Rectal Prolapse in Children

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Prolapse of the rectum is a relatively common and self-limited problem in children, with a peak incidence between 1 and 3 years of age. The prolapse can be either partial (only rectal mucosa) or complete (full thickness).

Rectal prolapse is often idiopathic in children and the vast majority of these patients have no predisposing factors, except that the sacrum in this age group is not curved as in older age groups but rather straight towards the anus allowing to prolaps the rectum in cases of difficult defacation or constipation. However, it can be caused by factors that can cause undue straining, such as diarrhea and constipation. It is also associated with autism, neuromuscular problems such as meningomyelocele, or exstrophy of the bladder, and there is an increased incidence of rectal prolapse in children with cystic fibrosis associated with tenacious stool, chronic cough, and loss of perirectal fat. More than one fifth of patients with cystic fibrosis will develop rectal prolapse, and cystic fibrosis will be diagnosed later in 20% of children seen with rectal prolapse between 6 months and 3 years of age. Rectal prolapse is also rarely associated to Shigellosis in neonates, scleroderma, lymphoid hyperplasia of the distal colon (which also acts as a leading point for rectal intussusception), parasites and other infectious agents, and HIV infection.

39.1 Diagnosis

The assessment of children presenting with rectal prolapse should include a general history and physical examination to exclude associated etiological factors such as rectal polyps, in which the polyp acts as a leading point for the intussusception. Initial investigations should include a sweat test or gene probe to exclude cystic fibrosis. Stool analysis is also usually performed.

Clinical examination is important, but it may not reveal the prolapse. Modern technology allows documentation which is often diagnosed by the parents themselves. Most commonly, the prolapse is incomplete, limited to 2–3 cm of mucosa protruding from the anus and classically displaying radial folds. Complete, full-thickness rectal prolapse is more unusual; in this case, the mucosal folds are circumferential.

The prolapse may reduce spontaneously or may require manual reduction. When the prolapse has been present for some hours, the mucosa becomes edematous, smooth, and featureless: only the size and palpable thickness of the wall will differentiate the two types. Rarely, children with rectal prolapse present to the emergency room with mucosal bleeding.

39.2 Initial Management

The steps of the initial management of rectal prolapse are nonoperative and aim to facilitate normal stooling without excessive straining:

1. prescribing a laxative (e.g., lactulose)
2. encouraging a high-fiber diet
3. encouraging regular, prompt defecation from a sitting, not squatting, position

The initial management is designed to break the cycle that led to the a mechanical prolapse in the first place. Laxatives used to soften the stool and hence eliminate the urge to defecate may allow the pelvic floor muscles to recover and retain their tone. It is also advisable to prevent prolonged defecation periods. Over 90% of children who experience rectal prolapse during the first 3 years of life respond to conservative treatment.

In the past, external support to the perianal region during defecation was recommended, but there is no evidence that it

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P. Puri, M. E. Höllwarth (eds.), *Pediatric Surgery*, Springer Surgery Atlas Series,
https://doi.org/10.1007/978-3-662-56282-6_39

prevents recurrence, and the authors do not support this practice.

39.3 Surgical Management

Surgical management is required in refractory cases. Among the surgical procedures described are Thiersch's operation, posterior sagittal rectopexy (PSRP), and more recently, laparoscopic rectopexy (LSRP) with or without the use of a synthetic mesh material.

Under general anesthesia, an initial rectal examination and proctoscopy are performed to exclude rectal polyps. If the rectum is loaded with hard stool, this should be evacuated. The specific goals of surgical management of full-thickness rectal prolapse are to eradicate the external prolapse of the rectum, improve continence, improve bowel function, and reduce the incidence of recurrence.

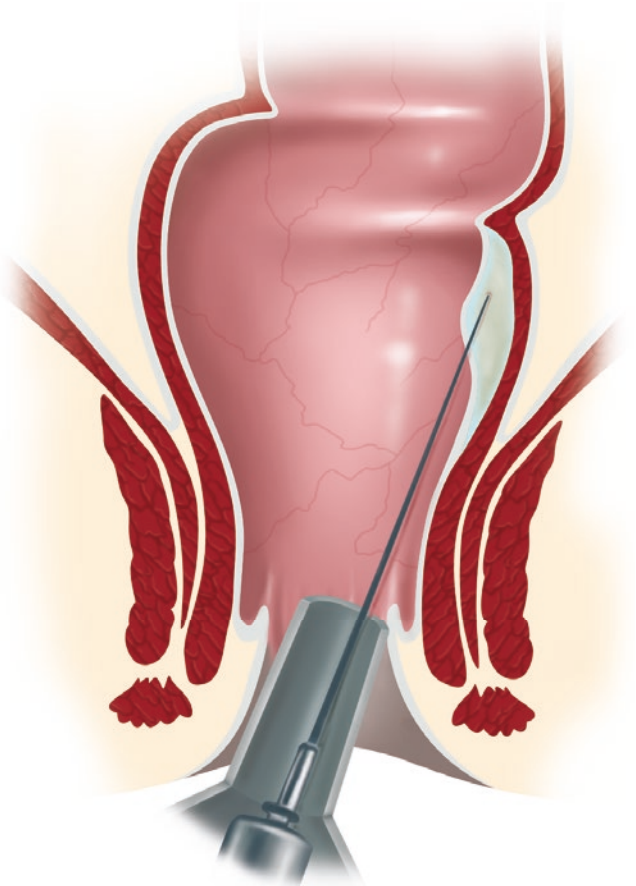

Fig. 39.1 Injection of mucosal prolapse

39.3.1 Thiersch's Operation

A proctoscope of appropriate size is gently introduced into the lower anorectal region (Fig. 39.1). A long, 23-gauge needle is placed under vision into the submucosal plane of the lower rectum approximately 4 cm from the anal verge. Then 1–2 mL of 5% phenol, 30% saline solution, or 5% ethanolamine oleate is injected into the submucosal space in each of the four quadrants. A bulge at the injection site or blanching of the mucosa will indicate that sufficient sclerosant has been injected.

The child is placed in the lithotomy position and the perianal area is prepared and draped (Fig. 39.2). Two small incisions are made 2 cm from the anal verge at 12 o'clock and 6 o'clock. A length of absorbable suture material (e.g., 0 caliber polydioxanone [PDS]) is threaded from the posterior incision to the anterior incision around the anus, just deep to the external sphincter muscle. The suture is continued from anterior to posterior so that eventually a ring is placed around the anus.

With an assistant's finger or a Hegar's dilator held inside the anal canal, the suture is pulled and tied inside the posterior incision. Absorbable sutures are used to close the two incisions. Thiersch's procedure acts by narrowing the anal orifice and thereby mechanically preventing the prolapse.

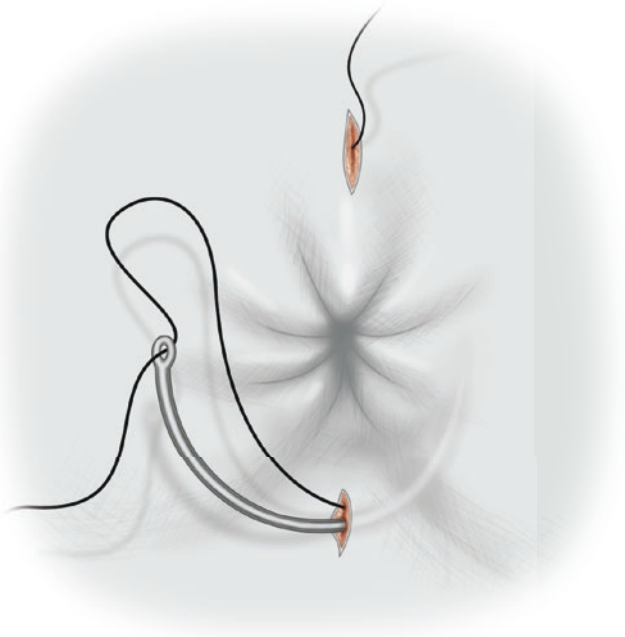

Fig. 39.2 Thiersch's operation (modified)

39.3.2 Eckehorn Procedure

The patient is placed in prone jackknife position on the table. The anus is spread wide open by the assistant with two long Langenbecks holders. The largest available 180° curved needle with one end of 0-PDS thread is introduced as far as possible into the rectum and pulled out through the seromuscular layers close to one side of the sacrum. The PDS is held there by the assistant. The needle is pulled back and the other end of the PDS suture is threaded into the needle, which is then again introduced as far as possible into the rectum and pulled out at the other side of the sacrum. The two ends of the PDS thread are now tied firmly together over a swab. The dorsal rectum wall is fixed to the sacrum and the local inflammation results in a permanent fixation of the rectum to the sacrum. Complications such as abscess formation are unusual. The PDS is removed after 8–10 days. Clinical experience shows satisfying long-term results in most cases, and a low rate of recurrence.

39.3.3 Posterior Sagittal Rectopexy

The patient is placed in the jackknife position (Fig. 39.3). A midline skin incision is made from the coccyx and extended halfway to the anus. This incision is deepened towards the coccyx. If the distance from the coccyx to the anus is short and the operating field is limited, the coccyx may be excised. The parasagittal fibers and levator muscle are divided exactly in the midline using cautery, taking care not to incise the muscle complex. The rectum is then dissected free for two thirds of the circumference and up to 10–15 cm vertically. Three or four permanent seromuscular sutures (3/0 or 4/0 polypropylene [Prolene]) are then placed in a longitudinal, U-shaped, mattress pattern. When these sutures are pulled together, the redundant rectum is drawn together. A further set of sutures may then be passed through the last segment of the sacrum and tied on its surface. The muscle layers are then approximated and the wound is closed.

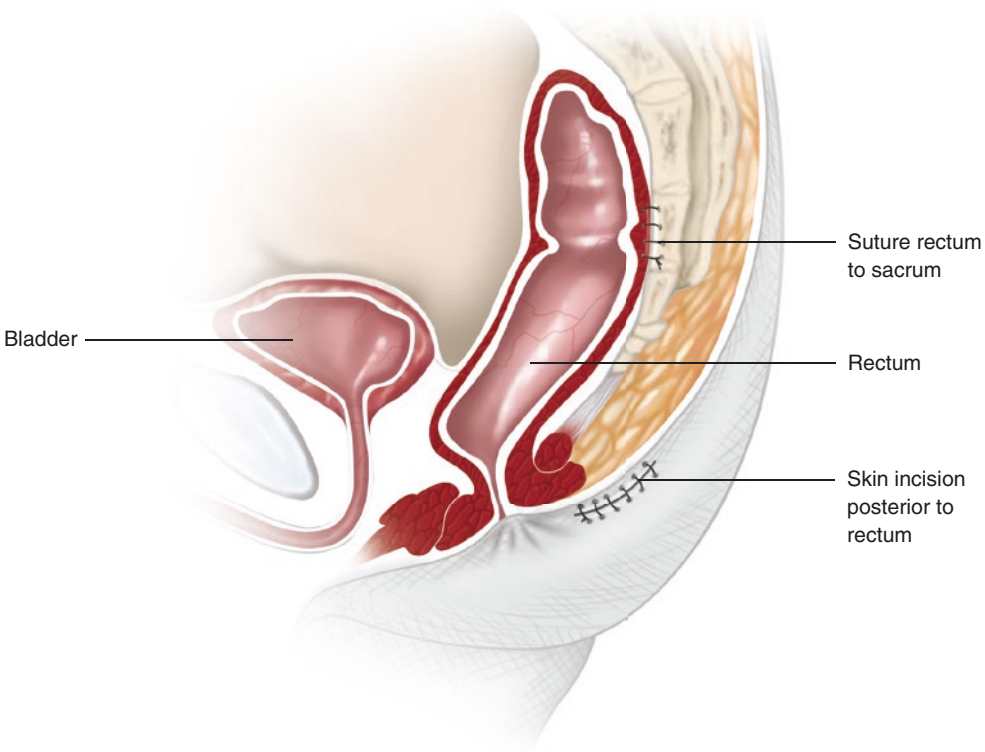

Fig. 39.3 Posterior sagittal rectopexy (PSRP)

39.3.4 Transanal Mucosal Sleeve Resection

The patient is placed prone in the jackknife position (Fig. 39.4). The prolapse is gently drawn out and four quadrant traction sutures are placed through the submucosa at the apex. Epinephrine solution (1:200,000) may be injected to separate the mucosal and submucosal layers from the muscular layers, defining the plane of dissection (**a**). A circumferential incision is made through the mucosal and submucosal layers approximately 1 cm proximal to the pectinate line, and blunt dissection is used to strip this layer from the underlying muscle (**b**). The denuded muscle layer is gradually reduced into the pelvis while the traction sutures are used to pull the mucosal sleeve in the opposite direction. When the submucosal layer has been separated from the entire length of the prolapse, it is divided longitudinally into two halves (**c**). As the sleeve is incised circumferentially, single absorbable sutures are placed to approximate the edges of the proximal and distal mucosal cuffs. Traction is maintained on the sleeve until the resection is complete; the sutures are then cut and the anastomosis retracts into the pelvis (**d**).

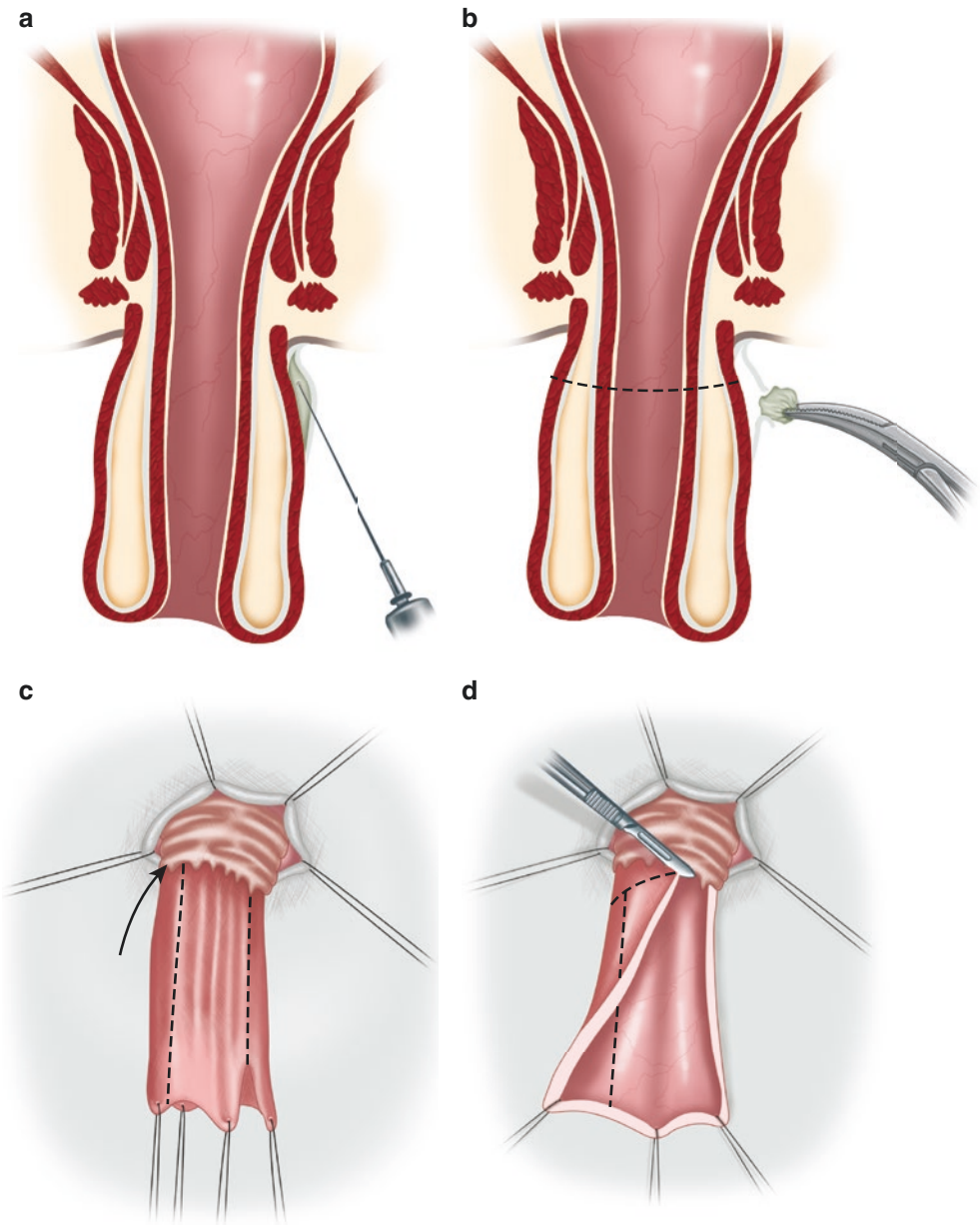

Fig. 39.4 Transanal mucosal sleeve resection (**a**–**d**)

39.3.5 Laparoscopic Abdominal Rectopexy

Many open abdominal procedures previously advocated for severe recurrent rectal prolapse are now performed using laparoscopic techniques such as the suture rectopexy and the modified sling rectopexy using a polypropylene mesh to secure the rectum; in the opinion of the authors, this is the preferable technique because it gives the best view and surgical control of the procedure. Indeed, a growing body of evidence in the literature supports the concept that laparoscopic surgical techniques can safely provide the benefits of low recurrence rates, improved functional outcome, less postoperative pain, short hospital stay, and early return of bowel function for patients with full-thickness rectal prolapse.

The patient is placed in the lithotomy position. A nasogastric tube and urethral catheter are placed. A pneumoperitoneum is established under direct vision by placing a Hasson cannula. A 5-mm, 30° laparoscope is passed to inspect the intra-abdominal contents. Three further 5-mm trocars are then inserted under direct vision, two in the right paraumbilical region and one in the left paraumbilical region (Fig. 39.5).

Laparoscopic technique includes a retrorectal dissection, starting from the peritoneal reflection on the right side of the rectum and extending from the sacral promontory to the pelvic muscular floor in the rectosacral bloodless plane. Great care is given to the identification of the iliac vessels and ureter. In the absence of pelvic floor laxity, suture rectopexy to the sacral promontory and suture sigmoidopexy to the left lateral peritoneum are done without mesh. In cases with laxity and weakness of the pelvic floor and in patients with neuropathic conditions (spina bifida and meningomyelocele), additional retrorectal mesh is recommended. The mesh is tailored to fit the retrorectal space, where it is fixed to the rectum by two to four nonabsorbable stitches. Then the mesh and the rectum are dragged up and fixed to the sacral promontory, with closure of the peritoneal defect.

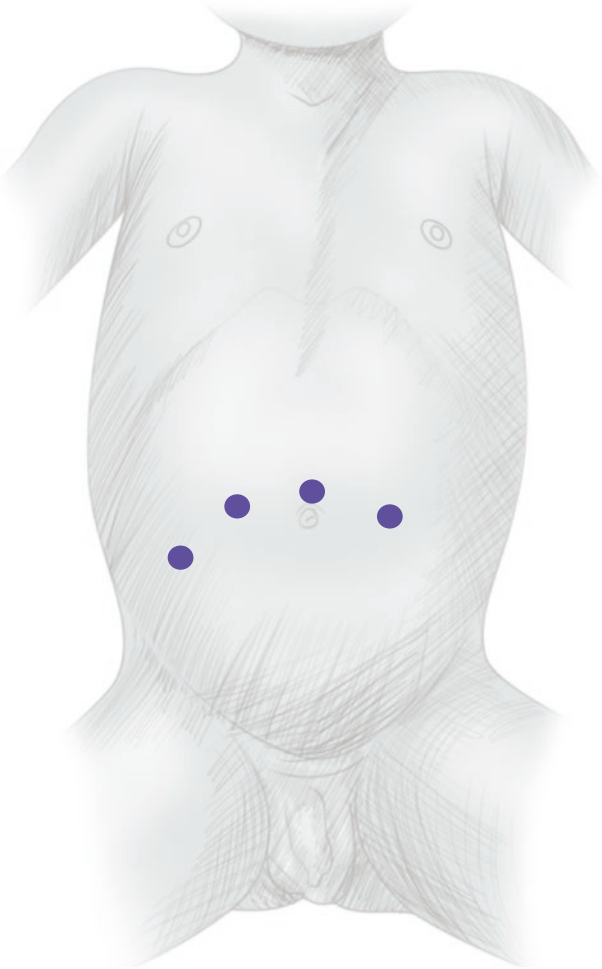

Fig. 39.5 Laparoscopic abdominal rectopexy: trocar positions

39.3.6 Postoperative Care and Complications

As in nonoperative management, regular bowel habits are encouraged. Stool softeners may be advocated for 3–6 months, with advice to avoid sitting on the toilet for long periods.

All of the procedures may be associated with infection and the formation of perianal abscess. Usually these complications resolve fully with conservative treatment, including antibiotic therapy, but occasionally incision and drainage may be required.

Rarely, serious scarring and stricture formation may result, causing deformity of the rectum and leakage of mucus or fistula formation. The Thiersch suture may cause stool retention and fecal impaction if tied too tightly, in which case suture removal should be performed. Disruption of the skin wounds and exposure of the knots may occur if they have not been buried sufficiently.

Most patients presenting with a simple mucosal rectal prolapse respond to conservative, nonoperative management.

Following injection of sclerosant, recurrence occurs in 10–20% of cases. In these cases, injection therapy may be repeated 4–6 weeks later. Many different treatments have been suggested for persistent or severe cases that are resistant to injection therapy. Encircling procedures, abdominal rectopexies, and abdominal perineal bowel resections and have a recurrence risk of approximately 25%. Posterior sagittal and transanal procedures have a higher success rate, between 80% and 100%.

Suggested Reading

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