

# Rectal irrigation: a useful tool in the armamentarium for functional bowel disorders

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## Abstract

**Aim** The efficacy of rectal irrigation (RI) was assessed in patients with various functional bowel disorders.

**Method** A prospective analysis was carried out of patients presenting to our functional bowel clinic from 2005 to 2009. The Cleveland Clinic Constipation and Incontinence Scores were used to assess outcomes following rectal irrigation. Patients were asked if they were satisfied with RI and would recommend it to a friend.

**Results** Ninety-one patients (80 female, median age 51 (17–78) years) had undergone rectal irrigation for the following indications: chronic constipation ( $n = 32$ ), slow transit constipation ( $n = 18$ ), obstructed defaecation ( $n = 10$ ), and faecal incontinence ( $n = 31$ ). Of the 60 patients with constipation, 50 (83%) were available for follow up. Mean constipation scores improved from 18.72 to 11.45 following rectal irrigation ( $P = 0.001$ ). Twenty-five patients experienced failure of RI to control symptoms, 10 of whom were offered surgery. Of the patients with incontinence, 20 (67%) were available for follow up. Mean incontinence scores improved from 16.2

to 10.8 with rectal irrigation ( $P = 0.005$ ). Twelve patients discontinued RI, the commonest reason being lack of improvement in symptoms. Seven of these patients were offered surgery. The only complication was in one patient with constipation who had minor rectal bleeding following irrigation, which was stopped.

**Conclusion** Rectal irrigation can be a useful tool in the management of functional bowel disorders and should be tried prior to the consideration of any surgery. However, further work is needed to define the precise indications and patient selection criteria.

**Keywords** Rectal irrigation, constipation, faecal incontinence, functional bowel disorders

### What is new in this paper?

Using the validated Cleveland Clinic Constipation and Incontinence Scores, rectal irrigation significantly improved the symptoms of patients presenting with constipation and faecal incontinence.

## Introduction

The term functional gastrointestinal disorders (FGDs) refers to a range of chronic symptom complexes such as abdominal pain, altered bowel function and irregularities in faecal continence that are not explained by other pathologically based disorders [1]. Patients usually put up with these symptoms for many years with a detrimental effect on their quality of life, before seeking or being referred for specialist treatment.

FGDs can be broadly divided into two groups depending on whether constipation or faecal

incontinence is the predominant symptom [2]. Constipation may be associated with additional symptoms such as straining, incomplete emptying or the need for digitations. The subtypes of constipation include simple, slow transit and obstructive defaecation [3]. Faecal incontinence (FI) is defined as the impairment of voluntary control over the evacuation of stool or flatus.

Management of patients presenting with FGD is often difficult owing to the complex nature of these disorders. Patients are initially managed conservatively with dietary advice and simple medication, suppositories or enemas for symptomatic relief. Failure of conservative measures to control symptoms sometimes leads to surgery, such as subtotal colectomy, antegrade continence enema (ACE) and ileostomy, for constipation and sphincter repair for faecal incontinence. However, due to the potential risks

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involved with surgery, patients often seek alternative forms of treatment to manage their symptoms.

Rectal irrigation (RI) was initially used in children with spina bifida to prevent faecal incontinence and treat constipation [4]. Over the years, adults with spinal cord injuries [5] and selected patients with constipation and faecal incontinence [2,6,7] have also been shown to benefit from rectal irrigation. However, this technique is still being used infrequently in the United Kingdom. The aim of this study was, therefore, to assess the efficacy of rectal irrigation in patients presenting with chronic constipation and faecal incontinence.

## Method

All patients who were offered rectal irrigation between June 2005 and August 2009 were identified from the prospectively maintained database of the functional bowel clinic. Ethical permission for the study was not required as this was a review of current practice at our institution and was not an experimental study.

Patients are usually reviewed in the joint functional bowel clinic by the consultant colorectal surgeon and the specialist colorectal nurse. Those who responded to conservative management and those in whom surgery was indicated were excluded from this study, which dealt with a group of patients in whom it was felt that rectal irrigation may be of some benefit. They were given specific instruction leaflets and taught how to use the rectal irrigation system by the specialist nurse. They were then reviewed in the clinic after 3, 6 and 12 months. The severity of symptoms was assessed before and after irrigation (at 6 months) using the validated Cleveland Clinic Constipation Score (CCCS) [8] and the Cleveland Clinic Incontinence Score (CCIS) [9]. The Cleveland Clinic Constipation Score assesses the severity of constipation with a maximum score of 30 (0 = no constipation, 30 = severe constipation). The Cleveland Clinic Incontinence Score assesses the severity of faecal incontinence with a maximum score of 20 (0 = no incontinence, 20 = severe incontinence). We also assessed the results taking a threshold of 15 for the constipation score and 7 for the continence score; any patient who had a value below these thresholds would be deemed to have had an adequate clinical result following RI. Patients were also asked if they were satisfied with RI and would recommend it to a friend and the reasons for discontinuation. Any complications or side-effects of the irrigation system were recorded.

Patients were divided into two groups according to their predominant symptoms of either constipation or faecal incontinence. Constipation was defined as the infrequent passage of stool and may include symptoms

such as straining or difficulty in emptying and the need for digitations [3]. Slow transit studies were performed in all patients with persistent constipation that failed to respond to simple laxatives and enemas. These patients were deemed to have simple chronic constipation if their slow transit studies were normal. A defaecating proctogram was performed in patients whose symptoms and signs were suggestive of an obstructed defaecation. Patients not responding were brought back to the joint clinic for review and to explore surgical options.

## Statistical analysis

Statistical analysis appropriate for nonparametric data was used. Differences in scores before and after rectal irrigation were compared using the Wilcoxon's signed ranks test. Differences were deemed to be statistically significant at a *P*-value of < 0.05. Data analysis was carried out with the STATISTICAL PACKAGE FOR SOCIAL SCIENCES (SPSS) version 15 (SPSS, Chicago, Illinois, USA).

## Results

Between 1 June 2005 and 13 August 2009, 271 (250 female) patients were reviewed in the functional bowel clinic. Ninety-one [80 female; median age 51 (17–78) years] were offered rectal irrigation. Sixty had constipation and 31 had faecal incontinence (Table 1). There was a similar male to female ratio in both groups (1:9). Patients with faecal incontinence were significantly older compared with patients with constipation (median age 56 years *vs* 46 years, *P* = 0.009).

## Constipation

Of the 60 patients with constipation, 32 (53%) had simple chronic constipation, 18 (30%) had confirmed

**Table 1** Demographic details of patients who had rectal irrigation.

	Constipation	Faecal incontinence	<i>P</i>
Total number	60	31	
Male:female (%)	8:52 (13:87)	3:28 (10:90)	0.612
Median age (range)	46 (17–78)	56 (38–77)	0.009
Follow up (%)	50 (83%)	20 (65%)	0.079
Mean duration of use (months)	10.7	11.9	0.419
Satisfied	39	11	0.007
Recommend	45	20	0.062

slow transit constipation and 10 (17%) had obstructive defaecation with either a rectocele or recto-anal intussusception or a combination of both. Fifty (83%) were available for follow up. The remaining patients were not contactable and did not attend their outpatient appointment. Overall, the mean Cleveland Clinic Constipation Score before irrigation was 18.72 and following irrigation 11.45,  $P = 0.0001$  (Wilcoxon's signed rank test) (Fig. 1). The breakdown of results in the subgroups of patients with constipation is shown in Table 2.

Using a score of  $< 15$  as a reflection of improvement in patients with constipation ( $n = 50$ ), 43 had postirrigation scores of  $< 15$ . Thirty-nine patients were satisfied with RI and 45 patients would recommend it to a friend with similar problems. Twenty-five of 50 patients with constipation stopped using the pump (Table 3), the commonest reason cited as failure of RI to control symptoms ( $n = 18$ ). Of these 18 patients, seven still claimed to be satisfied after a trial of procedure, probably understanding the limitation of the procedure and their ability to carry on with life. None of the seven patients opted for surgery. Of the remaining 11 patients, surgery was subsequently offered to 10 with intractable constipation following failure of conservative measures including rectal irrigation (three had total colectomy and ileorectal anastomosis, three had an ileostomy, two had rectocele repair, one had an ACE procedure and one had resection rectopexy).

### Faecal incontinence

Twenty (65%) patients were available for follow up. The mean incontinence score of 31 patients before irrigation was 16.2 and following irrigation 10.8,  $P = 0.005$  (Wilcoxon's signed ranks test) (Fig. 1). Using an arbitrary post-treatment score of 7 or less as an indication of successful outcome, only three of the 20 patients had incontinence scores of  $< 7$ . However, 11 patients were satisfied with RI and all 20 patients would recommend it to a friend. Twelve (60%) of 20 patients with FI discontinued RI, the commonest reason being the lack of improvement in symptoms ( $n = 7$ ). In two patients

symptoms had resolved completely and therefore they did not require further irrigation. Surgery was subsequently offered to seven of these patients with incontinence (three had sphincter repair, two had a colostomy and two had sacral nerve stimulation).

There were no serious adverse side-effects or complications in either group of patients. One patient experienced minor bleeding, which stopped spontaneously.

### Discussion

Faecal incontinence and constipation are examples of FGD that can lead to distressing psychological and physical symptoms, which seriously diminish quality of life. Rectal irrigation offers a better treatment option compared with conservative treatment and is less invasive than surgery [5,10].

Various methods have been used to assess success and efficacy of rectal irrigation in patients with functional bowel disorders, such as detailed unvalidated questionnaires [6,11], visual analogue scores [7] and Parks' incontinence scores [12]. Christensen *et al.* used the Cleveland Clinic Constipation Scores and St Mark's Faecal Incontinence Scores in patients with spinal cord injuries. However, as far as we are aware, there are no other studies that have used the Cleveland Clinic Constipation and Incontinence Scores to evaluate the efficacy of rectal irrigation in patients with functional bowel disorders.

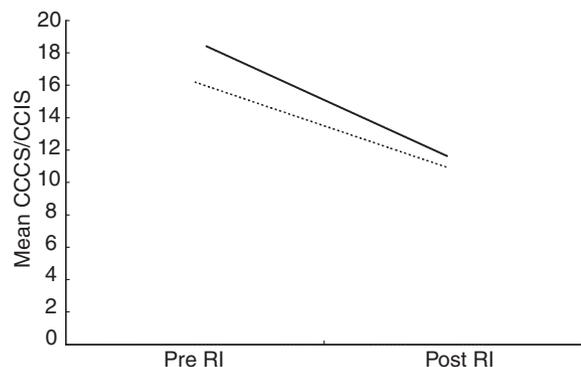
In a cohort study of 80 patients, Gardiner *et al.* found that rectal irrigation was successful in 75% and 51% of patients with FI and constipation, respectively [3]. However, a successful outcome was not quantified using validated questionnaires or scoring systems and therefore any comparison with our study should be made with caution. If a definition of success was based on the continued use of rectal irrigation, our study compares favourably with 40% of patients with FI and 50% of patients with constipation. This trend towards a better outcome in patients with constipation compared with FI is contrary to the findings of other studies [11,12]. Also the fact that 35% (7/20) of patients with incontinence

**Table 2** Cleveland Clinic Constipation Score before and after rectal irrigation.

	N(FU)	Mean scores		P	Score $< 15$	Satisfied
		Pre-RI	Post-RI			
Simple constipation	32 (26)	18.78	12.05	0.0001	24	23
Slow transit constipation	18 (15)	19.53	12.14	0.003	14	13
Obstructive defaecation	10 (9)	17.22	8.75	0.018	5	3
Total	60 (50)				43	39

**Table 3** Reasons for discontinuation of rectal irrigation.

	Constipation	Incontinence
Failure of procedure	18	7
Discomfort	4	3
Bleeding	1	0
Resolution of symptoms	1	2
Expensive	1	1
Total	25	12



**Figure 1** Mean CCCS and CCIS score before and 6 months after rectal irrigation in patients with constipation and incontinence. —, constipation; - - -, incontinence. Wilcoxon's signed rank test:  $P$ -value constipation = 0.0001;  $P$ -value incontinence = 0.005.

opted for a surgical solution compared with 20% (10/50) of patients with constipation supports this.

The proportion of patients with constipation scores < 15 following RI were 92% (24/26), 93% (14/15) and 55% (5/9) in patients with simple constipation, slow transit constipation and obstructive defaecation, respectively. Although the data seem to suggest that RI works better in patients with simple constipation and slow transit constipation compared with patients with obstructed defaecation, small numbers limit statistical comparison.

Of 60 patients with constipation (50 followed up), 43 had postirrigation scores < 15. This seems to correlate with patient satisfaction, as 39 patients were satisfied with RI and 45 patients would recommend RI to their friend with similar problems. Some patients were satisfied with the procedure despite it not having an improvement in their symptoms as they understood its limitations and would also recommend it to their friend. However, in patients with faecal incontinence, incontinence scores of < 7 after RI (only 3 of 20 patients) seem to correlate less well with patient satisfaction as 11 patients were satisfied with RI and all 20 patients would recommend it to a friend.

We assessed symptoms at 6 months following irrigation. In contrast, Christensen *et al.* [11] evaluated 348 patients at a mean of 21 months and concluded that transanal irrigation was safe and most effective in patients with neurogenic bowel dysfunction. Only two nonfatal bowel perforations were recorded after approximately 110 000 irrigation procedures. In our study, there were no serious adverse reactions. It is, however, routine practice in our department to obtain informed consent prior to undergoing RI and all patients are made aware of the potential risks.

While surgery may be considered initially in patients with FI and a proven sphincter defect, initial success after overlapping sphincter in the short term can be followed by deterioration of function in up to 60% of patients after 2 years [13]. In addition, patients with a concomitant pudendal neuropathy are more likely to have poor postoperative function following sphincter repair [14]. In a retrospective study of 48 patients, visual analogue scores, faecal incontinence scores and anorectal physiology measures did not predict those patients who responded successfully to rectal irrigation [7]. The results of our study echo these findings as faecal incontinence scores did not predict success with RI. Our current practice following this study, therefore, is to offer RI to most of the patients presenting with FI, including those with an obvious sphincter defect.

The management options for patients with functional bowel disorders include simple laxatives, phosphate enemas and biofeedback therapy. Phosphate enemas, although only slightly less invasive, have been shown to be less effective than rectal irrigation as it clears the bowel more proximally than an enema [15]. Biofeedback is a form of behavioural therapy that utilizes exercise regimes and relaxation strategies. Patients with mild FI often fare well [16], but when compared with RI, biofeedback is only successful if treatment is sustained and is performed in the presence of an observer [17]. The advantage of RI is that it allows the patient to decide on the timing and frequency of treatment, thus giving a degree of control of their symptoms. It is also simple to learn and does not require hospitalization, thus allowing patients to be managed in the community. For patients with constipation who are satisfied with RI but feel that it is too inconvenient or cumbersome, an ACE procedure performed either percutaneously or surgically, may be an option, though we have had no experience of this.

## Conclusion

This prospective cohort study in a single centre has demonstrated that rectal irrigation is effective in managing the symptoms of chronic constipation and faecal

incontinence. This form of treatment is safe and should be considered in these patients prior to surgery.

### Conflict of interests

The authors have no conflicting interests to declare.

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