Delorme's Procedure for Complete Rectal Prolapse in Severely Debilitated Patients

An Analysis of 41 Cases

Gregory C. Oliver, M.D.,* Debra Vachon, M.D., Theodore E. Eisenstat, M.D., Robert J. Rubin, M.D., Eugene P. Salvati, M.D.

From the Division of Colon and Rectal Surgery, Robert Wood Johnson Medical School, Muhlenberg Regional Medical Center, Plainfield, New Jersey, and John F. Kennedy Hospital, Edison, New Jersey

PURPOSE: This study was designed to assess the results of a minimally invasive surgical procedure for the correction of complete rectal prolapse in a poor surgical risk group. METHODS: Over a ten-year period, 40 patients underwent 41 Delorme operations when advanced age and/or poor overall health mitigated against an abdominal approach. Mean age was 82 (range, 30–100) years. Eighty-eight percent were females. Surgery was performed in the prone jackknife position utilizing intravenous sedation and local anesthesia. RESULTS: Follow-up ranges from 1 year to 2 years (mean, 47 months). There have been 9 recurrences in 8 patients (22 percent). Mean time to recurrence was 13 months (range, 1 month to 6 years). One death occurred in an 81-year-old patient within 24 hours of surgery from cardiopulmonary arrest. Minor complications occurred in 25 percent of patients. CONCLUSION: Satisfactory prolapse repair was safely performed in 78 percent of this high-risk group. Pitfalls in performing this procedure relate primarily to associated perineal and colonic conditions. Most prominent among these conditions are weak or absent anal sphincter tone, perineal descent, and previous sphincter injury. Extensive diverticular disease may prohibit effective and complete proximal mucosectomy. An inadequate mucosectomy sets the stage for early recurrence of prolapse. [Key words: Rectal prolapse; Delorme's procedure]

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Rectal prolapse is a debilitating condition that has challenged surgeons since its first description in the Ebus papyrus 3,500 years ago.[1] Over 100 operations have been described for the correction of rectal prolapse. Dissatisfaction with results and a diverse spectrum of affected patients have contributed to the plethora of procedures to correct this defect. It is generally accepted that an abdominal approach to this condition yields the best results in fit patients. In our experience, rectal prolapse all too often occurs in very elderly, frail patients who are deemed to be poor candidates for major abdominal surgery. This clinical situation provides the rationale for the performance of a low-risk perineal procedure under local anesthesia, the Delorme operation.

Mucosal stripping of the prolapsed rectum was described in 1899 by Delorme,[2] a French army surgeon. He originally reported his operative technique for the correction of full-thickness rectal prolapse in three young men. Although the repair was successful, one patient died because of peritonitis. Modifications to the original technique have been touted to reduce recurrences and morbidity and thereby have increased the operations popularity.[3–5] Reports of success with this technique by Uhlig and Sullivan[4] and others[3, 5, 6] have helped to stimulate interest in this procedure. This report summarizes our experience with Delorme's procedure in elderly and poor-risk patients from 1982 until 1992.

METHODS

We reviewed the office and hospital records of all patients who underwent Delorme's procedure for full-thickness rectal prolapse between March 1982 (our first such procedure) and March 1992. The procedure was selected for patients judged to be poor candidates for a major abdominal approach because of advanced age or poor medical health. The patient ages ranged from 30 to 100 (mean, 82) years. Eighty percent of the patients were 80 years of age or older, while 18 percent were over 90 years of age.

Forty patients underwent 41 procedures using this technique for rectal prolapse repair from March 1982 until March 1992. During this same period,

Address reprint requests to Dr. Oliver: Associated Colon and Rectal Surgeons, 1010 Park Avenue, Plainfield, New Jersey 07060.

56 patients underwent anterior resection with rectopexy, 17 had Ripstein procedures, and 6 perineal proctosigmoidectomies were performed in patients for rectal prolapse. Patient follow-up was through chart review and telephone contacts. In the case of patients deceased since surgery, their medical physicians were contacted to obtain follow-up data where available. In one patient, follow-up was incomplete.

Surgical Technique

Patients were admitted the day before surgery for mechanical and antibiotic bowel preparation (standard Nichols-sedation). The local anesthesia (0.25 percent bupivacaine with 1:200,000 epinephrine and 150 TR units hyaluronidase/30 ml of anesthesia solution) was injected for a perianal block and submucosally for rectal mucosectomy (Fig. 1). The operation can be done with the rectum prolapsed or reduced, depending upon the surgeon's preference. The technique is shown with the rectum prolapsed for ease of illustration. A circumferential incision is made 1.5 cm to 2 cm proximal to the dentate line. This site is selected in order to preserve the anorectal mucosal transition zone and its sensory contribution to the continence mechanism (Fig. 2). The mucosa and submucosa are dissected circumferentially from the circular internal sphincter muscle fibers (Fig. 3). Initially, dissection can be tedious and is more difficult if prior anorectal surgery has been performed or if the prolapsed mucosa has been badly damaged by the chronic edematous prolapse. Dissection becomes easier as it proceeds proximally and can be done sharply with scissor dissection supplemented by electrocautery for hemostasis. Diluted epinephrine in a saline or local solution decreases blood loss and facilitates dissection of the proper plane. It is important to secure hemostasis during dissection.

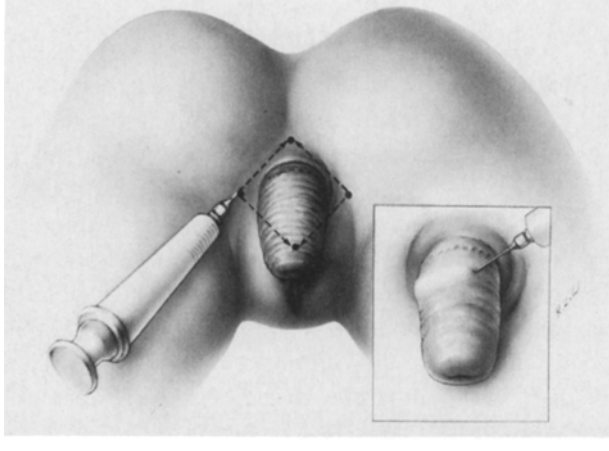

Figure 1. With the patient in the prone, jackknife position, a perianal block is performed and a submucosal weal is created using the injection solution to facilitate dissection.

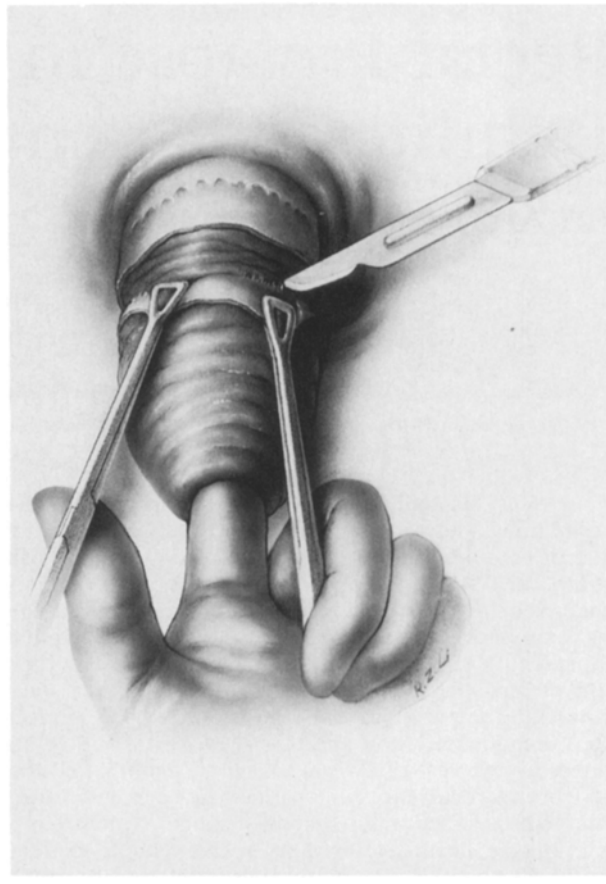

Figure 2. A circumferential incision is made through the mucosa and submucosa exposing the circular muscular layer 1.5 cm to 2 cm proximal to the dentate line.

Electrocautery is usually sufficient to coagulate perforating vessels before sharply dividing them in the proximal dissection. Mucosectomy is carried proximally until resistance to further prolapse is met. If performed while the rectum is prolapsed, the dissection is continued into the prolapsed segment (Fig. 4). Beginning at the proximal extent of the mucosectomy, the circular layer of muscularis is plicated using a #1 polyglactic suture. The suture ends at the distal edge of the internal sphincter exposed proximal to the dentate line. The mucosa is not included in this suture. Initially, four quadrant sutures are placed, followed by a bisecting suture in each quadrant for a total of eight vertical plicating sutures. On tying these sutures, muscularis is reduced and plicated (Fig. 5). The stripped

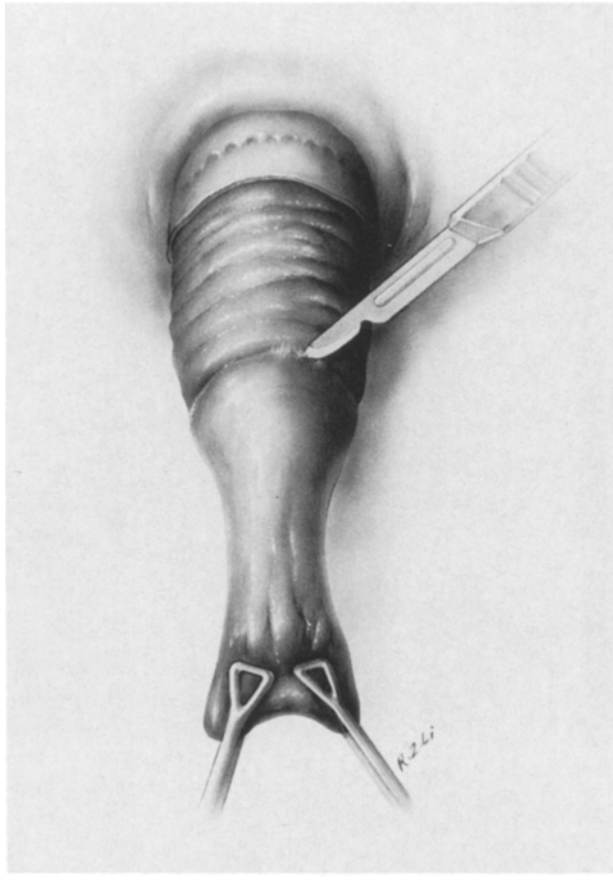

Figure 3. The mucosectomy is continued sharply to the apex of the prolapse. When necessary, electrocautery is employed to control bleeding.

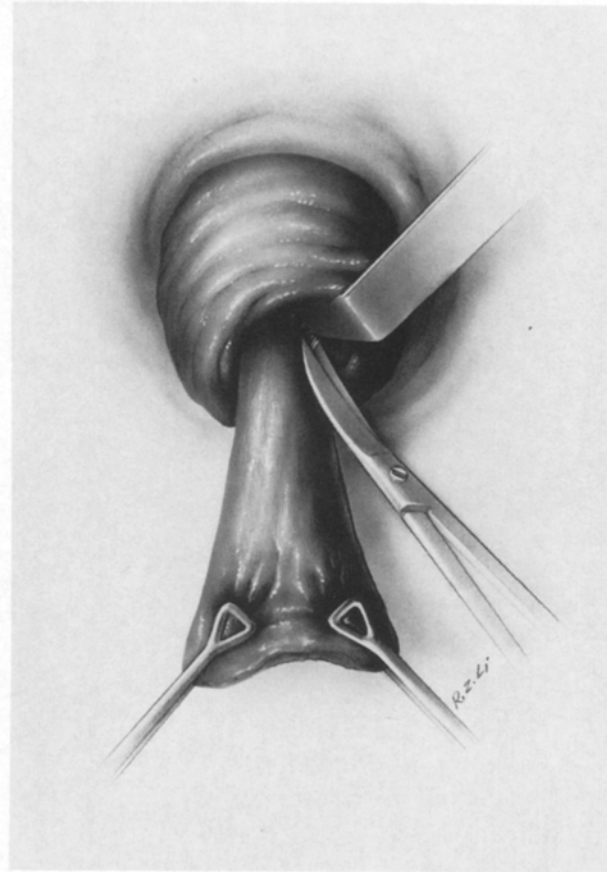

Figure 4. The mucosectomy is continued with traction on the cut edge distally until no further mucosa can be drawn down into the wound and no further prolapse can be exposed.

mucosa is then amputated at its proximal extent and the mucosal anastomosis completed using 000 Polyglactic suture (Fig. 6). The underlying muscle is included. Figure 7 represents the completed double-layer anastomosis in a sagittal view.

Patients were allowed to ambulate *ad libitum*. Clear liquids were offered postoperatively and advanced to a regular diet as tolerated. Foley catheter insertion was performed only if the patient was found to have voiding difficulties.

RESULTS

Forth patients underwent the Delorme procedure 41 times for complete rectal prolapse during this study. There were 35 females and 5 males. The mean age was 82 (range, 30–100) years. All patients were judged not to be candidates for an abdominal approach due to advanced age, extensive medical problems, or both. More than two-thirds of the patients had major medical problems, as shown in Table 1. Follow-up ranged from one to two years (mean, 47 months). The one patient lost to follow-up was not included in the calculation of recurrence rate. There were 9 recurrences in 41 operations (22 percent). All recurrences developed in females.

There was one perioperative death (2.4 percent mortality rate). This occurred in a frail 81-year-old female with severe cardiac and respiratory disease who expired suddenly within 24 hours of surgery. Her demise was attributable to an acute cardiorespiratory event.

Complications are listed in Table 2. One major complication was noted in this series, that being a mucosal anastomotic separation with hemorrhage requiring a 1-unit transfusion. No other patient required intraoperative or perioperative transfusion. Minor complications were mainly gastrointestinal and urinary tract problems. Five patients developed anastomotic strictures which resolved with digital dilation in the office. None were of clinical significance.

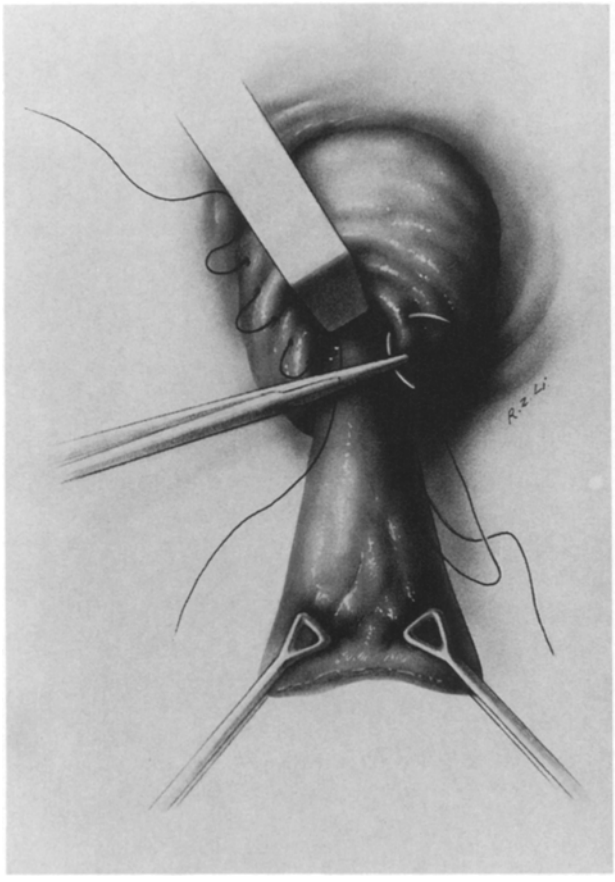

Figure 5. Beginning at the apex of the prolapse, #1 polyglactic acid sutures are placed in four quadrants in vertical mattress fashion with subsequent sutures being placed in between each of the cardinal sutures to complete the prolapse reduction.

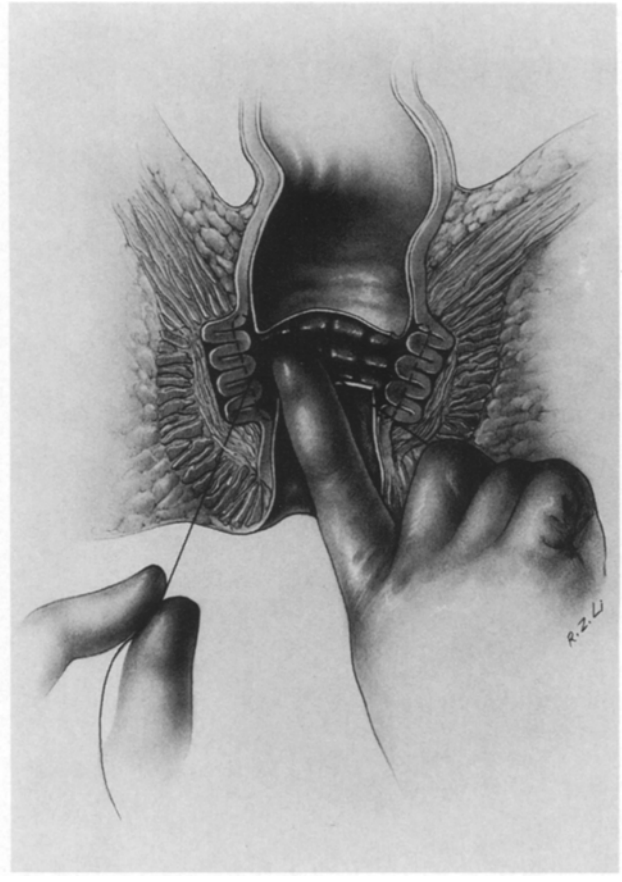

Figure 6. With all sutures tied down, the circular layer of muscle was telescoped bringing the cut ends of mucosa into apposition.

Seven patients had undergone prior surgery for rectal prolapse but had recurrence of their prolapse; one Ripstein operation and six Thiersch procedures using wire insertions had been performed. In addition, 18 patients had undergone previous anorectal or pelvic procedures including hemorrhoidectomy in 6 patients, hysterectomy in 10 patients, rectocele repair in 4 patients, fistulotomy in 1 patient, sphincterotomy in 1 patient, anoplasty in 1 patient, and perineal repair for traumatic laceration in 1 patient.

Preoperative and postoperative continence data were recorded in 38 patients. Thirty-two patients claimed continence was enhanced by their Delorme repair (68 percent). Seventeen patients were noted to be incontinent before surgery. Postoperatively, four patients were completely incontinent, 11 experienced occasional problems with continence and 23 patients denied difficulties with continence. Only one patient claimed her partial incontinence was worsened by the Delorme procedure.

DISCUSSION

Over the ten-year period assessed, rectal prolapse occurred in 126 of our patients. In 54 patients, perineal repairs were selected because of the patients' advanced age and poor general health. Of these, 41 repairs were done by the method of Delorme. Many procedures have been described for correction of rectal prolapse. This can be attributed to the disparate results and high complication rates, and the diverse spectrum of patients affected by this condition. Abdominal repairs repeatedly demonstrate lower recurrence rates but in high-risk elderly or sick patients, mortality and morbidity rise to offset this advantage. Critics of the Delorme procedure state that the technique does not address the basic anatomic defect that causes prolapse and had been condemned by some for its recurrence rate and morbidity.[7] As originally described by Delorme,[2] the technique was bloody

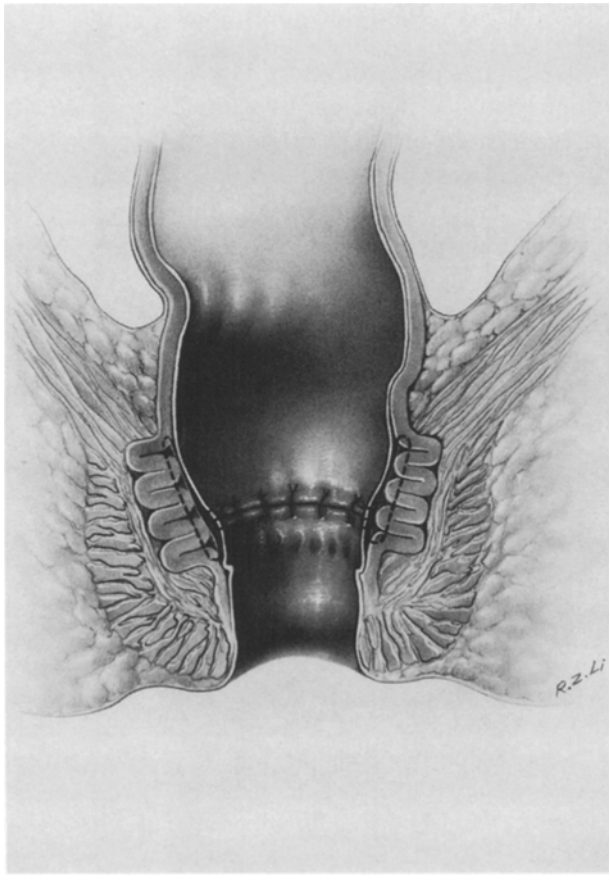

Figure 7. The circular muscle layer which has been telescoped is then closed by a separate mucosal layer approximated with #3–0 polyglactic acid sutures in an interrupted fashion.

and tedious and resulted in high complication and recurrence rates.

Modifications to the original technique have simplified and improved it. The submucosal infiltration of epinephrine-containing solutions has eased dissection and diminished blood loss. Performing this procedure under local anesthesia avoids the complications associated with general anesthesia in this high-risk elderly population. Operating in the prone position allows blood loss to drain away from the operator and permits better use of the surgical assistant.

Review of the surgical literature over the past 30 years documents successful applications of this procedure in large numbers of poor-risk patients. Uhlig and Sullivan's[4] series of 44 patients with only 3 recurrences (6.8 percent) and few complications prompted our interest in this procedure. Reports by Christiansen and Kirkegaard,[6] Gunderson *et al.*,[8] Monson *et al.*,[9] Moskalenko,[3] and Nay and Blair[5] produced recurrence rates between 0 and 17 percent. Our 22 percent recurrence rate is higher than those previously reported while our low morbidity and mortality rate is comparable to these other series. Our analysis of our higher recurrence rate suggests several factors. Possible inadequate mucosectomy, failure to correct pelvic floor and outlet defects, and a relatively long follow-up in this group since recurrence rate is directly related to length of follow-up. In the former case, extensive sigmoid diverticular formation or disease prohibits proximal dissection in that the muscular coat is incomplete and the bowel movement is narrowed. An inadequate or incomplete mucosectomy of the prolapsing bowel sets the stage for the recurrence of the prolapse. In this group, a perineal proctosigmoidectomy would have been a better choice to fully remove the prolapsing bowel. In regard to the latter case, Uhlig and Sullivan[4] and Sullivan *et al.*[10]

Table 1.
Associated Medical Problem

Problem	No. of Patients
Cardiac disease	11
Hypertension	8
Pulmonary disease	7
Prior stroke	3
Diabetes	3
Chronic steroid use	2
Carcinoma	2
Chronic renal failure	2
Marked obesity	2
Profound mental retardation	2
Advanced parkinsonism	1
Advanced multiple sclerosis	1
Dermatomyositis	1

Table 2.
Mortality and Morbidity

Event	Complication	No. of Patients
Mortality	Cardiorespiratory	1
Morbidity	Diarrhea	10
Minor	Urinary tract infection	5
	Anastomotic stricture	5
	Incomplete evacuation	4
	Urinary retention	4
	Fecal impaction	1
Major	Mucosal dehiscence/ hemorrhage	1

repaired pelvic floor and outlet defects after performing the Delorme procedure. They believe this is a prudent means to further reduce recurrences and postoperative continence problems in this group of patients and we must agree after analyzing our results. Applying the same rationale, Prasad *et al.*[11] added pelvic floor reconstruction to perineal proctectomy for prolapse and achieved a 96 percent continence rate. While reporting no recurrences, their follow-up was quite short.

One of the advantages of the modified Delorme is the minimal nature of this procedure. Patients are ambulatory and able to resume oral intake on the day of surgery. They have little postoperative pain. The procedure can be performed on patients who have had prior anorectal surgery and those who have failed other procedures for rectal prolapse.

Our follow-up was a mean of 47 months. We found that only one of our nine recurrences developed after one year of follow-up (six years postoperatively in the isolated case). We, therefore, expect that our reported recurrence rate of 22 percent approximates our true recurrence rate over an extended period of time. This result is similar to the 21 percent recently reported by a Swedish group.[12] Given the advanced age and poor health of our study population, most have a short life expectancy. Eleven patients died during the follow-up period. Excluding the one acute postoperative death, these patients lived a mean of 4.2 (range, 1–10) years after surgery. In contrast to the Ripstein and Thiersch procedures for correction of rectal prolapse, late complications infrequently develop. The morbidity of the Delorme operation occurs in the immediate perioperative period.[13–15]

Continence after prolapse repair often improves regardless of the technique used to correct the prolapse. Postoperative continence is affected by sphincter and nerve damage as a result of chronic prolapse. Two-thirds of our patients claimed that their continence was subjectively improved after the Delorme repair. A recent British study[16] reported that 86.4 percent of their patients so repaired for prolapse experienced normal continence. We believe that to some extent, the telescoped, plicated muscular cuff adds to continence. This extrinsic outlet obstruction must be overcome by bearing down to allow for defecation. This additional resistance to fecal flow enhances control over solid stool.

CONCLUSION

Delorme's procedure is a relatively simple technique that can be safely performed in patients of advanced age and in poor medical condition, who may otherwise be denied surgical correction. The recurrence, morbidity, and mortality rates are acceptable in this poor-risk group. Prior diverticulitis or extensive sigmoid diverticulosis should prompt consideration of alternative techniques. Repair of concomitant sphincter and perineal defects as advocated by Uhlig and Sullivan[4] should further reduce recurrence and improve continence.

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