Perineal rectosigmoidectomy for incarcerated rectal prolapse (Altemeier's procedure)

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ABSTRACT

Perineal procedures have higher recurrence and lower mortality rates than abdominal alternatives for the treatment of rectal prolapse. Presence of incarceration and strangulation also influences treatment choice. Perineal rectosigmoidectomy is one of the treatment options in patients with incarceration and strangulation, with low mortality and acceptable recurrence rates. This operation can be performed especially to avoid general anesthesia in old patients with co-morbidities. We aimed to present perineal rectosigmoidectomy and diverting loop colostomy in a patient with neurological disability due to spinal trauma and incarcerated rectal prolapse.

Keywords: Altemeier's procedure, perineal rectosigmoidectomy, rectal prolapse

INTRODUCTION

Rectal prolapse is a rare disease with an increased frequency after the fifth decade. Rectoanal inhibitory reflex deterioration, high-pressure intermittent rectal motor activity, anorectal sensation disorders, and pudendal neuropathy have been suggested in its pathophysiology, but still its exact etiology is unknown (1). Clinically, it may present as mucosal prolapse (partial or pseudoprolapsus), internal prolapse (rectal intussusception), or full-thickness prolapse (2). Surgical treatment options can be abdominal and/or perineal approach. Despite the higher recurrence rate, due to its low complication rates and better patient tolerance the perineal approach is often preferred in elderly patients with comorbidities, and can be applied in irreducible cases requiring emergency surgery. In this article, a 60-year-old male patient who had had thoracic spine fractures and neurological sequela due to being trapped in a collapsed building twenty years ago, and who underwent perineal rectosigmoidectomy (Altemeier procedure) and protective sigmoid colostomy for incarcerated rectal prolapse is presented.

CASE PRESENTATION

A 60-year-old male patient with reduced sensation and muscle strength in both lower limbs and left drop foot sequela due to a traumatic injury twenty years ago presented to the emergency room with an irreducible mass and pain in the anal region that emerged during defecation 6 hours ago. He had experienced fecal incontinence, constipation, and a rectal prolapse that could be manually reduced for the past 6 months. He had hypertension, diabetes mellitus type 2, and was being treated for benign prostatic hypertrophy. The patient was conscious, cooperative, and oriented. On physical examination, his vital signs were normal except for sinus tachycardia (120/min). On anal inspection, he had 20 cm full-thickness prolapse of the rectum and sigmoid colon. The prolapsed segment was edematous and hyperemic. There were areas of ulceration up to 2 cm in diameter. Bowel sounds were normoactive, there were no signs of abdominal tenderness, defense or rebound tenderness. His neurologic examination revealed a left drop foot, and slightly atrophied muscles in both calves and lower limbs, more prominent on the left. Both lower extremity manual muscle strength was determined as 3/5. Although more pronounced on the left side, there was reduced sensation in both lower extremities. The pathologic values on laboratory investigations were a white cell count of 14.5 K/uL, hemoglobin 11 g/dL, and blood glucose level of 115 mg/dL. After adequate intravenous analgesia and sedation, a 20% mannitol impregnated laparotomy pad was applied on the prolapsed segment. Despite a slight decline in the edema, manual reduction failed. A written consent was obtained from the patient and his relatives after being informed on the planned surgery and its complications. The patient had emergency surgery. He underwent surgery in lithotomy position under general anesthesia (Figure 1). 1 gr of cefazolin sodium and 500 mg metronidazole IV infusion was used for antibiotic prophylaxis. An 18F Foley catheter was inserted into the bladder. Following preparation of the operation field, the rectum was circumferentially transected with electro-cautery approximately 1 cm proximal to the dentate line (Figure 2). The sig-

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Fİgure 1. View of incarcerated rectal prolapse

Figure 2. Rectal incision line

Fİgure 3. Sigmoid colon meso excision

Figure 4. Anastomosis line

moid colon was exposed. The meso dissection was performed with Ligasure. Large arteries and veins of the sigmoid colon and rectum were ligated with 2/0 silk sutures, were cut and the meso dissection was completed (Figure 3). The resection was completed by circumferential transection of the sigmoid colon with electrocautery 2 cm proximal to the anal verge. Mucosal bleeding control was done. The anastomosis line was exposed with two overlapped rings of an outer anal canal and an inner sigmoid colon ring. The anastomosis was completed with continuous 2/0 Prolene suture in a single layer (Figure 4). The anastomosis line spontaneously reduced. On digital examination, the rectal anastomosis line was felt 6 cm proximal to the anal verge. Through an approximately 3 cm circular incision in the left upper quadrant, the skin and subcutaneous fat tissue were excised. The descending colon near the splenic flexure was pulled towards the incision. The protective sigmoid colostomy was matured in accordance with the technique. His postoperative follow-up was uneventful. Stool discharge was observed from the colostomy on postoperative day 1. Oral intake was started. The patient was discharged on postoperative day 3 following proper wound healing, adequate food intake, acceptable pain control with oral nonsteroidal anti-inflammatory analgesics, and ostomy care training.

DISCUSSION

The prevalence of external prolapse in the general population is less than 0.5% (3). 80-90% of patients with rectal prolapse are women over the age of 50. Although the etiology of rectal prolapse is unknown, the most 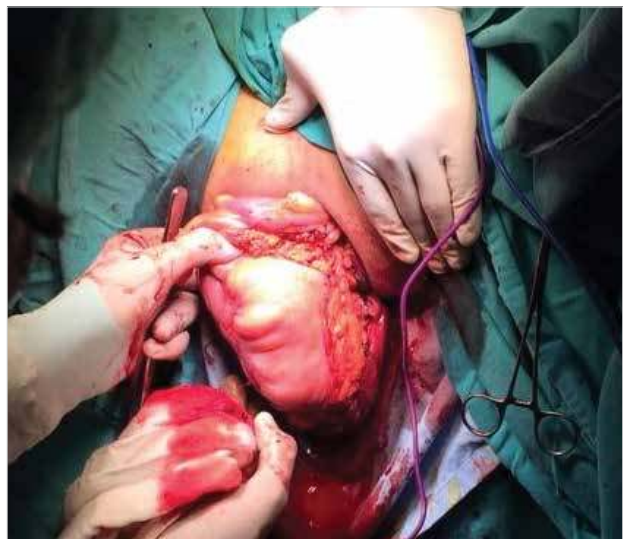accepted theory, as shown by defecation proctography, is rectorectal intussusception (1). Its incidence is higher in elderly patients, those with vaginal birth, chronic psychiatric disorder, and Ehlers-Danlos syndrome type IV (1). Defecation is a complex mechanism in which several

muscles and nerves participate. The anorectal and pelvic autonomic innervation is controlled by both the autonomic and somatic nervous systems. The levator ani and puborectalis muscles are innervated by sacral 2-5 nerves, while the external anal sphincter muscle is innervated by pudentalis inferior-rectalis inferior nerve. Parasympathetic innervation is supplied by sacral nerves 2-4, and sympathetic innervation by the pelvic plexus. The sensory innervation of the anal region and distal rectum is also supplied by the pudendal nerve (4, 5). We believe that our patient's prolapse etiology was associated with the previous trauma-related spinal injuries that have led to both motor and sensory deficits. Our patient has been complaining of fecal incontinence and constipation for the past 6 months.

There are various surgical treatment options for rectal prolapse. Surgery can be performed by either abdominal or perineal approaches (6). The morbidity and recurrence rate of each operation varies. Abdominal surgeries have less recurrence and higher mortality rates than perineal surgery (6, 7). Additionally, abdominal surgeries have a higher risk of impotence and infertility (8). Abdominal approaches include suture rectopexy (mortality 0%, recurrence 0-3%), suture rectopexy + resection (mortality 0 to 6.7%, recurrence 0-5%), posterior mesh rectopexy (mortality 0-3%, relapse 3%), anterior sling (Ripstein procedure) rectopexy (0 to 2.8% mortality, recurrence 0-13%), laparoscopic rectopexy (0% mortality, recurrence 0-10%) (7). In the laparoscopic approach, length of hospital stay and mortality rates are low while relapse is more common, especially because of inadequate dissection during the learning curve (6). This operation also requires laparoscopic surgical knowledge and experience. Nevertheless, laparoscopic rectopexy is a good treatment option with acceptable recurrence and low mortality rate. Perineal approaches mainly refer to two operations including Delorme's operation (mortality 0-4%, 4-38% recurrence), and perineal rectopexy (mortality 0-5%, 0-16% recurrence) (7).

The choice of surgery must be decided according to the patient and surgical experience. Abdominal surgery may be preferable for curative intent in especially a young patient without comorbidities, those with high intellectual and cultural status, and in patients who can deal with the morbidity burden. Poylin et al. (6) reported that abdominal surgery in elderly rectal prolapse patients is as safe and effective as in the young. Laparoscopic rectopexy is a good treatment option with low recurrence and mortality rates. This procedure requires advanced laparoscopic knowledge and experience. Perineal surgery may be especially preferred in debilitated patients with co-morbid diseases and older age groups (7). The applicability of perineal rectosigmoidectomy under spinal anesthesia provides another advantage in the choice of surgery.

Surgical options are more challenging in case of incarceration, due to the increased risk of performing surgical anastomosis because of bowel edema. Initially, reduction should be tried to reduce edema and the consequent risk of surgical complications, as well as to schedule for an elective surgery. Methods such as mannitol, elastic compression, hyaluronidase and sugar application can be used for reduction (1). The rate of anastomotic leak is 2-6% in elective rectosigmoidectomy in contrast to the 25% in incarcerated prolapse. Stapled methods and the two-stage approach have been tried to reduce the leakage rate, but the most common application is protective ileostomy or colostomy (9). Perineal rectosigmoidectomy and protective loop colostomy surgery through one incision is a less invasive surgical option with less risk of contamination as compared to open prolapse surgery. The length of hospital stay is also shorter in perineal approaches as compared to abdominal procedures (10). Compared with abdominal rectopexy, this surgery has disadvantages such as the need for bowel resection, the requirement for an anastomosis, an ileostomy or colostomy, and a second surgery for ostomy closure. Although rectal prolapse is a rare disease, it can be encountered in clinical practice. Perineal rectosigmoidectomy is a reasonable surgical option in selected cases.

CONCLUSION

The type of surgery for patients with rectal prolapse should be selected by taking the patient's overall condition and the surgical experience into account. Although its recurrence rate is higher as compared to abdominal rectal prolapse procedures, perineal resection may be the preferred surgical option in incarcerated rectal prolapse, especially those requiring resection, in debilitated, elderly patients with co-morbid diseases, and in whom general anesthesia is contraindicated.

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