

Management Operative Options of Rectal Procidentia

Ahmed Mohammed Abdel Galeel, Doaa Omar Refaat, Gamal Mohammed Osman, Fady Mehaney Habib

General Surgery Department, Faculty of Medicine, Zagazig University, Egypt

Corresponding author: Ahmed Mohammed Abdel Galeel

E-mail: ahmedabdelgaleal@gmail.com

Conflict of interest: None declared

Funding: No funding sources

Abstract

Rectal prolapse has a profound effect on quality of life and has been associated with a multitude of surgical treatment options since its original description. It is defined as a full-thickness protrusion of the rectal wall through the anal sphincter. Clinical management is confounded by the fact that whereas 75% of patients with rectal prolapse experience problems with anal incontinence, 25–50% will have significant constipation. Symptoms of anal incontinence may be due to acquired changes in bowel motility or a reduction in resting anal pressure as a result of continual activation of rectoanal inhibition. Rectal prolapse cannot be corrected nonoperatively, although some of the symptoms associated with this condition, such as fecal incontinence, pain, and constipation, can be palliated medically. Surgery is the main form of treatment for rectal prolapse, and many operative procedures have been described in the historical literature, including anal encirclement, mucosal resection, perineal proctosigmoidectomy, anterior resection with or without rectopexy, suture rectopexy alone and a host of procedures involving the use of synthetic or biologic meshes affixed to the presacral fascia, including ventral rectopexy with mesh. Another important decision involves the choice of pelvic dissection, either posterior or ventral. Here we discuss the procedures that are in common practice and are most commonly reported in the literature.

Keywords: Rectal Procidentia

Tob Regul Sci. TM 2023;9(1): 4585 - 4594

DOI: doi.org/10.18001/TRS.9.1.320

Introduction

Rectal prolapse has a profound effect on quality of life and has been associated with a multitude of surgical treatment options since its original description. It is defined as a full-thickness protrusion of the rectal wall through the anal sphincter. Clinical management is confounded by the fact that whereas 75% of patients with rectal prolapse experience problems with anal incontinence, 25–50% will have significant constipation (1).

Symptoms of anal incontinence may be due to acquired changes in bowel motility or a reduction in resting anal pressure as a result of continual activation of rectoanal inhibition. Constipation in patients with rectal prolapse may be a consequence of slow colonic transit or an increase in external anal sphincter contractions. These symptoms have a significant influence on the choice of operative approach in the treatment of rectal prolapse. However, due to the variable results of operative approaches, it is unclear whether optimal treatment can be selected based on preoperative physiologic testing (2).

A) Nonoperative Management

Rectal prolapse cannot be corrected nonoperatively, although some of the symptoms associated with this condition, such as fecal incontinence, pain, and constipation, can be palliated medically (3).

There are no reports of rectal prolapse being resolved through medical therapy alone. Although surgical treatment is under consideration, prolapse-associated symptoms of constipation and fecal incontinence can be treated nonsurgically to improve quality of life. Fiber and stool softeners may be used to treat constipation. Table sugar can be used topically to reduce edema and assist in reduction maneuvers with incarcerated rectal prolapse (4).

Attention to skin care to avoid skin maceration may also be beneficial. Although none of these palliative interventions addresses the prolapse itself, they may improve patient condition and ultimate quality of life. In addition, one recent retrospective study of 139 women showed that pretreatment of incontinence symptoms before surgery led to a better improvement in postoperative continence (3).

Any surgical treatment must, of course, be tailored to the patient's overall medical condition, history of previous procedures and patient willingness to undergo an operation. However, all of the patients who are candidates for surgical treatment of rectal prolapse—including the elderly—should be advised to act quickly, where possible, and avoid unnecessary delays and occasional bowel incarceration (5).

In the long term, patients with rectal prolapse who do not undergo surgery and are only managed medically will develop irreversible fecal incontinence. In addition, allowing prolapse to continue untreated beyond 4 years may lead to higher rates of subsequent rectal prolapse recurrence, presumably secondary to a secondarily weakened pelvic floor (6).

B) Operations for Rectal Prolapse

Surgery is the main form of treatment for rectal prolapse, and many operative procedures have been described in the historical literature, including anal encirclement, mucosal resection, perineal proctosigmoidectomy, anterior resection with or without rectopexy, suture rectopexy alone and a host of procedures involving the use of synthetic or biologic meshes affixed to the

presacral fascia, including ventral rectopexy with mesh. Only a few procedures are actually routinely advocated. In general, these procedures adopt 1 of 2 predominant general approaches, abdominal versus perineal, which is usually dictated by the comorbidities of the patient, the surgeon's preference and experience, and the patient's age and bowel function (7).

Another important decision involves the choice of pelvic dissection, either posterior or ventral. Here we discuss the procedures that are in common practice and are most commonly reported in the literature (8).

1) Abdominal Procedures for Rectal Prolapse

According to numerous retrospective reports, recurrence rates after abdominal surgery for rectal prolapse are approximately one fourth those after perineal surgery, and the abdominal approach is associated with better functional outcomes. Because of these superior overall results, the abdominal approach is advocated by many, as the preferred treatment for younger and healthier patients (9).

Some have raised concerns that patient selection bias (ie, the fact that perineal surgery is offered disproportionately to older, less healthy patients who may have higher rates of recurrence due to poor tissues and longer prolapse duration) may influence reported recurrence rates after perineal repairs. One study, in which all patients were treated with perineal proctectomy, showed that after 21 months of follow-up, rates of recurrent rectal prolapse in patients <50 years of age were comparable with those of patients generally offered abdominal repairs (<8%), (10).

Some surgeons who prefer a perineal approach have pointed to data suggesting that the morbidity and mortality rates of the abdominal approach are slightly higher. However, these studies have also been called into question recently by National Surgical Quality Improvement Program data, which suggest that the morbidity and mortality of the perineal approach have been underestimated (11).

I) Posterior Rectal Dissection Techniques to Repair Rectal Prolapse

Posterior rectal mobilization without a rectopexy (with or without a concomitant anterior resection) is associated with higher recurrence rates and complications and is typically not recommended.

Posterior dissection is a method of treatment in which the rectum is mobilized in the plane between the mesorectal fascia and the presacral fascia. This dissection usually starts at the sacral promontory and is carried down to the levators. It may be performed in isolation or in combination with an anterior resection.

Several studies show that posterior dissection alone (without rectopexy) does not provide lasting rectal prolapse repair (12). Even when the procedure is combined with a low anterior resection (not a sigmoid resection), low pelvic anastomoses in those with borderline continence may lead

to additional loss of function. Given the lack of functional advantages for this procedure, the high recurrence and complication rates, and the availability of options that can achieve better outcomes with lower risk, low anterior resection or posterior rectal mobilization without additional added steps is not typically recommended (8).

II) Posterior Suture Rectopexy With and Without Sigmoid Resection

Rectopexy is a key component in the abdominal approach to rectal prolapse. Rectopexy refers to the fixation of the rectum in the pelvis with suture and was first described by **Cutait** in (13). Suturing the rectum to the sacral promontory aims to prevent the telescoping of the redundant bowel.

Successful outcomes appear to be attributed, in part, to the fixation of the rectum with permanent suture and the scarring and fibrosis from the posterior dissection.

Patients presenting with severe constipation and rectal prolapse should probably undergo more than a suture rectopexy; current options include resection suture rectopexy, ventral rectopexy, or perineal repairs (14).

Resection rectopexy refers to the addition of a sigmoid resection to the standard suture rectopexy discussed above. The technique was first described by **Frykman** in (15) and was popularized in studies in 1969 and **Solla et al.** (16), which showed low prolapse recurrence rates (<2%) with an acceptable 4% complication rate and low rates of anastomotic leak.

In general, resection should be avoided in patients with recurrent rectal prolapse after a failed previous perineal rectosigmoidectomy, because transabdominal resection in this situation can lead to ischemic bowel. In addition to its favorable outcomes, the appeal of the resection rectopexy procedure includes the lack of artificial mesh, ease of operation, and the resection of a redundant sigmoid colon (8).

In addition, two randomized controlled trials of patients who reported preoperative constipation found lower rates of postoperative constipation after resection rectopexy compared with rectopexy alone (17). However, the operation may present concerns for rectal prolapse patients with fecal incontinence; the resolution of fecal incontinence appears to be lower when sigmoid resection is performed (9).

III) Anterior Rectal Dissection Techniques to Repair Rectal Prolapse

• Ventral Rectopexy

Ventral mesh rectopexy, developed by **D'Hoore** and **Penninckx**, (18) is the only technique for rectal prolapse repair that uses only a limited anterior rectal mobilization. The technique involves careful separation of the rectum from the vagina (or prostate) down to the perineal body anteriorly with no posterior dissection of the rectum from the sacrum (other than to clear a small

spot of sacrum for the rectopexy). After this limited rectal mobilization, a ventral rectopexy is performed using synthetic or biologic mesh (14).

The mesh buttresses the anterior wall of the rectum at the point of its intussusception and suspends the rectum to the sacral promontory. This is in contrast to the Orr-Loygue procedure, where the rectum is mobilized both anteriorly and posteriorly before fixation to the sacrum (19).

In addition to being reported as being effective in repairing the prolapse, D'Hoore et al. (20) reported an 84% improvement in postoperative constipation and no incidence of new de novo constipation. They postulated that avoiding posterior rectal dissection decreases injury to the parasympathetic and sympathetic innervation of the rectum.

A subsequent systematic review comparing 728 nonrandomized patients treated with either posterior rectal dissection/rectopexy or ventral mesh rectopexy suggested that patients undergoing ventral rectopexy reported a recurrence rate of 3.4% and a weighted decrease in the postoperative constipation rate estimated to be 23.0% (21). These observations, combined with reports purporting reassuring rates of postoperative complications, have led many in Europe to believe that this new approach is the preferred method of treatment for rectal prolapse.

- ***Laparoscopic ventral mesh rectopexy***

Minimally invasive treatment of rectal prolapse, first described in 1992, with a laparoscopic rectopexy, has the same goals as open surgery, which are eradicating full thickness rectal prolapse, improving bowel function and continence and minimizing recurrence rates, and the results do not appear to differ materially. Numerous studies comparing laparoscopic with open repair have shown equivalent recurrence rates (4%–8%) and morbidity (10%–33%) but clear benefits to the laparoscopic approach in terms of pain control, length of stay, and return of bowel function (9; 22).

Surgical Technique

The procedure is performed in a modified Lloyd Davis position. Four ports are used, one optical 10 port at the umbilicus, a 10- and 5-mm on the right side, and another 5-mm port in the left iliac fossa (23).

In the beginning of the procedure, sacral promontory is identified and a fold of peritoneum is stretched and dissection is started with monopolar diathermy on scissors. Once the incision is made on the stretched peritoneum, CO₂ helps dissecting the tissue planes (23).

A clearly defined plane preserving the hypogastric nerves can be developed in this way. Dissection is performed in craniocaudal fashion dissecting alongside the right border of the rectum (23).

Dissection is then extended to open the rectovaginal septum. The back wall of the vagina is identified and the rectum is retracted to open up the peritoneal fold (23).

If entered in the right plane, this plane should be avascular and there should be no damage to either the rectum or vagina. No retractors are placed in the pelvis and surgeon's left-hand instrument gives traction on the rectum and moves it to either side as needed. Dissection is continued down right to the perineal body (23).

At that stage, the level of dissection is assessed by holding the rectum with Johann's graspers and doing a digital rectal examination. The level of dissection should correspond to approximately 3 to 4 cm from the anal verge. A mesh with a size of approximately 5 × 15 cm is sutured to the distal end of the anterior rectal wall using four interrupted sutures of 2/0 Ethibond about 1 cm apart (23).

Care should be taken to take just enough bites and not to penetrate the rectum to prevent mesh infection. A gentle stretch is applied on the mesh to pull the rectum and fix the proximal end of the mesh to sacral promontory with tackers. Peritoneum is closed with a running suture of 2/0 polydioxanone suture covering the mesh completely (23).

2) Perineal Operations for Rectal Prolapse

I) *Perineal rectosigmoidectomy*

Perineal rectosigmoidectomy, the Altemeier procedure, involves a transanal full-thickness resection of the prolapsed rectum and a coloanal anastomosis. The operation can be performed without general anesthesia and involves a shorter hospital stay and lower complication rates compared with transabdominal surgery. However, recurrence rates of 16% to 30% at 2 years are high and may be affected by the length of resected intestine (24).

Bordeianou et al. (8) concluded that, treatment is well established in the growing body of literature that the benefits of low recurrence rates and improved functional outcome can be safely achieved using laparoscopic surgical techniques to repair full-thickness rectal prolapse. Selecting an operative approach based on clinical criteria provides exceptional functional outcomes with regard to symptoms of constipation and incontinence.

In addition, the practice of preserving the lateral rectal ligaments and avoiding injury to the hypogastric nerves is essential in order to obtain good functional outcomes (25).

II) *The Delorme procedure*

Delorme procedure involves a circumferential mucosal sleeve resection and imbrication of the muscularis layer. Retrospective studies suggest that recurrence rates after Delorme in the range of 10% to 15% may be higher than recurrence rates after abdominal approaches, but a recent

randomized controlled trial showed that recurrence rates and functional outcomes after Delorme procedures were comparable to perineal rectosigmoidectomy or abdominal procedures (26).

In the beginning of the procedure rectal examination is done . the position of the patient is in the Lithotomy/prone jackknife position. Grasp the mucosa of the rectum and prolapse mucosa and submucosa to fullest extent. Score rectal mucosa approximately 2 cm cephalad to dentate line. Circumferentially dissect mucosa proximally, leaving the terminal 2 cm in situ. Place plicating sutures in muscular wall of the rectum. Excise redundant mucosa and reapproximate it (27) .

Complications that may occur after rectal prolapse surgery

As with any surgery, anesthesia complications, bleeding and infection are always risks. Other risks and complications from surgeries to repair rectal prolapse include (8):

- Lack of healing where the two ends of bowel reconnect. This can happen in a surgery in which a segment of the bowel is removed and the two ends of the remaining bowel are reconnected.
- Intra-abdominal or rectal bleeding
- Urinary retention (inability to pass urine)
- Medical complications of surgery: heart attack, pneumonia, deep venous thrombosis (blood clots)
- Return of the rectal prolapse
- Worsening or development fecal incontinence
- Worsening or development of constipation

After surgery, constipation and straining should be avoided. Fiber, fluids, stool softeners and mild laxatives can be used (28).

Recurrence

The surgeon's experience could play a role, and the length of follow-up should be considered, although a pooled analysis of the studies available so far does not show any relationship between recurrence and length of follow-up. This is in agreement with other authors who have reported almost all recurrences within 2 years of the operation (29).

Another critical point could be the length of the resected specimen. In fact, the presence of a weak pelvic floor with a residual mobile sigmoid colon could favour a recurrence. However, the definition of recurrence is a major cause of confusion, as in some series, even a minor rectal mucosal prolapse or a wet anus is considered as such (8).

Functional Results

As far as the functional postoperative results are concerned, the data presented in almost all studies are of poor quality. Scoring systems to quantify the severity of faecal incontinence or constipation are used only in two papers, whereas a dedicated quality-of-life questionnaire is never mentioned (26).

One of the major functional problems associated with rectal prolapse is faecal incontinence, which is estimated to occur in about 80% of cases in most studies. In some cases, the impending prolapse itself can cause or contribute to incontinence due to the relaxing effect on the anal sphincter, but in most cases, there is a weak pelvic floor with a patent patulous anus and evident hiatus of the pelvic diaphragm (puborectalis muscles), which cannot be normalised with any operation. Pudendal neuropathy has been claimed to play a role by some authors who consider both the prolapse and the pelvic weakness as an expression of the same neuromuscular deficiency. However, the role of pudendal neuropathy is controversial, as in other experiences, no relationship was found between clinical outcome and the presence of pudendal neuropathy (11).

Furthermore, with this operation, the rectal ampulla is resected, and therefore rectal compliance is diminished, thus contributing to faecal incontinence. This point is controversial, as rectal resection for cancer of the proximal rectum is rarely associated with faecal incontinence unless the pelvic nerves are injured during pelvic dissection, but the issue is considered relevant and some authors prefer a colonic-pouch anal anastomosis instead of direct coloanal anastomosis (30).

The surgical management of rectal prolapse is complex and best tailored to the individual patient. This assertion seems to be realized in a recent meta-analysis by **Bachoo et al.** (31) in that there was insufficient evidence to determine which approach had the best outcomes.

Certainly, there is no procedural panacea, as the heterogeneity of patients who present with rectal prolapse must be emphasized in determining which of the surgical approaches will lead to improved functional outcome with the minimal associated morbidity. Future developments in the area of minimal-access surgery have challenged some of the established paradigms in limiting higher-risk patients to perineal procedures over abdominal rectopexy, but further study must be undertaken to determine the long-term durability of these minimally invasive approaches (32).

No Conflict of interest.

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