

1974 of associated pelvic floor disorders including urinary incontinence, rectocele, cystocele, and enterocele. About 20% of children with rectal prolapse will have cystic fibrosis. All children presenting with prolapse should undergo a sweat chloride test. Less common associations include Ehlers-Danlos syndrome, solitary rectal ulcer syndrome, congenital hypothyroidism, Hirschsprung's disease, dementia, mental retardation, and schizophrenia.

Anatomy and Pathophysiology Rectal prolapse (proctidentia) is a circumferential, full-thickness protrusion of the rectal wall through the anal orifice. It is often associated with a redundant sigmoid colon, pelvic laxity, and a deep rectovaginal septum (pouch of Douglas). Initially, rectal prolapse was felt to be the result of early internal rectal intussusception, which occurs in the upper to mid rectum. This was considered to be the first step in an inevitable progression to full-thickness external prolapse. However, only 1 of 38 patients with internal prolapse followed for >5 years developed full-thickness prolapse. Others have suggested that full-thickness prolapse is the result of damage to the nerve supply to the pelvic floor muscles or pudendal nerves from repeated stretching with straining to defecate. Damage to the pudendal nerves would weaken the pelvic floor muscles, including the external anal sphincter muscles. Bilateral pudendal nerve injury is more significantly associated with prolapse and incontinence than unilateral injury.

Presentation and Evaluation In external prolapse, the majority of patient complaints include anal mass, bleeding per rectum, and poor perianal hygiene. Prolapse of the rectum usually occurs following defecation and will spontaneously reduce or require the patient to manually reduce the prolapse. Constipation occurs in ~30–67% of patients with rectal prolapse. Differing degrees of fecal incontinence occur in 50–70% of patients. Patients with internal rectal prolapse will present with symptoms of both constipation and incontinence. Other associated findings include outlet obstruction (anismus) in 30%, colonic inertia in 10%, and solitary rectal ulcer syndrome in 12%.

Office evaluation is best performed after the patient has been given an enema, which enables the prolapse to protrude. An important distinction should be made between full-thickness rectal prolapse and isolated mucosal prolapse associated with hemorrhoidal disease (Fig. 353-4). Mucosal prolapse is known for radial grooves rather than circumferential folds around the anus and is due to increased laxity of the connective tissue between the submucosa and underlying muscle of the anal canal. The evaluation of prolapse should also include cystoproctography and colonoscopy. These examinations evaluate for associated pelvic floor disorders and rule out a malignancy or a polyp as the lead point for prolapse. If rectal prolapse is associated with chronic constipation, the patient should undergo a defecating proctogram and a sitzmark study. This will evaluate for the presence of anismus or colonic inertia. Anismus is the result of attempting to defecate against a closed pelvic floor and is also known as *nonrelaxing puborectalis*. This can be seen when straightening of the rectum fails to occur on fluoroscopy while the patient is attempting to defecate. In colonic inertia, a sitzmark study will demonstrate retention of >20% of markers on abdominal x-ray 5 days after swallowing. For patients with fecal incontinence, endoanal ultrasound and manometric evaluation, including pudendal nerve testing of their anal sphincter muscles, may be performed before surgery for prolapse (see “Fecal Incontinence,” below).

TREATMENT RECTAL PROLAPSE

The medical approach to the management of rectal prolapse is limited and includes stool-bulking agents or fiber supplementation to ease the process of evacuation. Surgical correction of rectal prolapse is the mainstay of therapy. Two approaches are commonly considered, transabdominal and transperineal. Transabdominal approaches have been associated with lower recurrence rates, but some patients with significant comorbidities are better served by a transperineal approach.

Common transperineal approaches include a transanal proctectomy (Altmeier procedure), mucosal proctectomy (Delorme

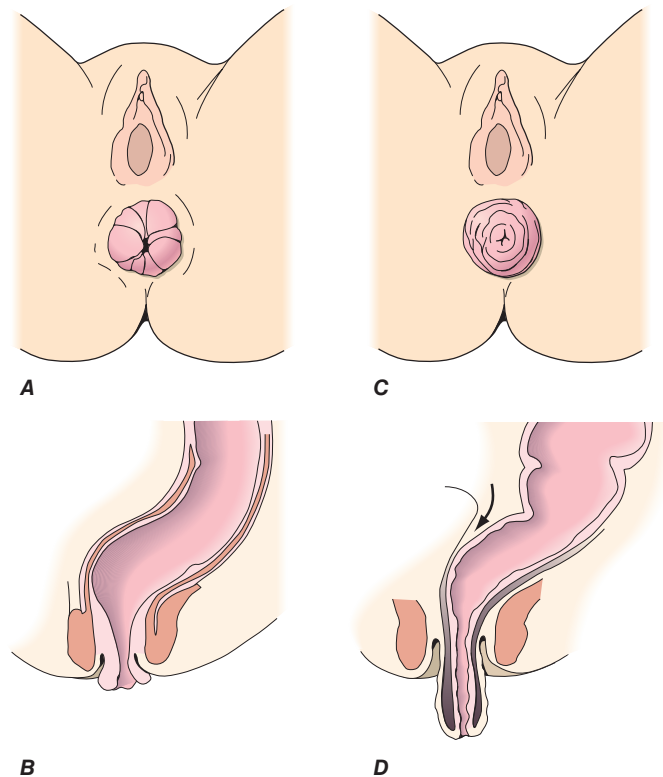


FIGURE 353-4 Degrees of rectal prolapse. Mucosal prolapse only (A, B, sagittal view). Full-thickness prolapse associated with redundant rectosigmoid and deep pouch of Douglas (C, D, sagittal view).

procedure), or placement of a Tirsch wire encircling the anus. The goal of the transperineal approach is to remove the redundant rectosigmoid colon. Common transabdominal approaches include presacral suture or mesh rectopexy (Ripstein) with (Frykman-Goldberg) or without resection of the redundant sigmoid. Colon resection, in general, is reserved for patients with constipation and outlet obstruction. Ventral rectopexy is an effective method of abdominal repair of full-thickness prolapse that does not require sigmoid resection (see description below). This repair may have improved functional results over other abdominal repairs. Transabdominal procedures can be performed effectively with laparoscopic and, more recently, robotic techniques without increased incidence of recurrence. The goal of the transabdominal approach is to restore normal anatomy by removing redundant bowel and reattaching the supportive tissue of the rectum to the presacral fascia. The final alternative is abdominal proctectomy with end-sigmoid colostomy. If total colonic inertia is present, as defined by a history of constipation and a positive sitzmark study, a subtotal colectomy with an ileosigmoid or rectal anastomosis may be required at the time of rectopexy.

Previously, the presence of internal rectal prolapse identified on imaging studies has been considered a nonsurgical disorder and biofeedback was recommended. However, only one-third of patients will have successful resolution of symptoms from biofeedback. Two surgical procedures more effective than biofeedback are the Stapled Transanal Rectal Resection (STARR) and the Laparoscopic Ventral Rectopexy (LVR). The STARR procedure (Fig. 353-5) is performed through the anus in patients with internal prolapse. A circular stapling device is inserted through the anus; the internal prolapse is identified and ligated with the stapling device. LVR (Fig. 353-6) is performed through an abdominal approach. An opening in the peritoneum is created on the left side of the rectosigmoid junction, and this opening continues down anterior on the rectum into the pouch of Douglas. No rectal mobilization is performed, thus avoiding any autonomic nerve injury. Mesh is secured to the anterior and lateral portion of the rectum, the vaginal fornix,