

# Patient satisfaction after biofeedback for constipation and pelvic floor dyssynergia

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## Summary

**Background:** Patients referred for chronic constipation frequently report symptoms of straining, feeling of incomplete evacuation, or the need to facilitate defecation digitally (dyschezia). When such patients show manometric evidence of inappropriate contraction or failure to relax the pelvic floor muscles during attempts to defecate, they are diagnosed as having pelvic floor dyssynergia (Rome I).

**Aims:** To evaluate long-term satisfaction of patients with pelvic floor dyssynergia after biofeedback.

**Patients:** Forty-one consecutive patients referred for chronic constipation at an outpatient gastrointestinal unit and diagnosed as having pelvic floor dyssynergia who completed a full course of biofeedback.

**Methods:** Data have been collected using a standardised questionnaire. A questionnaire survey of patients' satisfaction rate and requirement of aperients was undertaken.

**Results:** Mean age and symptom duration were respectively 41 and 20 years. Half of patients reported fewer than 3 bowel motions per week. Patients were treated with a mean of 5 biofeedback sessions. At the end of the therapy pelvic floor dyssynergia was alleviated in 85% of patients and 49% were able to stop all aperients. Satisfaction was maintained at follow-up telephone interviews undertaken after a mean period of 2 years, as biofeedback was helpful for 79% of patients and 47% still abstained from intake of aperients.

**Conclusions:** Satisfaction after biofeedback is high for patients referred for chronic constipation and diagnosed with pelvic floor dyssynergia. Biofeedback improves symptoms related to dyschezia and reduces use of aperients.

**Keywords:** constipation; dyschezia; pelvic floor dyssynergia; biofeedback; survey

## Introduction

Symptoms of difficult defecation such as straining, feeling of incomplete evacuation after defecation, or digital facilitation are reported by 40–74% of patients referred with chronic constipation to a specialised centre [1]. These symptoms defining dyschezia are frequently associated with failure to relax the pelvic floor during attempts to defecate, best described as pelvic floor dyssynergia [2].

Treatment of chronic constipation with dietary modification and aperients is relatively ineffective [3]. Biofeedback therapy is claimed to be

successful in 18–100% of patients referred for chronic constipation [4]. The variability in success rate may be explained by poorly defined inclusion criteria, small series, different methods of biofeedback and short duration of follow-up. We are unaware of any series reporting long-term results after biofeedback in patients complaining of chronic constipation associated with pelvic floor dyssynergia.

The aim of the present study was to describe long-term satisfaction of patients diagnosed with pelvic floor dyssynergia after biofeedback.

## Methods

### Patients

Our study cohort consists of all consecutive patients referred for chronic constipation and diagnosed with pelvic floor dyssynergia who completed a full course of

biofeedback in our unit from March 1, 1992 to January 31, 1997. The patients included fulfilled the Rome I criteria for dyschezia and pelvic floor dyssynergia [2]. The diagnosis of dyschezia was based on the presence of straining,

feeling of incomplete evacuation after defecation, or having to facilitate defecation digitally by pressing in or around the anus on at least 25% of bowel movements. Pelvic floor dyssynergia was characterised by dyschezia associated with manometric evidence of inappropriate contraction or failure to relax the pelvic floor muscles during attempts to defecate. During the study period 29 patients, who were not included in this study, completed a full course of biofeedback (12 dyschezia without pelvic floor dyssynergia, 14 faecal incontinence, 2 anorectal pain, 1 unspecified anorectal disorder).

### Anorectal tests

Anorectal manometry was performed as previously described [5]. Balloon distension was used to detect the rectal sensory thresholds for the first detectable sensation, the sensation of urgency to defecate, and the maximum tolerable volume. Paradoxical contraction of the pelvic floor muscles was considered on any sustained rise in anal pressure during straining without consecutive relaxation of the anal sphincter [6].

### Biofeedback

Biofeedback was provided on a weekly outpatient basis. Surface electrodes placed adjacent to the anal verge permit the patient to watch the trace of pelvic floor muscle activity at rest, during voluntary contraction and while attempting to expel a rectal balloon. The patients were taught to be conscious of a balloon distending the rectum, to relax the pelvic floor, to improve recto-anal coordination without increasing pelvic floor muscle activity and to strain efficiently by using a propulsive force through bracing

with the abdominal muscles. A single therapist (PC) performed all the sessions. The patients were also advised on normal defecatory behaviour and bowel habits. An attempt was made to wean patients off laxatives, enemas, and suppositories. The therapist and the patient agreed to end the therapy when both were satisfied with the progress made. At the end of the biofeedback an assessment took place and the anorectal tests were repeated. An investigator (PJ, PW) who had not been the patients' therapist undertook a follow-up telephone interview.

Data were collected using a standardised questionnaire based on Rome I [2]. To establish the possible benefits and satisfaction with the therapy the patients were asked whether they felt that biofeedback had helped them to defecate and whether or not their constipation had improved. Enquiry was made about current use of aperients (laxatives, suppositories, and enemas).

### Statistical analysis

Continuous data are presented as mean  $\pm$  STDEV. The study variables at referral, after biofeedback and at follow-up telephone interview, were compared by means of McNemar's test for binary variables, and with Student's paired t-test for continuous variables. To determine what characteristics may predict response to treatment, logistic regression was performed on the efficacy of biofeedback, as reported by the patients at the follow-up telephone interview – "biofeedback helped me on the whole" or not – including, as co-variables, patients' characteristics, baseline signs and symptoms.  $p < 0.05$  was considered statistically significant.

## Results

Forty-one consecutive patients (34 females) received biofeedback therapy for pelvic floor dyssynergia. The mean age was  $41 \pm 17$  years and the mean duration of constipation symptoms  $20 \pm 15$  years.

Patients were treated on a weekly basis by an average of  $5.0 \pm 2.1$  sessions. They were all assessed after the end of the biofeedback therapy. The follow-up interview took place after a mean period of  $2.0 \pm 1.2$  years. Three patients were lost to follow-up despite repeated attempts to contact them.

### Patient satisfaction, symptoms and use of aperients

79% of patients (30/38) expressed overall satisfaction with biofeedback in the long term. The percentage of satisfied patients did not change significantly from end-of-treatment assessment

(35/41 patients) to long-term follow-up (30/38,  $p = 0.10$ ). After biofeedback only 37% of patients complained of constipation and the effect was maintained in 53% of the cohort at follow-up ( $p < 0.0001$ , when compared to referral time). Table 1 shows that the number of patients reporting fewer than 3 bowel movements per week was reduced both immediately after biofeedback and at follow-up. Similarly, symptoms of dyschezia (need to strain, feeling of incomplete evacuation, need to digitate), abdominal pain and bloating were reported less frequently after biofeedback and at follow-up than at the time of referral (Figure 1).

All patients relied regularly or occasionally on aperients at referral. Half were able to cease using aperients after biofeedback and this was maintained at follow-up (Table 1).

**Table 1**

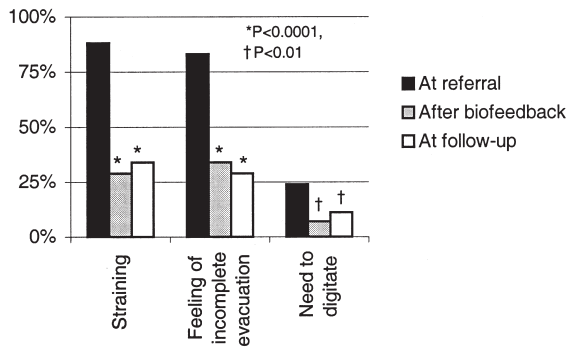
Occurrence of symptoms and use of aperients at referral, after biofeedback and at follow-up.

	at referral (n = 41)	after biofeedback (n = 41)	p value (n = 38)	at follow-up	p value
Bowel frequency (<3/week)	27 (66%)	6 (15%)	<0.0001	4 (11%)	<0.0001
Dyschezia	41 (100%)	9 (22%)	<0.0001	11 (29%)	<0.0001
Abdominal pain or bloating	21 (51%)	9 (22%)	<0.0005	15 (39%)	<0.0001
Use of aperients	41 (100%)	20 (51%)	<0.0001	18 (53%)	<0.03

Values are given as number of patients (percentage). Comparisons between periods are evaluated by McNemar's test.

**Figure 1**

Occurrence of dyschezic symptoms at referral, after biofeedback and at follow-up. Dyschezia diagnosis is based on Rome I criteria: straining, feeling of incomplete evacuation after defecation, or having to facilitate defecation digitally by pressing in or around the anus [2]. Values are given as percentages of patients at referral (41 patients), after biofeedback (41 patients) and at follow-up (38 patients). Comparisons between periods are evaluated by McNemar's test.



### Factors associated with patient satisfaction

Due to the high proportion of females (83%), gender could not be analysed as a predictive factor of outcome. Patients who were helped by biofeedback were not significantly younger than patients who did not benefit from it ( $40 \pm 17$  vs.  $45 \pm 17$  years). No symptom at initial assessment appeared predictive of patients' satisfaction (data not shown).

Patients helped by biofeedback received a mean of 4 sessions, while those not improved received a mean of 5 sessions (not statistically significant). Twenty patients were practising biofeedback exercises at the time of follow-up. However, failure to practise home exercises was not significantly associated with a failed outcome at long-term follow-up.

### Anorectal tests

Anorectal tests were performed on all patients. Consistent with the Rome I criteria, all patients showed manometric evidence of inappropriate contraction or failure to relax the pelvic floor muscles during attempts to defecate at referral time. At the end of the biofeedback therapy physiological relaxation of the pelvic floor during attempts to defecate was more prevalent (Table 2).

Mean values obtained for the cohort for maximum resting pressure, maximum squeeze pressure, first sensation, urge sensation and maximum tolerable volume-to-volume distension were all in the normal range for our laboratory, both at referral and after biofeedback, without any significant trend from initial to end-of-treatment assessment [5]. However, urge sensation to volume distension was lower after biofeedback compared with before (Table 2).

Correction of the inappropriate contraction of the pelvic floor muscles at the end of biofeedback sessions was not predictive of a satisfying outcome at long-term follow-up. Twenty-six of the thirty patients (87%) who felt that biofeedback had helped them in the long term had previous manometric correction of pelvic floor dysfunction immediately after biofeedback, whereas 7 of 8 patients (88%) to whom biofeedback had not been helpful had the same manometric resolution after biofeedback. None of the anorectal tests was predictive of the outcome (data not shown).

**Table 2.**

Anorectal tests at referral and after biofeedback.

	at referral	after biofeedback	p value
Inappropriate contraction pelvic floor	41 (100%)	6 (15%)	<0.0001
Maximum resting pressure (mm Hg)	60 ± 18	57 ± 17	ns
Maximum squeeze pressure (mm Hg)	99 ± 36	103 ± 39	ns
First sensation to volume distension (ml)	19 ± 12	17 ± 16	ns
Urge sensation to volume distension (ml)	112 ± 56	85 ± 26	<0.003
Maximum tolerable volume (ml)	247 ± 88	252 ± 60	ns

Values are given as number of patients (percentage) and mean ± STDEV. Comparison is evaluated by McNemar's test and Student's paired t-test.

## Discussion

This study has shown that the majority of patients referred to a specialised centre for chronic constipation related to pelvic floor dyssynergia are satisfied with biofeedback in the long term. Improvement was supported by an increase in bowel frequency and decreased use of aperients at long-term follow-up.

Our cohort of middle-aged patients with a life-long history of constipation is representative of the population referred to specialised centres [7]. Neither patient age or duration of symptoms was indicative of outcome [8, 9].

We restricted our entry criteria to patients fulfilling Rome I criteria for pelvic floor dyssynergia [2]. Patients had symptoms of dyschezia (straining,

feeling of incomplete evacuation after defecation, or having to facilitate defecation digitally by pressing in or around the anus on at least 25% of bowel movements) and manometric evidence of paradoxical contraction or failure to relax the pelvic floor muscles when attempting to defecate. With these selection criteria 79% of our patients were on the whole satisfied in the long term with biofeedback. Symptoms of straining, feeling of incomplete evacuation, need for digitation, abdominal pain and bloating were all improved after biofeedback. Despite the subjective nature of the outcome variables, the improvement was supported by an increase in bowel frequency and a reduction in the use of aperients. Lower success rates

have been described when entry criteria were broadened [9-14]. The present study has shown that clear-cut clinical criteria and anorectal manometry render possible the selection of patients likely to benefit from biofeedback in the long-term, without the costs and risk (i.e. high-dose irradiation of defecography) of other tests.

Manometry was used to identify patients with pelvic floor dysfunction. The majority of patients had corrected this anomaly at the end of the biofeedback sessions but long-term satisfaction did not correlate with this finding. Rectal sensory perception was improved after biofeedback and lower thresholds for urge sensation to rectal distension were measured, confirming previous observations [10, 15-17]. The anorectal laboratory is an "abnormal" setting where patients are embarrassed [18]. Conflicting results have been reported, with some authors assigning predictive value to pre-treatment investigations [19] and others not [20]. Slight but clinically significant physiological variations are difficult to record. Moreover, improvements measured by anorectal tests do not necessarily reflect symptomatic improvement, and many patients may show physiological improvement while functional improvement may lag behind or vice versa. Anorectal testing is necessary to diagnose pelvic floor dyssynergia and for the patient's comprehension of anorectal physiology. It allows the therapist to work on recto-anal coordination and rectal sensory perception to improve the patient's defecatory function.

Methods of biofeedback therapy varied widely between centres [21] but no difference was described when EMG-based biofeedback was compared to manometry-based biofeedback [22], or when visual or auditory feedback was given [10]. In our study, as in others [11;23;24], the majority of patients requested a limited number of biofeedback sessions. Weekly one-hour biofeedback ses-

sions allow focused remoulding of defecatory habits over a short period of time. This gives patients access to a therapist who can devote time and energy to providing counselling and training. Visual and verbal feedback based on surface EMG electrodes was convenient both to the patient and to the therapist.

Our high success rate may be due to the fact that all of our patients ended the therapy only by common consent with the therapist. Motivation of patients to complete the treatment [11, 14] and psychological factors influence response to biofeedback [13, 25]. We believe that the patient's willingness to cure his/her defecatory disorder is an important factor in therapeutic success.

In conclusion, this study has shown a high degree of satisfaction with biofeedback in patients suffering from pelvic floor dyssynergia as a cause of chronic constipation. The high rate and sustained benefit at long-term follow-up argues against a placebo response in patients who have previously tried many remedies unsuccessfully. Until a better therapy emerges biofeedback remains a morbidity-free, low-cost and effective outpatient therapy for well-motivated patients complaining of constipation and diagnosed with pelvic floor dyssynergia.

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