Case Report

Managing a Patient's Constipation With Physical Therapy

Background and Purpose. Constipation is a prevalent condition in the United States, with typical treatment consisting of diet modification, stool softeners, and laxatives. These interventions, however, are not always effective. The purpose of this case report is to describe the use of abdominal massage in physical therapist management for a patient with constipation. Case Description. An 85-year-old woman with constipation was referred for physical therapy following unsuccessful treatment with stool softeners. The patient was instructed in bowel management as well as a daily, 10-minute home abdominal massage program. Outcomes. Upon re-examination, the patient reported a return of normal bowel frequency and function without the need to strain or use digital evacuation. Discussion. Physical therapy incorporating abdominal massage appeared to be helpful in resolving this patient's constipation. Unlike medical management of constipation, no known side effects have been identified with abdominal massage. [Harrington KL, Haskvitz EM. Managing a patient's constipation with physical therapy. *Phys Ther.* 2006;86:1511–1519.]

Key Words: *Constipation, Massage, Pelvic floor, Physical therapy techniques.*

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This case report describes the use of abdominal bowel stimulation massage in the physical therapist management of constipation in a patient whose symptoms did not resolve with traditional medical interventions.

Constipation is a common condition, affecting up to 27% of Americans[1] and resulting in more than 2 million physician visits annually.[2] It is most prevalent in women and people over the age of 65 years.[1] Studies have shown that constipation has a negative effect on an individual's quality of life[3] and increases the risk of colon cancer.[4] The Rome II Criteria for functional constipation has served as a diagnostic tool since 1999 and includes the areas of bowel frequency, consistency, and evacuation difficulties (Tab. 1).[5] Diagnosing constipation is difficult because constipation is a symptom rather than a disease, and its diagnosis is based primarily on the patient's perception of normal bowel function.[6]

The etiology for constipation is often multifactorial, possibly the sign of an underlying organic disease.[7] In addition, constipation may be attributable to lesions or structural abnormalities within the colon.[8] These abnormalities may result in compression or narrowing of the intestines and rectum, causing difficulty in passing stools.[8] Once disease and structural abnormalities are ruled out, 3 main subgroups of constipation exist: normal-transit constipation, defecatory disorders, and slow-transit constipation.[7]

Normal-transit constipation is the most prevalent subgroup of constipation. During this type of constipation, stools move through the colon at a normal rate, and stool frequency is normal, yet patients believe that they are constipated because of a perceived difficulty with evacuation or the presence of hard stools.[9] This subgroup of constipation is managed with dietary fiber, enemas, or laxatives.[7] However, many patients complain of side effects, such as flatulence, abdominal pain or cramping, bloating, or distension, associated with these interventions.[7] In addition, a significant correlation between laxative use and colon cancer has been identified.[4] Finally, one third of patients indicate that they are not satisfied with their medication management and continue to seek additional therapy.[10]

Another category includes defecatory disorders which are often the result of pelvic-floor or anal sphincter dysfunction.[7] Included in this category of defecatory disorders are pelvic-floor dyssynergia, spastic pelvic-floor syndrome, and anismus. With these disorders, the external anal sphincter contracts and tightens rather than relaxing and opening during defecation.[7] This category of constipation often is characterized by straining and incomplete bowel emptying.[7]

Therapy for defecatory disorders focuses on retraining pelvic-floor muscle functioning during evacuation.[11] Patients with defecatory disorders can be referred to physical therapists who are trained in managing pelvic-floor dysfunction for biofeedback training in order to regain normal pelvic-floor muscle functioning. Patients can be trained to relax their external anal sphincter during straining as well as to coordinate abdominal contractions to assist stool propulsion into the rectum.[11] With biofeedback training, an improvement of greater than 80% in the restoration of normal bowel function has been obtained.[12] Electrogalvanic stimulation also has been reported to be effective for the management of pelvic-floor dyssynergia by increasing rectal sensory function and improving the number of bowel movements each week.[13]

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Table 1.
Rome II Criteria for Constipation[a]

1. Bowel frequency of less than 3 times per week
2. Need to strain more than 25% of the time during defecation
3. Lumpy or hard stools for more than 25% of bowel movements
4. Sensation of incomplete evacuation or anorectal blockage for more than 25% of bowel movements
5. Need for manual maneuvers (digital evacuation or support of the pelvic floor) to facilitate more than 25% of bowel movements

[a] Two or more of these symptoms must be present for at least 12 (consecutive or nonconsecutive) weeks within a 12-month period.[5]

The third subgroup, slow-transit constipation, is a result of decreased neuromuscular function of the colon.[8] Slow transit of stools may occur at any point throughout the colon.[14] Medications can result in slowed colonic motility, causing infrequent or difficult bowel movements.[8] Systemic, metabolic, endocrine, or some neurological disorders can result in slow colonic function.[8] However, many times, the etiology for slow-transit constipation is unknown, and therefore the condition is considered idiopathic.[15] This subgroup of constipation is associated with symptoms of an infrequent urge to defecate,[16] bloating, and abdominal pain or discomfort.[7] In addition, dry, hard stools are often the patient's main complaint.[17] Therapy for slow-transit constipation is the same as that for normal-transit constipation. However, in severe cases of slow-transit constipation, when all other interventions have failed, colonic resection or ileorectostomy may be performed.[8] Common complications following surgery include small-bowel obstruction, incontinence, and diarrhea.[18]

With slow-transit constipation, moderate aerobic exercise has been found to have an effect on increasing gut transit but no effect on defecation frequency.[19] In addition, strength (force-generating capacity) training has been noted to accelerate whole-bowel transit time in middle-aged men who were previously sedentary.[20] However, the intensity of aerobic and strengthening exercises required to have these beneficial effects may be beyond the capacity of many older individuals.[21]

Abdominal massage for the management of constipation was used as early as 1870.[22] Over time, its therapeutic use faded. More recently, interest in abdominal massage as an effective intervention for constipation without known side effects has resurfaced.[23] However, one study found it to be ineffective. Klauser and colleagues[24] concluded that abdominal wall massage did not improve slow-transit constipation and, therefore, that abdominal massage could not be considered an alternative to laxative therapy for chronic constipation. However, what differentiates this study from later studies is that the abdominal massage was performed only 3 times per week over a 3-week period instead of daily over longer periods.[24]

Other authors[22,23,25] have reported benefits of abdominal massage. Emly[25] reported performing a daily abdominal massage to relieve constipation during physical therapy management for a 21-year-old man with cerebral palsy. The author stated that the etiology for this patient's constipation was related to severe abdominal spasticity. The therapist massaged the patient's spastic abdomen for 15 to 20 minutes daily in a path following the ascending, transverse, and descending colons. The patient spontaneously opened his bowels within a half hour after the massage without the need for enemas. The author concluded that abdominal massage was effective in decreasing abdominal spasticity and therefore in assisting the bowels in peristalsis.[25]

Richards[22] also used a type of massage to improve bowel function and decrease use of medication therapy for constipation. Richards, a nurse specializing in people with disabilities, instructed patients with various diagnoses to use a tennis ball to provide circular movements along the path of the colon for 10 minutes per day. The path described by Richards was similar to that described by Emly.[25] Significant differences were not found, possibly because of a limited number of participants (N=10); however, several patients had increased bowel movements and a reduction in the use of medication. Similar to Emly's findings, patients were found to have decreased abdominal spasticity, which the author believed resulted in increased intestinal motility.[22] In a case series by Preece,[23] the same abdominal massage technique that Richards used was found to be effective for patients in the hospice setting. These patients reported a decrease in abdominal distension and flatulence as well as a return to normal bowel function in as little as 4 to 6 weeks.[23]

The primary difference between the massage techniques used by Preece[23] and Richards[22] was that Preece used a gentle manual technique with lotion applied to the abdomen, whereas Richards used a tennis ball. As stated previously, no known serious adverse effects have been associated with abdominal massage. Currently identified contraindications for abdominal massage include known or suspected abdominal obstruction, abdominal mass, or abdominal surgery or radiation therapy within the preceding 6 weeks.[23]

Abdominal massage of the ascending, transverse, and descending colons may be effective in regulating bowel movements and decreasing medication used for constipation through improvements in intestinal motility when performed on a daily basis.[22] One case report on the use of abdominal massage during physical therapist

Table 2.
Medications Taken During Course of Physical Therapist Management and Possible Effects on Constipation

Medication	Diagnosis Associated With Prescription	Possible Constipation Side Effect[a]
Plavix[b]	Peripheral vascular disease	+
Baby aspirin	Hypertension	−
Lisinopril	Hypertension	+
Detrol[c]	Urge urinary incontinence	+
AcipHex[d]	Gastroesophageal reflux disease	+
Hydrochlorothiazide	Hypertension	+
Calcium	Osteoporosis	+
Zanaflex[e]	Lower-extremity cramping	+
Zocor[f]	Hyperlipidemia	+
Betoptic[g]	Hypertension	+
Plendil[h]	Hypertension	+
Toprol[h]	Hypertension	+
Uroqid acid	Recurrent urinary tract infection	−
MiraLax	Constipation	−

[a] +=possible side effect of constipation, −=not presumed to have a side effect of constipation.
[b] Bristol-Myers Squibb, PO Box 4500, Princeton, NJ 08543-4500, and Sanofi Aventis Pharmaceuticals, 300 Somerset Corporate Blvd, Bridgewater, NJ 08807-2854.
[c] Pfizer Inc, 235 E 42nd St, New York, NY 10017-5755.
[d] Eisai Co Ltd, 4-6-10 Koishikawa, Bunkyo-ku, Tokyo 112-8088, Japan.
[e] Elan Pharmaceuticals Inc, 225 Franklin St, Floor 26, Boston, MA 02110-2804.
[f] Merck & Co Inc, One Merck Dr, PO Box 100, Whitehouse Station, NJ 08889.
[g] Alocn, 6201 S Freeway, Forth Worth, TX 76134-2099.
[h] AstraZeneca LP, PO Box 15437, Wilmington, DE 19850-5437.

management for a patient with abdominal wall spasticity was found[25]; however, no physical therapy literature to date describes the use of abdominal massage in the physical therapist management of constipation. In addition, no current literature describes the use of abdominal massage for a patient who also has abdominal muscle weakness. The purpose of this case report is to describe the use of abdominal bowel stimulation massage during physical therapist management for a patient with constipation and abdominal muscle weakness. This case report also provides physical therapists with a simple management option for patients who have been identified through the systems review component of the initial evaluation to have constipation.

Case Description

Patient Description

The patient was an 85-year-old woman who was seen by a gastroenterologist because of progressively worsening constipation over several months. At the time of the physician consultation, the patient was prescribed MiraLax* to help soften the stools. Upon follow-up with the physician, the patient noted minimal improvement. The physician performed a sigmoidoscopy, and the examination was normal, with the exception of diverticulosis within the sigmoid. At that time, the physician recommended that the patient follow a high-fiber diet. Approximately 1 month later, the patient underwent defecography, the results of which were abnormal. The patient had 22% evacuation, with normal evacuation being 90%, as defined by the radiology report. No specific etiology for this patient's constipation was determined. The patient did not undergo a transit-time test to determine the function of the intestinal tract.

After the results of the defecography procedure were obtained, the patient was referred for pelvic-floor physical therapy services because of a lack of response to previous therapy. The patient reported that her bowel movements occurred once every 2 or 3 days, with hard, pellet-sized stools being passed. The patient continued the stool softeners prescribed by the physician. She also reported the need for excessive straining and that she was unable to pass stools without rectal digital evacuation. The patient was asked whether she had a history of suppressing the urge to defecate because this habit can result in slowed colonic transit.[26] The patient denied urge suppression. She scored the perceived severity of her bowel dysfunction with regard to her quality of life as 9 of 10, using a verbal rating score of 0 to 10, with 0 representing no effect and 10 representing substantial effect on the patient's quality of life.

The patient's past pelvic-floor medical history consisted of urge urinary incontinence for which she reported undergoing 5 or 6 visits of biofeedback training and Kegel exercises a few months prior to this examination. No improvement in symptoms was achieved at that time. She further stated that her constipation was present during the previous pelvic rehabilitation. At the time of her initial visit, the patient was still experiencing daily episodes of urge urinary incontinence. These symptoms required the daily use of 2 Poise pads,† which were damp to saturated when changed.

No other relevant past medical history was reported at the time of the examination. Table 2 outlines the patient's medications, their purpose, and whether they are associated with the possible side effect of constipa-

* Braintree Laboratories Inc, 60 Columbian St W, PO Box 850929, Braintree, MA 02185.

† Kimberly-Clark Corp, Department INT, PO Box 2020, Neenah, WI 54957.

tion. Although many of these medications could have a side effect of constipation, the patient reported that she had been on this drug regimen for years without any side effects. The patient's goal for pelvic-floor physical therapy was to regain normal bowel function without the need for digital evacuation.

Examination

A thorough physical therapist examination was performed in order to determine the relationship, if any, of the supporting pelvic structures to the patient's constipation. Gross muscle testing indicated overall weakness throughout the extremities, with weakness being greater in the left lower extremity than in the right lower extremity. The patient was able to ambulate short distances independently; however, she required the use of a single-axis cane for most long-distance and outdoor mobility. Upper abdominal strength was graded as 2/5, and lower abdominal strength was graded as 1/5.[27]

Next, a physical therapist urogynecological examination of the pelvic-floor muscles was performed. This examination was performed rectally with the patient lying on her left side, with her left lower extremity extended and with her right hip and knee flexed and the knee supported on a pillow. Upon palpation of the puborectalis and coccygeus muscles, typical resting tension was not felt and both of these muscles were considered to be hypertonic. Currently, there is no scale for assessing integrity and muscle tone of the pelvic-floor muscles. In addition, sensation to light touch or pressure was absent throughout the rectal canal. When the patient was instructed to perform a contraction of the pelvic-floor muscles, there was poor isolation of these muscles, and accessory muscle recruitment of the gluteal, hip adductor, and abdominal muscles was present. In addition, the patient used breath-holding techniques during pelvic-floor muscle contractions. As determined with the Brink pelvic-floor muscle strength scale, this patient displayed a pelvic-floor muscle strength grade of 5/12 (pressure=2, displacement of the vertical plane=1, duration in seconds=2) at the time of the initial evaluation.[28] The Brink scale has been shown to yield data with test-retest reliability (r=.65) and to have construct and convergent validity.[28] Following verbal cueing, the patient was asked to perform a Valsalva maneuver. Normal pelvic or rectal descent was noted, and this finding ruled out an outlet obstruction or paradoxical puborectalis etiology for this patient's constipation. In addition, the patient displayed a normal external anal sphincter reflex, as noted with the cough test.[29] Finally, as determined with the Baden-Walker system,[30] a rectocele, which could result in an outlet obstruction, was ruled out as a cause of her constipation.[31]

Evaluation and Diagnosis

The patient reported the presence of 5 of 6 diagnostic criteria, as defined by the Rome II Criteria for functional constipation.[5] This finding confirmed a true, versus a perceptual, presence of constipation. Review of the findings of the examination indicated that the patient had decreased pelvic-floor muscle strength, which probably resulted in decreased pelvic-floor muscle tone. Decreased pelvic-floor muscle tone has been found in patients with slow-transit constipation.[16] The decrease in pelvic-floor muscle strength most likely was contributing to the patient's urinary incontinence. The overall decreased extremity strength most likely resulted in her decreased ambulation status and further decrease in pelvic-floor muscle strength. In addition, the patient's decreased pelvic-floor muscle awareness most likely was related to the absence of sensation noted rectally. With the absence of sensation throughout the rectal canal, as well as decreased muscle tone, a neurological etiology resulting in slow-transit constipation was hypothesized for this patient's constipation.

Research has suggested that slow-transit constipation may produce changes in bowel nerves, resulting in decreased rectal sensation and leading to impaired rectal evacuation.[16] Because the patient did have appropriate pelvic-floor muscle descent during straining, as well as no evidence of a rectocele at the time of examination, slow transit of the feces within the colon rather than the presence of a defecatory disorder was hypothesized as an etiology for this patient's constipation. In addition, half of the medications that this patient was taking could result in slow colonic transit.[8] The patient's complaint of hard stools was consistent with slow colonic transit.[17] Research has noted that patients with a diagnosis of idiopathic constipation often are found later to have abnormal colonic motility, including rectal motility, causing possible fecal transit delay throughout the colon as well as the inability to evacuate rectal contents.[15] On the basis of these findings, a differential diagnosis of slow-transit constipation was made. Therefore, interventions for this patient consisted of therapies to increase bowel stimulation.

With slow-transit constipation suspected as this patient's diagnosis and the positive trends noted in previous literature for the use of massage to improve peristalsis, a good outcome from pelvic-floor physical therapy was anticipated. Goals consisted of a patient report of 0–2/10 for perceived severity of constipation and increased bowel frequency to every other day without the need for digital evacuation. Goals were expected to be achieved within 4 to 8 visits. Follow-up visits at 3- to 4-week intervals were recommended. Re-examination of the patient's symptoms of pelvic-floor muscle dysfunction was performed at each visit.

Intervention

The focus of therapy was on the patient's constipation; however, the patient's urinary incontinence also was addressed. Therapy began with educating the patient and her daughter in pelvic-floor anatomy and normal bowel and bladder function, including dietary irritants such as coffee, teas, and sodas. In addition, the patient was educated in toileting techniques to avoid straining during a bowel movement in order to decrease her risk of developing pudendal nerve dysfunction.[32] These techniques consisted of leaning forward while sitting on the toilet with her feet positioned on a step stool. This position decreases the anorectal angle, thus easing the evacuation of stools.[33] Another technique taught to the patient was to perform "huffing," that is, forced respiratory expirations, rather than straining during defecation. This technique activates the abdominal oblique muscles, which assist in the propulsion of stools.[33] The patient displayed good understanding of all educational material reviewed, without any barriers to learning being noted.

Next, the patient was instructed in a home exercise program consisting of 10 Kegel exercises to be performed in the supine (gravity-eliminated) position 3 times per day. For each Kegel exercise performed, the patient was instructed to hold the contraction for 3 seconds. This exercise was designed to strengthen the pelvic-floor muscles as well as to enhance the patient's pelvic-floor muscle tone to decrease urge urinary incontinence symptoms. In addition, gross strengthening of the trunk muscles was initiated for all muscle groups that attach to the pelvis. Daily exercises prescribed at the first visit were pelvic tilts, 20 times in the sitting position and 20 times in the supine position, as well as 10 abdominal bridges, which the patient was instructed to hold for 5 to 10 seconds each.

Finally, the patient was instructed in a propulsive abdominal bowel massage in order to promote bowel motility throughout the colon. This massage was performed by applying constant moderate pressure to the abdomen with 2 or 3 fingers. Small, clockwise circular movements were initiated at the right anterior superior iliac spine, which is located at the base of the ascending colon. The progression of the massage occurred cranially, up the ascending colon, toward the base of the rib cage, where it meets the transverse colon. The circular movements continued across the transverse colon toward the left upper quadrant of the abdomen and then down over the descending colon toward the left anterior superior iliac spine (Figure). Each pass of the massage was to take 1 minute, and the patient was instructed to repeat the massage 10 times per daily session. No specific time of day for the bowel massage program was prescribed. The choice of massage technique was adapted from the colonic massage described by De Domenico and Wood[34]; however, a kneading technique using the patient's fingertips rather than the palm of the hand was incorporated for ease of patient self-application. The duration of time for the massage was taken from Preece.[23]

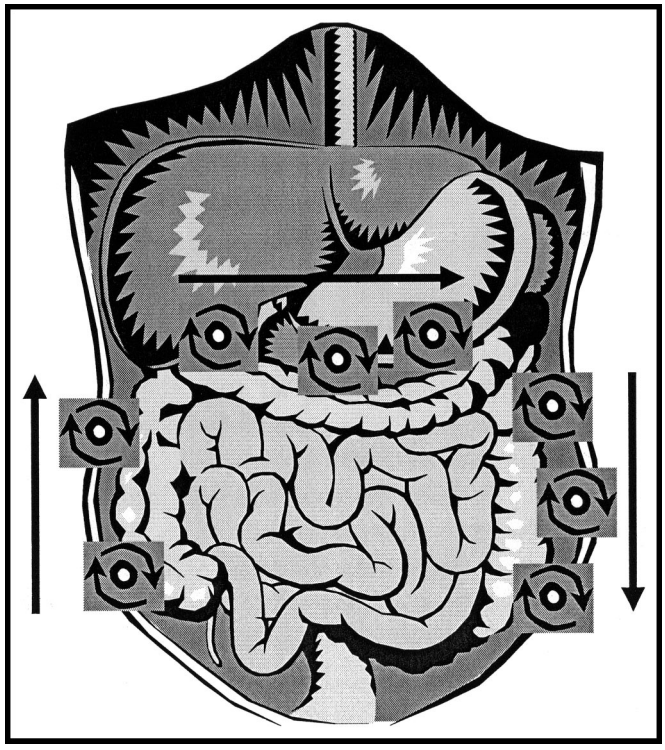

Figure.
Path of propulsive abdominal bowel massage taught to patient.

Subsequent follow-up visits consisted of re-examination of the pelvic-floor muscles as well as progression of the home exercise program to resolve the patient's urinary incontinence. In addition, the accuracy of performance of the assigned home program was monitored. Biofeedback training was performed in follow-up visits in order to increase the patient's awareness of the pelvic-floor muscles during strengthening activities. Biofeedback training did not address pelvic-floor muscle functioning during evacuation because the patient demonstrated adequate pelvic-floor descent and relaxation of the external anal sphincter during the initial examination.

Outcomes

The patient was re-examined on the fifth visit, which was 13 weeks after the initiation of therapy for her constipation (Tab. 3). Re-examination of pelvic-floor muscle strength was performed rectally and showed improvement from 5/12 (pressure=2, displacement of vertical plane=1, duration in seconds=2) during the initial examination to 7/12 (pressure=2, displacement of vertical plane=2, duration in seconds=3) at re-evaluation. In addition, the patient reported no longer having symptoms of constipation. She stated that she was mov-

Table 3.
Summary of Examination Findings

Examination	Rectal Pelvic-Floor Muscle Strength[a]	Bowel Frequency	Straining[b]	Digital Evacuation	Quality-of-Life Score[c]	Rectal Sensory Awareness
Initial	2/1/2=5/12	Every 2 or 3 d	+	+	9/10	−
Follow-up (13 wk)	2/2/3=7/12	Every 2 d	−	−	5/10	+

[a] A higher number indicates improved strength.[28]
[b] +=yes, −=no.
[c] A lower number indicates improved quality of life.

ing her bowels every other day without needing to strain or use digital evacuation. Instead, the patient was using the huffing toileting technique as instructed during her initial physical therapy visit. The patient also reported a return of normal rectal sensory awareness when needing to defecate. She continued to take 2 stool softeners per day. At re-examination, the patient scored the perceived severity of the constipation on her quality of life as 5/10 because of fear that the symptoms might return. She continued with physical therapy for an additional 3 months for her urinary incontinence. The resolution of the patient's constipation continued throughout those 3 months.

Discussion

Physical therapist examination findings for this patient suggested slow-transit constipation as a possible etiology despite the inconclusiveness of the medical diagnostic tests. Therefore, physical therapy for this patient focused on increasing fecal transit within the colon. Biofeedback training and electrogalvanic stimulation of the pelvic-floor muscles have been used to treat constipation related to pelvic-floor dyssynergia.[13,35,36] Both of these interventions have been found to increase rectal sensation, increase bowel movements, and therefore decrease the use of laxatives[13,35] even up to 1 year after therapy.[36] However, both biofeedback training and electrogalvanic stimulation have been found to have little or no effect on slow-transit constipation.[35,36] Therefore, neither one was considered an appropriate management option for this patient.

A more palliative management option, abdominal massage, was believed to be the most appropriate therapeutic option for this patient. Despite the lack of large-scale, randomized controlled trial studies yielding significant results, abdominal massage has been found to decrease colonic transit time.[22,23,25] Abdominal massage for bowel functioning is beneficial in increasing peristalsis in the gut. Other benefits include massage being a safe, noninvasive technique for managing constipation, and massage can be performed independently by the patient.[22] This independent form of therapy allowed this patient to be actively involved in managing her symptoms, thus addressing possible underlying psychological roots of constipation.[33] In addition, no known serious side effects are associated with abdominal massage, and limited contraindications exist,[23] making this form of therapy the most appropriate therapeutic option for this patient's constipation. A daily, 10-minute abdominal massage was prescribed on the basis of the positive findings reported by Richards.[22]

The return of a regular bowel movement regimen may have been related directly to the abdominal bowel stimulation massage. As suggested by a previous study,[37] women with slow-transit constipation have reduced rectal sensitivity. Therefore, a large volume of stool within the rectum is needed in order to elicit sensory awareness of the need to defecate.[37] By the patient massaging her colon, stimulation of the feces through the intestinal tract may have been enhanced, thus decreasing transit time, producing larger fecal volumes within the rectum, and resulting in increased sensory awareness of the need to defecate. In addition, the patient reported that she no longer required the use of rectal digital manipulation to pass stools, decreasing the likelihood that a defecatory dysfunction was the cause of her constipation.[7]

Ultimately, the patient's quality of life improved following the resolution of her constipation. The quality of life for a person with constipation can be greatly affected.[3,10,38] In fact, the mental impact of constipation has been found to be just as severe as that of end-stage renal disease.[10]

Because of the nature of case reports, ruling out a placebo effect on the resolution of constipation is not possible. A placebo effect is unlikely, however, because the patient did undergo management with a stool softener for several months without a resolution of symptoms. A limitation of this case report involves the inconclusive diagnostic tests that the patient underwent. The defecogram measured only the amount of rectal emptying and did not report on the anorectal angle, perineal descent during straining, presence of a rectocele, or total evacuation time.[39] The percentage of evacuation alone can be misleading without investigation of the evacuation time. The rate of rectal emptying is a better guide to rectal function than the percentage of empty-

ing.[40] A colonic transit test or an anorectal manometry test is important because research has shown that patients with abnormal defecography results also have an abnormality in one or both of these other tests.[41] Rao and colleagues[41] found that defecography adds little to clinical evaluation and that additional diagnostic tests are necessary to determine the etiology for constipation. In addition, when underlying disease or a structural abnormality has been ruled out and management with medication has been ineffective, a colonic transit or anorectal manometry test should be performed to further investigate the etiology and determine the appropriate therapy for constipation.[42]

As stated previously, underlying disease was ruled out as an etiology for this patient's constipation. In addition, she underwent a course of management with medication, which failed. Therefore, a colonic transit test should have been performed to further investigate the etiology for constipation. The results from a colonic transit test would have helped to confirm a decrease in transit time following the initiation of the abdominal massage. Finally, because this patient had an underlying diagnosis of urge urinary incontinence, physical therapist management for this patient could not be limited strictly to the abdominal massage. Therefore, therapeutic benefit from these additional interventions could be possible.

In order to validate the findings of this case report and further justify the use of abdominal massage in the physical therapist management of slow-transit constipation, an experimental research design is needed. This research design should include a measure, such as a radioisotope test,[14] in order to formally diagnose slow-transit constipation. The results of this radioisotope test should be compared with those of another radioisotope test performed after the initiation of abdominal massage therapy. The results of the 2 radioisotope tests would determine whether abdominal massage reduces colonic transit time.

Physical therapy incorporating abdominal massage appeared to be helpful in resolving this patient's constipation. No known associated side effects have been identified with abdominal massage, unlike medication and surgery for constipation. In addition, abdominal massage can be carried out as an independent home program with minimal physical therapy follow-up care and should be considered in physical therapist management for patients with slow-transit constipation.

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