Complete Rectal Prolapse in Adults: Clinical and Functional Results of Delorme Procedure Combined with Postanal Repair

Ayman Hossny ElGadaa · Nabil Hamrah ·
Yahyia AlAshry

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Abstract This study has been performed at the Department of General Surgery, Zagazig University Hospital and King Saud Hospital, Oniza, KSA during the period from November 1998 to September 2008. Twenty adult patients (6 males and 14 females with a mean age of 55 years) with complete rectal prolapse were eligible for the study. Where Delorme's procedure and postanal repair were combined. All patients presented with complete rectal prolapse at least 5 cm in length. The associated disorders included constipation (4 patients, 20%), variable degrees of incontinence (15 patients, 75%). Only one patient had no associated functional problems. The median follow up period was 65 months. There was no mortality and immediate postoperative complications developed in 4 patients (20%). Recurrence of the prolapse occurred in two patients. Eleven patients (73.3%) (11/17) with faecal incontinence showed postoperative improvement and 4 patients failed to improve. The 4 patients presented with constipation were all improved postoperatively. **We conclude** that the combination of Delorme's procedure and postanal repair in the treatment of complete rectal prolapse in adults is a safe procedure that corrects the anatomical defects and improves the functional outcome. **We recommend** use of this method

in the treatment of complete rectal prolapse especially in the elderly who are complaining of faecal incontinence.

Keywords Complete rectal prolapse in adult

Introduction

Rectal prolapse, or procidentia, is defined as a protrusion of the rectum beyond the anus. Complete or full-thickness rectal prolapse is the protrusion of all of the rectal wall through the anal canal; if the rectal wall has prolapsed but does not protrude through the anus, it is called an occult (internal) rectal prolapse or a rectal intussusception [1]. Full-thickness rectal prolapse should be distinguished from mucosal prolapse in which there is protrusion of only the rectal or anal mucosa [2].

Rectal prolapse occurs at the extremes of age. In the paediatric population, the disease is usually diagnosed by the age of 3 and there is an equal gender distribution. In the adult population, the peak incidence is after the fifth decade and women are more commonly affected, representing 80% to 90% of patients with rectal prolapse [3].

The anatomical abnormalities associated with rectal prolapse are the intussusception itself, deep cul-de-sac or pouch of Douglas, absent fixation of the rectum to the sacrum, redundant rectum and sigmoid colon, weakness of the pelvic floor and/or anal sphincter muscles and possibly the presence of a rectocele. The ideal rectal prolapse repair should correct as many of these abnormalities as possible [4].

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. Faecal incontinence occurs in

A. H. ElGadaa · N. Hamrah
Department of General Surgery, College of Medicine,
Zagazig University,
Zagazig, Egypt

A. H. ElGadaa (✉) · N. Hamrah
Qassim University,
Qassim, Saudi Arabia
e-mail: draymanelgadaa@yahoo.com

Y. AlAshry
King Saud Hospital in Oniza,
Oniza, Saudi Arabia

about 70% of cases [5], difficulty with evacuation of the rectum in 50% [6] and constipation in up to 28% [7].

The ideal surgical technique should therefore be based not only on the elements of simplicity, recurrence and complications but should also take into account the treatment or at least the alleviation of the functional abnormalities so commonly associated with rectal prolapse [8].

In this study, we *aimed* to correct more anatomical abnormalities and improve the functional outcome of Delorme's procedure by addition of postanal repair.

Patients and Methods

This work was performed at the Department of General Surgery, Zagazig University Hospital and King Saud Hospital in Oniza, KSA. Twenty patients with complete rectal prolapse were eligible for the study. Twenty patients presented at Zagazig University Hospital and King Saud Hospital during the period from November 1998 to September 2008. Six of the patients were men and 14 women with mean age at presentation 55 years, range 35–70). Seven patients had previous surgery for rectal prolapse, 2 Thiersch wire removed subsequently, 3 unsuccessful rectopexy 1, 3 and 4 years earlier and 2 patients with recurrence after delorme operation. One female patient had had haemorrhoidectomy 3 years before. All patients presented with the prolapse that was full thickness circumferential and at least 5 cm in length. The associated disorders were constipation (4 patients), incontinence for solid stool (4 patients), incontinence for liquid and flatus (6 patients) and incontinence for flatus only (5 patients). Only one patient has no associated problem.

Assessment of patients one day before surgery included a detailed history of bowel function and thorough clinical examination. The history included frequency of attempted and successful defecation, the amount of time spent, need for laxatives and suppositories and use of digitation to enable evacuation.

Patients were considered to be constipated if they had two or fewer bowel action per week or strained for more than 25% of time spent defecating. Incontinence of faeces was graded according to Park's classification [9] into: -

- Grade 4** = Incontinence for solid stool.
- Grade 3** = Incontinence for liquid and flatus.
- Grade 2** = Incontinence for flatus only.
- Grade 1** = Normal.

All patients received a low-residue diet for 3 days before surgery. The bowel was prepared the day before with 10% mannitol solution in water mixed with fruit juice to make it more palatable. One liter should be drunk in an hour followed in the next hour by drinking plenty of fluids of

Fig. 1 Complete rectal prolapse with a urinary catheter inserted

various kinds according to the patient's taste preferably not less than 2 liters.

The operation was performed under spinal or epidural anaesthesia. After insertion of a urinary catheter, all patients were placed in the Lithotomy position (Fig. 1).

Antibiotic prophylaxis (100 ml metronidazol and 1 gm cefotaxime) were given to all patients. A 1:200,000 solution of adrenaline was infiltrated submucosally to approximately 3 cm above the dentate line. Mucosal stripping was taken as far proximal as possible into the intussuscepted rectum. The length of mucosa resected varied between 10 and 25 cm (Fig. 2).

The mucosa of the dentate line was preserved. The rectal muscle was then vertically plicated in four quadrants, starting at the apex of the dissection and continuing down to the distal cut edge of mucosa in the anal canal (Fig. 3).

These sutures were placed and tagged and then additional sutures were placed in between for a total of 8 to 10. As they were tied, the muscle was plicated. The excess mucosa was then excised and an interrupted mucosa to mucosa closure was performed.

Postanal repair was performed after skin preparation, a solution of saline containing adrenaline 1:200,000 was injected into the fat and subcutaneous tissue around the posterior part of the anal canal. A posterior circumanal

Fig. 2 The complete mucosal tube

Fig. 3 The initial plicating sutures being inserted

incision was extended halfway around and so far behind the anus (Fig. 4).

The intersphincteric plane was dissected till the ileococcygeus muscle and puborectalis were reached (Fig. 5). Puborectalis, ileococcygeus muscle and external anal sphincter were reefed with vicryl (Figs. 6, 7 & 8). The skin incision was sutured (Fig. 9) (a V-Y plasty was performed in two cases where there was tension on the skin.)

Postoperatively, patients were maintained on intravenous fluids and were given nothing by mouth for 5 days. Patients were given an elemental diet for 10 days. Lactulose 30 cc orally daily was used as a stool softener for a month.

Results

The **median duration of surgery** was 90 minutes (range, 50–120 minutes). All patients required blood transfusion of one unit of blood intraoperatively.

Postoperative pain was easily controlled in 12 patients by injection of xylocaine 2% in the epidural catheter (2 cc diluted in 10 cc saline given 8 hourly for 3 doses). In the other 8 patients, pain was controlled by diclofenac 75 mg i. m. injection 8 hourly for 3 doses. The median **follow up period** for patients included in this study was 65 months (range, 10–120 months) (Fig. 10).

Fig. 4 The skin incision for postanal repair. The incision is sited well behind the anal orifice

Fig. 5 Sutures being taken to approximate the puborectalis muscle behind the anal canal

Only two patient developed **recurrence** of rectal prolapse. Four patients developed complications during the immediate postoperative period, 3 of them developed **postoperative bleeding** and were treated successfully just by an anal pack. The other 1 patient developed rapid elevation of the blood pressure (240/140 mmHg) and was controlled medically in the ICU. **Perineal wound infection and disruption** of skin only occurred in 2 patients, one male and one female and healed by granulation in three weeks.

As regards the **bowel habit**, the 4 patients (3 males and 1 female) who were complaining of constipation showed postoperative improvement. The **degree of anal incontinence** had been improved postoperatively in 11 patients (11/15) (73.3%). One patient remained incontinent to solid stool, one to liquid and flatus and 2 patients to flatus.

Discussion

Delorme's operation is a perineal procedure in which the prolapsed bowel is not resected. The operation restores anal mucosa to its position with subsequent improvement in

Fig. 6 Repair of the intermediate loop of external anal sphincter

Fig. 7 The intersphincteric plane was dissected till the levator ani muscle and puborectalis (top loop) were reached

anorectal sensation. This improvement results in continence recovery after operation. Delorme's operation reduced rectal compliance, which might be expected to result in incontinence because of urgency. It also reduces rectal intussusception that eliminates constipation [10]. It is thought that incontinence may be improved by Delorme's procedure because it creates a bulky circumferential mass of rectal wall muscle around the upper anal canal and lower rectum [11].

Postanal repair has been recommended as the treatment of choice for patients with faecal incontinence associated with complete rectal prolapse. It significantly increases the length of the high-pressure zone and high resting pressure [12].

Only a small series of cases have been reported on Delorme's operation, carried out with postanal repair at the same time [13].

Shafik [14] concluded that pudendal neuropathy is the cause of faecal incontinence in complete rectal prolapse and that the constant prolongation of pudendal nerve terminal motor latency (PNTML) in these patients postulates a relationship between the two. The cause of prolonged PNTML seems to be attributable to pudendal neuropathy due probably to pudendal nerve entrapment in the pudendal canal with a resulting pudendal canal syndrome. Therefore, Pudendal canal syndrome is suggested to play a significant

Fig. 8 Plicating the superficial part of the external anal sphincter behind the anal canal

Fig. 9 Operation completed and skin incision closed without tension

role in the genesis of faecal incontinence in complete rectal prolapse [14]

Some degree of faecal incontinence was found in 70% (15/20) of our patients before operation which accords with **Plusa et al.** [10] who found 68.4% (13/19) of their patients complaining of incontinence. Constipation was found in 20% (4/20) of our patients, which differs from that of **Plusa et al.** [10] (15.8%).

The complication rate found in this study (20%) (4/20) was higher than that of **Senapati et al.** [11] (6%) and **Tobin and Scott** [15] (8%). The addition of postanal repair may be the cause of this higher rate of complication. Although, **Oliver et al.** [16] reported a complication rate of 25% after performing Delorme's operation alone on 40 patients with complete rectal prolapse.

Manson et al. [17] reported a recurrence rate of 32% after Delorme's operation alone, while **Browning et al.** [9] reported a recurrence rate of over 50% when postanal repair was used alone in patients with rectal prolapse and faecal incontinence. **Lieberth et al.** [18], in their study of 76 patients, reported a recurrence rate of 14.5%, which is near to our results, while **Fang et al.** [19] in their retrospective study (16 patients) reported a very low recurrence rate

Fig. 10 Eighteen months postoperative view during straining in a female patient

(6.6%). In this study, 2 patients developed recurrence of rectal prolapse (10%). This relatively low percentage of recurrence in our study may be due to the lower number of patients and the short-term follow up period.

Lieberman et al. [20] reported improvement in 33.3 of their patients with some degree of incontinence. **Plusa et al.** [10] reported 69.2% (9/13) improvement in incontinence after Delorme's operation alone. Other studies working on Delorme's operation alone reported a higher postoperative incontinence (**Senapati et al.** [11] reported 45% and **Lechaux et al.** [21] reported 43%). The addition of postanal repair to Delorme's operation in our study appears to result in a better improvement in incontinence, which occurred in 73.3% (11/15). Pudendal neuropathy may be the cause of failure of postoperative improvement in the degree of faecal incontinence in 4 of patients.

In this study, no patient described serious problems with evacuation after surgery, a result exactly similar to that of **Plusa et al.** [10] who had 3 patients complaining of constipation before Delorme's operation and all had been improved after surgery. On the other hand, **Senapati et al.** [11] reported postoperative constipation in 15% of their patients who underwent Delorme's operation alone.

We conclude that, the addition of postanal repair to Delorme's procedure at the same time for repair of complete rectal prolapse in adults greatly corrects the anatomical defects and improves the functional results. We recommend this method in the treatment of complete rectal prolapse especially in the elderly who are complaining of faecal incontinence.

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