

Current Perspectives in Management of Rectal Prolapse.

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Abstract: The problem of complete rectal prolapse is formidable, with no clear predominant treatment of choice. Surgical management is aimed at restoring physiology by correcting the prolapse and improving continence and constipation with acceptable mortality and recurrence rates. Abdominal procedures are ideal for young fit patients, whereas perineal procedures are reserved for older frail patients with significant co morbidity. Laparoscopic procedures with their advantages of early recovery, less pain, and possibly lower morbidity are recently added options. Regardless of the therapy chosen, matching the surgical selection to the patient is essential. **Data Sources** was literature review using MEDLINE. Many articles reporting on rectopexy were included. Articles reporting on prospective and retrospective comparisons were included. Case reports were excluded, as were studies comparing data with historical controls. **Data Extraction** The results were tabulated to show outcomes of different studies and were compared.

INTRODUCTION

Rectal prolapse, or procidentia, is defined as a protrusion of the rectum beyond the anus¹. Complete or full-thickness rectal prolapse is the protrusion of all of the rectal wall through the anal canal; if the rectal wall has prolapsed but does not protrude through the anus, it is called an occult (internal) rectal prolapse or a rectal intussusception^{2,3}. Full-thickness rectal prolapse should be distinguished from mucosal prolapse in which there is protrusion of only the rectal or anal mucosa¹⁻³.

Prerequisites for the development of rectal prolapse are (A) the presence of an abnormally deep pouch of Douglas³⁻⁶ (B) the lax and atonic condition of the muscles of the pelvic floor and anal canal,^{4,5} (C) weakness of both internal and external sphincters, often with evidence of pudendal nerve neuropathy,^{5,6} and (D) the lack of normal fixation of the rectum, with a mobile mesorectum and lax lateral ligaments^{5,6,7}. With this abnormality, the small intestine, which lies against the anterior wall of the rectum, may force the rectum out through the anal canal.

Rectal prolapse occurs at the extremes of age. In the pediatric population, the condition is usually diagnosed by the age of 3 years, with an equal sex distribution. In the adult population, the peak incidence is after the fifth decade and women are more commonly affected, representing 80% to 90% of patients with rectal prolapse. Patients with complete rectal prolapse have markedly impaired rectal adaptation to distention, which may contribute to anal incontinence, and consequently more than half of the patients with rectal prolapse have coexisting incontinence. Constipation is associated with prolapse in 15% to 65% of patients. Straining may force the anterior wall of the upper rectum into the anal canal, perhaps causing a solitary rectal ulcer due to mucosal trauma¹.

The aim of treatment is to control the prolapse, restore continence, and prevent constipation or impaired evacuation⁷. This goal can be achieved by (A) resection or plication of the redundant bowel and/or (B) fixation of the rectum to the sacrum^{5,6,7}. A strong and functional pelvic floor may be restored by plicating the puborectalis anterior to the rectum⁵. The rationale for rectal fixation is to keep the rectum attached in the desired elevated position until it becomes fixed by scar tissue. In incontinent patients, the patulous sphincter ani begins to regain its tone approximately 1 month after the procedure, and full continence is generally restored within 2 to 3 months. Numerous procedures have been described for the treatment of rectal prolapse and are generally categorized into perineal or abdominal approaches.

LABORATORY & IMAGING STUDIES

Rectal prolapse is diagnosed on physical examination without need for further investigations. Only patients with internal intussusception and rectal prolapse may be evaluated with anorectal physiology testing, defecography or dynamic MRI, colonic transit studies, and barium enema or colonoscopy. Anorectal physiology may demonstrate obstructed defecation and other causes of incontinence. Defecography or dynamic MRI will show the intussusceptum, making the diagnosis. Barium enema, colonoscopy may be needed to document normal colon.

SURGICAL OPTIONS

A vast number of different procedures described to manage the disorder serve as testimony to uncertain etiology of the disease and the resultant disagreement about optimal surgical therapy.

Procedure related factors for the choice: Extent of procedure, potential morbidity, recurrence rate, impact on fecal continence and bowel habit, familiarity and ease of technique.

There are two classes of operations for rectal prolapse: abdominal and perineal

A) Transabdominal Procedures

- 1) Suspension-fixation
 - Presacral rectopexy
 - Anterior sling rectopexy (Ripstein)
 - Posterior sling rectopexy (Wells)
- 2) Resection procedures
 - Rectopexy with sigmoid resection
 - Anterior resection

B) Perineal Procedures

- Perineal rectosigmoidectomy (Altemeier)
- Rectal mucosal sleeve resection (Delorme)
- Anal encirclement (Thiersch + modification)

ABDOMINAL PROCEDURES

Many abdominal techniques have been described, differing only in the extent of rectal mobilization, the methods used for rectal fixation, and the inclusion or exclusion of resection. Preservation of ligaments is associated with an improvement in continence and a reduction of constipation.

ABDOMINAL RECTOPEXY

This operation, first described by Cutait in 1959⁸, involves a thorough mobilization and upward fixation of the rectum. The mobilization

and subsequent healing by fibrosis tends to keep the rectum fixed in an elevated position as adhesions form, attaching the rectum to the presacral fascia.

This operation is useful for those patients who do not have associated constipation with prolapse. It involves mobilization of rectum to levator preserving lateral stalks, which are then sutured to fascia below sacral promontory, using non-absorbable suture like prolene.

Results Of Abdominal Rectopexy

Authors	No of patients	Recurrence (%)	Mortality (%)
Loygue et al	140	3.6	1.4
Blatchford et al	42	2	00

RESECTION

The concept of rectosigmoid resection is based on the observation that after low anterior resection, a dense area of fibrosis forms between the anastomotic suture line and the sacrum, securing the rectum to the sacrum⁵. Other advantages include¹ resection of the abundant rectosigmoid, which avoids torsion or volvulus;² achieving a straighter course of the left colon and little mobility from the phrenocolic ligament downward, which acts as yet another fixative device^{1,5} and³ relief of constipation in a selected group of patients⁵. It is well suited to patients with a long redundant sigmoid and a long history of constipation. However, sigmoid resection alone for rectal prolapse has not been popular and is confined to studies before 1980.

ABDOMINAL RECTOPEXY AND SIGMOID COLECTOMY

The addition of sigmoid resection to rectopexy (resection rectopexy; Frykman-Goldberg procedure) combines the advantages of mobilization of the rectum, sigmoid resection, and fixation of the rectum. Most of the series describe resection rectopexy in which resection is combined with suture rectopexy. Few studies have addressed a combination of resection and posterior mesh rectopexy. The mortality rates ranged from 0% to 6.7% with an associated recurrence rate of 0% to 5%.

In constipated patient or patient with redundant sigmoid colon, resection is preferred to fixation alone. There are four essential components of this operation

1. Complete mobilisation of rectum down to levator musculature, leaving the lateral stalks intact. This is done to avoid distal intussusception.
2. Elevation of rectum cephalad with suture fixation of lateral rectal stalks to pre sacral fascia just below the sacral promontory.
3. Suture of endopelvic fascia to obliterate the cul- de- sac
4. Sigmoid colectomy with anaestomosis

The modern components of the operation are essentially same except that most of the surgeons now no longer obliterate the cul- de- sac.

PROSTHETIC OR MESH RECTOPEXY

Insertion of a foreign material during rectopexy is commonly performed with the assumption that this material evokes more fibrous tissue formation than ordinary suture rectopexy⁵. Materials used include fascia lata; nonabsorbable synthetic meshes such as nylon, polypropylene (Prolene

Results Of Abdominal Rectopexy And Sigmoidectomy

Authors	No of patients	Recurrence (%)	Mortality (%)	Morbidity (%)
Watts et al	102	1.9	00	04
Husa et al	48	09	2.1	00
Sayfan et al	13	00	00	23
McKee et al	09	00	00	00
Luukkonen et al	15	00	6.7	20
Canfrere et al	17	00	00	00
Huber et al	39	00	00	7.1

[Ethicon Inc, Somerville, NJ], Marlex [CR Bard, Murray Hill, NJ], polyvinyl alcohol (Ivalon; Dow Corning, Midland, Mich), and polytef (Teflon; CR Bard); and absorbable meshes such as polyglactin (Vicryl; Ethicon Inc) and polyglycolic acid (Dexon; Davis Geck, Danbury, Conn). There are 2 types of mesh rectopexy: posterior mesh rectopexy and anterior sling rectopexy (Ripstein procedure).

POSTERIOR MESH RECTOPEXY

After rectal mobilization, a prosthetic material or mesh is inserted between the sacrum and the rectum, sutured into the rectum, and then sutured into the periosteum of the sacral promontory. Although fascia lata was used in the early description of the procedure in general, it is no longer used. The sponge rectopexy, first described by Wells in 1959¹⁵, involves insertion of the polyvinyl alcohol sponge prosthesis in front of the sacrum, between the sacrum and the rectum. Mortality rates ranged from 0% to 3%^{9,10,11}, and recurrence rates were reported at 3%^{9,10,11}. Improvement in continence occurred in 3% to 40%, but there was a mixed response of constipation to this type of rectopexy^{9,10,11}. Although the sponge rectopexy was popular before 1980, it has lost popularity and is confined to studies before 1994. Other nonabsorbable synthetic meshes have replaced the sponge, and more recently absorbable meshes have been introduced. A number of authors^{12,13} have shown that the use of both absorbable and nonabsorbable meshes achieved similar results. The mortality rate was 0% to 1% and the recurrence rates were 0% to 6% for both absorbable^{12,13} and nonabsorbable meshes. There was an overall improvement in continence, with conflicting results in terms of constipation.

Significant pelvic sepsis is a major contributor to postoperative morbidity, having been reported in 2% to 16% of patients with prosthetic rectopexy. Polyvinyl alcohol sponge placement carries an increased risk of infectious complications^{14,15}. In patients with polyvinyl alcohol sponge rectopexy, the infection rate was 3% without resection and increased to 3.7% in the presence of resection. Insertion of a mesh during rectopexy without resection appears to be reasonable, as it was associated with a 0% or very low mortality.

RIPSTEIN PROCEDURE (ANTERIOR SLING RECTOPEXY)

This operation was first described by Ripstein in 1952. After complete mobilization of the rectum, an anterior sling of fascia lata or synthetic material is placed in front of the rectum and sutured to the sacral promontory. The rationale is to restore the posterior curve of the rectum to minimize the effect of increased intra-abdominal pressure. The operation provides a firm anterior fascial support in patients with atrophic pelvic structures and restores the normal anatomic position of the rectum. Mortality rates ranged between 0% and 2.8% and recurrence rates between 0% and 13%, and there was a trend toward improvement in continence and a mixed response to constipation.

In a prospective randomized study of rectopexy with and without resection, McKee et al¹⁶ in 1992 showed that patients with rectal prolapse who underwent abdominal rectopexy alone had a high incidence of constipation. They also showed that patients having rectopexy alone had a higher pressure in the rectum for a given volume of isotonic sodium chloride solution infused. They postulated that this was due to kinking between the redundant sigmoid colon and the rectum at the rectosigmoid junction, and that the addition of sigmoidectomy appeared to alleviate this possibly by removing the redundant loop of colon that may kink and cause delay in passage of intestinal content.

Ripstein Procedure

Authors	Number of patients	Recurrence (%)	Mortality (%)	Morbidity (%)
Ripstein and Lanter	289	00	0.3	0
Gordon and Hoexter	1.1	2.3	00	16.6
Eisenstadt et al	30	00	00	13.3
Tjandra et al	134	08	0.6	21
Winde et al	35	00	00	28

Results of posterior wrap

Authors	No. of patients	Recurrence (%)	Mortality (%)	Morbidity (%)
Sayfan et al	16	00	00	12.5
Luukkonen et al	15	00	00	13.3
Novell et al	31	3	00	19

LAPAROSCOPIC RECTOPEXY

Compared with laparotomy, laparoscopic rectopexy has the advantages of reduced pain, shortened hospital stay, early recovery, and early return to work. The procedure involves either suture or posterior mesh rectopexy, with or without resection. The mortality for laparoscopic rectopexy ranged between 0% and 3%, with recurrence rates ranging from 0% to 10% in follow-up of between 8 and 30 months^{17,18,19}. These studies have demonstrated that this approach is as effective as the open method in the treatment of rectal prolapse, and the effect on continence and constipation depends on the type of rectopexy performed.

PLACE OF PROSTHETIC MESHES IN RECTOPEXY

The use of prosthetic material in rectopexy has been challenged in recent years. There is evidence that complete encirclement of the rectum (Ripstein procedure) may lead to erosion of the foreign material with subsequent fistula formation and stenosis in approximately 7% of patients⁵. Indeed, many authors now believe that rectal fixation by suture only seems sufficient, with reported recurrence rates of 3% or less^{1,2,3,4,5}.

ROLE OF DIVISION OF LIGAMENTS

The left colon and rectum receive retrograde innervation from neural efferents running through the lateral ligaments; thus, lateral ligament division during rectopexy has been suggested to denervate the rectum, causing postoperative constipation. In summary, it would appear that preservation of ligaments is associated with an improvement in continence and a reduction of constipation.

PERINEAL PROCEDURES

The advantage of perineal procedures is that they avoid laparotomy, which makes them well suited for high-risk patients.

- **Thiersch Procedure:** This procedure does not correct the prolapse but narrows the anus enough that the prolapse is confined to rectum. This procedure also has morbidity in the form of erosion of suture, breakage, sepsis etc. Thus, this procedure is reserved for most seriously ill patients who cannot undergo other definitive procedures.
- **Perineal Rectosigmoidectomy:** This is a procedure popularised by Altmeier. The recurrence rate for the procedure varies from 0-10 percent over 5 years. The recurrence is higher for series with longer follow-up. Levatorplasty, if added leads to improvement in incontinence.
- **Delorme Procedure:** This is ideally suited to those patients with less extensive or partial circumference prolapse. Only mucosa and submucosa are excised from prolapsed segment in this procedure. The procedure has morbidity rate varying from 0-32%. The morbidity includes haemorrhage, anaestomotic

Results Of Perineal Rectosigmoidectomy

Authors	No of patients	Recurrence (%)	Mortality (%)	Morbidity (%)
Altmeier et al	106	3	0	24
Friedman et al	27	50	0	12
Gopal et al	18	6	0	17
Finlay & Aitchison	17	6	6	18
Williams et al	114	11	0	12
Johansen et al	20	0	5	5
Kim et al	183	16	0	14
Azimuddin et al	36	16	0	0
Zbar et al	80	4	0	0

Results Of Delorme's Procedure

Authors	Number of patients	Recurrence (%)
Uhlig and Sullivan	44	7
Manson et al	27	7
Senapati et al	32	13
Oliver et al	41	22
Tobin and Scott	43	26

dehiscence, stricture, diarrhoea, and urinary retention. Recurrence rate varies from 7-22% over 1-13 years. Incontinence is improved in 40-50% patients.

CONCLUSIONS

The problem of complete rectal prolapse is formidable, with no clear predominant treatment of choice. Abdominal procedures are ideal for young fit patients, whereas perineal procedures are reserved for older frail patients with significant co morbidities. Results after all abdominal procedures are comparable. Suture rectopexy seems adequate in curing rectal prolapse. The superiority of mesh rectopexy has not been demonstrated, and meshes add a foreign body and increase the risk of infection. Suture and mesh rectopexy are still popular with many surgeons, and the choice depends on the surgeon's experience and preference. Whereas sigmoid resection alone and anterior resection are obsolete, laparoscopic rectopexy has results equivalent to or better than those of open rectopexy. Laparoscopic suture rectopexy is preferable because it is simple and easy to perform. Perineal procedures are useful for patients who are not fit for abdominal procedures. Perineal rectosigmoidectomy seems better than the Delorme procedure and, if possible, levatorplasty should be added.

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