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DELORME PROCEDURE FOR FULL THICKNESS RECTAL PROLAPSE WITH COMPLETE FECAL INCONTINENCE: A REPORT OF TWO CASES

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Abstract

A complete rectal prolapse or procidentia is a protrusion of the rectum with all its layers through the anus. The incidence ranges between 0.79-6.08 per 100 000 population per year.

The diagnosis could be easily established during examination, or in cases with internal rectal prolapse by defecography. Weakness of the anal sphincters is very common with advance disease and approximately 50% to 75% of patients experience some form of fecal incontinence. Symptomatic rectal prolapse is an indication for operation.

Over 100 operative procedures have been described for the treatment of rectal prolapse and they all can be categorized as transabdominal and transperineal procedures. Delorme procedure is a transperineal procedure that consists of resection of a cylindrical mucosal flap and plication of the protruded rectal musculature.

We are presenting two, senior and debilitated patients with procidentia and complete fecal incontinence, successfully treated with the Delorme procedure. The results of the treatment were remarkable regarding both the prolapse and the fecal incontinence.

We are concluding that for the surgeon, who is already familiar with other anorectal procedures, the Delorme procedure is relatively simple and easy to learn, with excellent structural and functional results even in very poor-risk patients with a long-segment rectal prolapse.

Keywords: rectal prolapse, fecal incontinence, Delorme procedure.

Introduction

A complete rectal prolapse (RP) or procidentia (type III) is a protrusion of the rectum with all its layers through the anus. It is recognized on inspection by the characteristic circular mucosal folds, opposite to radial folds detected in mucosal prolapse consistent with advanced hemorrhoidal disease.

The latter is known as partial rectal prolapse (type I). Procidentia is also called external rectal prolapse, unlike internal rectal prolapse (type II) or rectal intussusception, where the rectum is not protruding through the anus, but an invagination is present proximal to it [1,2].

The condition is well underreported, so its true incidence is unknown. According to Kairaluoma and Kellokumpu (2005) the incidence of RP ranges between 0.79-6.08 per 100 000 population per year. The incidence peaks in the fourth decade, where both genders are equally represented and again in the seventh decade where above 80% of the patients are female.

The assumption that multiparity is an etiologic factor is denied by the fact that above 35% of the female with RP are nulliparous. Most of the patients have weakness of the whole pelvic floor accompanied by prolapses of the uterus, bladder, rectocele or enterocoele. More than 50% of the patients have some degree of fecal incontinence. Some of the patients suffer from constipation with excessive straining during defecation [3].

Although the exact reason for the occurrence is unknown, there are two main theories. The Moskowitzh theory defines the RP as sliding hernia through the defect in the pelvic floor. The Broden and Snallman theory gives the main role to the development of an internal invagination of the rectum, at the

level of the promontory. The anatomic abnormalities commonly found in conjunction with RP are deep Douglas pouch, laxity of the pelvic floor muscles, weakness of the anal sphincters, pudendal nerve neuropathy and lax lateral ligaments of the rectum [4].

The symptoms are mostly awareness of protruding tissue through the anus, tenesmus, feeling of an incomplete evacuation, mucus discharge and rectal bleeding. The clinical picture could be accompanied by various forms of fecal incontinence, constipation with straining or urinary incontinence.

On examination, the external rectal prolapse, with its concentric mucosal folds, is usually obvious, and often a patulous anus or extremely weakened anal sphincters could be confirmed during digital rectal examination. If the condition is not visible, straining on the commode can easily provoke the protrusion. An internal rectal intussusception, on the other hand, could be confirmed by traditional contrast defecography or magnetic resonance imaging defecography in the recent years. It is suitable to fully evaluate the local condition with colonic transit series, anal manometry, pudendal nerve terminal motor latency, anorectal ultrasound and/or anal electromyography.

It is obligatory to examine the whole colon for the presence of malignancy or diverticular disease either with colonoscopy, double contrast colonography or computed tomography colonography, especially in patients older than 50.

A symptomatic rectal prolapse is an indication for operation. The conservative treatment should be reserved for debilitated patients, who are unfit for operations, and is mostly aimed at dietary changes that could reduce the extent and frequency of the prolapse. According to the defecography grading system based on the Broden and Snallman theory for the pathogenesis of the RP (table 1), grades 4 and 5 are indications for the operative treatment, whereas grades 1, 2 and 3 could be manage conservatively [5].

Table 1. Defecography grading system

Grade	Description
N	Rectum remains fixed to the sacrum, sphincter relaxes and rectum empties
1	Nonrelaxation of puborectalis
2	Mild intussusception or mobility from sacrum
3	Moderate intussusception
4	Severe intussusception
5	Prolapse
R	Rectocele

Over 100 operative procedures have been described for the treatment of RP, and they all can be categorized as transabdominal and transperineal procedures. An exception is the anal encirclement or Thiersch procedure that could be done with local anesthesia and is preferred in very poor-risk, debilitated patients.

Transabdominal procedures are more and more frequently performed laparoscopically or robotically in the recent period, and they encounter various types of rectopexy by using only sutures or by using a synthetic mesh with or without sigmoid resection. The low anterior resection is not preferred because of its high recurrence rate.

The choice of the procedures depends on the physical status and age of the patients, presence of constipation or incontinence, as well as the experience of the surgeon. Transabdominal procedures are used in physically fit patients and the perineal ones are used in high-risk patients. Rectopexy alone is recommended in the patient with a history for anal incontinence and resection is preferred in the patient with constipation [4,5]. There are two main perineal procedures.

In Altemeier procedure or perineal proctosigmoidectomy, a transanal approach is used to perform a full-thickness excision of the rectum and a portion of the sigmoid colon.

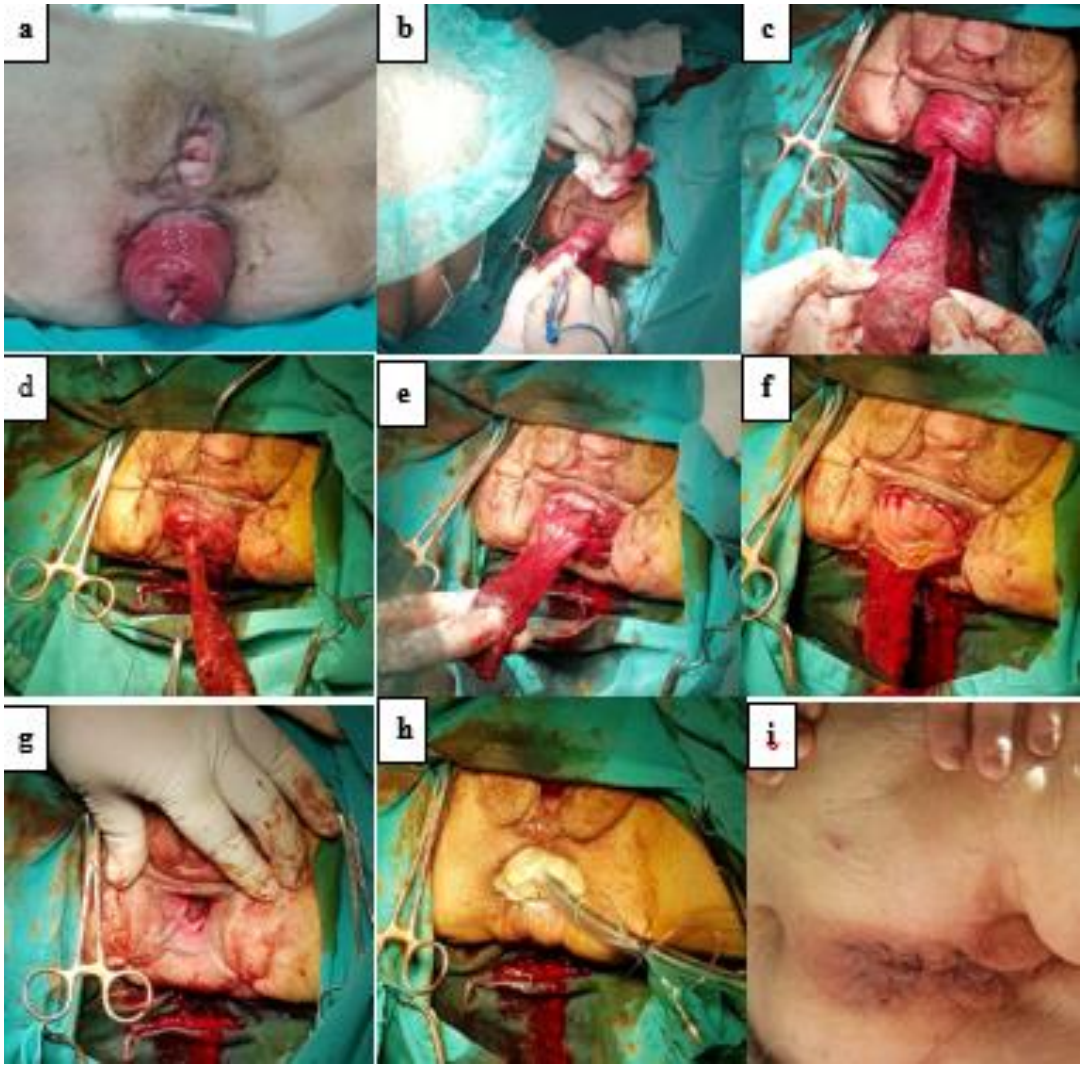
This procedure was originally described by Dr. William Altemeier, at the University of Cincinnati, in 1956, and popularized by Altemeier and Culbertson in 1971 [6]. Delorme procedure consists of resection of a cylindrical mucosal flap and plication of the protruded rectal musculature.

Case report No. 1

The first patient was an 85-year-old female with a history for cerebrovascular insult and Alzheimer dementia. She was with paraparesis in a wheelchair and suffered from arterial hypertension. The patient was incontinent for flatus, liquid and solid stool and was wearing diapers for two years. She was complaining of a mass in the anal region, with occasional rectal bleeding and constant rectal mucous discharge.

The patient was also anemic and cachectic. On inspection of the anal region, one could see substantial rectal prolapse (picture 1a), and on digital rectal examination, the tonus of the anal sphincters was completely gone.

The patient was scheduled for an elective operation, but not before a complete colonoscopy with otherwise normal finding was done. The colon was cleared a day before the operation.



Picture 1, Case No. 1

a) substantial rectal prolapse; b) dissection of the cylindrical mucosal flap; c) extent of the dissection; d) plication of the musculature with interrupted polydioxanone sutures; e) plicated musculature with mucosal flap; f) resection of the mucosal flap and suturing of the mucosal edges; g) the condition of the anus after repositioning of the reconstructed rectum; h) inserted endotracheal tube through the anus and above the suture line; i) the condition at one month from the operation.

According to American society of anesthesiology (ASA) score, she was classified by the anesthesiologist as grade III-IV.

One hour before the operation, parenteral antibiotic prophylaxis was administrated with ciprofloxacin and metronidazole. The operation was performed in a gynecologic position with spinal anesthesia. At first a submucosal infiltration of lidocaine and epinephrine solution was done. A circumferential incision of the mucosa and submucosa was created about 1 cm above the dentate line. Then a cylindrical mucosal flap was meticulously dissected away from the rectal musculature (picture 1 b, c). The plication of the musculature was done with 12, 2-0 interrupted polydioxanone (PDS) sutures (picture 1d, e).

The mucosal flap of about 20-25 cm was cut just above the line of demarcation and the mucosal edges were sutured with 3-0 full thickness interrupted PDS sutures, about 0.5-1 cm apart, after which the rectum was easily returned above the anus (picture 1f, g). At the end, an endotracheal tube was inserted in the anus to help with the hemostasis and fecal diversion in the immediate postoperative period. The operation lasted 1 hour and 35 minutes without intraoperative complications and substantial bleeding. The postoperative period went well and completely uneventful.

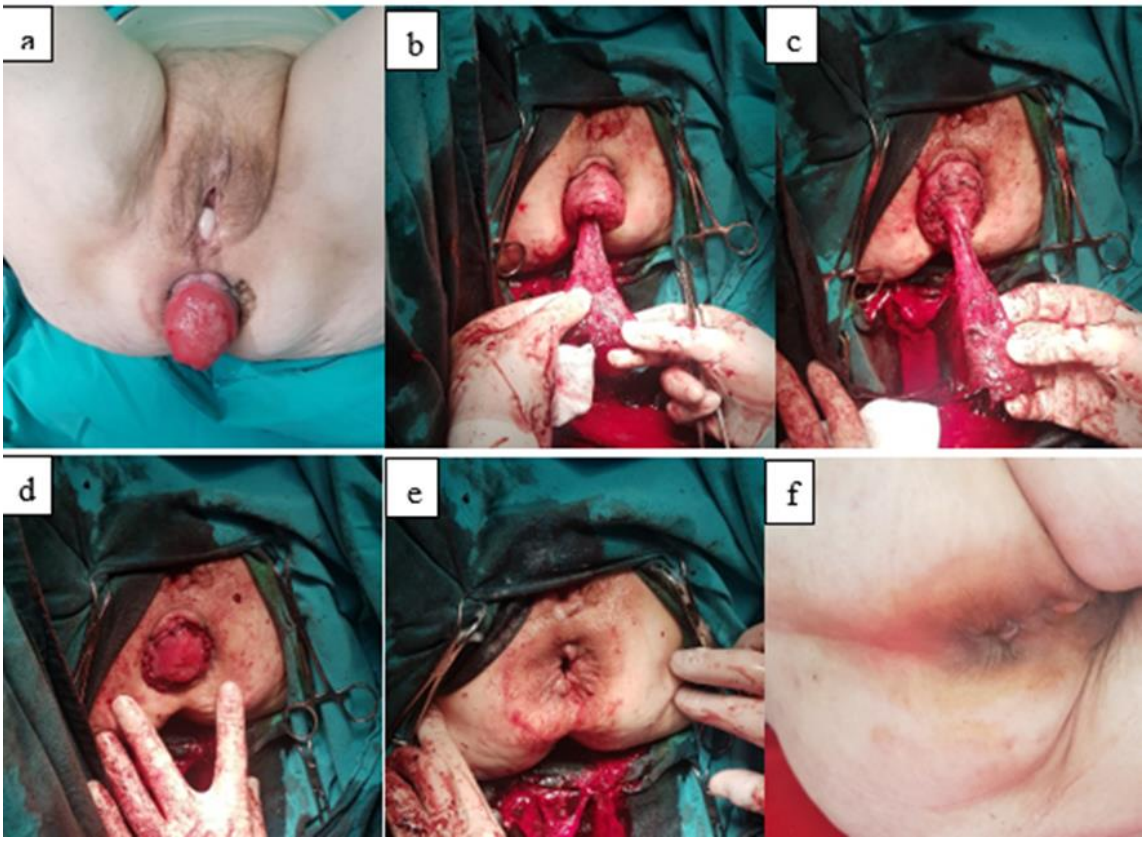
The endotracheal tube was extracted on the second postoperative day (POD) when the liquids were allowed. On the third POD solid food was allowed and the patient had the first bowel movement on the fourth POD.

The patient was discharged on the 9-th postoperative day continent for solid stool but not for flatus. At the control examination at one month from the operation there was not any kind of protrusion through the anus, the patient was completely continent for flatus, liquid and solid stool and very satisfied with her condition.

Case report No. 2

The second patient was an 84-year-old female, recently treated on the internal medicine ward for severe anemia due to rectal bleeding, where total colonoscopy was performed with otherwise normal finding.

The patient was complaining of a mass in the anal region, with occasional bleeding, constant mucus discharge and inability to control flatus, liquid, or solid stool. She was wearing diapers for 1 year. The patient also suffered from arterial hypertension, chronic cardiomyopathy and polyarthritis with generalized osteoporosis.



Picture 2, Case No. 2
a) extension of the rectal prolapse; b) dissected mucosal flap; c) plicated rectal musculature with mucosal flap; d) suture line after plication and resection; e) the condition of the anus after repositioning of the reconstructed rectum; f) the condition at one month from the operation.

On closer examination of the perianal region, a substantial rectal prolapse was registered with extensive inflammation anteriorly, while on the digital rectal examination, there was a patulous anal sphincter with complete loss of any kind of pressure in the markedly dilatated anus. The patient was scheduled for elective operation. She was classified according to ASA, as grade III, by the anesthesiologist.

The course of events from that point was identical as with the previous patient (pictures 2a, b, c, d, e). Intraoperatively, at the point of inflamed mucosa anteriorly the dissection was very difficult and a hole in the rectal musculature was created.

This hole was easily sutured with 2-0 PDS, and this event did not cause any kind of postoperative complications. At the end a petroleum gaze was placed in the anus and rectum. The postoperative course was extended but without complications.

The petroleum gaze was extracted on the third POD, when fluids were allowed. Solid food was allowed on the 5th POD. The first bowel movement was registered on the 3rd POD. The patient was discharged on the 10th POD, continent for solid stool, but not for flatus. At one month after the operation, the patient was very satisfied with the condition without any mass or bleeding from the anus and completely continent for gas, solid and liquid stool (picture 2f).

Discussion

The Delorme procedure was first described by the French military surgeon Edmond Delorme in 1900 [7]. For a long time, it could not gain popularity, but in recent years, especially in Europe, it is more popular than the Altemeier's procedure [8].

The operation is relatively simple, with minimal operative trauma, without real resection or anastomosis and easily repeatable, so it is suitable for poor-risk patients. Complications are rare, with the overall morbidity of around 9%, mostly due to minor complications, including postoperative bleeding, sepsis, constipation, fecal incontinence, urgency, tenesmus etc. As a perineal procedure, a main drawback could be the slightly higher recurrence rate of 0-9%, or in some reports up to 16%. Our two patients were poor surgical risk patients with significant comorbidity and the first intention was to do only the Thiersch procedure, as the most recommendable one for such patients.

Considering that the anal encirclement is not very popular for its high recurrence rate 33-44% [9] and risk for constipation, as well as the fact that it is not solving the real problem in the essence, we decided to utilize the Delorme procedure.

The result in these debilitated patients was very good. Consequently, we can recommend the Delorme procedure as a viable option in poor-risk patients when one is in doubt whether to only perform the anal encirclement because of the poor health status of the patients.

While the perianal procedures are known by the higher recurrence rate than the abdominal procedures, they offer very good results regarding the functional improvement of the anorectum in context of the incontinence or constipation problems.

Approximately 50% to 75% of patients with rectal prolapse experience form of fecal incontinence. Fecal incontinence in the patients with RP is the result of the injury to the anal sphincters from the chronic stretching, continuous stimulation of the anal inhibitory reflex by the prolapse tissue and pudendal nerve neuropathy due to the nerve injury by the descend perineum [10].

The improvement of fecal incontinence after Altemeier procedure is about 60% and after Delorme is about 70% [11]. There are three main reasons for improving the continence problem caused by the Delorme procedure.

Firstly, the anal sphincters are devoid of the trauma from the rectal mass protruding through the anus. Secondly, the pudendal nerve is released from the constant stretching by descensus of the rectum through the anal canal and by that the conditions are created for returning to its normal function.

And thirdly, by plicating the rectal musculature a bulk is created above the anus that serves as a good mechanical support of the physiology of the anal continence mechanism. In our patients, there was a remarkable improvement in the anal continence with complete recovery of the continence for flatus, liquid, and solid stool by the end of the first month after the operation.

We can say that the Delorme procedure has remarkable outcomes regarding the fecal incontinence problem with rectal prolapse and this could even be improved by adding sphincteroplasty [12,13] or maybe anal encirclement at the end of the procedure [14, 15].

In the literature, there are clear recommendations about the choice of the perianal procedure in relations with the characteristics of the rectal prolapse and the functional impairment of the anorectum due to the pathologic condition. Altemeier is undoubtedly the procedure of choice in strangulated rectal prolapse where all the damage tissue must be removed.

The Altemeier procedure is also recommended in long segment rectal prolapse when there is a suspicion about the efficacy of the Delorme procedure with its limited resection. With our patient No. 1 there was a long, prolapsed segment, and the entire rectum was out through the anus. As the operative treatment was without any complications, the results at the end were the same as with patient No. 2, where a shorter segment was prolapsed.

We can assume that that the Delorme procedure could be safe and successful, for operations with long segment rectal prolapse and those patients could be spared of the extensiveness of the Altemeier procedure, as well as of some of the specific procedure-related complications.

Conclusion

The Delorme procedure is relatively simple and easy to learn for a surgeon who is already familiar with other anorectal procedures.

The structural and functional results by utilizing the Delorme procedure could be very good, even in very poor-risk patients with long segment rectal prolapse.

The improvement of fecal incontinence with the Delorme procedure is remarkable, even without other additional techniques such as sphincteroplasty or anal encirclement.

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