

The Perineal Approach to Rectal Prolapse

67

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Learning Objectives

- Understand the indications for perineal approach to rectal prolapse.
- Describe the perioperative care and steps of the Delorme procedure.
- Describe the perioperative care and steps of the perineal rectosigmoidectomy (Altemeier procedure).
- Understand the historical perspective behind the Thiersch wire (anal encirclement).
- Understand the management of recurrent rectal prolapse and strangulated/incarcerated rectal prolapse.

67.1 Introduction

Rectal prolapse is a condition that involves protrusion of the rectal mucosa through the anal canal. Full-thickness prolapse occurs when the entirety of the rectal wall protrudes through the anus and forms concentric folds of mucosa that extend appreciably from the anus (Fig. 67.1). Mucosal prolapse involves only protrusion of the rectal mucosa through the anus and frequently is not circumferential, but rather comes out like spokes on a wheel (Fig. 67.2).

Rectal prolapse affects approximately 1% of the population and its incidence peaks in women aged 70 years old. Though classically described in elderly women, it is seen in both genders and across all age ranges. Additional risk factors for prolapse include chronic straining with defecation, constipation, multiparity, prior pelvic surgery, and pelvic



Fig. 67.1 Full-thickness rectal prolapse

floor dysfunction. Rectal prolapse is frequently associated with concomitant pelvic floor disorders such as enterocele, rectocele, and cystocele. In fact, up to 30% of female patients have concomitant pelvic floor disorders, and a thorough evaluation should be performed to exclude their presence.

Like many pelvic floor disorders, rectal prolapse can cause debilitating symptoms such as anal pain, bleeding, incontinence, and constipation that have a profound impact on quality of life. As patients may initially be too embarrassed to disclose the extent of their symptoms, it is important to ask specific questions and obtain a thorough history if the suspicion for prolapse is high. The diagnosis is usually confirmed clinically by physical examination. A thorough physical examination includes a digital rectal examination to assess for sphincter tone and any other pelvic floor patholo-

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Fig. 67.2 Mucosal prolapse

gies. Examination of the perianal skin can reveal signs of irritation from prolapsed tissue or incontinence. If necessary, the patient can be examined in a squatting position or given an enema and placed on the commode and asked to strain. Once prolapse is confirmed by physical examination, appropriate evaluation with colonoscopy, defecography, anal manometry, and colonic transit studies may be performed as indicated before proceeding with surgical intervention. A colonoscopy should be obtained if patients are due for screening, have new symptoms of rectal bleeding or other concerning symptoms (i.e., changes in bowel movements, weight loss, pain), and would tolerate intervention if malignancy was identified. Defecography, while not required to identify rectal prolapse, may be helpful to identify other pelvic floor pathologies and to further visualize the prolapse if necessary or help identify obstructive defecation. Manometry may not be completely accurate in a patient with prolapse, but may provide a baseline measurement to assess sphincter function. Unfortunately, with chronic prolapse, the resting and squeeze tone may be considerably altered. If a patient

has a history of constipation, a radiographic marker transit study will help rule out slow transit constipation.

Surgical treatment of rectal prolapse continues to evolve, with the goal of treatment to eliminate the prolapse and restore proper bowel function and quality of life. Ultimately, the surgical approaches to rectal prolapse can be divided into perineal and abdominal operations. Traditionally, an abdominal approach has been recommended for patients who are physically well enough to undergo such a procedure while a perineal approach is deemed more appropriate for patients who may benefit from a procedure that can be carried out safely under spinal rather than general anesthesia (though not mandatory) [1]. The decreased morbidity of the perineal approach has classically been considered a trade-off, however, for higher recurrence rates [2–4]. Yet, several large prospective studies and reviews have failed to discern significant differences in the long-term outcomes when comparing each of the approaches [5, 6]. Given the prevalence of this condition, it is necessary for colorectal surgeons to be well versed in both the abdominal and perineal approaches to repair.

67.2 Delorme Procedure

The Delorme operation for rectal prolapse was first described by Edmond Delorme in 1900 in his manuscript “On the Treatment of Total Rectal Prolapse by Excision of the Rectal Mucosa” and was subsequently modified by other surgeons throughout the following decades [7]. This procedure became a favorable option for both surgeons and patients as it offered a simple approach without major complications that could be especially useful for elderly patients and those with multiple comorbidities. Within this cohort, the operation is typically best suited for patients with a short (<5 cm from the anal verge), full-thickness prolapse.

The basis of the Delorme procedure is a mucosal resection with muscular plication (Fig. 67.3). The patient is placed in either prone jackknife or lithotomy position. The procedure can be performed under conscious sedation, general anesthesia, or spinal anesthesia. Once the patient is properly positioned, visualization of the anus is obtained by using anal effacement sutures or a hook retraction system. The redundant mucosa is manually prolapsed through the anal canal. A submucosal injection is performed to help develop the space between the submucosa and muscularis layers of the bowel. Options for injection include saline or lidocaine with or without epinephrine and are based upon surgeon preference. If local anesthetic (with or without epinephrine) is used, care should be taken to not exceed the maximum dose. The dentate line is then identified, and an incision is carried through the mucosa and submucosa approximately 1 cm proximal to the dentate line. This incision is carried circumferentially around the rectum creating a sleeve of

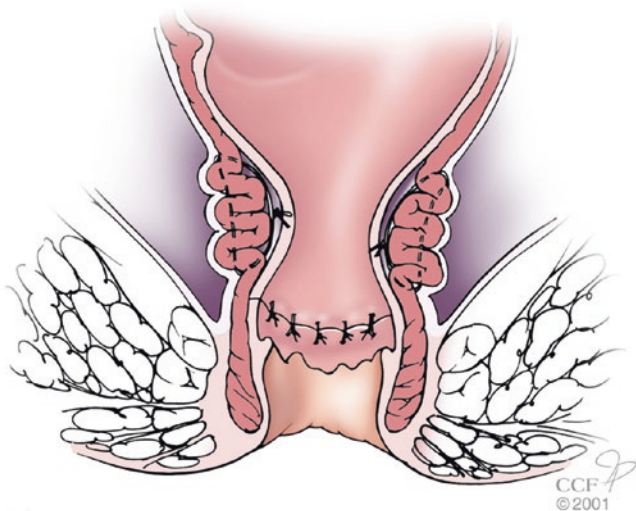


Fig. 67.3 Delorme procedure. (Courtesy of Cleveland Clinic Foundation, Copyright 2001)

mucosa. Allis or Babcock clamps may be used to aide in controlling the mucosal sleeve. The mucosa is peeled away as the dissection is carried proximally. While the dissection is carried proximally, additional injections may be required to develop the plane. The dissection is carried proximally until no further mucosa prolapses. At this point, the mucosa is completely transected. Plication sutures are then placed. Suture material should be braided and absorbable. The plication sutures are placed longitudinally across the muscle and tied down. At least eight sutures should be placed—four cardinal sutures and four in between the cardinal sutures. After the muscle has been plicated, the mucosa should be re-approximated, again using braided absorbable simple interrupted sutures.

Postoperative care is surgeon-dependent. While some may choose to constipate the patient so that hard stools pass through as soon as possible, others may choose to soften the stools immediately or utilize mineral oil to allow smooth passage of stools. Regardless, patients should be monitored postoperatively for bleeding and typically remain in the hospital for 1 day unless comorbidities preclude discharge home.

Postoperative complications are typically limited to entities such as bleeding, urinary retention, and fecal impaction. Less commonly, more serious complications such as anastomotic dehiscence and ischemic proctitis can occur. Retrospective and prospective studies evaluating outcomes of Delorme procedure with associated recurrence and complication rates can be seen in Table 67.1. Complication rates range from 4 to 45% and recurrence rates range from 4 to 27%.

Table 67.1 Recurrence and morbidity rates for both retrospective and prospective studies of Delorme procedure

Author (year)	Number of patients	Recurrence %	Morbidity %
Tobin (1994) [8]	43	26	–
Oliver (1994) [9]	40	22	25
Senapati (1994) [10]	32	13	6
Lechoux (1995) [11]	85	14	14
Pescatori (1998) [12]	33	21	45
Watts (2000) [13]	101	27	–
Tsunoda (2003) [14]	31	13	13
Watkins (2003) [7]	52	10	4
Marchal (2005) [15]	60	23	15
Pascual (2006) [16]	21	10	5
Lieberth (2009) [17]	76	8	15
Chen (2012) [18]	25	4	32
Fazeli (2013) [19]	52	10	10
Elagil (2016)	53	16	7
Pares (2017)	11	18	18

67.3 Perineal Rectosigmoidectomy (Altemeier Procedure)

At the same time that the Delorme procedure was developed, the first perineal rectosigmoidectomy was performed by a Polish surgeon, Jan Mikulicz-Radecki. However, the operation was not popularized until the 1960s by Altemeier, whose namesake the procedure is often referred [20]. The technique was adopted as surgeons continued to search for the best approach to prolapse in elderly or otherwise unfit patient. Compared to the Delorme procedure, the perineal rectosigmoidectomy is better suited for patients with a longer full-thickness prolapse.

As the name implies, this approach involves a full-thickness perineal resection of the rectum with colo-anal anastomosis (Figs. 67.4–67.7). The patient is placed in either the lithotomy or prone jackknife position. The procedure can be performed under conscious sedation, spinal anesthesia, or general anesthesia, as co-morbidities allow. Visualization of the anus is obtained using anal effacement sutures or a hook retractor system. The rectum is prolapsed using Babcock clamps. The dentate line is identified, and electrocautery is used to mark the mucosa circumferentially about 1–2 cm proximal to the dentate line. This marking is then carried down through the full thickness of the rectum and can be aided with the use of a surgical energy device. Anteriorly, the peritoneal reflection is typically entered, which may allow for additional prolapse. Failure to enter the peritoneal cavity is associated with higher rates of recurrence. The rectosigmoid junction should be withdrawn from the abdomen until there is no further redundancy. Once this maximum prolapse has been identified,

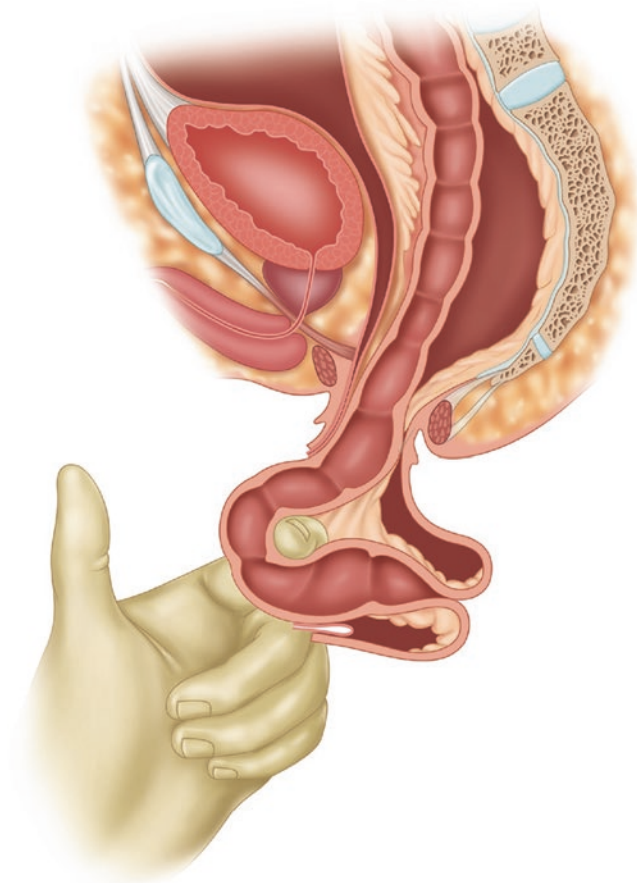


Fig. 67.4 Perineal rectosigmoidectomy (Altemeier procedure): prolapse of rectum through anal canal. (Courtesy of Cleveland Clinic Foundation, Copyright 2001)

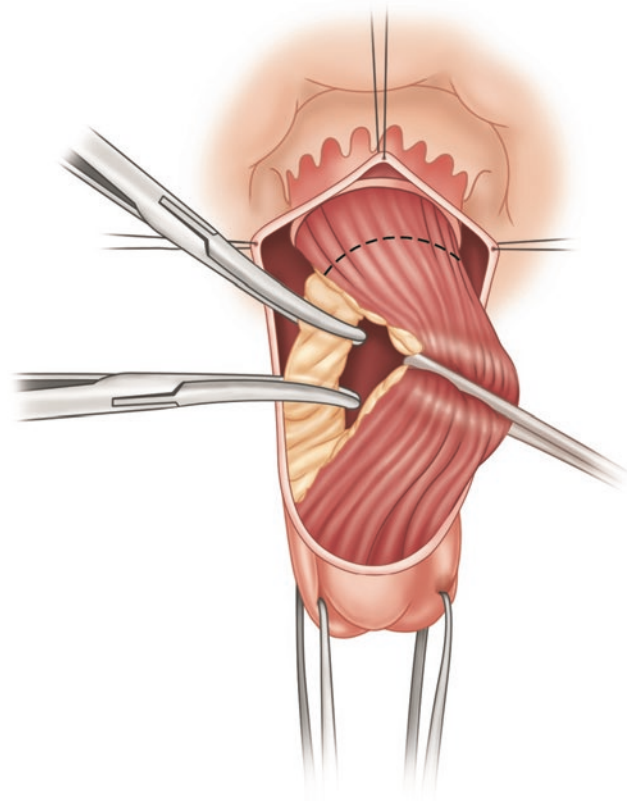


Fig. 67.5 Perineal rectosigmoidectomy (Altemeier procedure): transection of mesentery after bowel has been prolapsed from the peritoneal cavity. (Courtesy of Cleveland Clinic Foundation, Copyright 2001)

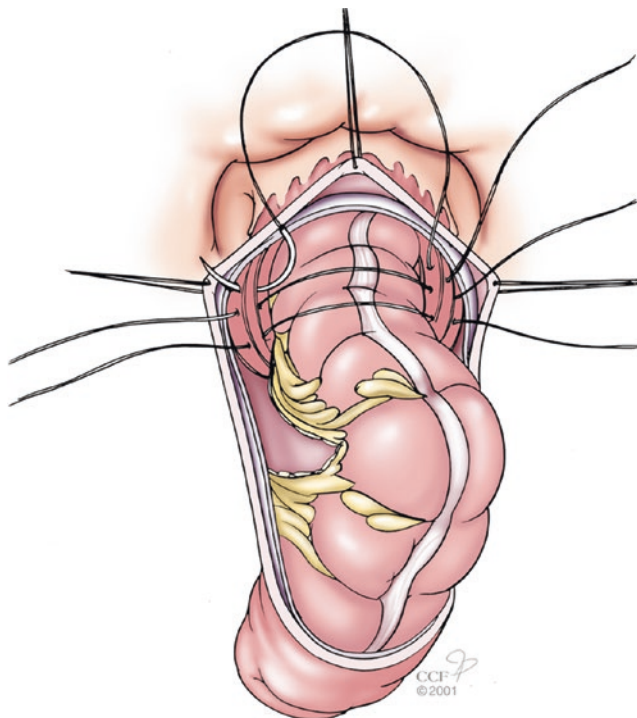


Fig. 67.6 Perineal rectosigmoidectomy (Altemeier procedure): full thickness dissection of the prolapsed bowel through the rectum is performed into the peritoneal cavity. (Courtesy of Cleveland Clinic Foundation, Copyright 2001)

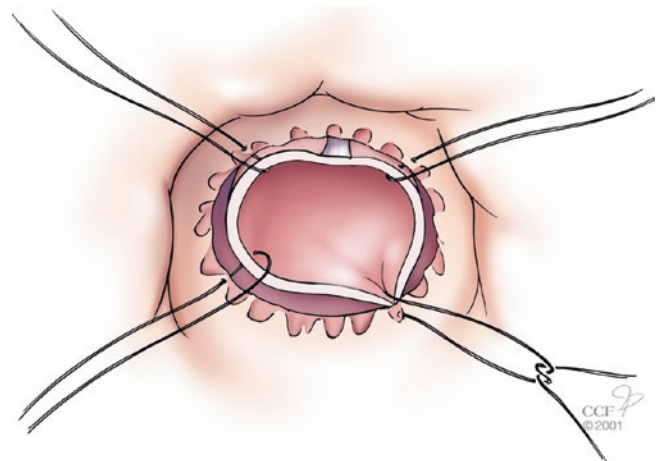


Fig. 67.7 Following transection, the Altemeier is completed with a hand-sewn colo-anal anastomosis. (Courtesy of Cleveland Clinic Foundation, Copyright 2001)

the rectum can be transected. Typically, only a portion of the rectum is transected at a time so that sutures can be placed serially, as this helps avoid the bowel from returning to the abdominal cavity and helps keep the bowel oriented to avoid twisting. A small segment of the bowel is often transected and a stitch is placed. Transection of the bowel is continued circumferentially, pausing to place sutures to

Table 67.2 Recurrence and morbidity rates for both retrospective and prospective studies of Altemeier procedure

Author (year)	Number of patients	Recurrence %	Morbidity %
Altemeier (1971) [24]	106	3	24
Williams (1992) [25]	114	10	12
Kimmins (2001) [26]	63	6	10
Steele (2006) [27]	48 recurrent	39	17
Glasgow (2008) [28]	103	9	9
Kim (2009) [29]	38	3	18
Altomare (2009) [30]	93	18	9
Cirocco (2010) [31]	103	0	14
Ris (2011) [32]	60	14	12
Ding (2012) [21]	113 primary 23 recurrent	18 39	17 17
Towliat (2013) [33]	28	27	–

keep the bowel oriented and to avoid the bowel from retracting back into the pelvis. Suture material should be braided and absorbable. After four cardinal stitches are placed, intervening sutures are placed to complete the anastomosis. Once the anastomosis has been completed, ensure that the lumen of the proximal bowel and the anastomosis are widely patent. This can be done using a flexible or rigid scope or simply a Hill-Ferguson retractor. The anastomosis should easily accommodate a medium-sized retractor. Some surgeons will choose to perform a levatorplasty prior to starting the anastomosis. Care must be taken not to create an overly tight levatorplasty as this can lead to outlet dysfunction. A single finger should comfortably fit between the colon and the pelvic floor. A levatorplasty is typically performed by approximating the levator muscles anteriorly using a monofilament absorbable suture.

Perineal rectosigmoidectomy, in general, carries a low complication rate. Complications include anastomotic leak, bleeding, stenosis, and pelvic abscess [21]. As this is a full-thickness resection (in contrast to the Delorme), the leak can result in peritoneal sepsis and severe morbidity or even mortality; however, this is rare. Several studies examining outcomes of the Altemeier operation have demonstrated success in improving patients' constipation, fecal incontinence, and anal manometry metrics [22]. Retrospective and prospective studies evaluating outcomes of perineal rectosigmoidectomy with associated recurrence and complication rates can be seen in Table 67.2. Recurrence rates are generally lower than those seen in patients undergoing Delorme procedure, and morbidity rates are comparable. Recurrence rates with Altemeier procedure may even be further augmented by the implementation of levatorplasty [23]. Some surgeons do prefer the Delorme procedure over the Altemeier as functional results may be improved with the Delorme.

The PROSPER trial is the only randomized control trial comparing the different surgical approaches to rectal prolapse. In this study, there were no statistically significant differences in recurrence rates or functional outcomes between these two perineal approaches [6]. However, this study may have been underpowered and had potential bias in the randomization. Therefore, the operation best suited for each patient should be selected on a case-by-case basis at the discretion of both surgeon and patient.

67.4 Anal Encirclement (Thiersch Wire)

Anal encirclement was initially described in 1891 by Carl Thiersch. The underlying principle of this procedure is to create a tunnel around the distal anal canal and using a wire, mesh, or suture through the tunnel to create a partial obstruction of the anal opening. This procedure can be done under local anesthetic and is therefore preferred in patients who cannot tolerate any or minimal systemic anesthetic. In general, this procedure is rarely used currently and is only reserved for the rarest cases, typically in a palliative setting.

The procedure is performed with the patient in either lithotomy or prone jackknife position, whichever can be tolerated physiologically and based upon surgeon preference. An incision is made in the skin of the posterior perineum about 2–4 cm from the anal verge. A closed curved Kelly clamp is used to dissect a tunnel around the anal verge in the deep subcutaneous tissues. The clamp is brought all the way around to the anterior perineum and another incision is made. This is then recreated on the other side. The material of choice is then passed through this tunnel circumferentially circling the anal opening. Several different types of materials have been used to create the encirclement. This includes metal wire, nylon suture, prolene suture, Dacron graft, silicone band, or biological graft.

The utilization of anal encirclement has largely fallen out of favor due to very high recurrence rates upwards of 44% and problems with outlet constipation [34]. In modern-day use, this procedure has been reserved for patients with permanent colostomies with rectal prolapse with severe comorbidities that would not tolerate perineal proctectomy. Recently, the utilization of anal encirclement with biological mesh to augment perineal proctectomy was found to reduce rates of recurrent prolapse from 29% without encirclement to 8% with encirclement [35]. Given the problems with anal encirclement, this procedure is rarely done in current times (Table 67.3).

Table 67.3 Recurrence and morbidity rates for anal encirclement procedure

Author (year)	Number of patients	Recurrence %	Morbidity %
Sainio (1991) [36]	14	15	NR
Fengler (1997) [37]	1	n/a	100% (death)
Eftaiha (2017) [35]	25	8	NR

More recently, the Fenix® Contenance Restoration System (Torax Medical, Inc., Shoreview, MN), consisting of a magnetically linked titanium beads on a titanium string, was utilized as a Thiersch-type procedure. Following its initial release in 2015 and reported success, it was withdrawn from the market and is currently not available in the United States.

67.5 Management of Recurrent Rectal Prolapse

It is imperative to understand the treatment of recurrent rectal prolapse given the high recurrence rates even with surgical treatment. There are several factors that need to be taken into consideration when approaching a patient with recurrence. First and foremost, it is absolutely necessary to know what operations have been performed in the past. Prior to embarking on any sort of procedure involving a resection, the current blood supply must be understood. The prior operation will dictate the remaining blood supply and therefore dictate the surgical options for the recurrence.

In patients who have undergone a resection rectopexy in the past, an Altemeier should not typically be undertaken. Similarly, patients who have undergone Altemeier in the past should not undergo a resection rectopexy. These operations have the potential to leave an intervening segment of colon between the old and new anastomoses that is at risk for ischemia. If either of these scenarios is encountered and chosen, it is imperative to resect the prior anastomosis to avoid the risk of ischemia. In patients who have had an Altemeier, a repeat Altemeier or Delorme is feasible. If the patient is now felt to be a reasonable surgical risk, a rectopexy is also an option. Similarly, patients who have had a rectopexy in the past are candidates for repeat rectopexy or a perineal procedure. Those who had resection rectopexy in the past should be considered for redo rectopexy; any perineal procedure would demand resection of the old anastomosis, so it is important to get a good understanding of the patient's anatomy prior to any surgical repair. A flexible sigmoidoscopy can typically be done in an outpatient setting to assess the location of the former anastomosis and if it is involved in the prolapsed segment. If the anastomosis is not easily prolapsing through the anal canal, then an Altemeier procedure should be avoided.

**Fig. 67.8** Incarcerated rectal prolapse

67.6 Management of Incarcerated or Strangulated Rectal Prolapse

Patients with incarcerated or strangulated rectal prolapse should be evaluated at the bedside immediately and the viability of the rectum should be assessed (Fig. 67.8). First, it is important to ensure that the prolapse is, in fact, rectal prolapse and not internal hemorrhoid prolapse. Once it is determined that the condition is rectal prolapse, if the rectum appears viable, attempts should be made to reduce the prolapse. If the rectum is quite edematous, applying a large amount of sugar may help pull out some of the edema, allowing the prolapse to be reduced. Coating the entirety of the rectum in a thick layer of sugar and then wrapping it in gauze may help reduce the swelling. Many of these patients have a patulous anus and reduction is usually possible. In the case that the prolapse is not reducible at the bedside, the patient can be taken to the operating room where an anesthetic may allow the prolapse to be reduced. If the rectum is strangulated and becoming necrotic, then the prolapse should not be reduced but should be excised via emergent perineal rectosigmoidectomy procedure.

67.7 Conclusion

Perineal approaches to rectal prolapse still play a large role in the care of patients with rectal prolapse. Despite their proclivity for a slightly higher recurrence rate, they are associated with low morbidity and mortality, and in general, serve to improve quality of life.

Take-Home Messages

- Understanding the various perineal approach to rectal prolapse is a necessary tool for surgeons who treat this condition.
- The choice of operation is patient dependent, and various factors need to be considered in making that decision.
- It is necessary to have a management strategy in place for patients with emergent issues related to rectal prolapse, including reduction of the prolapse and emergency perineal rectosigmoidectomy, if necessary.

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