Delorme's Procedure for Full-Thickness Rectal Prolapse; Does it Alter Anorectal Function

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Abstract Clinical and anorectal manometric results of Delorme's procedure for full-thickness rectal prolapse were assessed retrospectively. Thirty-seven patients with full-thickness rectal prolapse who were operated on with Delorme's procedure were included in the study. They were 11 males and 26 females with mean age of 54 ± 4.4 years (range 15–70 years) and mean follow-up period of 27 ± 4.6 months (15–48 months). The mean operative time was 65 ± 4.5 min (60–90 min); there was no mortality and blood loss was minimal. Mean hospital stay was 3.5 days (2–6 days). Outcomes of the procedure were satisfactory in 29 patients (78.4%). Dissatisfaction came from recurrence and persistence of fecal incontinence. Prolapse recurrence had been observed in six patients; three of them were treated by the same technique and showed no recurrence, and the others were treated by either mucosal resection (1) or abdominal resection rectopexy (2). Constipated patients showed improved symptoms in 7 of 10 cases. Of 11 patients who were incontinent preoperatively, seven patients became fully continent. Postoperatively, anorectal manometric studies (MRP, MSP, MTV, and UDV) showed significant improvement in all patients with intact RAIR. Delorme's operation, coupled with avoidance of abdominal procedures, is the treatment of choice of rectal prolapse in elderly frail patients and in patients with defecatory disorders.

Keywords Rectal prolapse · Delorme's operation · Anorectal dysfunction

Introduction

Rectal prolapse is a distressing condition that is encountered more frequently with increasing age; constipation and fecal incontinence often accompany it [1]. There are several anatomical abnormalities associated with prolapse, although it is unknown whether these are the cause of, or simply associated with, the anorectal dysfunction [2].

Many operations described for rectal prolapse attempt to correct one or more of the anatomical changes present, thereby improving anorectal function and, in particular, controlling prolapse. Abdominal surgical procedures usually control prolapse but produce variable improvement in continence. Perineal operations are less traumatic for the frail patients [3].

Mucosal stripping of the prolapsed rectum was described by Delorme [4]. He originally reported his operative technique for the correction of full-thickness rectal prolapse in three young men. Modifications to the original technique have been touted to reduce recurrences and morbidity and thereby have increased the operation's popularity [5–7]. Reports of success with this technique have been confirmed by Uhlig and Sullivan and others [5, 7, 8].

The operation has resolved fecal incontinence with a variable degree [9] and has not been found to be associated with constipation after operation [6]. The physiological reasons for this improved function involve improved rectal sensation and lower compliance [10] but are still controversial [11].

This retrospective study was designed to evaluate clinical and anorectal manometric results of Delorme's procedure for full-thickness rectal prolapse.

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Patients and Methods

Thirty-seven patients with full-thickness rectal prolapse who were operated on with Delorme's procedure were included in the study. The collected preoperative data of the patients included the following:

- History (straining at defecation, constipation, fecal incontinence, and previous surgery)
- Full laboratory investigations
- Endoscopy (proctoscopy and colonoscopy)
- Radiological investigations (barium enema and defecation proctography)
- Anorectal manometric studies (MRP, MSP, MTV, UDV, RAIR)

The patients were operated on with Delorme's procedure.

After preoperative bowel preparation, under general anesthesia, and in lithotomy position, the prolapsed rectum was identified and pulled tightly downward with Babcock forceps so that the redundant rectal wall was taken into the prolapsed segment. After injecting 1:200,000 adrenaline in normal saline in the submucosal plane, circumferential incision was made 1.5–2 cm proximal to the dentate line. Mucosal dissection from internal sphincter fibers was done cephalad till the end of redundant segment. Plication of rectal wall, excision of dissected mucosa, and closure of mucosal defect were done. Mild laxatives were given for 2 weeks and the patients were advised not to strain at stool.

The patients were followed up for a mean period of 27 ± 4.6 months where the following items were done after 3 and 6 months and every 6 months after that:

- Questionnaire (straining at stool, fecal incontinence, and recurrence of prolapse)
- Radiological investigations (barium enema and defecation proctography)
- Anorectal manometric studies (MRP, MSP, MTV, UDV, RAIR)

Results

The mean operative time was 65 ± 4.5 min (60–90 min); there was no mortality and blood loss was minimal. Mean

hospital stay was 3.5 days (2–6 days). Postoperative complications included suture line bleeding (3, 8.1%), urine retention (6, 16.2%), infection (3, 8.1%), fecal impaction (3, 8.1%), and anastomotic stricture (4, 10.8%).

Outcomes of the procedure were satisfactory in 29 patients (78.4%). Dissatisfaction came from recurrence and persistence of fecal incontinence.

Prolapse recurrence had been observed in six patients with a mean recurrence time of 13 months; three of them were treated by the same technique and showed no recurrence, and the others were treated by either mucosal resection (1) or abdominal resection rectopexy (2).

Constipated patients showed improved symptoms in 7 of 10 cases. Of 11 patients who were incontinent preoperatively, seven patients became fully continent, two patients showed partial improvement, and two patients showed no response (Tables 1 and 2)

Postoperatively, anorectal manometric studies (MRP, MSP, MTV, and UDV) showed significant improvement in all patients with intact RAIR (Table 3).

Discussion

Abdominal procedures for treatment of procedentia are presumed to entail better anatomic and functional results than perineal repair. They are prone to correct the loss of sacral attachments of the rectum and deep peritoneal reflection. Concomitant resection provides adequate rectosigmoid shortening. After rectopexy, persistence of incontinence and residual disorders of defecation are the main causes of dissatisfaction. Constipation and difficulties in evacuating the rectal ampulla occur in up to 50% of patients. Division of the lateral ligaments and posterior dissection that lead to partial denervation of the rectum may be responsible. All abdominal procedures have two drawbacks that might account for the functional results: (1) they entail a rectal mobilization with subsequent changes in motility and sensation and (2) pelvic floor repair is presumably less effective from above than from below [12].

The majority of sufferers of rectal prolapse are elderly, multiparous women, often with associated psychogeriatric problems. Difficulties with patient communication and the

Table 1 Associated symptoms among studied patients ($n=37$)^a

	Preoperative No (%)	Postoperative No (%)	<i>P</i> value
Constipation	10	3	<0.01
Incomplete evacuation	15	6	<0.01
Straining	13	6	<0.01
Rectal bleeding	7	1	<0.01
Incontinence	11	4	<0.01

^aEach patient may have had more than one symptom

Table 2 Incontinent patients and their scores

Grade	Preoperative	Postoperative	<i>P</i> value
0	–	7	0.01
A 1	0	0	–
2	3	1	
3	2	1	
B 1	1	0	–
2	2	0	
3	1	0	
C 1	1	1	–
2	1	1	
3	–	–	

effect of coexisting medical conditions complicate outcome assessment [9].

With regard to correction of the prolapse, a significant improvement has been demonstrated by the present operation. Many series of Delorme's procedure reported a variable recurrence rate of 0–32% [3, 6, 9]. This may be related to the length of follow-up along with variations in case mix and patient selection. An 18.9% recurrence with a mean follow-up of 27 ± 4.6 months was within the range and compared favorably with figures reported.

Delorme's procedure has two theoretic advantages: it avoids the hazards of colo-anal anastomosis, and respects the internal sphincter innervation and rectal sensitivity [12]. It has an additional advantage of excision of a concomitant rectal ulcer with concomitant improvement of associated bleeding and urgency.

Anastomotic stricture is related to mucosal excision excessive in length. Stenosis is currently avoided by limited mucosal stripping not exceeding the apex of the prolapse.

With regard to functional outcome, 63.6% of incontinent patients improved with return of full continence in 6 months. Pescatori et al. [11] combined Delorme's procedure with sphincteroplasty in 33 patients, with good results achieved in 79% of patients. Continence was improved in 70%, and constipation was cured in 44%. They concluded that

Delorme's procedure combined with sphincteroplasty seemed indicated when both clinical and physiological findings showed a concomitant severe pelvic floor dysfunction. However, many other series without sphincteroplasty have shown improvement in continence [9, 12–14].

Increased awareness of the functional abnormalities associated with rectal prolapse has resulted in the realization that appropriate surgery should not be directed only at a reduction of the prolapse. Rectopexy, although successful in reducing the anatomical abnormality, often worsens rectal evacuation problems and may cause profound constipation [10].

Anorectal manometric study as regard mean MRP, MSP, MTV, UDV, and RAIR showed improvement in the postoperative period up to a normal level in most of patients. The improvement in rectal sensation and decreased compliance may aid rectal evacuation. This goes in hands with others [6, 15] who stated that functional results, constipation, and difficult evacuation have not been reported to be a problem after Delorme's procedure.

Patients with the severe degree of fecal incontinence showed no improvement after surgery. Oliver et al. [14] successfully performed Delorme's procedure in 41 patients. They pointed out that important pitfalls in performing the procedure were weak or absent sphincter tone, perineal descent, and previous sphincter injury. These findings confirm that restoring normal anorectal anatomy, allowing a normal function, is the most important factor.

Delorme's operation showed reported mortality rates of 0–4% and recurrence rates of 4–38%. [9, 16, 17]. These figures approximate the figures reported in this study. Factors associated with failure for Delorme's procedure include proximal procidentia with retrosacral separation on defecography, fecal incontinence, chronic diarrhea, and major perineal descent (9 cm on straining). In the absence of these factors, Delorme's procedure provided a satisfactory and durable outcome [18].

Delorme's procedure represents a surgical alternative for patients with prolapse who may be unable to tolerate a more extensive operation, such as the elderly, frail patients, and those who are medically unfit for major surgery [19].

Results of recent studies [20, 21] are consistent with previously published experiences that most preoperative evacuatory symptoms resolve with repair of the prolapse, and serious complications are uncommon. The observation that recurrence and complication rates may be lower in younger, medically fit patients suggests Delorme's repair need not be restricted specifically to older, medically unfit patients.

In conclusion, because of low incidence of postoperative constipation and significant improvement in rectal sensation and compliance, we believe that Delorme's operation, coupled with avoidance of abdominal procedures, is the treatment of choice in elderly frail patients and in patients with defecatory disorders. Recurrence can be successfully treated with repeated Delorme's operation.

Table 3 Anorectal manometric study among studied patients (*n*=37)

	Preoperative	Postoperative	<i>P</i> value
MRP (mmHg)	44.13±9.8	52.63±10.5	0.04
MSP (mmHg)	74.43±18.44	105.46±21.63	<0.01
MTV (mL)	180±42	113±28	<0.01
UDV (mL)	100±7.9	70±3.5	<0.01
RAIR	Intact	Intact	–

MRP maximum resting pressure; MSP maximum squeeze pressure; MTV maximum tolerable volume; UDV urge to defecate volume; RAIR recto anal inhibitory reflex

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