Perineal Approaches to Rectal Prolapse

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ABSTRACT

The management of full-thickness rectal prolapse involves surgical intervention in the majority of cases. Many procedures have been described. Perineal procedures are generally reserved for patients with multiple comorbid conditions or those considered too elderly or frail to withstand an abdominal surgical approach. They also play an important role in the management of rectal mucosal prolapse. The techniques, advantages, and complications of perineal approaches to rectal prolapse in use today are the focus of this chapter.

KEYWORDS: Rectal prolapse, perineal procedures, procidentia, rectal mucosal prolapse

Objectives: On completion of this article, the reader should be able to summarize perineal management options for the treatment of rectal prolapse.

Rectal prolapse or procidentia is a condition that has been recognized since antiquity, having been described in the Ebers Papyrus in 1500 BC.¹ It is well documented that over 100 different procedures have been described for the management of rectal prolapse.^{2–7} Current repair strategies for rectal prolapse are broadly categorized as either abdominal or perineal.

Perineal approaches are considered best suited to patients who are frail, elderly, and/or have significant comorbidities. The benefits of the perineal operations are a predominantly uneventful postoperative course, in which patients experience minimal amounts of pain, often ambulating within hours after surgery and resuming a regular diet within the first 24 hours. Return of full bowel function, as evidenced by a bowel movement, typically occurs within a few days after surgery.⁸

Historically, perineal approaches are associated with higher recurrence rates, yet reported recurrence rates comparable to abdominal approaches when combining perineal rectosigmoidectomy with a levatorplasty

are well documented.^{8–11} The drawback of a higher recurrence rate is more than balanced by the reduction in perioperative morbidity in this special patient population. It is therefore necessary to counsel patients appropriately regarding a high likelihood of recurrence in those undergoing a perineal procedure as a primary or repeat operation for the treatment of prolapse.^{12–17}

THE DELORME PROCEDURE

The Delorme procedure was first described in 1900.¹⁸ The basic principles of the operation include a transanal approach to dissection of the mucosa from the muscularis propria followed by plication of the muscularis propria and reanastomosis of the mucosa. It is a good choice for the treatment of a mucosal or partial thickness rectal prolapse,¹⁹ and arguably the best treatment option in patients with short segment full-thickness rectal prolapse.^{8,20} Table 1 summarizes the data on patients undergoing the Delorme procedure with

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Table 1 Results of the Delorme Procedure for Rectal Prolapse

Author	N	Study	Mortality # (%)	Continence %	Constipation %	Recurrence # (%)	Follow-Up, Months
Pescatori et al, 1998 ¹⁵	33	Retrospective	0	(+)	44 (+)	6 (18)	39
Lechaux et al, 1995 ¹⁶	85	Retrospective	1 (1.2)	45 (+)	100 (+)	11 (14)	33
Agachan et al, 1997 ¹⁰	8	Retrospective	0	(+)	NR	3 (38)	24
Oliver et al, 1994 ²¹	41	Retrospective	1 (2.4)	58 (+)	NR	8 (22)	47
Yakut et al, 1998 ¹²	27	Retrospective	0	NR	NR	4 (4.2)	38
Kling et al, 1996 ²²	6	Retrospective	0	67 (+)	100 (+)	1 (17)	11
Watts and Thompson, 2000 ¹⁷	101	Retrospective	4 (4.0)	25 (+)	13 (+)	30 (27)	36
Senapati et al, 1994 ⁷	32	NR	0	46 (+)	50 (+)	4 (12.5)	21
Liberman et al, 2000 ²³	34	Retrospective	0	32 (+)	88 (+)	0	43
Tobin and Scott, 1994 ¹⁹	43	Prospective	0	50 (+)	N/A	11 (26)	20

(+), improvement; (–), worsening; N/A, not applicable; NR, not reported.

reported mortality rates of 0 to 4% and recurrence rates of 4 to 38%.^{7,10,12,15–17,19–23}

Yakut et al¹² retrospectively reviewed their results for the Delorme procedure and for abdominal procedures performed for rectal prolapse. In men, one of the most important complications was sexual dysfunction secondary to extensive pelvic dissection and posterior rectopexy procedures, leading to a recommendation of a perineal approach to rectal prolapse in young male patients.

Interestingly, Oliver et al noted a general improvement in continence, likely related to increased bulk provided by the plicated muscularis propria.²¹ Pescatori et al¹⁵ combined the Delorme procedure with sphincteroplasty in 33 patients successfully improving the continence of 70% of the patients and curing constipation in 44%. The benefit of adding the additional morbidity of a sphincteroplasty is unclear because other series have demonstrated improved continence without the sphincteroplasty.

Factors predictive of failure include proximal lead point with retrosacral separation seen on defecography, fecal incontinence, chronic diarrhea, major perineal descent (> 9 cm).²⁴ From a technical standpoint, extensive diverticular disease may prohibit complete proximal mucosectomy predisposing patients to a higher recurrence rate secondary to incomplete resection.²¹ Complications are relatively uncommon in association with the Delorme, but they include hemorrhage, hematoma, suture line dehiscence, stricture, and recurrence.

Recently Williams et al²⁵ reported a modification of the Delorme procedure, involving external pelvic rectal suspension using either Gore-Tex[®] (W.L. Gore & Associates, Inc., Elkton, MD) strips or acellular porcine collagen strips. The strips are attached to the apex of the prolapse, tunneled subcutaneously, and anchored to the external surface of the pelvis. This is also known as the express procedure. Thirty-one consecutive patients were reported in the study. Although the results with Gore-Tex[®] were fraught with sepsis and implant extrusion, the collagen

strip repairs were better. Of the 20 patients repaired with collagen strips, there was a 15% recurrence of full thickness prolapse and one (5%) recurrent mucosal prolapse at 14 months. One patient (5%) was taken back to the operating room for sepsis related to the collagen. Further data will be needed to determine the true merit of this new modification.

PERINEAL RECTOSIGMOIDECTOMY

The perineal rectosigmoidectomy was first described by Mikulicz in 1889,²⁶ advocated by Miles in 1933,²⁷ but ultimately popularized by Altemeier and Culbertson in the late 1960s to early 1970s, now bearing the name of Altemeier.^{28–30} It involves a full-thickness resection of the rectum, starting 1 cm proximal to the dentate line and can often include resection up to the sigmoid colon. An important component of the operation includes excision of the redundant peritoneum, which anteriorly forms the deep pouch of Douglas associated rectal prolapse. The bowel is reanastomosed with interrupted absorbable stitches, although modification of the anastomotic technique through use of a circular stapling device has been proposed.³¹ It is the operation of choice for patients presenting with an incarcerated, gangrenous rectal prolapse. Table 2 lists patients undergoing perineal rectosigmoidectomy with reported mortality rates of 0 to 5% and recurrence rates from 0 to 16%. Included in this data are studies where an additional levatorplasty was employed and those where it was not.^{8–11,14,30,32–35}

The most important modification to the perineal rectosigmoidectomy has been the addition of the levatorplasty, which will be addressed specifically. Beyond this, the application of new technologies in the operating room such as the harmonic scalpel and the circular stapler have been noted to significantly decrease operative time, blood loss, and hospital stay without compromising pain, time to normal activity, morbidity, or mortality.³⁶ There was no statistically significant difference in recurrence rates. As technologies advance, the

Table 2 Results of Perineal Rectosigmoidectomy for Rectal Prolapse

Authors	N	Study	Levatorplasty	Mortality # (%)	Continence %	Constipation %	Recurrence, # (%)	Follow-Up, Months
Takesue et al, 1999 ⁸	10	NR	Yes*	0	(+)	NR	0	42
Ramanujam et al, 1994 ³²	72	NR	No	0	67 (+)	NR	4 (6)	120
Deen et al, 1994 ¹⁴	10	Prospective	No	0	80	NR	1 (10)	18
Watts et al, 1985 ³³	33	Retrospective	No	0	6 (+) 22 (—)	NR	0	23
Williams et al, 1992 ¹¹	56	Retrospective	No	0	46 (+)	NR	6 (11)	12
	11		Yes		91 (+)		0	
Johansen et al, 1993 ³⁴	20	NR	No	1 (5)	21 (+)	NR	0	26
Agachan et al, 1997 ¹⁰	32	Retrospective	No	0	(+)	NR	4 (13)	30
	21		Yes				1 (5)	30
Altmeier et al, 1971 ³⁰	106	Retrospective	No	0	NR	NR	3 (3)	228
Kim et al, 1999 ³⁵	183	Retrospective	No	NR	53 (+)	61 (+)	29 (16)	47
Prasad et al, 1986 ⁹	25	NR	Yes	0	88 (+)	NR	0	NR

*Levatorplasty performed in 7 patients with incontinence.
(+), improvement; (—), worsening; NR, not reported.

safety incorporating new operative techniques and instruments will certainly improve operative outcomes in the short term, but this is a benefit not to be overlooked in the patient population served by the perineal rectosigmoidectomy.

Complications from a perineal proctosigmoidectomy can include anastomotic bleeding—pelvic sepsis from anastomotic leak. Risk of leak can be minimized by taking care not to pull the bowel too tightly (resecting too much) or ligate the mesentery too far proximally, thereby insuring a tension-free, well-vascularized anastomosis.⁸

The main disadvantage of a perineal proctectomy is the high recurrence rate, with some series reporting recurrences in up to 50 to 60% of patients.^{37,38} Not surprisingly, patients undergoing repeat operation for recurrent prolapse have a significantly higher rate of recurrence when the repair is perineal. Steele et al reported that the abdominal approach continued to have significantly lower recurrence rates (39 versus 13%; $p < 0.01$) when performed for recurrent rectal prolapse compared with the perineal approach. Although it was also noted that the patients undergoing perineal repair were significantly older with a mean age of 71.5 years compared with 58.5 years in the abdominal surgery group, the two did not differ significantly in their ASA classification. Therefore, the abdominal approach is preferred for sufficiently healthy patients requiring a repeat operation for rectal prolapse.³⁹

Other disadvantages are poor functional results including incontinence, urgency, and soiling secondary to the reduced reservoir capacity of the colon and reduction in the anal sphincter function. To counteract the reduction in reservoir capacity, Yoshoika et al⁴⁰ described a pouch perineal rectosigmoidectomy. This technique has not caught on, largely because of the

difficulty in creating a viable pouch that will still reach for a tension-free anastomosis.

PERINEAL RECTOSIGMOIDECTOMY WITH LEVATORPLASTY

Based on the reduced compliance of the colon and resting anal pressure, addition of a posterior levatorplasty has been suggested. This restoration of the anorectal angle seems to effect an improvement in anal continence.⁴⁰ Additional benefits of adding the levatorplasty include a lower rate of recurrence in the short term and therefore also a longer recurrence-free interval.¹⁰ The Cleveland Clinic Florida group compared the results of perineal rectosigmoidectomy with and without levatorplasty in 109 patients.⁴¹ Recurrence rates in patients with rectosigmoidectomy alone were 20.6% compared with 7.7% with the addition of a levatorplasty. Levatorplasty also increased the mean time dramatically from 13.3 months to 45.5 months.

Agachan et al¹⁰ compared the outcomes of patients undergoing the perineal rectosigmoidectomy alone, with a levatorplasty and the Delorme procedure. No significant difference in hospital stay was observed among all groups. All patients experienced an improvement in their incontinence scores, with the greatest improvement seen in patients undergoing the perineal rectosigmoidectomy with levatorplasty. The recurrence rates were as follows: 38% for the Delorme, 13% for perineal rectosigmoidectomy alone, and 5% for perineal rectosigmoidectomy with levatorplasty.

ANAL ENCIRCLEMENT

Thiersch in 1891⁴² first described anal encirclement by use of a silver wire. Encirclement and narrowing of the anal canal acts as a physical barrier to further prolapse,

but otherwise does not correct the anatomic defects. As such, it has a high recurrence rate (33 to 44%).^{43–47} Multiple alternative materials have since been described [nylon, Mersilene[®] (Ethicon, Somerville, NJ), Dacron[®] (Invista, Inc., Wichita, KS), Marlex[®] (Marlex Pharmaceuticals, New Castle, DE), Teflon[®] (DuPont Pharma, Wilmington, DE), fascia lata, silicone rubber, Silastic[®] (Dow Corning, Midland, MI/Barry, UK) and Dacron[®]-impregnated Silastic[®] mesh]. In principle, the Thiersch procedure consists of the passage of some foreign material around the anal canal through the ischiorectal fossae with the knot buried posteriorly. The recommended diameter of the anal encirclement should be to the size of a 16 or 18 Hegar dilator.⁴⁸

The Thiersch procedure is still fraught with complications beyond just its high recurrence rate. Complications associated with the Thiersch procedure include erosion, wound infection, sepsis, and fecal impaction. Recurrent prolapse following a Thiersch deserves special comment as incarceration and subsequent strangulation are significant risks requiring urgent evaluation should it occur. Patients who have undergone this procedure should be placed on a bowel regimen in combination with frequent evaluations to prevent fecal impactions. They often require stool softeners and laxatives, as well as suppositories and enemas to ensure an impaction does not occur. Given the high complication and recurrence rate associated with this procedure, it has been largely abandoned. The safety provided by modern anesthetic techniques permits the use of safer, more durable operations, obviating the need for a Thiersch procedure.⁴⁴ Despite this, a form of the Thiersch procedure called the Gant–Miwa procedure is in broad usage in Japan.

MUCOSAL PLICATION FOR RECTAL PROLAPSE

Introduced by Gant in Japan in the 1920s, the procedure consists of 20 to 40 absorbable sutures, placed at least 5 mm apart, incorporating both the mucosa and submucosa extending proximally from the apex of the prolapse to 1 cm above the dentate line distally.

Since the 1960s, this procedure has been used and developed in conjunction with anal encircling proposed by Miwa to reduce the likelihood of recurrence further. Rarely performed in the West, in Japan the Gant–Miwa procedure still plays a major role in the treatment of rectal prolapse. Clinical results show a recurrence rate of 0 to 31%,⁴⁹ with the believed recurrence rate to approximate 15%.⁵⁰

OFFICE PROCEDURES

It is important to remember that although rectal prolapse has the potential to become life threatening if incarceration with strangulation were to occur, it is still

a benign condition. Under the circumstances where operative repair is contraindicated, or if the patient refuses surgery, the following office procedures have been suggested as temporizing measures including sclerotherapy, rubber band ligation, and infrared coagulation. Although they can relieve some of the symptoms, they are not expected to affect a cure of the prolapse. Both the patients and the families should be apprised of this prior to any treatment initiated.

The principle behind the use of sclerotherapy is the induction of scar tissue, and the hope that the scarring can produce sufficient local reaction to act as a physical barrier to the prolapse itself. It is an accepted option for the treatment of rectal prolapse in malnourished children. In children, proposed sclerosants include 30% saline^{51,52} or 70% alcohol.⁵³ In adults, phenol in almond or olive oil has been extended from its application to hemorrhoidal disease to nonoperative management of prolapse.

Rubber band ligation may also be an excellent option for patients presenting with persistent mucosal prolapse following an abdominal repair, which can be seen in up to 5 to 10% of patients.⁵⁴ As described above, in the Gant–Miwa procedure, multiple mucosal ligations can be used as therapy for rectal prolapse. The concept again is induction of local reaction and fixation through scarring to act as a barrier to prolapse.

POSTOPERATIVE MANAGEMENT

Following any of the perineal operations, the patient should be placed on a bulk-forming diet. The importance of not straining needs to be emphasized to the patient. Although many patients will report an improvement in their constipation postoperatively from a perineal approach,^{7,15–17,22,23,35} a large number of patients will have a persistent defect in their continence. Rates of residual fecal incontinence have been reported to vary from 26 to 81%, though the majority of abdominal series report persistent postoperative incontinence in the range of 40 to 60% and up to 80 to 90% in perineal procedures. Patients must be counseled preoperatively in this regard.

The repeated or persistent stretching of the anal sphincter muscles in addition to damage to the pudendal nerves sustained as a result of chronic prolapse are believed to contribute to poor functional results postoperatively. Factors found to be predictive of return of continence function following repair of rectal prolapse include delayed leakage during the saline infusion test, a narrow anorectal angle during pelvic floor contraction, minimal pelvic floor descent during contraction, and a long anal canal at rest and during pelvic contraction.⁵⁵ A preoperative manometric study with the ability to generate > 60 mmHg was also predictive of continence in patients undergoing a perineal rectosigmoidectomy.⁵⁶ The return of continence can take as long as 6 to

12 months as the sphincter muscles and the pelvic floor recover from the repeated trauma of a full-thickness rectal prolapse. As such, a period of waiting should precede any further evaluation and subsequent operative management ideally should be delayed at least a full year following repair of a prolapse.

SUMMARY

There are a multitude of operations available for the treatment of both full- and partial- thickness rectal prolapse. The first decision that the operating surgeon must make is whether to pursue an abdominal approach or the perineal approach. It is expected that patients of sufficient health are best served by an abdominal approach, with a suggestion of caution in young men undergoing pelvic dissection and rectopexy due to risk of sexual dysfunction.¹² Once it has been determined that a perineal approach will be used, the decision of which technique may be largely personal, based on the operating surgeon's training and experience base. Generally speaking, the Delorme procedure is optimally utilized in patients limited to a short segment of full thickness prolapse or with a partial thickness prolapse. In patients who are a poor operative risk, this represents a safe local approach without any violation of the peritoneal cavity. For patients of a more intermediate operative risk, a perineal rectosigmoidectomy with levatorplasty would certainly be the operation of choice in patients presenting with full-thickness rectal prolapse for its reduced rate of recurrence and improved functional outcomes relative to the other perineal approaches.

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