33. Rectal Prolapse

Steven D. Mills

Rectal prolapse is a telescoping of the rectum out of the anus.

Rectal intussusception is when the telescoping does not protrude through the anal canal.

Many patients have other associated pathologies of the pelvic floor.

Fecal incontinence is a common associated symptom.

There is also a frequent association with anterior compartment pathologies such as urinary incontinence, voiding disorders, cystocele, or rectocele.

Nearly 100 years ago, Moschcowitz suggested that rectal prolapse occurs as a sliding hernia through a defect within the pelvic fascia. Later, Broden and Snellman demonstrated, with the aid of cinedefecography, that rectal prolapse is an intussusception of the rectum.

Rectal prolapse is more common in women than in men and is associated with childbirth, prolonged straining at stool, and/or anatomical considerations such as a wider pelvis. In women, the disorder increases in frequency with age and associated with damage to the pudendal nerves during childbirth and/or chronic straining at stool.

Many different procedures have been described to treat rectal prolapse (Table 33.1).

Choice of procedure is based upon patient and procedural factors. The key issues are gender, the patient's overall medical condition, bowel function, and whether fecal incontinence is present.

There is a dearth of high-quality data regarding the optimum treatment method.

A comprehensive review, in 2008, of randomized trials found a few patterns:

The method of fixation during rectopexy did not change outcome.

Division of the lateral stalks was associated with a higher incidence of constipation.

Resection and rectopexy was associated with less constipation.

Laparoscopy was associated with a shorter hospitalization and less morbidity.

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Table 33.1 Operations described for rectal prolapse

Transabdominal procedures
1. Repair of the pelvic floor
Abdominal repair of levator diastasis
Abdominoperineal levator repair
2. Suspension–fixation
Sigmoidopexy (Pemberton–Stalker)
Presacral rectopexy
Lateral strip rectopexy (Orr–Loygue)
Anterior sling rectopexy (Ripstein)
Posterior sling rectopexy (Wells)
Puborectal sling (Nigro)
3. Resection procedures proctopexy with sigmoid resection anterior resection
Perineal procedures
Perineal rectosigmoidectomy (Altemeier)
Rectal mucosal sleeve resection (Delorme)
Perineal suspension–fixation (Wyatt)
Anal encirclement (Thiersch + modification)

Patient Evaluation

Most patients present with complaints associated with the prolapse itself.

Constipation and/or fecal incontinence symptoms should be elucidated.

Physical examination may demonstrate a spontaneous prolapse (Fig. 33.1), while straining may be needed to demonstrate the prolapse in the squatting or sitting position.

A differentiation should be made between full-thickness and mucosal prolapse.

Digital rectal examination detects concomitant anal pathology and evaluates adequacy of sphincter resting tone and squeeze pressure and function of the puborectalis muscle.

Colonoscopy or flexible sigmoidoscopy with air-contrast barium enema excludes and associated mucosal abnormalities.

Defecography adds little in full-thickness prolapse; however, it can be essential in the evaluation of internal or occult procidentia (rectorectal intussusception) or as part of pelvic floor musculature evaluation.

Anal manometry assesses sphincter function, as chronic prolapse typically damages the internal anal sphincter, resulting in poor resting pressures. A manometric study by Spencer reported that the anorectal inhibitory reflex was frequently absent or abnormal, that resting anal pressures were abnormally low, and that squeeze pressures were normal.

Surgical Procedures

There are two general approaches: abdominal and perineal operations.

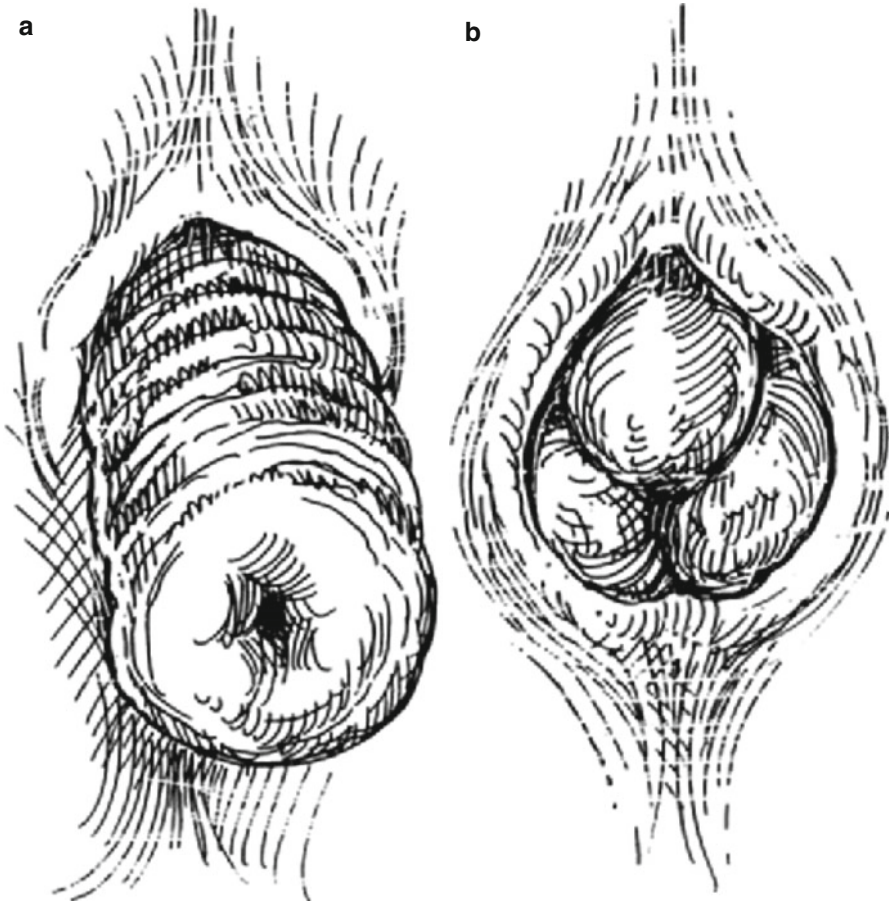The most common abdominal operations are rectopexy with or without concomitant sigmoid resection.

Fig. 33.1 Mucosal versus full-thickness prolapse. (**a**) Circumferential full-thickness prolapse with concentric mucosal folds. (**b**) Radial folds seen with hemorrhoidal prolapse (From Beck and Whitlow. Copyright 2003 by Taylor & Francis Group LLC. Reproduced with permission)

The typical perineal procedures are perineal rectosigmoidectomy (Altemeier) or a mucosal sleeve resection (Delorme).

The specific operation must be tailored to the condition and pathology of each patient, but some generalizations can be made.

Elderly, high-risk patients are best treated with perineal procedures (possibly with regional anesthesia).

An abdominal resection/rectopexy should be considered for a healthy patient with constipation and no incontinence.

The risk of impotence for abdominal rectopexy should approach 1–2 % in skilled hands.

A rectopexy with or without levatorplasty can be performed in patients without constipation symptoms

Perineal Procedures

Rectosigmoidectomy

Rectosigmoidectomy (Altemeier procedure) can be performed under a general or spinal anesthetic in either the prone, left lateral, or lithotomy position. A circumferential incision is made in the rectal wall approximately 1–2 cm above the dentate line (Fig. 33.2). The incision is deepened until the full thickness of the rectal wall has been divided. The rectum is withdrawn out of the body while progressively dividing and ligating the mesorectum, advancing more cephalad.

Anteriorly, the peritoneal reflection (hernia sac) is opened. The dissection continues until there is no further redundancy remaining in the rectum/sigmoid colon. A hand-sutured or circular-stapled coloanal anastomosis is performed. A levator plication can be performed prior to the coloanal anastomosis, which has been reported to improve continence in two-thirds of patients.

Several studies have been reported on perineal rectosigmoidectomy, and clinical outcomes are summarized. An improvement in incontinence is reported in the majority of patients in whom levatorplasty was performed.

Mucosal Sleeve Resection (Delorme Procedure)

The Delorme procedure is ideally suited to those patients with a less extensive prolapse (e.g., about 5 cm in length) or with full-thickness prolapse limited to partial circumference (e.g., anterior wall).

In Delorme procedure, only the mucosa and submucosa are excised from the prolapsed segment (Fig. 33.3).

It can be performed under general, spinal, or local anesthesia. Prone position is preferred, but left lateral or lithotomy position can be used.

Results of Delorme procedure are summarized in Table 33.2. Recurrence rates (6–26 % at 1–13 years postoperatively) are generally higher than with a perineal rectosigmoidectomy. Incontinence is improved in 40–50 % of patients.

An alternative to the mucosal resection with muscular plication is the mucosal plication procedure (Gant–Miwa procedure). The best results seem to be when the mucosal plication is combined with an anal encircling procedure (see section "Thiersch Procedure" below).

Thiersch Procedure

Anal encirclement (Thiersch procedure) was originally performed with a silver wire placed subcutaneously around the anus under local anesthesia. The goal of this procedure was to mechanically supplement or replace the anal sphincter and stimulate a foreign body reaction in the perianal area, thereby increasing resistance at the anus.

William Gabriel in the 1950s reported 25 cases of incontinence or minor rectal prolapse. He did not recommend this operation for major degrees of prolapse.
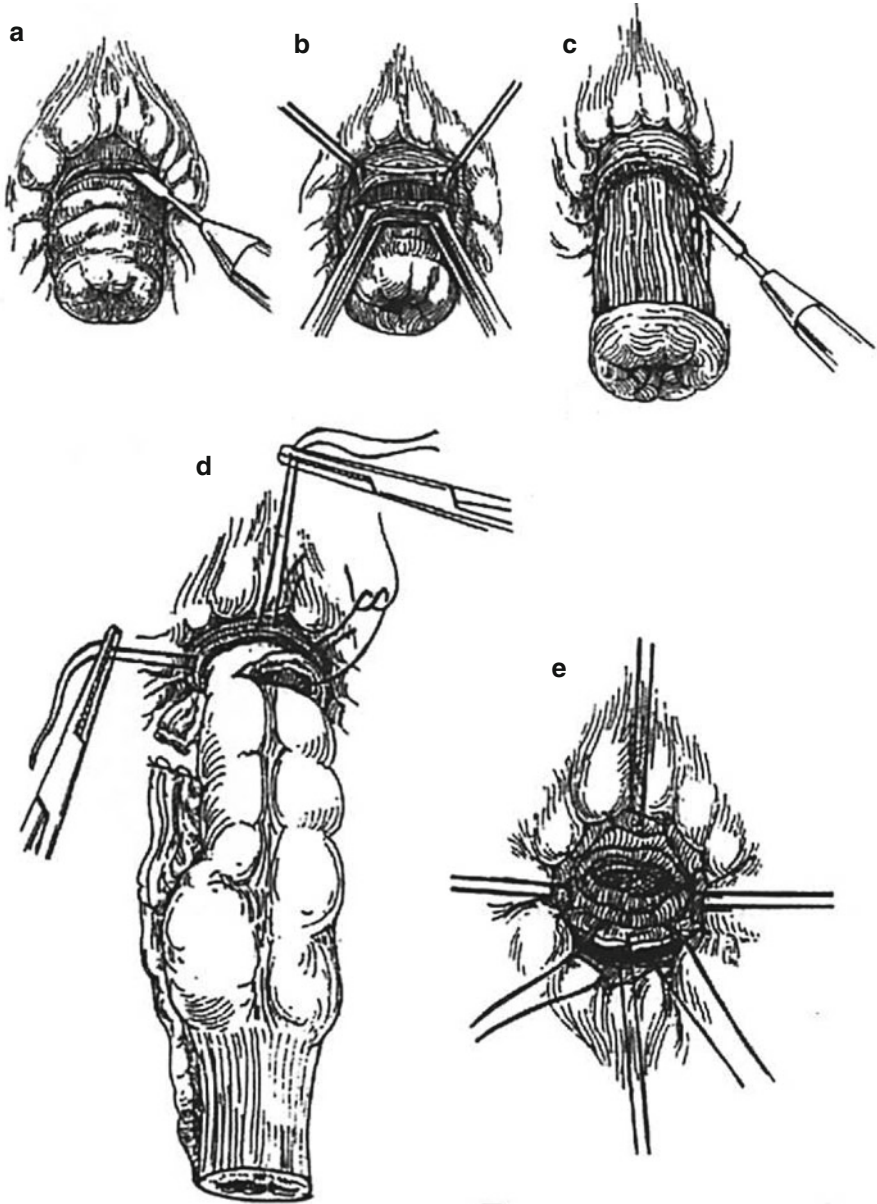
Fig. 33.2 Perineal rectosigmoidectomy. (**a**, **b**) Incision of rectal wall. (**c**) Division of vessel adjacent to bowel wall. (**d**) The prolapsed segment is amputated. Stay sutures previously placed in distal edge of outer cylinder are placed in cut edge of inner cylinder. (**e**) Anastomosis of distal aspect of remaining colon to the short rectal stump (From Beck and Whitlow. Copyright 2003 by Taylor & Francis Group LLC. Reproduced with permission)
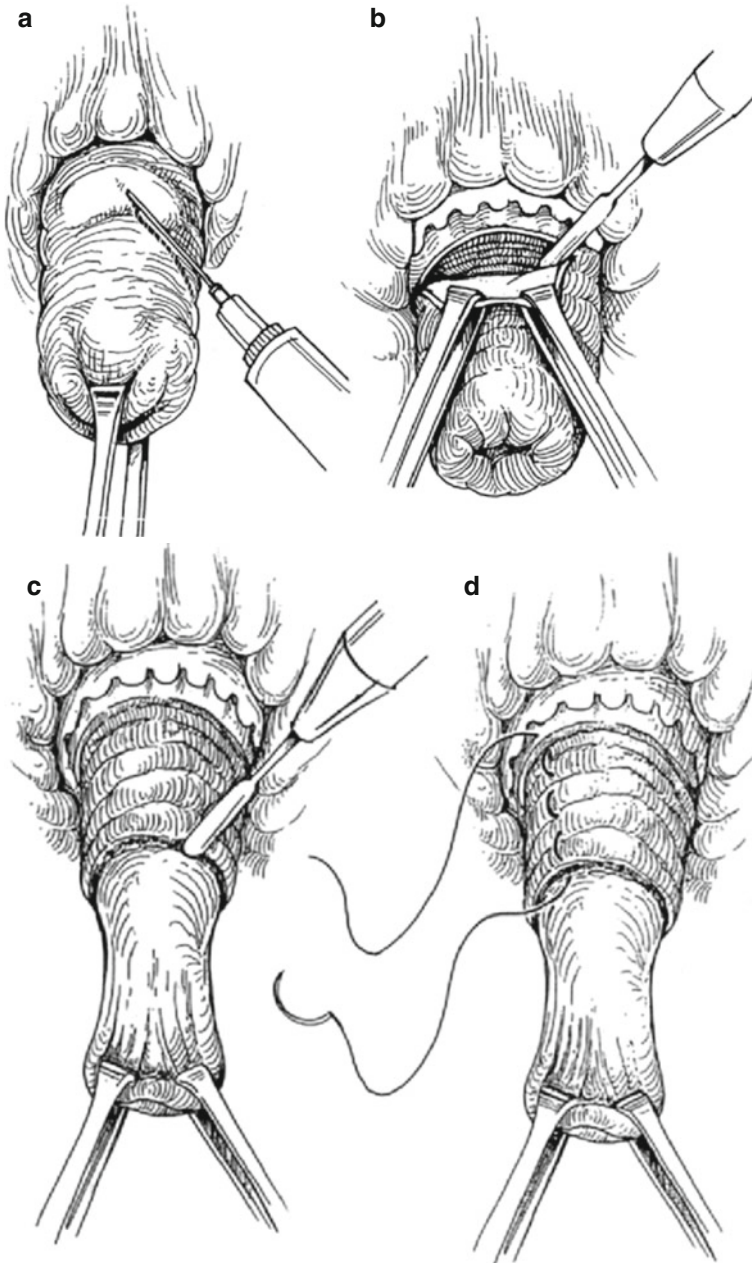
Fig. 33.3 Delorme procedure. (**a**) Subcutaneous infiltration of dilute epinephrine solution. (**b**) Circumferential mucosal incision. (**c**) Dissection of mucosa off muscular layer. (**d**) Plicating stitch approximating cut edge of mucosa, muscular wall, and mucosa just proximal to dentate line. (**e**) Plicating stitch tied. (**f**) Completed anastomosis (From Beck and Whitlow. Copyright 2003 by Taylor & Francis Group LLC (B). Reproduced with permission of Taylor & Francis Group (B) in the format Textbook via Copyright Clearance Center)
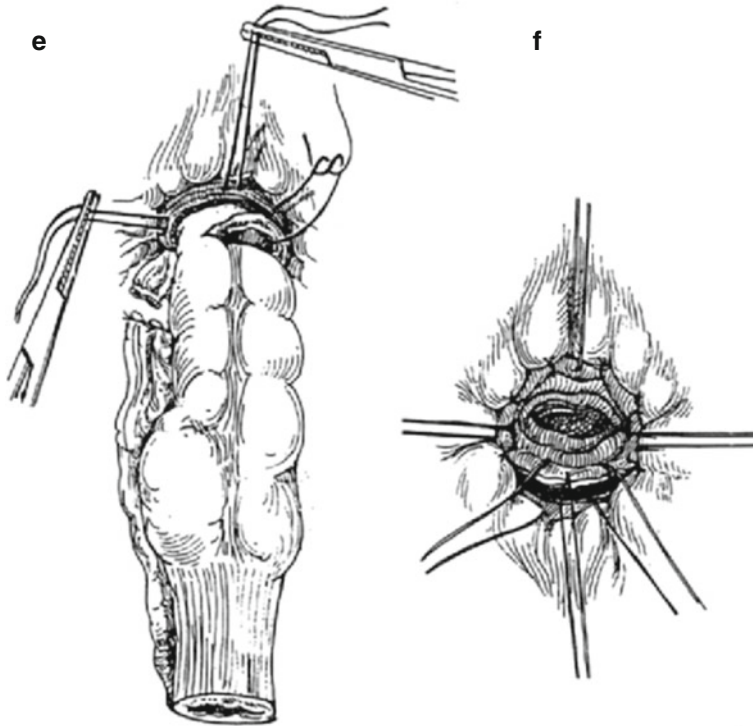
Fig. 33.3 (continued)

Table 33.2 Results of Delorme procedure

Authors	Number of patients	Recurrence	Mortality	Morbidity
	n	(%)	(%)	(%)
Uhlig and Sullivan	44	7	0	34
Monson et al.	27	7	0	0
Senapati et al.	32	13	0	6
Oliver et al.	41	22	2	62
Tobin and Scott	43	26	0	12
Graf et al.	14	21	0	–
Watkins et al.	52	6	0	77
Lieberth et al.	76	14	0	25

Anal encirclement is performed with the patient placed in the prone jackknife, lithotomy, or left lateral position (Fig. 33.4). A variety of materials used for encirclement include nylon, silk, Silastic rods, silicone, Marlex mesh, Mersilene mesh, fascia, tendon, and Dacron.

Complications of this procedure include breakage of the suture or wire, fecal impaction, sepsis, and erosion of the encircling material into the skin or anal canal.
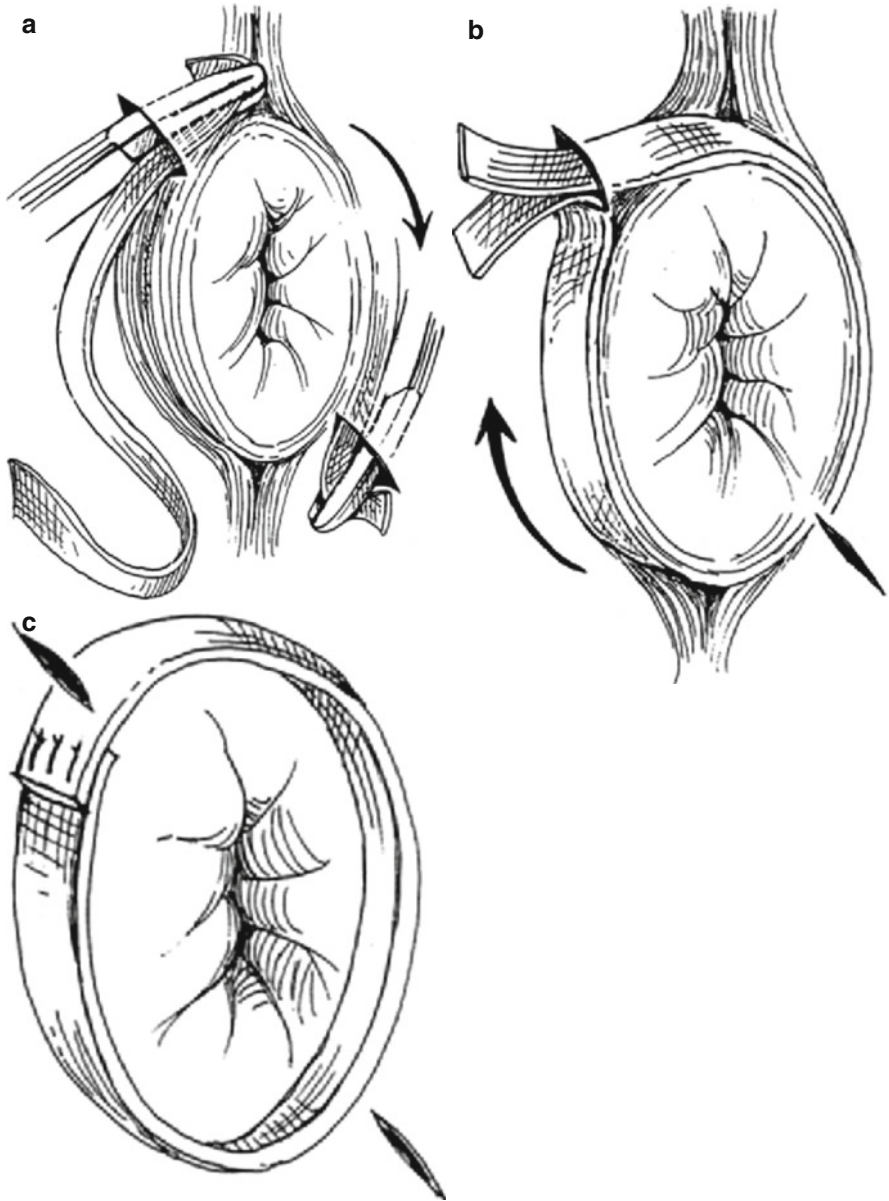
Fig. 33.4 Anal encirclement (Thiersch). (**a**) Lateral incisions with prosthetic mesh tunneled around the anus. (**b**) Mesh completely encircling the anal opening. (**c**) Completed anal encirclement procedure (From Beck and Whitlow. Copyright 2003 by Taylor & Francis Group LLC. Reproduced with permission)

Table 33.3 Results of Thiersch procedure

Authors	Number of patients	Recurrence (%)	Mortality (%)	Morbidity (%)
Jackaman et al.	52	33	–	–
Labow et al.	9	0	–	0
Hunt et al.	41	44	–	37
Poole et al.	15	33	–	33
Vongsangnak et al.	25	39	–	59
Earnshaw and Hopkinson	21	33	–	–
Khanduja et al.	16	0	–	25
Sainio et al.	14	15	–	–

Results of the Thiersch procedure are summarized in Table 33.3.

Abdominal Procedures

Abdominal Rectopexy and Sigmoid Colectomy

Initially described by Frykman in 1955.
    The four essential components are shown in Fig. 33.5 and results in Table 33.4.

Abdominal Rectopexy

Simple suture rectopexy without sigmoid colectomy has been reported.
    Rectopexy without resection can lead to worsening of constipation.
    Results are summarized in Table 33.5.

Ripstein Procedure

The Ripstein operation was popular in the past, but is infrequent today, due to the success of alternate therapies, the incidence of postoperative constipation, and use of prosthetic material.
    The rectum is mobilized posteriorly with preservation of the lateral stalks. A 5-cm piece of prosthetic mesh (Marlex or Prolene) is sutured to the presacral fascia within the sacral hollow, about 5 cm below the sacral promontory in the midline (Fig. 33.6).
    Care must be taken to avoid making the wrap too tight thus causing an obstruction.
    The results are summarized in Table 33.6.

Posterior Mesh Rectopexy

- Posterior mesh rectopexy is a modification of the Wells Ivalon sponge wrap operation.
- The sponge is no longer available and has been replaced by using a posterior mesh attached to the sacrum and the mesorectum.
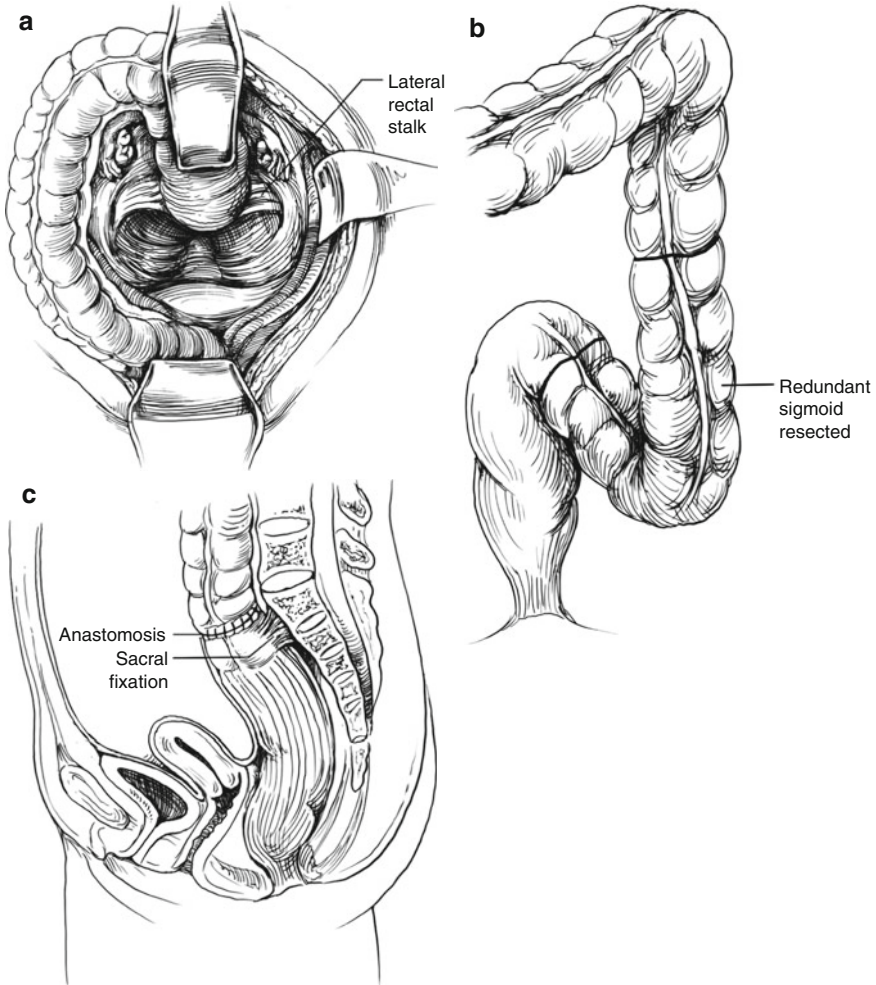
a

b

Lateral
rectal
stalk

Redundant
sigmoid
resected

c

Anastomosis
Sacral
fixation

Fig. 33.5 Abdominal rectopexy and sigmoidectomy. (**a**) Rectum is fully mobilized in the posterior avascular plane. (**b**) Redundant sigmoid colon is resected. (**c**) Anastomosis is completed and rectopexy sutures are placed (From Beck and Whitlow. Copyright 2003 by Taylor & Francis Group LLC. Reproduced with permission)

Table 33.4 Results of abdominal rectopexy and sigmoid colectomy

Authors	Number of patients	Recurrence (%)	Mortality (%)	Morbidity (%)
Watts et al.	102	2	0	4
Husa et al.	48	9	2	0
Sayfan et al.	13	0	0	23
McKee et al.	9	0	0	0
Luukkonen et al.	15	0	7	20
Canfrere et al.	17	0	0	–
Huber et al.	39	0	0	7
Ashari et al.[a]	117	2.5	0.8	9

[a]Laparoscopic approach

Table 33.5 Results of abdominal rectopexy

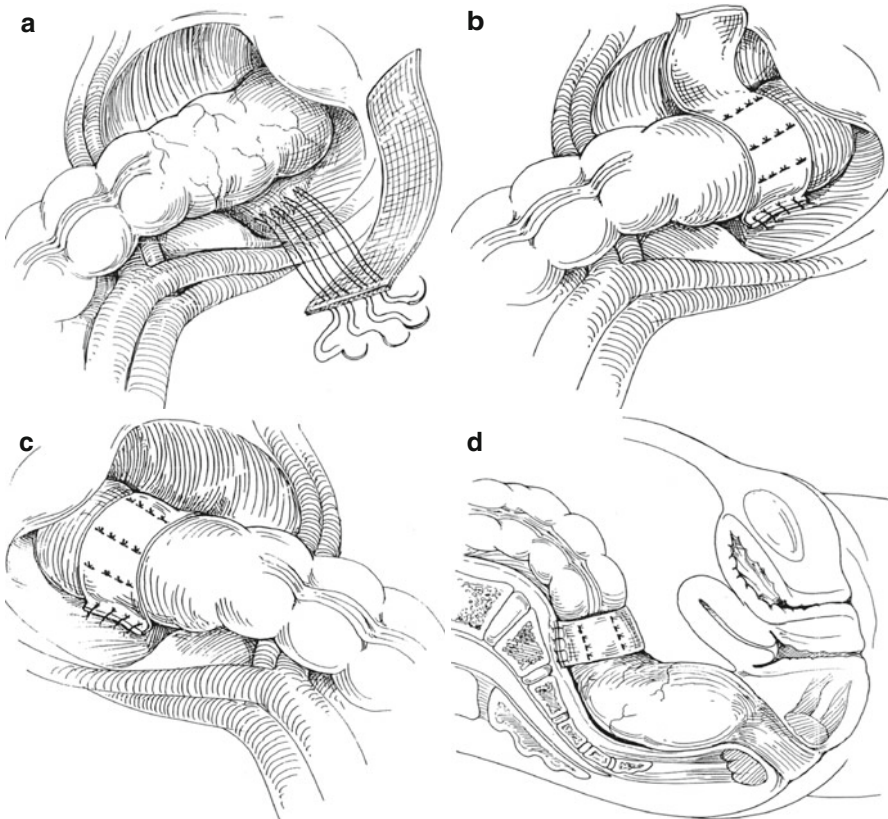| Authors	Number of patients	Recurrence	Mortality	Morbidity
	n	*(%)*	*(%)*	*(%)*
Loygue et al.	140	4	1	
Blatchford et al.	42	2	0	20
Novell et al.	32	3	0	9

Fig. 33.6 Mesh rectopexy (Ripstein). (**a**) Posterior fixation of sling on one side. (**b**) Sling brought anteriorly around mobilized rectum. (**c**) Sling fixed posteriorly on the opposite side. (**d**) Sagittal view of the completed rectopexy (From Beck and Whitlow. Copyright 2003 by Taylor & Francis Group LLC. Reproduced with permission)

- Mobilization of the rectum is analogous to all other procedures.
- Results of posterior wraps are summarized in Table 33.7.

Anterior Mesh Procedures

- Multiple other mesh procedures have been described, some of which employ an anterior suspension technique. Among the most popular of these has been the Orr–Loygue procedure with placement of two ribbons of synthetic mesh

Table 33.6 Results of Ripstein procedure

Authors	Number of patients	Recurrence (%)	Mortality (%)	Morbidity (%)
Ripstein and Lanter	289	0	0.3	–
Gordon and Hoexter	1111	2	–	17
Eisenstadt et al.	30	0	0	13
Tjandra et al.	134	8	0.6	21
Winde et al.	35	0	0	28
Schultz et al.	69	1.6	1.6	33

Table 33.7 Results of Ivalon sponge/posterior mesh rectopexy operation

Authors	Number of patients	Recurrence	Mortality	Morbidity
	n	(%)	(%)	(%)
Sayfan et al.	16	0	0	13
Luukkonen et al.	15	0	0	13
Novell et al.	31	3	0	19
Dulucq et al.[a]	77	1	0	4

[a]Laparoscopic posterior mesh rectopexy

is sutured to the anterior–lateral rectum (one on each side) after mobilization of the rectum as described earlier. A modification is the more recent ventral mesh rectopexy with placement of the mesh to the anterior rectum and closure of the peritoneum over the mesh. These procedures offer similar outcomes.

Laparoscopic Approaches

- Laparoscopic approaches are analogous to all of the previously described abdominal procedures.
- Success and morbidity are comparable to traditional approaches, with the benefit of shorter hospitalizations and a rapid recovery.
- A meta-analysis by Purkayastha et al. of six studies comparing laparoscopic versus open suture rectopexy found no significant difference in terms of morbidity or recurrence of prolapse between the two approaches but a decrease in the length of hospitalization by 3.5 days as compared to the open group.
- Robotic-assisted laparoscopic surgery is associated with increased cost but no clinical advantages.

Recurrent Prolapse

- Though rectal prolapse has historically had a high recurrence rate (up to 50 % or more), recent reports note recurrent prolapse following resection with rectopexy to be less than 10 %.
- Perineal operations for prolapse have a higher risk of recurrence compared to abdominal approaches.

Table 33.8 Management options for recurrent rectal prolapse

Initial operation	Options for management of recurrence
Perineal rectosigmoidectomy	Redo perineal rectosigmoidectomy
	Abdominal rectopexy (avoid resection)
Abdominal rectopexy	Redo abdominal rectopexy
	(+/− sigmoidectomy)
	Perineal rectosigmoidectomy
Abdominal rectopexy + resection	Redo abdominal rectopexy (+/− re-resection)
	Avoid perineal rectosigmoidectomy

- With recurrent rectal prolapse, it is important to reevaluate the patient for both constipation and other pelvic floor abnormalities.
- An important consideration is the residual blood supply of the remaining large bowel due to the initial operative procedure (Table 33.8).
- For example, if the patient has undergone an initial perineal rectosigmoidectomy, then a repeat perineal rectosigmoidectomy or abdominal rectopexy (without resection) can be safely performed.
- Abdominal rectopexy with sigmoid colectomy should be avoided because of the risk of ischemia to the retained rectal segment.
- For those patients who have undergone prior abdominal rectopexy but who now have recurrent prolapse, a redo abdominal rectopexy is an acceptable approach.
- Successful treatment of recurrence has been reported between 85 and 100 %.
- Pikarsky et al. reported on 27 patients with recurrent full-thickness rectal prolapse in a case-match study. Re-recurrence of prolapse occurred in 4/27 (15 %) after a median follow-up period of 24 months, with similar results for abdominal and perineal approaches.
- Steele et al. reported on 78 patients with recurrent rectal prolapse and found that abdominal operations to treat a recurrent rectal prolapse were associated with a lower re-recurrence rate.

Solitary Rectal Ulcer Syndrome and Colitis Cystica Profunda

- Solitary rectal ulcer syndrome (SRUS) and colitis cystica profunda (CCP) are uncommon and controversial conditions associated with rectal prolapse.
- CCP and SRUS are closely related diagnoses and some authors consider them interchangeable.
- Symptoms include rectal bleeding, copious mucous discharge, anorectal pain, and difficult evacuation.
- There may be single, multiple, or no rectal ulcers, usually located on the anterior rectal wall just above the anorectal ring.

- CCP is a benign condition characterized by mucin-filled cysts located within the submucosa. These lesions generally appear as nodules or masses, most commonly on the anterior rectal wall.
- CCP is a pathologic diagnosis whose most important aspect is to differentiate it from adenocarcinoma, especially a well-differentiated mucinous adenocarcinoma. Obtaining the correct diagnosis can prevent unnecessary radical operations to treat a benign process.
- The differential diagnosis of both CCP and SRUS includes polyps, endometriosis, inflammatory granulomas, infectious disorders, drug-induced colitides, and mucus-producing adenocarcinoma.
- SRUS is associated with characteristic obliteration of the lamina propria by fibrosis and a thickened muscularis mucosa with muscle fibers extending to the lumen.
- Mucous cysts lined by normal columnar epithelium located deep to the muscularis mucosa characterize CCP pathologically.
- The etiology of these conditions remains unclear, but a common feature is chronic inflammation and/or trauma.
- An endoscopic evaluation of the distal colon and rectum in symptomatic patients will reveal the above-described lesions.
- Defecography is generally abnormal in most patients.
- Treatment is directed at reducing symptoms or preventing some of the proposed etiologic mechanisms. Conservative therapy (high-fiber diet and modifying bowel movements to avoid straining) will reduce symptoms in most patients and should be tried first. Patients without rectal intussusception should be offered biofeedback to retrain their bowel function.
- If symptoms persist, a localized resection may be considered in selected patients. Those few patients potentially suitable for localized resection should be highly symptomatic, be good surgical risks, have failed all conservative nonoperative management, and have localized, accessible areas of disease.
- Patients with prolapse are considered for surgical treatment via an appropriate procedure as outlined previously. Those without prolapse may be offered excision, which varies from a transanal excision to a major resection with coloanal pull through.

Conclusion

- Management of patients with rectal prolapse requires careful patient evaluation for synchronous functional bowel disorders and associated anterior compartment problems such as urinary incontinence, voiding disorders, cystocele, and rectocele.
- Management of any associated constipation is important.
- Fecal incontinence is frequent and successful treatment results in only a 50 % improvement.

- Operations are divided into abdominal and perineal approaches. Generally, abdominal procedures have a higher morbidity but a lower rate of recurrence compared to the perineal approaches. Selection is at the surgeon's discretion and remains dependent upon such variables as the patient's general medical condition, comorbid disorders, the presence of incontinence or constipation, and any prior history of colon resection.
- Laparoscopic approaches are safe and effective.
- SRUS and CCP are uncommon colorectal conditions often associated with prolapse. They are benign and efforts are directed to establishing the diagnosis, excluding malignancy, and treating symptoms. Initial conservative therapy is to modify bowel movements and habits and is associated the most success. Surgical therapy is used if these measures fail and should be directed at correcting any coexisting rectal prolapse or to excise locally the lesions.