Practical Strategies for Treating Postsurgical Bowel Dysfunction

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Postsurgical bowel dysfunction is a potential complication for patients undergoing ileoanal anastomosis, restorative proctocolectomy, and low anterior anastomosis. In our setting, these patients are referred to the Anorectal Physiology Clinic at the Townsville Hospital, Queensland, for comprehensive behavioral therapy. The goals of the therapy are as follows: improve stool consistency, improve control over stool elimination, decrease fecal frequency and rectal urgency, fecal continence without excessive restrictions on food and fluid intake, and increase quality of life. This article outlines our holistic approach and specific treatment strategies, including assessment, education, support and assistance with coping, individualized dietary and fluid modifications, medications, and exercise. Biofeedback is used to help patients improve anal sphincter and pelvic floor muscle function and bowel elimination habits. Information on the biofeedback component of the treatment program will be described in a subsequent article.

Introduction

Surgical procedures involving resection of most or all of the colon, with anastomosis of the ileum or ileal pouch to the rectum or anal canal, are associated with major changes in stool elimination patterns. Patients undergoing low or ultralow anterior resections for rectal cancer are also at risk for altered fecal elimination patterns, due to loss of the rectal reservoir. Bowel habits and function usually continue to improve for several months postoperatively, and a high percentage of patients now experience a good clinical outcome with complete continence, “normal” stool consistency and frequency, and the confidence to defer defecation. However, for a proportion of patients, bowel function and associated health-related quality of life (HRQOL) remains unsatisfactory, and it may continue to be adversely affected for more than 5 years postoperatively.

Adult patients from throughout north Queensland, Australia, are referred to the Anorectal Physiology Clinic at the Townsville Hospital for treatment of postsurgical bowel dysfunction (PSBD). Twelve to 15 patients (aged 30-70 years) are referred to the clinic annually for treatment following anterior resection (13%), ultralow anterior resection (40%), colectomy (22%), or restorative proctocolectomy (25%). Typical bowel elimination symptoms include loose stools, excessive stool frequency, rectal urgency, fecal incontinence, and incomplete or difficult evacuation. People are referred to the clinic for treatment of PSBD when symptoms affecting their HRQOL fail to diminish with time and they do not respond to conservative therapies such as dietary modifications, medications, or standard pelvic floor muscle training. These patients often have a history of accepting substantial limitations imposed by their symptoms such as restrictive modifications to their lifestyle or stringent dietary restrictions. Some do not realize or deny the impact that these modifications exert on activities of daily living and HRQOL. Nevertheless, ineffective and restrictive coping strategies may lead to isolation or the inability to work or socialize due to lack of control and confidence.

Treatment Program Overview

Treatment sessions are conducted by a nurse specialist, with support available from a colorectal surgeon, dietitian, physiotherapist, and psychologist. We consider a welcoming, relaxed atmosphere, adequate time for individual treatment needs, and positive patient-therapist interaction crucial for success. Our service also provides privacy and confidentiality to promote trust and frank discussion and minimize embarrassment.

Our program uses a holistic approach that includes thorough assessment, extensive education, individualized recommendations and support, instruction in relaxation breathing, pelvic floor muscle and anal sphincter training, and effective evacuation techniques using visual and tactile computer-assisted biofeedback. Patients attend 4 to 7 individual therapy sessions lasting from 1.0 to 1.5 hours. A typical referral involves an initial appointment, which
includes assessment, planning, and the first biofeedback-assisted pelvic floor muscle training session, followed by weekly sessions for 2 weeks. After 4 weeks to practice exercises and implement lifestyle modifications, patients attend a review session to assess progress and identify any further needs. One or two follow-up sessions over a period of several weeks may be required for further modification of the treatment program and monitoring for results. Treatment typically requires a minimum of 7 weeks, but may be extended several months to enable individual patients to achieve personal treatment goals and desired improvement in HRQOL. If the patients feel that there has been inadequate improvement in HRQOL after several months of treatment, they may choose to discuss further options with their colorectal surgeon.

**Initial Visit/Assessment**

A detailed assessment is conducted during the first visit. Specifically, patients’ previous medical, surgical, and obstetric history; current medications; and typical bowel habits are reviewed and recorded. Bowel elimination symptoms are discussed, including the type, severity, and duration of bothersome symptoms and any recent changes, along with any suspected triggers or recurring patterns of symptoms. Patients are also asked to provide their own assessment of their symptom severity, and its impact on their HRQOL. This self-assessment assists the clinician to evaluate patients’ attitudes toward PSBD, their mental status, and typical coping mechanisms. Patients are asked about food and fluid intake. They are asked to describe their usual diet, type and volume of fiber and fluid intake, patterns of fluid and alcohol consumption, and any dietary restrictions they have implemented to manage PSBD. Continence and HRQOL are evaluated using validated instruments, the Cleveland Clinic Continence Grading Scale and Fecal Incontinence Quality of Life questionnaires. The overall goals of the therapy are explained, and personal treatment goals are established for each patient.

Manometric anorectal assessment is conducted using a Gaeltec catheter with a single solid-state pressure transducer (Gaeltec Ltd, Dunvegan, Isle of Skye, Scotland), a Neomedix Acquidata System (Acquiprocessor Model No. ML785NM, Acquaimplifier Model No. 601.819; Neomedix, Hornsby, Sydney, Australia) with Uromac/Urotrak (Powerlab, Version 5.2.2), and an anorectal software program (Neomedix, Hornsby, Sydney, Australia). Functional anal canal length, resting anal sphincter pressure, and maximum voluntary contraction pressure are recorded. A latex balloon is positioned in the rectal vault and inflated to elicit the rectosphincteric inhibitory reflex. Inflation also allows the examiner to determine the intrarectal volume that elicits an initial sensation, the volume at first urge, and the maximum tolerable volume. Results of the anorectal tests, and any additional tests such as endoanal ultrasound, together with symptoms reported during the patient’s personal history assessment are used to differentiate between urge incontinence, passive incontinence, stool frequency, rectal urgency, incomplete evacuation, and postdefecation soiling. An individualized pelvic floor muscle training program using biofeedback is planned. Treatment is directed toward increasing anal sphincter and pelvic floor muscle strength and endurance, improving awareness of muscle control and relaxation, increasing anal resting pressure, improving rectal or pouch compliance, decreasing urgency, or moderating rectal or pouch sensitivity as appropriate for each patient’s combination of symptoms and personal treatment goals.

**Education, Advice, and Support**

Our clinical experiences managing persons with PSBD reveal that education is a vital component of each therapy session. The basic anatomy and function of the gastrointestinal tract and pelvic floor muscles are explained with the aid of diagrams and sketches. The effects of surgery, medication, diet, and exercise on bowel function are discussed, and advice and support are offered on these topics as appropriate for each patient. All patients are asked to keep a daily chart that includes food and fluid intake, exercise, and bowel movements (including volume, consistency, and associated symptoms such as urgency or incontinence). An understanding of the range of possible changes in bowel function and the bowel’s responses to routine stimuli, stresses, and irritants following surgery encourages patients to adhere to the lifestyle modifications often needed to augment biofeedback-enhanced pelvic floor muscle training. In particular, patients are taught about reduced transit time due to decreased gut length and increased gut motility when the gastrocolic reflex is stimulated by eating, drinking, or exercise. Patients are counseled that the combination of these factors and decreased intestinal surface area for fluid reabsorption helps explain alterations in the consistency of bowel contents. The possibility of altered sensitivity to some types of foods and changes in food and fluid absorption and tolerance are also discussed, as well as the difference between insoluble and soluble fibers and their roles in providing bulk and moisture retention in the bowel. An explanation of the decreased capacity and lowered compliance of the rectum or anal pouch following low or ultralow anterior resection or restorative proctocolectomy is provided to enhance their understanding of bowel elimination symptoms such frequency, rectal urgency, or incomplete evacuation. The effect of removal or remodeling of part of the bowel and the likelihood of resulting muscle or nerve damage or formation of scar tissue are also explained. This may have an impact on patients’ capacity to store fecal matter and control rectal or pouch contents and their ability to defer evacuation or effectively empty the pouch or rectum. Although the remaining bowel can
adapt and its function improve with time, patients are informed that biofeedback enhanced pelvic floor muscle training can assist their bowel to “relearn” coordination between the muscles and nerves of the rectum or pouch and the anal sphincter to improve compliance, control, and evacuation. Advice and support are also offered to help patients cope with their everyday situations and to give them confidence when managing lifestyle modifications.

**Diet and Fluids**

Solid foods and the volume and pattern of fluid intake affect stool consistency and transit time, which in turn influence stool frequency and continence. Removal of part or all of the ileum or colon affects the physiological mechanisms that regulate intestinal transit. Therefore, eating and drinking can exacerbate PSBD symptoms by stimulating the gastrocolic reflex. Some patients report a sudden and strong desire to defecate during meals, and they may also experience increased urgency and the tendency to cluster defecation after meals and fluids.

In our tropical climate, fluid intake is particularly important but the volume of fluid typically recommended (2 L per day) may cause loose bowel consistency and associated difficulty controlling the bowels. Therefore, we advise our patients to avoid rapid consumption of large volumes of hot or cold beverages, especially with meals, to decrease the stimulating effect. Instead, they are advised to maintain fluid intake by frequently drinking smaller amounts of cool fluids throughout waking hours.

Postoperative bowel function is influenced by the length of remaining bowel; individual adjustment; and some foods, nutrients, and additives. For example, stool consistency, frequency, and control are usually affected by the fiber and fat content of the diet, intake of alcohol, and consumption of smooth muscle stimulants such as caffeine. Bowel function is also influenced by intake of substances that tend to relax the anal sphincters, such as caffeine or theobromine in dark and milk chocolate, and artificial sweeteners that exert an osmotic effect such as sorbitol and mannitol. The modified bowel may also be more sensitive to foods and drinks with a low pH, spicy foods, and some chemicals and additives. We have found that some patients with PSBD complain that these substances cause bloating and discomfort that did not occur prior to surgery. Individual dietary recommendations are made, based on the patient’s history and symptoms and details of their usual diet and any suspected triggering substances that were recorded during the initial assessment session. For some patients attending our clinic, simply identifying reactions to specific foods or bowel irritants exerts a marked effect on bowel activity. Possible reactions are tested by detailed recording of the intake of food types and additives and concurrent bowel habits to monitor their effect. If a link appears to exist between diet and symptoms, reducing intake of these types of foods usually results in improved bowel function and patient comfort as bowel irritation decreases. If symptoms do not improve, referral to a dietitian may be beneficial. We have found that once bowel habits have settled, provocative foods can sometimes be slowly reintroduced to the diet without further adverse effect on bowel function.

Defecation frequency is a major problem for some patients with PSBD. Some of our patients report up to 30 bowel movements per day. Analysis of our clinical data does not support a significant relationship between fecal frequency and any specific type of surgical procedure, but patients who have had restorative proctocolectomy tend to report the highest median number of bowel movements per week. Individuals who experience severe frequency may decrease bowel intake or the number of times they eat per day in an attempt to decrease defecation frequency. Eating smaller meals and adjusting fiber intake may be helpful. Stool consistency also may be improved by reducing foods high in insoluble fiber to decrease intestinal bulk and peristaltic stimulation. Other patients benefit from increased soluble fiber intake by adding extra salads, fruit, and vegetables to their diet. The addition of soluble fiber firms the stools and slows its passage through the digestive tract. For some patients, a combination of these strategies is beneficial. Fiber supplements such as psyllium husk or guar gum may also help by firming and bulking the stools. Initially a small dose (1 teaspoon in half a glass of water) is taken daily or twice daily before meals and increased gradually as indicated.

If no improvement in stool consistency occurs with added dietary fiber or supplements, or the extra bulk is found to be counterproductive to continence, we have found that small doses of a dry fiber supplement may be added to meals or sprinkled on foods to provide an absorbent effect in the gut. This strategy improves stool consistency without creating a significant increase in bulk or requiring extra fluid intake with the fiber. However, fiber supplements, especially psyllium and ispaghula, may cause unwanted side effects such as bloating and flatulence, particularly in women. Because the response to fiber supplements is highly individualized, the type and dose of supplement and method of consumption must be closely monitored and adjusted for each patient with PSBD.

Although dietary changes may be necessary to improve consistency and control of stools, patients are nevertheless encouraged to enjoy a variety of foods to ensure a nutritionally adequate diet. If a particular food is found to cause problems, the patient can decide whether to include or avoid the item, especially before outings or social events. The combined effect of diet, fluid, and fiber intake is assessed at each visit and adjusted as necessary to optimize the patient’s response to treatment.

**Medications**

Medications often influence stool consistency, especially in those with PSBD. Stool consistency can be adversely
affected by a variety of drugs including antibiotics and nonsteroidal anti-inflammatory drugs; the oral hypoglycemic agent metformin; colchicines (prescribed for gout); and some antidepressant medications such as citalopram, venlafaxine, and sertraline.\textsuperscript{15,27} Careful questioning can reveal a link between starting a new medication, or changing the dose and timing of medication, and the onset or exacerbation of bowel elimination symptoms. The patient’s medications may need to be reviewed with their physician for alternative agents.

Antidiarrheal medications such as loperamide have been shown to be useful in regulating bowel function after hemicolectomy,\textsuperscript{28} ileoanal anastomosis,\textsuperscript{29} and restorative proctocolectomy.\textsuperscript{30} Loperamide is prescribed to firm stool consistency, decrease defecation frequency,\textsuperscript{31} ameliorate episodes of urgency,\textsuperscript{32} and improve continence.\textsuperscript{33} In our clinic, the use of antidiarrheal medication is not a routine treatment strategy. Loperamide is initially prescribed by the colorectal surgeon if symptoms of frequency, urgency, or incontinence are overwhelming or to assist with bowel control until patients’ symptoms improve with treatment. It may be taken approximately half an hour before meals. For example, loperamide may be prescribed as 2 mg twice daily or up to 4 mg 4 times daily. Alternatively, it may be taken as a 2 mg dose after each loose bowel motion, until stool frequency and consistency improve. The individual response to antidiarrheal medication varies, and patients are encouraged to adjust the timing and dosage of their drug to maximize effectiveness, without causing irregular bowel habits or fluctuating bouts of constipation and diarrhea.\textsuperscript{34} As bowel elimination symptoms improve and patients gain confidence, the dose of antidiarrheal medications is usually decreased. Some patients also benefit from cholestyramine, because it binds the bile salts that stimulate luminal secretion and promotes watery stools.\textsuperscript{35,36} Cholestyramine may be added to the treatment regimen when patients’ response to loperamide, dietary modifications, and biofeedback-assisted bowel retraining does not adequately improve stool consistency and decrease frequency.

**Emotional Support**

Our clinical experience strongly suggests that successful treatment of PSBD is influenced by the clinician’s empathy, understanding of the patient’s individual situation, including the range and severity of symptoms, ability to cope with symptoms, and response to treatment. Therapy sessions provide an adequate opportunity for most patients to discuss their bowel condition and possible strategies to help cope with their problems. However, others find their symptoms overwhelming, and they benefit from additional emotional support and advice from our hospital’s mental health counseling team. Practical advice is offered during treatment sessions and coping strategies are discussed that improve personal confidence. Specifically, patients are encouraged to discuss their daily routine and activities and any lifestyle modifications they have implemented. Patients are also advised to take note of any pattern in their bowel routine or any bowel signals that might precede an incontinent episode. Advice on skin care is given, including regular cleaning of the anal area after bowel movements or leakage using plain warm water or a nonscented alcohol-free product, and the use of a skin protectant and/or an antifungal or corticosteroid cream when indicated. The use of continence aids and products, including absorbent odor-reducing incontinence pads and pants, and useful ostomy products, such as deodorants and peristomal skin protectants, are discussed. Our patients are offered a booklet, which gives details of public toilet maps, and advice is also offered about using a practical portable “cleanup kit” that includes a nonalcoholic skin wipe, spare clothing, incontinence pads, and a large sealable plastic bag. The implementation of coping strategies usually leads to increased confidence and improved self-esteem, which our clinical experience suggests may precede increased control or a decrease in urgency or frequency. We have also found that increased confidence enhances the response to biofeedback, pelvic floor muscle training, bowel habit training, and encourages participation in social activities and exercise.\textsuperscript{35}

**Physical Activity**

People with bowel dysfunction often experience a loss of confidence when contemplating exercise or sporting activities, resulting in diminished physical fitness and well-being, and a less active social life.\textsuperscript{21} Therefore, we encourage patients to remain active or gradually increase their level of physical activity as bowel control and associated confidence improve. However, we also counsel patients that more vigorous exercises such as running, swimming, and cycling may stimulate bowel activity. They are further counseled that gentle exercise, such as walking, is a safer option until bowel function settles and control improves.\textsuperscript{36}

**Supplements**

Our clinical experience suggests that the use of certain herbal medicinal products may improve symptoms for some patients with PSBD. For example, patients have reported benefits from charcoal capsules for bloating and flatulence\textsuperscript{37} and from colostrum powder for pouchitis.\textsuperscript{38,39} We also recommend consumption of probiotics such as *Lactobacillus* sp and *Bifidobacterium* sp to restore normal intestinal flora, boost the bowel’s immune function, decrease flatulence, and improve stool consistency.\textsuperscript{40,41} Patients have also reported benefit from peppermint, which has been shown to inhibit intestinal spasms, relieve flatulence, and decrease abdominal pain and frequency.\textsuperscript{52,43} Ginger has been reported to reduce spasms and flatulence and to exhibit anti-inflammatory properties.\textsuperscript{44} Slippery elm is reported by some to soothe inflammation of the gastrointestinal tract and associated frequency and sensitivity
to irritating foods. A combination of zinc and magnesium (along with vitamin B6 as coenzyme to assist their assimilation) is recommended to promote a healthy gut mucosa, immune function, and normal gut motility. We especially encourage supplementation in patients with chronic diarrhea, which depletes these elements.

Postmenopausal women with PSBD may benefit from a topical estrogen to alleviate symptoms of urogenital atrophy. Estrogen increases tissue hydration and suppleness, which improves physical comfort and assists in strengthening the pelvic floor and sphincter muscles that provide bladder and bowel control.

Assessing Outcomes

Progress between appointments is monitored with daily bowel and exercise charts and a food diary. Charts are used to monitor the frequency and consistency of bowel movement; to encourage adherence to pelvic floor muscle training regimens; to evaluate the effect of diet and fluid intake on bowel habits; and to document any difficulty with evacuation, urgency, or incontinent episodes. Maintaining charts also provides patients with PSBD the tools needed to make self-directed modifications in lifestyle and to monitor the effect of these changes.

The general aims of our program are to encourage adequate intake of a variety of foods, while improving stool frequency, consistency, and control, and decreasing bowel reactivity, especially after eating. Nevertheless, each patient’s situation is unique, and goals are individualized. For some patients, identifying and improving one major problem or aspect of bowel function is the key to successful treatment. For others, alleviation of one symptom results in an increased awareness of other symptoms or issues. Results from our clinic show a 30% improvement in median HRQOL measured via the FIQOL, and a 48% improvement in median continence scores for 83% of patients over the median 7-week treatment period.

Summary

Each patient presenting for treatment of PSBD has a unique combination of symptoms and ability to cope with his or her symptoms. Our clinical experience treating complex patients with PSBD is reflected in 5 essential elements of therapy: (1) empathy, which enables the therapist to appreciate each patient’s individual situation; (2) education to increase the individual’s understanding of the anatomy, physiology, and postsurgery responses of the body; (3) empowerment through multiple behavioral interventions designed to improve HRQOL; (4) enthusiasm and a positive attitude to enhance confidence and HRQOL; and (5) endurance to encourage long-term adherence to muscle training, dietary, and lifestyle alterations needed to maximize treatment response and maintain the improvement.

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References


