Using biofeedback to treat constipation, faecal incontinence and other bowel disorders

Biofeedback therapy, which involves patient re-education, can be used to treat bowel dysfunction for which first line measures have proved ineffective.

Studies in adults suggest that biofeedback is effective for bowel dysfunction and leads to improvement in approximately 70% of patients, potentially with long term benefits (Norton, 2008; Ryn et al, 2000). However, effectiveness varies considerably between patients.

WHAT IS BIOFEEDBACK?
The theoretical basis for biofeedback is “learning through reinforcement” or “operant conditioning” techniques (Norton, 2008). It is classed as a re-education tool – information on a normally subconscious physiological function is given to patients, who are then actively involved in learning to change that function (Horton, 2004).

Biofeedback therapy is used in bowel and muscle retraining to normalise patterns of bowel function and lessen gastrointestinal symptoms caused by functional bowel disorders, such as faecal incontinence.

BIOFEEDBACK SERVICES

Biofeedback therapy can vary considerably between centres, including the number and frequency of sessions. There is no evidence to suggest that one treatment regime is more effective than another. This article focuses on the biofeedback therapy offered at a tertiary centre at St Mark’s Hospital in Harrow.

The biofeedback service at St Mark’s is a nurse led service that has the support of an extensive multidisciplinary team. The biofeedback team has six members—a nurse consultant, a lead nurse, three clinical nurse specialists and a physiotherapist.

Biofeedback therapy is an outpatient service and patients are seen for up to four or five sessions at four to six weekly intervals by the same therapist. The initial appointment is for approximately 60 minutes with follow up appointments of 30-40 minutes. The aim is for the patient to improve and take control of their bowel function. Box 1 outlines the types of patients usually seen.

PRACTICE POINTS

- Biofeedback is a behavioural therapy for bowel dysfunction.
- It is used to retrain the bowel.
- Biofeedback can benefit people with constipation and faecal incontinence.

Many of the patients seen at St Mark’s have had bowel symptoms and problems for many years despite repeated GP and hospital visits and numerous treatments. The physiology unit has developed a biofeedback programme for faecal incontinence and constipation that advocates a holistic, individual package of care incorporating many nursing components (Box 2).

BIOFEEDBACK THERAPY TESTS

Anorectal physiology tests and endoanal ultrasound are usually carried out on patients with faecal incontinence. Anorectal physiology tests involve a range of tests to assess the sensation and function of the anorectum (Nicholls, 2004). Endoanal ultrasound provides a 360 degree image of the anal canal (Williams, 2004) and shows the structure of the internal and external anal sphincters necessary for faecal continence.

It is useful for patients to complete a bowel symptom questionnaire to bring to their first session, such as the validated questionnaire developed by Cotterill et al (2008). This introduces patients to the terms used during the initial assessment and provides an opportunity for them to reflect on their bowel symptoms and quality of life.

For constipation/evacuatory disorders, transit studies and/or defecating proctograms are performed. A transit study involves the patient ingesting six capsules, two each day for three days, with each capsule containing ten radio opaque markers. The capsules dissolve in the stomach and the radio opaque markers are dispersed in the gastrointestinal tract. An X-ray is performed six days after the first set of capsules are taken; this will provide information on the time it takes for food to reach the large bowel indicating normal or slow transit time or evacuatory disorder. Normal/slow transit and evacuatory disorder are defined in Box 3.

INTRODUCTION

Biofeedback is a behaviour therapy offering a non surgical treatment option for patients with bowel dysfunction including faecal incontinence and constipation.

Faecal incontinence is defined as the involuntary or inappropriate passage of liquid or solid stool (Chelvanayagam and Norton, 1999). It affects 1-10% of the adult population, with 0.5-10% experiencing regular episodes (National Institute for Health and Clinical Excellence, 2007).

It is a distressing and demoralising condition, resulting in both physical and psychological problems including social restriction, loss of self esteem, altered body image and loss of skin integrity (Boyd-Carson, 2003), all of which reduce quality of life (Rothbarth et al, 2001; Norton, 1997).

Constipation is one of the most common digestive complaints and affects 3-5% of the population depending on the definition (Muller-Lissner et al, 2005). The Department of Health (2000) has estimated that £46m is spent each year in England on laxatives.

When patients do not respond to conservative measures such as dietary fibre and fluid intake changes, and are resistant to laxatives, biofeedback is recommended as a first line non-invasive treatment for those with faecal incontinence, constipation and evacuatory disorders (Storrke, 1997).

AUTHOR

Jennie Burch MSc, BSc, RN, is a nurse specialist, both at St Mark’s Hospital, Harrow.

ABSTRACT


Biofeedback is a behavioural therapy used to treat people with bowel dysfunction, such as constipation or faecal incontinence, who do not respond to standard treatment. This article highlights how biofeedback therapy is used to treat these problems and improve patients’ quality of life.

KEYWORDS

BIOFEEDBACK THERAPY | GASTROINTESTINAL | CONSTIPATION | FECAL INCONTINENCE
A defecating proctogram is a barium study and requires thick barium paste to be inserted into the rectum via a rectal tube. An X-ray is taken with the patient sitting on a commode and attempting to expel the paste. This helps to evaluate rectal expulsion as well as providing information on the structure and function of the pelvic floor, including the presence of rectocele, perineal descent, rectal prolapse and intussusception (the enfolding of one portion of the intestine within another).

**BIOFEEDBACK FOR CONSTIPATION**

Biofeedback is an individualised package of care. It begins with a comprehensive bowel assessment to identify patients’ symptoms and problems as well as their concerns and anxieties (Box 4). Once an assessment has been completed, the following components are included in the biofeedback sessions:

- Education
- Bowel and muscle retraining
- Behavioural therapy
- Psychological support (Collins and Burch, 2009).

**Education**

The initial session incorporates an account of biofeedback, the aim of the programme and outlines the commitment and active participation required by patients (Duncan et al, 2003).

Patients are often unfamiliar with the structure and function of the digestive tract and what happens to ingested food. The educational aspect of biofeedback therapy involves a discussion about normal colonic function and the defecatory process with the aid of diagrams and models. This addresses any myths and erroneous beliefs patients may have about their bowel problem.

Consideration should be given to the effect of bowel dysfunction on quality of life, as well as to patients’ expectations of therapy. This ensures that realistic goals are set and an individualised package of care planned.

It is important to explain any test results. Patients with slow transit need to understand that their bowel function is slow and not a result of a bowel abnormality. Dietary support is offered, particularly when an increase in insoluble fibres, such as bran, has been recommended in the past as a way of improving bowel function.

There is no doubt that an intake of insoluble fibres increases stool bulk and frequency, and softens stool consistency (Fernandez-Banares, 2006). However, an increase in these fibres by people with slow transit can aggravate symptoms of bloating (Muller-Lissner et al, 2005). As such, it is recommended that patients with slow transit reduce their insoluble fibre intake to try to relieve symptoms (Walld, 2007). It should be noted that sources of soluble fibre can be found in fruit and vegetables and help to maintain a healthy diet (Horton, 2004).

**Bowel and muscle retraining**

The biofeedback programme also concentrates on defecatory coordination. This necessitates assessing for poor propulsion and for paradoxical contraction.

Poor propulsion occurs when patients strain and hold their breath with tension in the upper body during defecation. This prevents an effective bowel movement and can cause other anorectal conditions, such as haemorrhoids (Horton, 2004). Paradoxical contraction occurs when the external sphincter is contracted instead of relaxed during defecation. This may initiate slower transit (Klausner et al, 1990).

Biofeedback therapists are able to assess bowel coordination by inserting a deflated balloon into the rectum and inflating the balloon with 50ml of air. This provides the sensation of a full rectum and the need to defecate. The therapist monitors patients’ abdominal movements, relaxation and breathing during the attempt to expel the balloon. Many patients demonstrate defecatory incoordination and are taught evacuation techniques. Leaflets for this technique (named the brace exercise) can be found at tinyurl.com/brace-exercise.

An individual home programme is planned, which includes retraining the bowel by teaching new skills or strategies to develop a routine and predictable schedule for evacuation. Additionally, patients are taught to sit on the toilet with their feet raised on a stool, leaning forward with their arms on their lap and their shoulders relaxed. This provides an anatomically improved pathway for stools to be expelled.

**Behavioural therapy**

Patients are asked to adjust unusual patterns of behaviour to improve their bowel function, for example not eating to avoid faecal incontinence. This is sometimes difficult, especially when behaviour has been a pattern for many years. Support and guidance from the same therapist can improve progress (Duncan et al, 2003).

**Psychological support**

There is evidence that psychological disturbance and childhood abuse is associated with bowel dysfunction (Longstreth et al, 2006; Drossman et al, 1990). Psychological issues may be divulged by patients during biofeedback sessions and it is useful to have access to a psychological medicine team. At St Mark’s, referrals can be made to the consultant psychiatrist; sessions with the psychological medicine team run simultaneously with biofeedback sessions, addressing both physical and psychological issues.

**Irrigation**

If biofeedback therapy does not improve bowel symptoms, the therapist may consider transanal irrigation to manage constipation and faecal incontinence. Irrigation assists the evacuation of faeces from the bowel by

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**BOX 1. TYPES OF PATIENTS USUALLY SEEN BY BIOFEEDBACK SERVICE**

- Women with gynaecological problems such as obstetric injury
- People with:
  - Idiopathic constipation
  - Evacuation disorder
  - Ileo-anal pouch
  - Rectocele
  - Prolapse
  - Solitary rectal ulcer syndrome
  - Idiopathic megarectum

**BOX 2. NURSING COMPONENTS OF A BIOFEEDBACK PROGRAMME**

- History and symptom assessment
- Patient teaching/education
- Bowel and muscle training
- Dietary modification/support
- Emotional support
- Behavioural therapy
- Psychological support
- Electrical stimulation

**BOX 3. TRANSIT STUDIES DEFINITIONS**

- **Slow transit:** more than four of the day one markers, more than six of the day two markers and 12 or more of the day three markers scattered throughout the colon
- **Normal transit:** no markers present or fewer than seen in slow transit
- **Evaculatory disorder:** markers remain in the rectum with a normal transit
introducing warm tap water/enemas through a rectal balloon catheter into the colon via the anus (Gardiner, 2009). This enables water and stools to be emptied from the descending colon.

**BIOFEEDBACK THERAPY FOR FAECAL INCONTINENCE**

As with constipation, patients presenting with faecal incontinence require a full and comprehensive assessment, which will include an anal and rectal examination. Other factors considered in biofeedback therapy for this group of patients include:

- Patient education: verbal and written information should be provided about normal gut function and the reason for their symptoms (Norton and Kamm, 1999).
- Emotional support: specialist time needs to be spent with patients so that feelings and emotions can be explored.
- Dietary modification: a reduction in fibre may be advised, especially if intake is high and creating loose/diarrhoea type stools. It is also important to highlight that types of foods and drinks, such as excess caffeine and alcohol, may contribute to symptoms.
- Lactose intolerance and undiagnosed coeliac disease should be considered (Norton, 2008).
- Anal sphincter exercises: anal sphincter assessment can be carried out through a digital rectal examination and can be computer assisted. Exercises are based on patients’ assessments and leaflets should be adapted to their individual needs. Leaflets on sphincter exercises can be found at tinyurl.com/biofeedback-patient-info.
- Urge resistance: Patients with faecal urgency can benefit from a gradual programme of resisting the urge to defecate using a “holding on” programme. This can be combined in the biofeedback therapy appointments with rectal balloondistension.
- Electrical stimulation: The NeuroTrac Continence, a neuromuscular stimulator used with the Anuform, an intra-anal electrode, can be used in faecal incontinence. Electrical stimulation initiates an involuntary contraction of the anal sphincters via the anal plug electrode inserted into the anal canal (Norton, 2004). Therapists need to be familiar with using electrical stimulation. Patients with faecal incontinence who find it difficult to perform sphincter exercises may benefit from electrical stimulation in conjunction with sphincter exercises.

**Products for management**

Therapists working with biofeedback must be familiar with the products used to manage faecal incontinence, especially if biofeedback therapy has not helped. These include:

- Pads;
- Anal plugs;
- Products for odour control;
- Skin care products;
- Rectal irrigation.

**CONCLUSION**

Biofeedback is a highly effective therapy for people who have bowel dysfunction such as constipation or faecal incontinence. It can vary between centres; the basic principles are to re-educate patients and support them through this process. It consists of a variety of components including education, bowel and muscle retraining, behavioural therapy and psychological support. Prior to therapy, investigations must be undertaken, particularly if there are concerns about the cause of any change in bowel habit. Other options can assist people with constipation, such as rectal irrigation.

Nurses should know how biofeedback works, identify when it might assist patients and offer advice on how to access therapy if required.

**REFERENCES**


**BOX 4. COMPONENTS OF BOWEL ASSESSMENT**

- Usual stool consistency;
- Usual stool frequency;
- Pain associated with bowel motions;
- Presence of blood and/or mucus;
- Evacuation problems;
- Past medical history;
- Toilet access issues;
- Diet and fluid intake;
- Medication, including over the counter medications;
- Physical examination.