up period, with a median time of 32 months. Two patients had anterior mucosal prolapsus about 1 cm in forceful straining, 1 patient had gas incontinence from time to time

Conclusion: Sigmoid resection with posterior prolene mesh rectopexy appears to be a safe procedure in controlling CRP.

Keywords: Rectal prolapsus, resection rectopexy, sigmoid resection

Introduction

Complete rectal prolapse (CRP) is defined as the circumferential and full-thickness protrusion of the rectum out of the anal verge. Total rectal prolapse (RP), rectal procidentia, and external RP, all defines the same pathology.

Rectal prolapse (RP) can be internal (also called recto-rectal intussusception: grades 1-4 of Oxford Rectal Prolapse Grading System—ORPGS) or external (grade 5 of ORPGS).[1] With chronic exposure, the mucosa may be bleeding and ulcerated. Generally, patients with external RP have pain, bleeding, constipation, and/or incontinence as associated symptoms in addition to the main symptom of prolapsing bowel. Patients with internal RP have obstructed defecation or fecal incontinence.

External RP requires surgical correction. However, internal RP may be treated conservatively in the beginning with lifestyle modifications, an appropriate diet, pelvic physiotherapy, biofeedback, psychological-psychiatric counseling, and then eventually it may require surgical repair if there is no satisfactory symptomatic response. In adults, it is more common in women with a ratio of 6-9 : 1.[2] It is usually seen in elderly women above 50 and in a younger age group of 20-40 in males.[3,4] Genital prolapse or pelvic organ prolapse can be associated with CRP in up to 30% of patients. Hence, a vaginal examination is essential in female patients with RP.[5] The precise cause of RP is not fully understood.

Anatomic Alterations

Anatomic and morphologic pathologies observed in association with CRP are defects in the pelvic floor with diastasis of the levator ani muscles, an abnormally deep Douglas pouch, a long

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rectosigmoid, loss of fixation of the rectum to the sacrum, loss of normal horizontal position of the rectum caused by its loose attachment to the sacrum and pelvic walls, and a patulous anus, and a weak anal sphincter.[6,7]

These changes may be the cause of the prolapse, or if it is considered to be invagination, the changes may be secondary to the prolapse. Neurologic diseases and connective tissue disorders should also be considered. It used to be thought that there was no need for any investigation other than a clinical examination. But to exclude any other gastrointestinal or neurologic diseases, double contrast barium enema of the colon, spine graphies, defecography, colonic motility studies, endoanorectal ultrasound, pelvic magnetic resonance imaging, and anal manometry may be required.

Methods

This retrospective study aims to evaluate the outcomes of 12 patients treated with posterior prolene mesh rectopexy and sigmoid colon resection due to CRP between 2018 and 2022**.** 9 of these patients were female, 3 were male. The median age of female patients was 45 years (age range: 20-73) while the median age of male patients was 61 years (age range: 42-79).

Two of the female patients had RP since childhood, 1 for 15 years, 1 for 22 years. A 64 year old male patient had RP for 20 years but the symptoms worsened in the last 2 years. The other 7 female patients had CRP from 2 months to 2 years.

All of the patients had CRP in defecation or spontaneously while standing and walking. 6 patients complained about constipation of varying degrees. All patients had incontinence for gas and stool.

The study was approved by the Ethics Committee of İstanbul University-Cerrahpaşa, and informed consent was obtained from all participants (Approval no: 604.01-1028329, Date: 2024).

Surgical Technique

All patients received compression stockings, subcutaneous low molecular weight heparin, cefotaxime, metronidazole, and mechanical bowel preparation the day before surgery. All patients were operated on under general anesthesia.

The patients are placed in a supine and Trendelenburg position. For 4 patients, Pfannenstiel incision, for 8 patients subumbilical median incision is utilized. The peritoneum lateral to the rectum is incised, and the rectum is fully mobilized posteriorly down to the levator ani muscles, behind the mesorectum and anterior to the presacral fascia. The pelvic peritoneum is opened in the retrovesical or retrouterine sulcus, and dissection is carried out down to the prostate or low on the posterior vaginal wall. The lateral ligaments are divided, and the deep pelvic peritoneum is stripped upward. The lateral peritoneal incision is extended cephalad to mobilize the long sigmoid colon, and if necessary the descending colon. The descending colon should not be mobilized completely.

The rectum is drawn upward to its maximum extent. A piece of prolene mesh about 5 cm in width is prepared. The proximal and distal colon and rectum ends are covered by gauze pads. The mesh is sutured to the presacral fascia just below the promontorium in the midline with 3/0 polypropylene sutures 1 cm to each other. Then the mesh is covered by gauze soaked in diluted povidone-iodine. The length of resection and anastomosis site is defined. The excess length of the colon is resected. The anastomosis site is about 5-7 cm above the mesh encirclement area around the rectum. End-to-end colo-rectal 2-layered anastomosis is done. For the first layer, 3/0 vicryl, for the second layer, 3/0 silk is used. Then the lateral wings of the prolene mesh are wrapped around the mesorectum and rectum, and the edges are sutured to the rectum by 3/0 prolene sutures through the mesh and serosa and subserosa of the rectum, leaving the anterior surface of the rectum free.

The excess pelvic peritoneum is excised, and the peritoneal edges are sutured to the rectum laterally and anteriorly. Thus, the deep Douglas' pouch is elevated, and the mesh is covered by the medial and lateral peritoneum. A suction drain is placed in the presacral space.

Results

In the postoperative period, a 64 year old female patient had a pulmonary embolism, which resolved with medical therapy. The mean postoperative hospital stay was 7 days. None of the patients developed intraabdominal infections. The length of the resected colon was 10 to 24 cm with a median length of 13 cm. The mean follow-up period was 32 months. Two patients, 1 male and 1 female had mucosal prolapse about 1 cm long in anterior of the anus with forceful straining. One patient had gas incontinence from time to time. One patient using sertraline expressed constipation. All of the patients were glad to have the operation and expressed full satisfaction. Further studies with a larger group of patients are needed to detect the appropriate surgical technique for the appropriate patient. Our study's limitation is the small number of patients.

Discussion

The aim of the surgical therapy for CRP is to control and eliminate the prolapse, to restore continence, prevent constipation from impaired evacuation, and to have minimal morbidity and mortality.

The operations are to fix the rectum—rectopexy, to resect the long bowel—sigmoidectomy, to mobilize and fix the rectum and resect the long bowel—resection rectopexy, and to narrow the defect in the levator ani.[8,9]

These goals can be achieved by perineal or abdominal procedures. Nowadays, abdominal operations are considered standard therapy. Surgery is the only treatment, but ideal treatment is still not defined and remains controversial and should be tailored to the patient. Open, laparoscopic, and robotic surgery have similar results.[3]

The choice of the procedure depends on the age, sex, general health, coexisting systemic, and gastrointestinal disorders. A full history of the patient's symptoms may determine the choice of surgical procedure, especially if constipation, obstructed defecation or fecal incontinence is present.

Recurrence after surgery for CRP is the most important measure of a successful outcome. Also, improvement of constipation and/or incontinence are important functional outcomes. Several authors think that sigmoid or anterior resection with rectopexy provides long-term control of RP with an acceptable recurrence rate and improvement in constipation and continence.[10,11] Notaras' posterior mesh rectopexy has reported good results with no or very low recurrence rates.[12] Teflon, polypropylene, polyvinyl alcohol sponge, Gore-Tex, and absorbable meshes with polyglycolic acid or polygalactone are some of the materials used for rectopexy. Teflon is rather soft but holds the sutures well. Polypropylene is stiffer but more inert. Ivolone is very soft when wet and holds the sutures poorly, and have higher incidence of infection. The recurrence rate with absorbable mesh is about 7%, but functional outcome is not so good.[13] Patients complain of worsened constipation.

The important functional problem after surgery is that, despite successful control of prolapse, persistent or onset constipation.[14,15] Kinking of the long sigmoid colon above the rectopexy level is suggested to be the cause of constipation. To avoid this problem, sigmoid colon resection was suggested. The combined suture rectopexy and sigmoid resection was initially proposed by Frykman in 1955, and later by Goldberg in 1969. Although there is the possibility of complications due to resection, recurrent prolapse rates are very low and constipation improves greatly.[16] Many surgeons who favor abdominal sigmoid resection and rectopexy avoid using mesh rectopexy for fear of infectious complications and prefer to perform suture rectopexy. However, sigmoid resection and mesh rectopexy have been reported to have better functional outcomes and very low recurrence rates.[17]

We have used prolene mesh for rectopexy and resection in 12 patients. No infection developed. Four of the patients had a Pfannenstiel incision. When the patient is not overweight, this incision provides good exposure and satisfactory space to work.

The study has some limitations, such as small sample size and the absence of long-term follow-up data. Further, larger series are needed to draw more robust conclusions.

Resection rectopexy for CRP has very good functional results and very low recurrence rates. Rectopexy with an inert material such as propylene is effective and has no or acceptable infectious complications, and its use can be considered safe. If laparotomy is used, Pfannenstiel incision is satisfactory and has better cosmetic results. Therefore, sigmoid resection with posterior prolene mesh rectopexy appears to be a safe procedure in controlling CRP.

Availability of Data and Materials: The data that support the findings of this study are available on request from the corresponding author.

Ethics Committee Approval: Ethics committee approval was received for this study from the Ethics Committee of İstanbul University-Cerrahpaşa University (Approval no: 604.01-1028329, Date: 2024).

Informed Consent: Written informed consent was obtained from the patients who participated in this study.

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