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Delorme's operation and sphincteroplasty for rectal prolapse and fecal incontinence

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Abstract Clinical and manometric results of Delorme's operation and sphincteroplasty were assessed retrospectively in patients undergoing this procedure for fecal incontinence and rectal prolapse. A series of 33 patients (11 males, 22 females; aged 18–83 years, mean 59) with external rectal prolapse were treated by Delorme's operation between 1989 and 1996. Mean follow-up was 39 months (range 7–84). Sphincteroplasty was associated in 12 cases with severe fecal incontinence due to striated muscle defects. Good results were achieved in 27 patients (79%); prolapse recurrence was observed in 6 (21%), the mean recurrence time being 9 months (range 1–24 months). There were no postoperative deaths. Minor complications occurred in 15 patients. Changes in preoperative and postoperative manometric patterns were as follows (mean±SEM): voluntary contraction from 59±6.9 to 66±7.1 mmHg (P=0.05), resting tone from 33±5 to 32±4.3 mmHg, rectal sensation from 59±5 to 61±5.2 ml of air (n.s.). A solitary rectal ulcer syndrome was detected in five patients. The histological pattern demonstrated pathological changes in 40% of cases. Fecal incontinence was resolved in 6 of 20 cases (30%) and chronic constipation in 4 of 9 (44%). Failure (n=3) was related primarily to postoperative sepsis. The incontinence score showed a mean improvement of 35% decreasing, from 4.5±0.39 to 2.9±0.44 after surgery (P<0.01). In conclusion, Delorme's procedure did not lead to constipation and improved anal continence when associated with sphincteroplasty.

Key words Delorme's operation · Sphincteroplasty · Fecal incontinence

Introduction

Management of rectal prolapse is more difficult when it is associated with constipation and fecal incontinence, and many surgical procedures have been proposed to correct these conditions [1–10]. Once the anatomical disorder is corrected, any remaining problems with obstructed defecation or incontinence results in poor patient satisfaction. Due to our presently incomplete understanding of the pathophysiology of the condition, there is no strong evidence in favor of any particular surgical approach.

Mucosal stripping of the prolapsed rectum followed by plication of the underlying muscular layer was first described by Delorme [1]. Several recent reports have shown an increased interest in this operation particularly in elderly patients at poor risk for major abdominal surgery and requiring a locoregional anesthesia [2–10]. Postanal and total pelvic floor repair have both been advocated to restore sphincter function, but the results are still controversial [11].

The purpose of this study was to investigate the clinical and functional results of Delorme's operation alone and in association with sphincteroplasty.

Patients and methods

Thirty-three patients (11 males, 22 females) with external rectal prolapse were treated by Delorme's operation at the Coloproctology Unit of Rome between January 1989 and May 1996. Their mean age was 59 years (range 18–83 years), and the mean follow-up was 39 months (range 7–84). Nine patients had severe constipation before surgery, and 20 were incontinent. In 12 cases sphincteroplasty, either as postanal repair (n=6) or total pelvic floor repair (n=6), was also performed in the attempt to correct severe fecal incontinence. Sphincteroplasty was indicated when both the clinical examination and anorectal physiology tests (manometry, EMG, defecography, anal ultrasound) suggested a striated sphincter defect. All operations were carried out by the first author according to the technique reported elsewhere [9–11]. The extent of the prolapsing rectum never exceeded 8 cm on straining in the squatting position. lt was mainly mucous in 22 cases and full thickness in 11.

Informed consent was obtained from the patients, who were hospitalized the day before surgery for mechanical bowel preparation and antibiotic prophylaxis with metronidazole and cephalosporine. Specimens of the excised mucosa were sent to the pathology laboratory to assess any inflammatory or ischemic changes. Patients were kept on a low-residue diet for 1 week postoperatively, and the first evacuation was facilitated by either enemas or mild laxatives. Ano-

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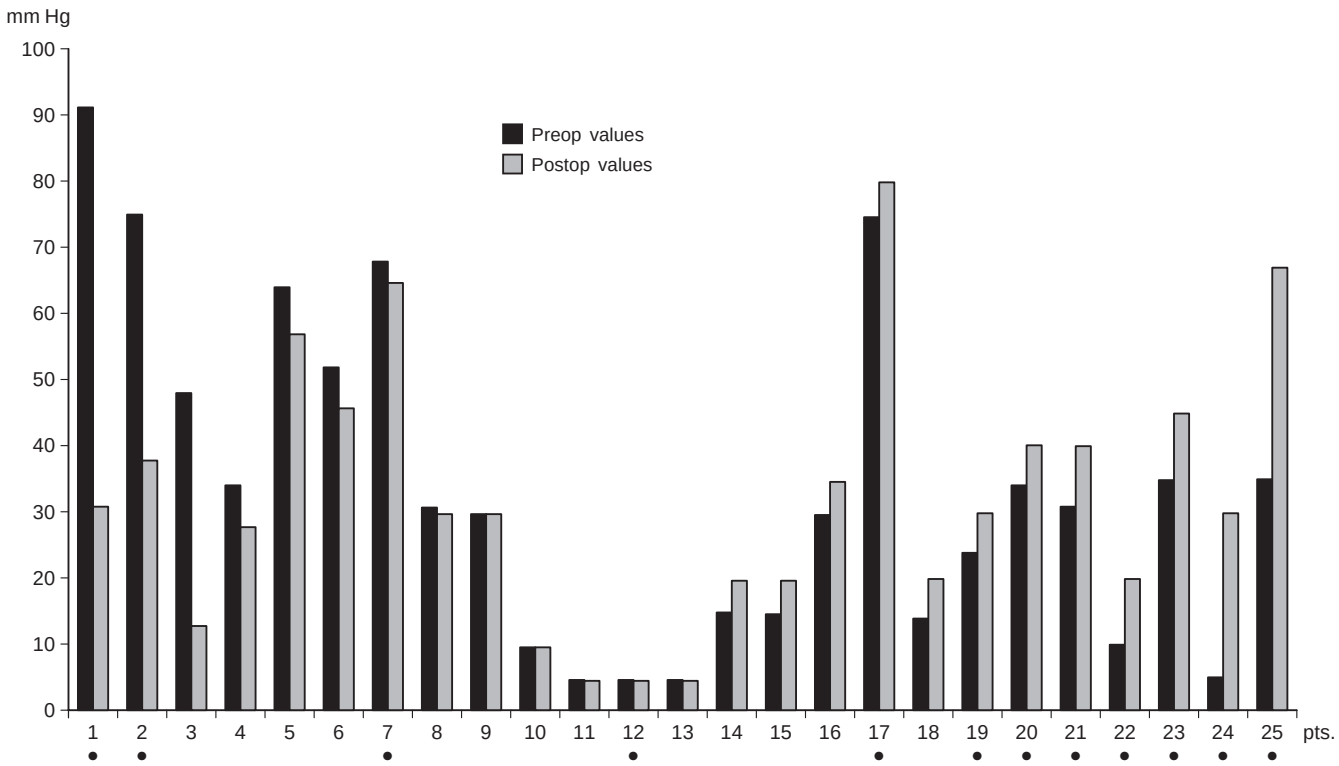

Fig. 1 Pre- and postoperative changes in resting tone at anal manometry in 25 patients undergoing Delorme's operation for rectal prolapse; 12 also had a sphincteroplasty (•)

Table 1 Manometric pattern before and after surgery

	Preop.	Postop.
Voluntary contraction (mmHg)	59±7	66±7*
Resting tone (mmHg)	37±5	32±4
Rectal sensation (ml air)	59±5	61±5

*$P<0.05$ vs preoperative

rectal manometry was performed before and, in almost all cases, at least 2 months after surgery. Other tests were used prior to surgery only in patients with severe fecal incontinence.

Fecal incontinence was graded according to a previously reported classification and score based upon both frequency and severity of symptoms [12]. Incontinence was considered severe when it occurred weekly for liquid motions or worse (B2–C3) according to our grading. Anal manometry was performed, as reported by others [13], using the slow station pull-through technique in which a microballoon mounted on a tiny probe is connected to a computerized Dyno Polygraph via a pressure transducer. Follow-up was carried out in 29 patients by telephone interview and clinical examination with physiology tests.

Data are expressed as means±SEM. Differences in means were compared using Student's paired *t* test; *P* values less than 0.05 were regarded as statistically significant.

Results

Outcome of the Delorme procedure was satisfactory in 27 of the 33 patients (79%). Prolapse recurrence was observed in 6, with a mean recurrence time of 9 months (range 1–24 months). There were no postoperative deaths, but two patients died of nonrelated conditions, respectively, 1 and 3 years after the procedure. Minor postoperative complications occurred in 15 patients and resolved within a few days (minor dehiscence, negligible wound infection, urinary tract infection, pneumonia, hypertension). Differences in resting tone, voluntary contraction and rectal sensation at manometry are shown in Figs. 1–3 and in Table 1. Of the 9 patients complaining of constipation prior to surgery, 4 were cured postoperatively (44%); constipation did not develop in any of the 24 patients who had not been constipated preoperatively. Of the 20 patients with fecal incontinence prior to surgery, 14 still had problems postoperatively: 8 improved, 5 remained unchanged, and in one the situation deteriorated, whereas 6 regained full continence (30%). Seven of the improved and two of the cured patients also had a sphincteroplasty. The remaining three who had had a postanal repair, in our early experience, failed due to a wide suture dehiscence following surgical wound sepsis. Two of the continent patients became incontinent after Delorme's operation (Fig. 4).

The preoperative incontinence score improved from 4.5±0.4 to 2.9±0.4 after surgery ($P<0.01$). The histology pattern of the excised rectal mucosa showed solitary rectal ulcer syndrome in 5 cases, inflammatory changes in 8, and was normal in 20.

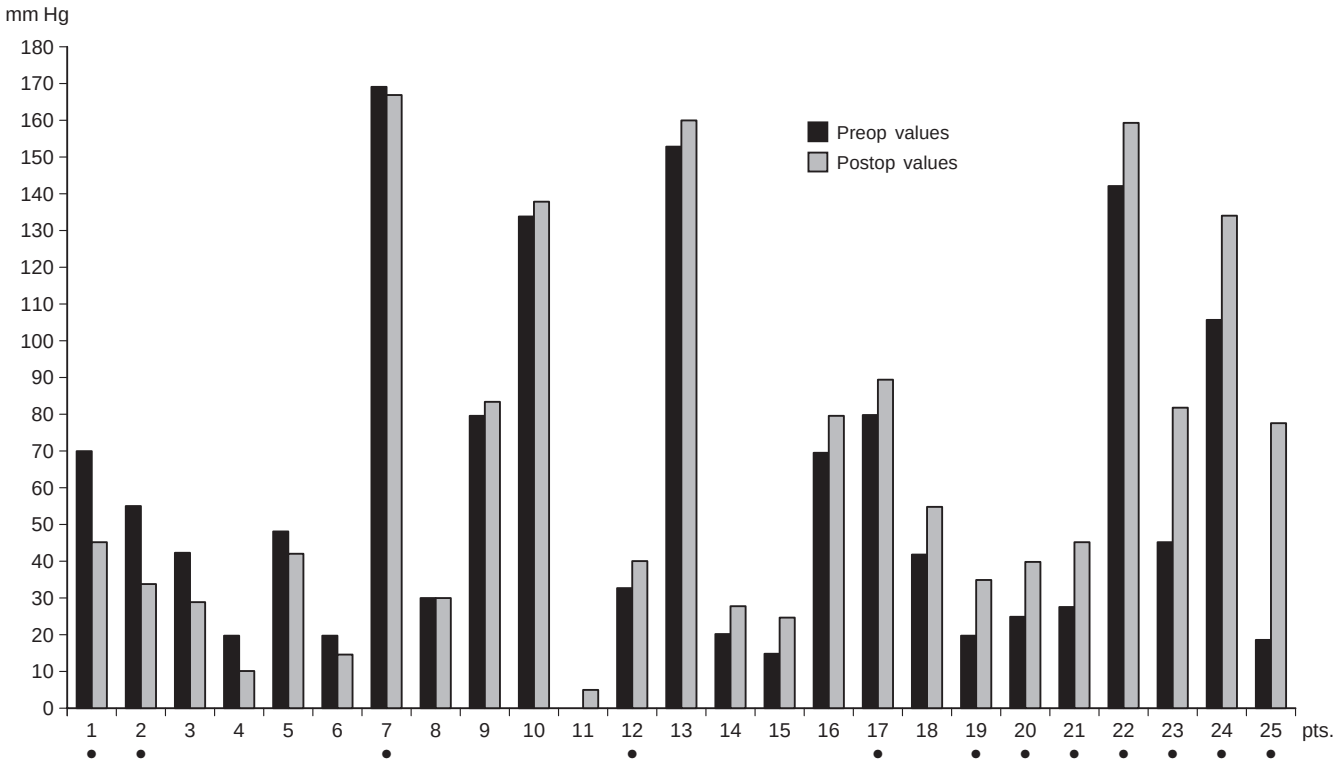

Fig. 2 Pre- and postoperative changes in voluntary contraction at anal manometry in 25 patients undergoing to Delorme's operation for rectal prolapse; 12 also had a sphincteroplasty (•)

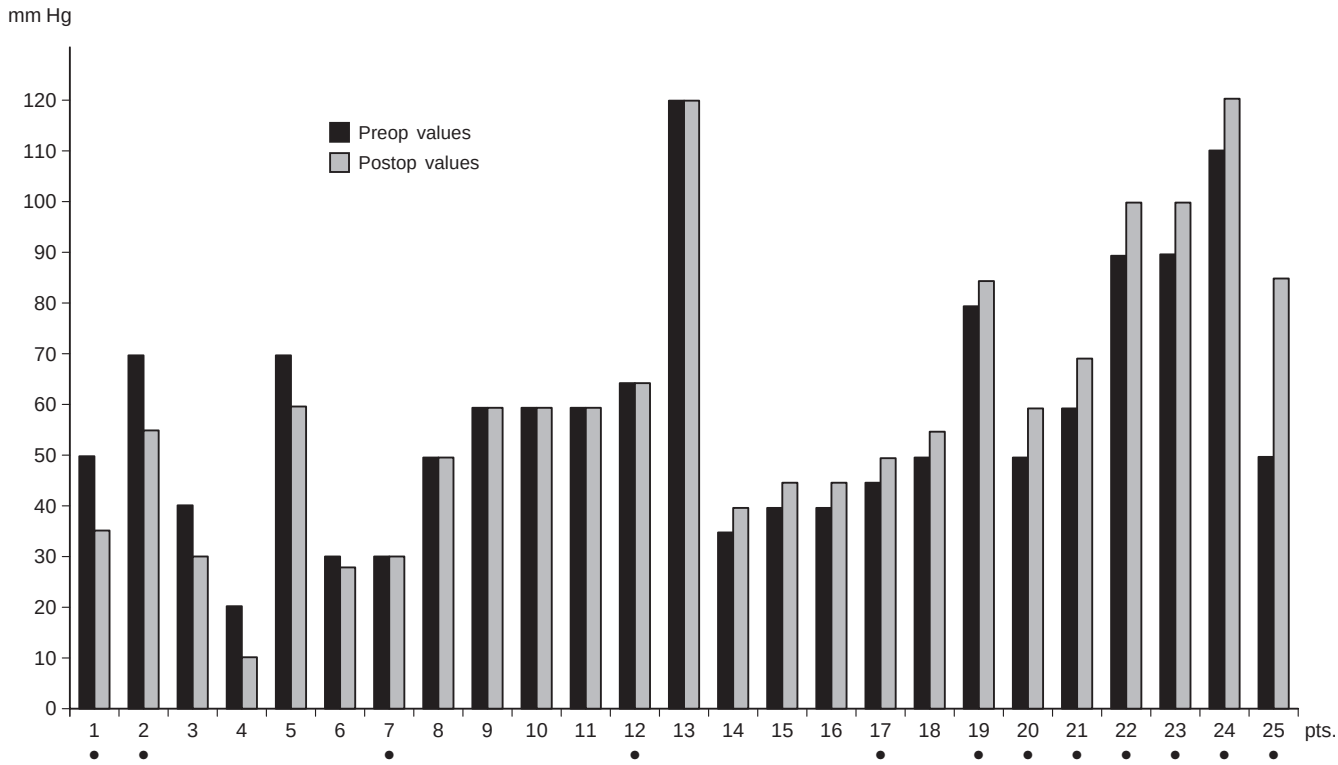

Fig. 3 Pre- and postoperative changes in rectal sensation at anal manometry in 25 patients undergoing Delorme's operation for rectal prolapse; 12 also had a sphincteroplasty (•)

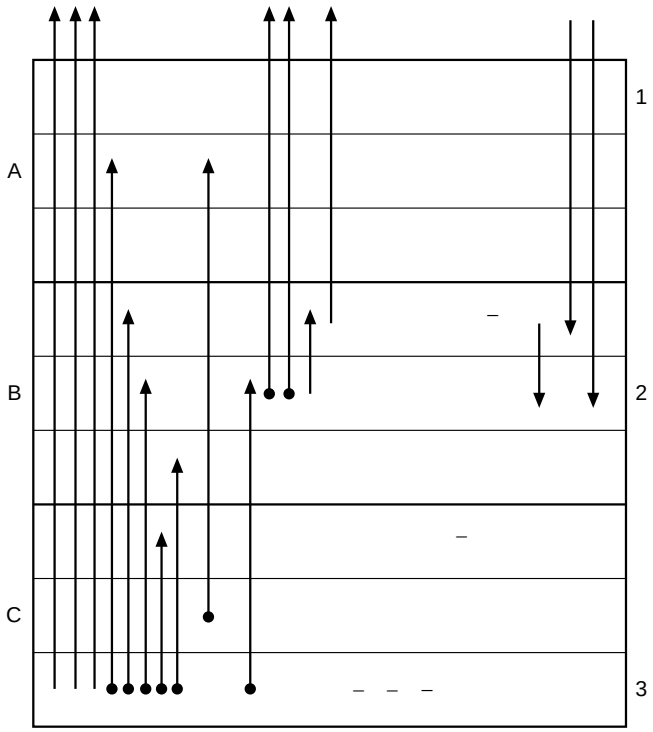

Fig. 4 Fecal continence before and after Delorme's operation. ●, patients who also had a sphincteroplasty; –, patients unchanged; *A, B, C*, incontinence for flatus, liquid, and solid stool; *1, 2, 3*, occasional, weekly, and daily incontinence

Discussion

Positive results following the association of two perineal procedures (excision and plasty, plus either rectopexy or Douglas sac resection) for rectal prolapse and sphincter dysfunction have been reported by Prasad et al. [14] and Lechaux et al. [5]. A transabdominal approach had previously been described by Graham et al. [15] who carried out rectopexy associated with muscle plication. The reported recurrence rate of rectal prolapse following Delorme's operation varies between 7% and 22% (Table 2).

Chronic constipation and fecal incontinence still persist to a certain extent in some patients following abdominal correction of rectal prolapse [4–16]. Ripstein and Wells sacral rectopexy lead to obstructed defecation due to a number of factors, such as rectal stricture, increased rectosigmoid angle, and perirectal denervation [17, 18].

Preoperative fecal incontinence may be related to a reversible internal sphincter relaxation induced by the prolapse itself and/or to a concurrent weakness of the pelvic floor [19]. Delorme's procedure, advocated primarily in high-risk patients in whom abdominal surgery is inadvisable, has also been performed in constipated patients in good general condition with full-thickness rectal prolapse; the alternative is resection rectopexy requiring an intra-abdominal suture and therefore increasing the risk of postoperative morbidity [5]. Some 40% of the rectal mucosa specimens showed an anomalous histological pattern in the present series, thus confirming that inflammatory changes are likely to appear with prolapsed rectal mucosa [20]. In the case of rectal ulcer syndrome, the advantage of this procedure over sacral rectopexy is the possibility of achieving complete excision of the pathological tissue, for both diagnostic and therapeutic purposes.

The question arose whether a transanal approach would be safer in terms of postoperative morbidity and less likely to further impair bowel function. Most studies report no post-operative mortality after Delorme's operation, and an extremely low constipation rate, ranging between 0% and 16% (Table 2) [2–10].

Plusa et al. [13], on the bases of manometric evaluation before and after this procedure, reported an improvement in rectal sensation. The latter is likely due to reduced compliance and may help those patients in whom the reduced preoperative rectal sensation causes a delay in evacuation, increasing fecal water reabsorption and making the expulsion of small hard stool more difficult. Nevertheless, postoperative improvement in the anal sensation was detected in only 6 out of 25 patients in whom manometry was performed before and after surgery. This could be due to the large number of patients with idiopathic incontinence in our series; the underlying pudendal neuropathy may have

Table 2 Clinical and functional results of Delorme's procedure for external rectal prolapse in the literature over the past 20 years

Author	Year	*n*	Mean follow-up (months)	Recurrence (%)	Postop. constipation	Improved continence	Improved manometry	Postop. complications	Postop. mortality
Christiansen and Kierkegaard [2]	1981	12	36	17	NR	50	NP	0	0
Gundersen et al. [7]	1985	18	42	6	NR	NR	NP	17	0
Houry et al. [8]	1986	18	18	17	6	44	NP	NR	0
Monson et al. [9]	1986	27	35	7	NR	83	NP	0	0
Abulafi et al. [3]	1990	22	29	5	9	75	NP	28	0
Senapati et al. [10]	1994	32	21	21	16	46	NP	6	0
Oliver et al. [6]	1994	40	47	22	NR	68	NP	75	2
Plusa et al. [13]	1995	19	28	17	0	21	YES	0[a]	0
Present study[b]	1997	33	39	21	15	18	YES	45	0

Only articles dealing with more than ten patients are listed. NR, not reported; NP, not performed
[a] Only severe complications reported
[b] Sphincteroplasty associated in 12 cases

made the loss of sensation irreversible. Recordings of electrical sensitivity and pudendal nerve terminal motor latency are necessary to better clarify this. Continence improved in 70% of our cases after surgery, with an increase in voluntary contraction at anal manometry. Most patients were incontinent prior to surgery, and their reduced rectal capacity, due to the bulking prolapse, may have played a negative role, since a well-distensible storage organ is important in preventing fecal incontinence in the presence of weakened sphincters.

The perineum cleansed scrupulously following prolapsectomy and prior to sphincteroplasty to prevent postoperative sepsis leading to dehiscence of muscle suture, as observed in the early eases. Tailored antibiotic prophylaxis and perineal disinfection after the endoanal procedure therefore seems advisable.

In conclusion, we suggest Delorme's procedure in patients suffering from rectal prolapse and also presenting with constipation and who, due to either local (e.g., adhesions) or systemic (e.g., cardiopulmonary disease) problems, would not be able easily to tolerate transabdominal resection rectopexy. Delorme's operation is not only safe and easy to perform, but the recurrence rate is reasonably low. Furthermore, excision of a concomitant rectal ulcer is possible, and when associated with a sphincteroplasty, seems effective even in cases of severe fecal incontinence. Since improved continence is reported in 50–86% of patients undergoing Delorme's operation alone [21], associated sphincteroplasty seems indicated when both clinical and physiology findings reveal a concomitant severe pelvic floor dysfunction.

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