

Behavioural treatment (biofeedback) for constipation following hysterectomy

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Background: Constipation after hysterectomy has been postulated to be due to pelvic nerve damage, but there may be emotional or reversible physical factors of pathophysiological relevance. The aim of this study was to determine whether such constipation is responsive to behavioural treatment.

Methods: Three groups of patients who had completed a course of biofeedback treatment were compared: women with no history of abdominal or pelvic surgery ($n=25$), women for whom a hysterectomy had led to no change in bowel function ($n=27$) and women who stated that their constipation was precipitated ($n=18$) or severely worsened ($n=8$) by hysterectomy. Pretreatment and post-treatment details about bowel function and symptoms were assessed using structured interview, and pretreatment whole-gut transit time and anorectal physiology testing were assessed for prognostic relevance.

Results: Follow-up after completing treatment was a median of 28 (range 12–44) months. Forty-eight of 78 patients considered that their constipation had improved with treatment; the proportion in each group was similar ($P=0.73$). Biofeedback reduced the need to strain, reduced abdominal pain, improved bowel frequency, and reduced laxative use to a similar degree in all three groups. Thirty-three of 53 patients with slow transit considered there was an improvement, compared with 15 of 22 with measured normal transit. Physiological testing did not predict outcome and did not differ between the three groups.

Conclusion: The majority of patients complaining of constipation induced or worsened by hysterectomy respond subjectively to behavioural treatment, in a similar proportion to those with idiopathic constipation. In contrast to the widely held view that nerve damage is responsible for symptoms, reversible factors are likely to be important in many patients.

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Introduction

Hysterectomy is the commonest gynaecological operation in the UK, performed in 28 per 10 000 women each year¹. Urinary symptoms or dysfunction occur in up to 76 per cent of patients after total abdominal hysterectomy with bilateral salpingo-oophorectomy^{2–4} and in 25 per cent of patients after hysterectomy with preservation of the ovaries^{5,6}. New bowel symptoms occur in up to 43 per cent of women after hysterectomy^{7–12}, the most frequently reported being difficulty with evacuation. When treating these bowel symptoms after hysterectomy, dietary modification¹³, laxatives^{14–18}, and surgical treatment of an enterocele or rectal prolapse^{13,16,17} are often not effective.

Gut-directed biofeedback retraining has become an established therapy for idiopathic constipation^{19–25}, with

more than half of all adult patients responding^{17,26}. It helps patients with both slow and normal colonic transit, and those with or without paradoxical contraction^{17,26,27}.

In a large consecutive series of patients referred for management of intractable constipation, one-fifth reported that the onset of their symptoms was related to previous hysterectomy²⁶. This study aimed to determine whether biofeedback is effective in such patients.

Posthysterectomy constipation has been attributed to autonomic denervation of the hind gut occurring as a complication of the procedure^{12,14,15}. If this were the case, it might be expected that the condition would be irreversible and not amenable to behavioural treatment. As part of the assessment, an objective measure of rectal innervation was used to establish the prevalence of possible hind gut denervation in patients complaining of constipation follow-

ing hysterectomy, and to determine whether this marker of possible denervation could serve as a prognostic indicator.

Patients and methods

The only criterion for behavioural treatment is the subjective complaint of constipation which is unresponsive to dietary or drug treatment. All patients complain of either an excessive need to strain or an abnormally decreased bowel frequency¹⁸. All patients undergo a digital rectal examination in addition to radiological or endoscopic examination as appropriate. Patients with endocrine or other recognized causes of secondary constipation are excluded from this treatment.

Biofeedback therapy

Patients see a biofeedback therapist as an outpatient every 1–2 weeks, usually for four or five sessions. They lie on a couch on their right side facing the therapist and the electromyography display unit. A balloon is inserted into the rectum and inflated with 50 ml of air so that the patient has the sensation of a full rectum and thus the need to defaecate. Two adherent surface electrodes are placed adjacent to the anal opening to assess external anal sphincter function. The patient watches the trace of muscle activity and can see the pattern of electrical activity at rest and during voluntary contraction. The patient is then asked to observe the trace while attempting to expel the balloon. If there is an obvious increase, rather than the normal decrease, in activity, the patient is encouraged to strain without increasing sphincter activity so that its appearance continues to resemble the resting trace.

Patients are also taught how to strain effectively by using a propulsive force through bracing with their abdominal muscles. They are advised on normal defaecatory behaviour and bowel habits, including restricting the number of visits to the toilet for patients who make frequent defaecatory attempts during the day, or increasing the number of visits to the toilet for those with infrequent defaecation. The amount of time spent, and posture, in the toilet are also specified. The treatment includes gaining an appreciation about psychosocial factors of relevance. An attempt is made to get patients off oral laxatives, enemas and suppositories.

Patients

All the case records of women treated by biofeedback retraining for constipation over a 3-year period, and who had completed treatment at least 12 months previously, were reviewed. Seventy-eight consecutive contactable patients were identified from this group and were categor-

ized into three groups as described below. Clinical details of the three groups of patients are shown in *Table 1*.

Table 1 Patient profiles for the three groups

	Group 1	Group 2	Group 3
No. of patients	26	27	25
Mean (range) age (years)	48 (37–75)	51 (34–71)	36 (24–63)
Mean age at onset of constipation (years)	30	27	17
Rectal prolapse	4	3	5
Rectocele*	8	7	7
Slow transit	19	18	16
Paradoxical contraction†	11	17	12
Psychological problems	0	3	3
Medical problems	3	2	1
Surgical problems	8	12	0

*Defined as an anterior rectal protrusion on proctography; †defined as pelvic floor contraction on straining on external sphincter electromyography

Group 1 (n = 26)

Patients attributed the constipation to hysterectomy; they reported normal previous bowel function ($n = 18$) or considered that bowel function had been severely worsened by hysterectomy ($n = 8$).

Group 2 (n = 27)

The onset of constipation in these patients, who had undergone hysterectomy, was not considered by the patient to be temporally related to the operation.

Group 3 (n = 25)

This group comprised patients with constipation and no history of abdominal or pelvic surgery.

Review of medical notes

Notes were reviewed for details about medical history, bowel function and symptoms before treatment. Psychological factors which were routinely explored during biofeedback treatment were also recorded, including previous contact with a psychiatrist, psychologist or counsellor.

The results of physiological assessment and bowel transit before biofeedback were noted. Rectal electrosensitivity²⁸ was recorded as a possible prognostic marker, as abnormal sensory function reflects denervation. This previously validated technique assesses rectal sensation to an electrical

stimulus using a bipolar electrode placed in the rectum 6 cm above the upper limit of the anal canal²⁸.

A transit time is performed in all patients before the commencement of biofeedback treatment. Three radiologically distinct sets of 20 radio-opaque markers are swallowed on successive days and a plain abdominal radiograph is taken 120 h after the ingestion of the first set of markers. The number of retained markers for each of the three sets is compared with a previously validated normal range²⁹. Excessive retention of any one of the three sets is regarded as indicative of 'slow transit'.

Telephone interview

Each patient was interviewed by telephone by an investigator who had not been the patient's biofeedback therapist. Data were obtained using a questionnaire employed in a previous study²⁶. Patients were asked about their age at onset of the constipation and its temporal relationship to the hysterectomy, bowel function before biofeedback, immediately after biofeedback and at the time of interview. Details included frequency of bowel action, details of laxative use, need to strain, need to digitate, and the presence of abdominal pain and bloating. Symptoms were assessed as either present or absent, to minimize the reporting of success in patients with only a partial response.

Patients were also asked to give their opinion as to whether they considered biofeedback had helped them and specifically whether they believed the constipation had improved.

Statistical analysis

Student's *t* test was used to compare normally distributed data between the three groups. Fisher's exact test was used to analyse non-parametric clinical data. $P < 0.05$ was considered statistically significant.

Results

Table 1 shows that the three patient groups were similar in terms of constipation history. Patients in groups 1 and 2 were significantly older than those in group 3 ($P = 0.0006$ and $P < 0.0001$ respectively). Patients in the first two groups also had a greater incidence of previous other medical and surgical problems. Forty-seven of 53 patients with previous hysterectomy (groups 1 and 2) had had an abdominal hysterectomy; six had had a vaginal hysterectomy.

The median length of follow-up after completing the course of biofeedback to the time of interview was 28 (range 12–44) months.

Table 2 Bowel symptoms

Group	Before biofeedback	Immediately after biofeedback	Long-term follow-up	P‡
Straining				
1	23	12	17	0.0007
2	21	15	15	0.07
3	23	17	17	0.05
P†	—	0.21	0.99	—
Pain				
1	11	5	8	0.06
2	16	8	8	0.03
3	14	7	5	0.04
P†	—	0.31	0.11	—
Low bowel frequency*				
1	6	4	6	0.36
2	15	9	10	0.09
3	11	6	9	0.12
P†	—	0.32	0.84	—
Normal bowel frequency*				
1	15	21	18	0.06
2	7	15	14	0.03
3	11	13	12	0.39
P†	—	0.14	0.58	—

*Low bowel frequency, less than three motions per week; normal bowel frequency, between three motions per week and three per day. †Values refer to the proportion of patients in the three groups with a symptom before and immediately after treatment, or before treatment and at long-term follow-up (χ^2 analysis); ‡values refer to whether a symptom was present in a significantly different proportion of patients on long-term follow-up *versus* before treatment, applied within each group of patients (Student's *t* test)

Overall 62 per cent (48 of 78) of patients considered that their constipation, specifically, had been improved by biofeedback. The proportion of responders in the three groups was similar: group 1, 71 per cent; group 2, 67 per cent; group 3, 56 per cent ($P=0.73$). Seventy-two per cent (56 of 78) considered that biofeedback had helped them feel generally better, the proportion in the three groups being similar: group 1, 77 per cent; group 2, 67 per cent; group 3, 73 per cent ($P=0.71$).

A comparison of bowel symptoms before and after biofeedback and on follow-up is shown in *Table 2*. Biofeedback reduced the need to strain and abdominal pain, and improved bowel frequency, in a similar proportion of each of the three groups. For each symptom there was no significant difference in incidence between the three patient groups before biofeedback and on long-term follow-up.

Laxative use was studied as an objective marker of benefit. Laxative use before and after biofeedback and on follow-up is shown in *Table 3*. There was a reduction in all forms of laxative consumption which was generally maintained at follow-up. There was a decrease in the use of laxatives in all three groups of patients, and no significant difference in laxative use between the three groups.

Twelve (15 per cent) of the 78 women studied had a rectal mucosal sensory threshold that was above the normal range. The proportion of patients with an abnormal threshold was similar in patients who had undergone hysterectomy (groups 1 and 2; eight (15 per cent) of 53 patients) and

those who had not undergone hysterectomy (group 3; four of 25 patients).

A transit study was performed in 75 of the 78 patients: 53 of these had slow transit, of whom 33 (62 per cent) subjectively improved. Twenty-two patients had normal transit, of whom 15 improved.

Discussion

This study has shown that behavioural treatment is effective in a majority of women complaining of constipation after hysterectomy. A retrospective study cannot ascertain definitively whether patients' surgery did in fact precipitate the bowel symptoms. Rather, it can be stated only that patients who present with bowel symptoms, and give this history, may respond to treatment.

There is a large overlap between gynaecological and bowel symptoms, and patients with bowel symptoms often attend a gynaecologist^{8,30}. A proportion of these patients is likely to undergo hysterectomy because of pain, and this may contribute to worsening bowel symptoms in some patients. The psychological profiles of these two groups of patients are similar. Women who have undergone a hysterectomy have increased levels of anxiety and somatization, and an increased tendency to develop a variety of functional symptoms^{31,32}. These psychological features are also common in women with constipation¹³.

Several possible explanations may account for the pathogenesis of altered bowel and bladder function following hysterectomy. It was originally assumed that any symptomatic changes were due to emotional and sexual consequences of the operation³³⁻³⁶. The pre-existing psychological status of patients having a hysterectomy, together with the psychological effects of losing the womb, may be of relevance in some patients, and may account for the reversibility in some patients with behavioural treatment.

Alternatively, surgery has been postulated to damage the extrinsic autonomic nerve supply to the bladder and bowel^{9,37}. The sacral efferent supply to the pelvic viscera is predominantly cholinergic and its loss would be expected to result in a loss of excitatory drive to the bowel. The present study found no evidence of hind gut denervation, as measured by quantitative sensory testing, in patients who had had a hysterectomy. The reversibility of symptoms after treatment would further suggest that, at least in some patients, there is unlikely to be permanent nerve damage.

A third possible explanation is that anatomical changes occur in the pelvis after surgery³⁸. Removal of the uterus and its supporting structures may result in the potential to develop an enterocele, rectocele or rectal prolapse, all of

Table 3 Laxative use

Group	Before biofeedback	After biofeedback	Follow-up
Oral laxative			
1	19	13	13
2	23	16	16
3	13	6	3
P*	—	0.65	0.36
Suppository			
1	3	2	1
2	8	2	1
3	8	3	4
P*	—	0.13	0.20
Enema			
1	5	1	4
2	5	4	4
3	5	4	4
P*	—	0.20	0.41

*Values refer to the proportion of patients in the three groups with a symptom before and after biofeedback, or before treatment and at follow-up (χ^2 analysis)

which are known to be associated with difficult evacuation^{39–41}.

A similar proportion of patients with documented slow and normal transit improved with biofeedback treatment. It has previously been shown that subjective improvement, and improved bowel frequency, in patients with slow transit results in normalization of transit in most patients²⁷.

The patients who had had a hysterectomy were significantly older than those who had not had this operation. This is to be expected as hysterectomy most commonly occurs after childbearing is completed. The higher incidence of previous medical and surgical problems in the patients who had had hysterectomy may relate either to their older age, with more time to experience other illnesses, or to their predilection to seek surgical treatment, in general.

The proportion of patients responding to treatment was similar in those with and without a history of hysterectomy, and similar to the long-term results previously reported in a non-selected group²⁶. The failure of some patients to respond may be due to irreversible neurological, psychological, physiological or structural factors.

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