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Clinical Expert Series CME

Management of Fecal Incontinence

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Nine percent of adult women experience episodes of fecal incontinence at least monthly. Fecal incontinence is more common in older women and those with chronic bowel disturbance, diabetes, obesity, prior anal sphincter injury, or urinary incontinence. Fecal incontinence negatively affects quality of life and mental health and is associated with increased risk of nursing home placement. Fewer than 30% of women with fecal incontinence seek care, and lack of information about effective solutions is an important barrier for both patients and health care professionals. Even among women with both urinary and fecal incontinence presenting for urogynecologic care, the rate of verbal disclosure of fecal incontinence symptoms remains low. This article provides an overview of the evaluation and management of fecal incontinence for the busy obstetrician–gynecologist, incorporating existing guidance from the American College of Obstetricians and Gynecologists, the American College of Gastroenterology, and the American Society of Colon and Rectal Surgeons. The initial clinical evaluation of fecal incontinence requires a focused history and physical examination. Recording patient symptoms using a standard diary or questionnaire can help document symptoms and response to treatment. Invasive diagnostic testing and imaging generally are not needed to initiate treatment but may be considered in complex cases. Most women have mild symptoms that will improve with optimized stool consistency and medications. Additional treatment options include pelvic floor muscle strengthening with or without biofeedback, devices placed anally or vaginally, and surgery, including sacral neurostimulation, anal sphincteroplasty, and, for severely affected individuals for whom other interventions fail, colonic diversion.

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Fecal incontinence is "the involuntary loss of liquid or solid stool that is a social or hygienic problem."[1] Although prevalence varies widely based on definition, several large, population-based studies of community-dwelling women estimate the prevalence of monthly fecal incontinence at 9% and less frequent fecal incontinence at 19%, which increases with age.[2–4] Because of the aging population, fecal incontinence prevalence is predicted to increase by 59%, from 10.6 million affected individuals in 2010 to 16.8 million affected individuals in 2050.[5] Risk factors for fecal incontinence in women include prior pelvic floor damage related to childbirth, surgery, diabetes, neurologic conditions, anoreceptive intercourse, urinary incontinence (UI), obesity, and disorders of chronic bowel disturbance, including irritable bowel syndrome, inflammatory bowel disease, and chronic diarrhea or constipation.[2–4,6–12] Incontinence of liquid stool is more common than incontinence of solid stool.

Even in patients with mild or infrequent symptoms, fecal incontinence negatively affects quality of life and is associated with increased risks of depression, shame, guilt, and social isolation.[6,13–16] Patients report a substantial effect of fecal incontinence on social activities, emotional health, travel, physical recreation, and feelings of frustration.[13,17] Patients with

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fecal incontinence are more likely to be placed in a nursing home, especially with increasing fecal incontinence frequency and severity of episodes.[18] Despite the existence of multiple noninvasive, efficacious treatment options, fewer than one third of women with fecal incontinence discuss their symptoms with a health care professional.[17] Seeking care is more common in patients with more severe fecal incontinence symptoms of longer duration.[13,17,19] Even among patients with both UI and fecal incontinence seeking urogynecologic care for their UI, symptoms of fecal incontinence are substantially less likely to be verbally disclosed.[19] Further, many patients with fecal incontinence who have attempted to seek care report that their health care professional dismissed concerns, did not provide hope, or did not offer solutions; fewer than 3% of patients with self-reported fecal incontinence receive a clinical diagnosis of fecal incontinence.[14,20,21]

PATHOPHYSIOLOGY OF ANAL CONTINENCE AND INCONTINENCE

Fecal continence is the result of complex interactions between the musculature of the pelvic floor and anal sphincter complex, the type and transit rate of stool, and a normally functioning central and peripheral neurologic system. Any disturbance to one or more of these can result in fecal incontinence; often women with fecal incontinence have more than one deficit in their continence mechanism. In general, a well-formed, soft stool is easier to sense and control than either loose or hard stools. Urge-associated fecal incontinence is more common in the setting of loose stools. The Bristol Stool Form Scale (Fig. 1) is a useful tool to describe and evaluate stool consistency, with types 3 and 4 representing optimal continence and defecation.[22]

The anal sphincter complex consists of an external anal sphincter made up of striated muscle under voluntary control and an internal anal sphincter made up of smooth muscle under involuntary control (see https://www.researchgate.net/figure/Components-of-the-anal-sphincter-The-puborectalis-acts-as-a-sling-to-pull-the_fig2_225877760). The internal sphincter is responsible for moment-to-moment continence and resting anal tone, and the external sphincter provides squeeze tone.[23] In the normal continence mechanism, when a bolus of stool is delivered to the rectum, stretch receptors in the rectum trigger the rectoanal inhibitory reflex, in which the internal anal sphincter relaxes and the external anal sphincter contracts. This process allows a sample of rectal contents to pass into the anal canal, which contains the nerves that sense whether these contents are solid, liquid, or gas.

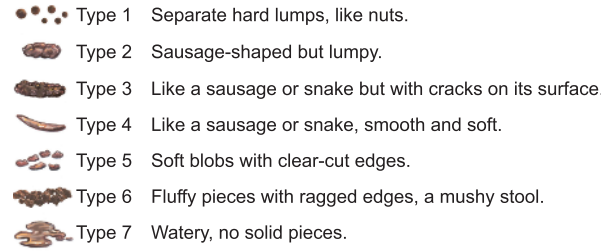

Fig. 1. Bristol Stool Form Scale. Images reprinted from the National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health. Stool types. Available at: https://www.niddk.nih.gov/news/media-library/8855. Retrieved June 16, 2020. The text in the figure is reprinted by permission of the publisher (Taylor & Francis Ltd, http://www.tandfonline.com) from Lewis SJ and Heaton KW. Stool form scale as a useful guide to intestinal transit time. Scand J Gastroenterol 1997;32(9):920–924.

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Ultrasound imaging of the anal sphincter complex has described distal, mid, and proximal portions of the sphincter (Appendix 1, available online at http://links.lww.com/AOG/B998). In the distal sphincter, only the external sphincter can be visualized; in the mid portion, both the internal and external sphincter can be visualized; proximally, the internal sphincter is seen.[24,25] The external anal sphincter overlaps the internal anal sphincter for a distance of approximately 2 cm. Three distinct regions of the external anal sphincter are identified on magnetic resonance imaging (MRI): the distal subcutaneous portion, a circular mid-portion, and two "wings" of the anal sphincter that interdigitate with the puborectalis muscle.[26] Although identification of these separate entities is challenging on physical examination, the close proximity of the external sphincter to the levator ani belies how these muscle groups work together.

The striated, voluntary puborectalis muscle is responsible for maintaining the anorectal angle. If the puborectalis muscle is hypertonic, the anorectal angle becomes more acute, which can lead to defecatory dysfunction and resulting overflow fecal incontinence. If the puborectalis is weakened, the anorectal angle becomes more obtuse, and fecal incontinence may occur because of decreased resistance between the rectum and anal canal. This decreased resistance may result in rapid delivery of rectal contents to the anal canal without activating the rectoanal inhibitory reflex to contract the external anal sphincter. Disruption of the puborectalis or anal sphincter may lead to fecal incontinence. These injuries may occur with spontaneous vaginal birth, but they occur more commonly with forceps-assisted operative delivery.[27]

Even in the absence of an obstetric anal sphincter injury, labor and delivery cause ischemia, stretching, and compression of neuromuscular tissues that contribute to incontinence. Women may not have symptoms for many years after sustaining an anal sphincter injury or after birth, because they have compensatory mechanisms that maintain continence.[28]

Aging contributes to the pathophysiology of fecal incontinence, with resultant loss in muscle mass and increase in comorbidities that challenge the continence mechanism. The presence of a rectocele may lead to stool trapping with subsequent incontinence, often with activity. Rectal prolapse may lead to incontinence because the rectal mucosa and muscularis carry stool beyond the anus and because chronic rectal prolapse can lead to dilation and poor functioning of the anal sphincter complex.[23]

Fecal incontinence may be passive or with urgency. Passive stool loss is thought to be secondary to neurologic dysfunction. If the rectoanal inhibitory reflex is disrupted, relaxation of the internal anal sphincter without concurrent contraction of the external anal sphincter can lead to fecal incontinence. Disorders of perception may also allow rectal contents to be expelled during this sampling process.[29] Stool perception may be altered because of neuropathy, aging, or prior trauma to the anorectum. The rectum is normally compliant to accommodate boluses of stool. When the rectum becomes noncompliant, normal rectal storage is disrupted and fecal incontinence can occur. Radiation therapy is an example of one process that can decrease rectal compliance.

Fecal incontinence with urgency is often related to changes in stool type and transit. Because of their consistency, loose stools are more difficult to contain and travel more rapidly. Disorders of bowel disturbance, particularly inflammatory bowel disease and irritable bowel syndrome with diarrhea predominance, are among the strongest risk factors for fecal incontinence.[2,30]

DIAGNOSIS AND EVALUATION OF FECAL INCONTINENCE

The American College of Obstetricians and Gynecologists recommends proactive screening for fecal incontinence among women with risk factors, including age 50 years or older, prior obstetric anal sphincter injury, engagement in anal intercourse, and relevant comorbid conditions, including UI, other pelvic floor disorders, chronic diarrhea, diabetes, obesity, and rectal urgency.[23] Qualitative research in women with fecal incontinence confirms patient preference that health care professionals inquire about symptoms.[21] The majority of patients with fecal incontinence prefer the term "accidental bowel leakage," so using this phrase may be useful.[2]

A detailed history should include bowel habits, consistency (eg, gas, liquid stool, or solid stool), fecal incontinence triggers, and relevant underlying medical conditions (disorders of chronic bowel disturbance, diabetes, neurologic disorders, prior cholecystectomy, history of anorectal intercourse, and prior anorectal trauma or injury through surgery, obstetric history, or radiation therapy). Use of validated instruments, bowel diaries, and the Bristol Stool Form Scale[22] can aid in further characterizing fecal incontinence symptom severity, effects on quality of life, potential triggers, modifying factors, and stool consistency. Because fecal incontinence is difficult to quantify in the clinic, reliance on patient-reported outcomes is critical to evaluate patient progress. Red flag symptoms, including worrisome changes in stool such as bright red blood per rectum or black, tarry stools, should prompt evaluation for malignancy regardless of patient age. Health care professionals should confirm that colorectal cancer screening is current in all patients aged 45 years or older.[31]

Physical examination should include rectal and pelvic examinations to assess for hemorrhoids, rectal masses, vaginal or rectal prolapse, and fistula.[23,32,33] Pelvic floor strength can be assessed with one or two gloved fingertips in the vaginal canal by asking the patient to squeeze or perform a Kegel. During digital rectal examination, the patient should be instructed to perform the Valsalva maneuver while a gloved index finger is inserted into the anus. The Valsalva maneuver should relax the external and internal anal sphincter muscles so that the examiner's finger perceives less tone than when the patient is instructed to relax. Resting tone (mostly from the internal anal sphincter) is assessed with the index finger in the anus after the patient has stopped the Valsalva maneuver; squeeze tone (external anal sphincter) is evaluated by instructing the patient to contract her muscles as if she is trying not to pass gas. Weakness in either the resting or squeeze pressures can result in fecal incontinence.

Ancillary testing is not necessary to initiate fecal incontinence treatment. Endoanal ultrasound imaging, defecography, dynamic MRI, anorectal manometry, and neurologic testing may provide assistance in patients with complicated cases that do not respond to conservative therapies.

Endoanal ultrasonography identifies defects in the internal and external anal sphincter muscles and is most useful in situations in which a patient has

undergone pelvic trauma and surgical repair of the sphincter is being considered. Endoanal ultrasound imaging allows lesions to be characterized as full or partial thickness and by degrees of disruption. Interrater and intrarater reliability remains an issue, but its relatively low cost and easy accessibility make it a reasonable diagnostic tool to consider. Some machines have the ability to reconstruct three-dimensional images, and translabial or transperineal approaches may reduce patient discomfort.[25,34] Anal ultrasonography is often used in preparation for surgical repair of the anal sphincter to identify the location and extent of anal sphincter defects.[35] We recommend performing endoanal ultrasound imaging before anal sphincteroplasty.

Defecography and dynamic MRI are specialized tests that can be considered to identify rectoceles and internal rectal prolapse and to visualize pelvic floor muscle activity during defecation. Magnetic resonance imaging can also identify defects of the anal sphincter and levator ani that may contribute to incontinence. These tests may be helpful when physical examination does not correlate with patient-reported severity of symptoms.[36]

Anorectal manometry assesses anal sphincter function at rest and with squeeze, although normal values have not been well-established.[33] It can provide information about anal sensory dysfunction.[37] The rectoanal inhibitory reflex is evaluated by rapid inflation and deflation of the balloon and is performed in the high-pressure zone of the rectum; a blunted rectoanal inhibitory reflex may suggest neurologic disease.[34] Anorectal manometry data do not always correlate with symptom severity nor provide consistent insight on whether a patient will respond to therapy[33,34,38,39]; thus, we do not recommend routine use of this test.

NONSURGICAL TREATMENT FOR FECAL INCONTINENCE

Figure 2 provides a suggested stepwise algorithm for clinical management of fecal incontinence. We recommend evaluating patients periodically while working through treatment to provide support, offer hope, evaluate response to interventions, and escalate treatment if indicated. Mainstay conservative management includes dietary manipulation, antidiarrheal medications, and pelvic floor physical therapy. Although only low-level evidence supports fecal incontinence conservative management, these interventions are associated with symptom improvement with little to no risk.[40] Fiber and antidiarrheal medications demonstrate benefit even in the setting of sphincter defects, making them ideal first-line interventions.[41] When patients with fecal incontinence were asked about symptoms important to them, they reported that stool consistency, frequency of loss, and amount of loss were critical to evaluation of their fecal incontinence. In addition, they identified predictability of fecal incontinence episodes, awareness of when fecal incontinence occurs, and evaluating the pain and discomfort that occurs with fecal incontinence as important.[42]

Although conservative interventions may not completely resolve fecal incontinence symptoms, they address these concerns and can improve quality of life. A randomized, controlled, modified crossover study combining fiber, loperamide, and biofeedback demonstrated significant decrease from baseline in the number of fecal incontinence episodes overall, as well as urge-associated fecal incontinence, passive fecal incontinence, and number of loose stools using bowel diary data.[41] Skin care to reduce irritation from stool leakage is helpful in symptom management. Many patients with incontinence have dry, irritated perineal skin. Soapless, nonirritating cleansers for delicate skin may be helpful. Moisturizers that also provide a skin barrier, such as dimethicone, lanolin, and petrolatum, should be considered. Such components are found in common products for infants (eg, A&D Ointment, Desitin) and also in perineal products for adults (eg, TEna, Coloplast Baza).

Dietary Manipulation

Optimizing stool consistency is an important goal in the treatment of fecal incontinence. The Bristol Stool Form Scale categorizes stools from type 1 (separate hard lumps) to type 7 (liquid consistency with no solid pieces), with stool types of 3 and 4 being ideal for continence.[22] Use of a standardized scale improves communication between physician and patient because personal definitions of stool consistency vary. Stools that are too hard may result in overflow fecal incontinence as well as incomplete evacuation, and stools that are too loose can result in inability to control boluses of fecal material that are delivered to the anorectum. For patients with constipation (stool types 1 and 2), increasing fluid and fiber typically will improve symptoms, with the addition of laxatives if needed. Patients with loose stool will improve with fiber and antimotility medications that make stools more formed.

Many patients do not eat adequate amounts of fiber and will benefit from a food diary to determine how much fiber and what types of fiber they consume from foods compared with supplements. Food diaries can also help identify triggers that should be avoided.

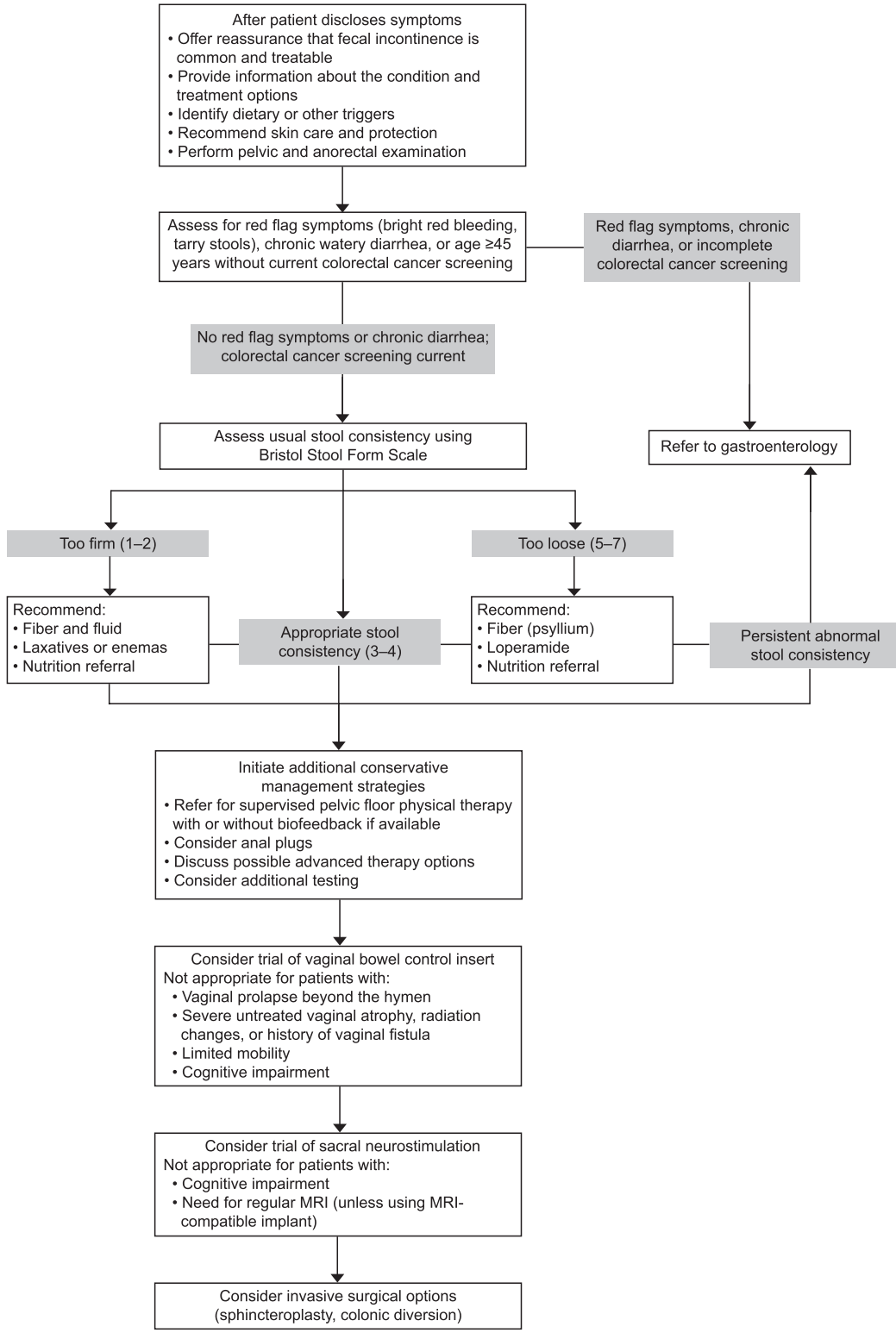

Fig. 2. Algorithm for management of fecal incontinence. Information for patients includes https://www.acog.org/patient-resources/faqs/gynecologic-problems/accidental-bowel-leakage and https://www.augs.org/assets/2/6/ABL.pdf. MRI, magnetic resonance imaging.

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Recommended daily fiber intake is 25 g for adult women under the age of 50 and 21 g for women aged 50 years or older.[43] Patients can check nutrition labels to ascertain the fiber content of foods they consume. Whole grain foods, fresh fruits and vegetables, legumes, and nuts all contain both soluble and insoluble fiber. A referral to a dietitian or clinical nutritionist can be helpful in evaluating dietary modifications to improve stool consistency. One serving of high-fiber cereal contains 10–12 g of fiber, and a serving of beans or legumes contains 8–12 g; helpful patient handouts with more information about fiber can be found at www.voicesforpfd.org and www.yourpelvicfloor.org.

A randomized controlled trial of dietary fiber supplementation for fecal incontinence in patients with loose stools found that 16 g of psyllium daily decreased the frequency of fecal incontinence episodes in both intent-to-treat and per-protocol analyses.[44] For reference, 1 rounded teaspoon of Metamucil contains 2.5 g of psyllium, so a patient would have to consume just more than 6 rounded teaspoons of Metamucil daily to get 16 g of psyllium. We recommend very gradual increases in fiber supplementation to avoid bloating and flatulence.

Medications

A number of antidiarrheal medications have been used to treat fecal incontinence in patients with frequent loose stools, including loperamide hydrochloride (Imodium), diphenoxylate hydrochloride–atropine sulfate (Lomotil), phenylephrine, amitriptyline, and clonidine.[23] Women vary widely in the dosing and use of these agents. Some women take a daily dose, and others take these medications only when they want added assurance that they will not have a fecal incontinence episode in a public setting. Patients should be cautioned that all these agents can result in constipation, so careful titration is suggested.

The FIRM (Fecal Incontinence Prescription (Rx) Management) trial showed reduced frequency of fecal incontinence episodes and improved quality of life in a randomized, double-blind, placebo-controlled crossover trial comparing loperamide with psyllium.[45] Constipation rates were higher with loperamide (29%) compared with psyllium (10%).[45] When used for acute diarrhea, loperamide dosing starts at an initial dose of 4 mg, followed by 2 mg after each unformed stool, to a maximum of 16 mg/d. Patients with fecal incontinence may start using a smaller dose (such as 2 mg) daily; in liquid formulation, even smaller doses can be administered. Loperamide has several advantages when compared with diphenoxylate hydrochloride–atropine sulfate, including improved efficacy, availability without a prescription, a more favorable safety profile, and less potential for dependence or abuse.[46] Careful use of laxatives and enemas can also be considered in those with fecal incontinence related to constipation and overflow, being mindful that overcorrection may result in further stool loss.

Physical Therapy With and Without Biofeedback

Pelvic floor exercises are often recommended for the treatment of fecal incontinence. Whether or not exercises are more effective than other conservative measures is unclear, but, given their low risk profile, they are recommended.[47] Biofeedback therapy is a neuromuscular training approach that includes real-time assessment of anal pressure changes during pelvic floor exercises.[37,48] Clinical trials evaluating the efficacy of biofeedback are conflicting, due in part to the lack of standardization of this treatment modality.[37] The type of feedback (digital, electromyography, manometric), interventionist approach, frequency, and duration all vary. A recent four-armed randomized trial found that oral placebo plus education only, placebo plus anorectal manometry-assisted biofeedback, loperamide plus education only, and loperamide plus anorectal manometry-assisted biofeedback all resulted in similar improvements in fecal incontinence.[49] Nonetheless, the authors recommend that a combination of interventions poses little risk and may result in patient symptom improvement.

The mnemonic RELIEF ("Routine lifestyle and routine bowel habits," "pelvic floor Exercises," "Live your life," "Imodium," "Effort to develop strategies and habits for you personally," "Fiber and Food diary") can be used in patient counseling to help improve recall of standard conservative fecal incontinence therapies. In a randomized trial, this mnemonic improved patient satisfaction and quality of life when used in patient counseling, and its use may aid both patients and health care professionals to remember first-line fecal incontinence treatments.[50]

Devices

Devices for fecal incontinence treatment, including anal plugs and a vaginal bowel control device, improve symptoms for more than 70% of patients who use them but have not yet been extensively studied. Anal plugs decrease fecal incontinence episodes but may be poorly tolerated, limiting widespread use.[23] A newer product, Renew anal insert, is a single-use, soft, flexible anal insert made of silicone. In

an observational study of 91 patients who used these inserts for 1–12 weeks, more than 75% achieved at least a 50% reduction in their frequency of fecal incontinence episodes.[51] More information about anal plugs and how patients can purchase them can be found at www.continenceproductadvisor.org. A prescription from a health care professional may be required.

A vaginal bowel control device is also available for fecal incontinence treatment. This device, the Eclipse System, must be fitted by a trained clinician and requires ongoing self-care for use. The device is fitted into the vagina and has a balloon that is inflated to obstruct the anal canal (Appendix 2, available online at http://links.lww.com/AOG/B998). The balloon is deflated for defecation. An observational study of 73 women found high patient satisfaction at 12 months, with 79.6% of women reporting that they were very much or much better on the Patient Global Impression of Improvement.[52] As with the anal plug devices, the risk profile of the vaginal bowel control device is low.

Posterior Tibial Nerve Stimulation

Neurostimulation improves urgency UI symptoms, and posterior tibial nerve stimulation is an outpatient form of neurostimulation investigated for fecal incontinence treatment. Stimulation can be delivered with either a needle electrode or an adhesive pad. Currently, the U.S. Food and Drug Administration has not cleared this product for fecal incontinence treatment in the United States. Two randomized trials have reported differing results on the efficacy of posterior tibial nerve stimulation for fecal incontinence treatment. Both trials used sham devices, important in the evaluation of posterior tibial nerve stimulation efficacy, because sham devices have a large placebo effect.[53] In a randomized, single-blind study comparing percutaneous, transcutaneous, and sham transcutaneous posterior tibial nerve stimulation administered twice weekly, patients in the percutaneous arm were more likely to experience a decrease from baseline of 50% or more in fecal incontinence episodes after 6 weeks than those in the transcutaneous active and sham treatment arms (81.8%, 45.5%, and 12.5%, respectively; $P=.04$).[54] However, in the CONFIDeNT (CONtrol of Fecal Incontinence using Distal NeuromodulaTion) Trial, women randomized to once-weekly sessions of active or sham posterior tibial nerve stimulation had similar reductions in fecal incontinence episodes from baseline after 12 weeks (38% vs 31%, respectively; $P=.4$).[55] Little is known about the frequency, interval, and intensity of stimulation to optimize results of this therapy. A large, randomized, sham-controlled trial is ongoing in the United States and should help to answer these questions.

Anal Canal Bulking

Anal canal bulking can be administered in an outpatient setting without anesthesia.[56,57] Injections are placed in multiple locations around the anal cushions to better seal the anal canal. A wide variety of substances has been used, including carbon-coated beads, polytetrafluoroethylene, collagen, autologous fat, and nonanimal stabilized hyaluronic acid–dextranomer. In many trials, individuals require repeat injection because effect diminishes over time, and little is known about long-term results. Both the American College of Obstetricians and Gynecologists and the American College of Gastroenterology suggest consideration of anal sphincter bulking injection as a short-term option in patients whose symptoms have failed to respond to other conservative management options.[23,32]

SURGICAL TREATMENTS FOR FECAL INCONTINENCE

Sacral Nerve Stimulation

Sacral nerve stimulation should be considered a first-line surgical therapy for fecal incontinence in patients with and without anal sphincter defects whose symptoms do not respond to conservative therapy.[23,32,33] Sacral nerve stimulation delivers pulsatile electrical current through an electrode placed in the third sacral (S3) nerve as it exits the sacral foramen. Although its mechanism of action remains incompletely understood, it can improve symptoms of overactive bladder, urinary retention, fecal incontinence, and constipation.[58] Sacral nerve stimulation is thought to improve bowel continence by stimulating pudendal afferent somatic fibers that normalize colonic motility and improve internal anal sphincter function.[59]

Sacral nerve stimulation requires a test phase before permanent implantation to ensure that the therapy will be effective. Patients are asked to keep a baseline symptom diary for a minimum of 1 week and again for 1–3 weeks after placement of an internal electrode that receives electrical pulses through an external stimulator. If a patient experiences at least a 50% decrease from baseline in fecal incontinence episodes during this stimulation trial, a sterile neurostimulator is implanted under anesthesia.[32,47] The landmark trial that demonstrated sacral nerve stimulation's safety and efficacy included 133 patients, of whom 120 (110 women) underwent sacral nerve

stimulation implantation.[60] Fecal incontinence episodes decreased from approximately nine to two per week, with more than 80% of patients meeting the threshold for at least a 50% reduction in the number of symptoms and 40% achieving complete continence.[60] The patients in this series were followed for 3–5 years, over which time symptom improvements persisted, but more than 35% underwent repeat surgery for device revision, replacement, or explant.[61,62] A 2015 Cochrane Database Systematic Review concluded that sacral nerve stimulation improves continence in a proportion of patients with fecal incontinence but does not improve symptoms in patients with constipation.[63] Although sacral nerve stimulation was initially tested in patients with an intact anal sphincter, subsequent trials have confirmed improvement in fecal incontinence symptoms even in patients with larger anal sphincter defects.[64]

Anal Sphincteroplasty

Anal sphincter disruption may occur after spontaneous and operative vaginal delivery, anorectal surgery, or pelvic trauma, and surgical reconstruction of these muscles may be attempted to restore anatomy and function. Although anal sphincteroplasty offers symptom improvement in the short term,[32,65–68] it rarely provides complete continence restoration.[69] Surgical complications include wound dehiscence, nerve damage, and infection and occur in approximately one quarter of patients,[65,67] with patients aged 50 years or older having worse outcomes.[65] Sphincteroplasty may worsen fecal incontinence symptoms, especially if rectovaginal fistula develops as a complication.

Although sphincteroplasty was once considered a mainstay therapy for fecal incontinence in patients with a prior obstetric anal sphincter injury, it has decreased in popularity with the emergence of sacral neurostimulation as a less invasive and more effective option, even in patients with a significant sphincter defect. Exceptions exist for women in the acute postpartum time period. When a young woman experiences fecal incontinence or fecal urgency symptoms immediately after vaginal birth, evaluation for perineal breakdown, anal sphincter separation, and fistula should be performed, and surgical intervention in these instances may be indicated. Immediately after delivery, careful examination of the perineum to identify and repair anal sphincter lacerations is important, because many severe lacerations are missed.[70] There are not data to suggest that an anal sphincter defect identified in an asymptomatic woman should be surgically corrected.

In a postmenopausal woman who experiences fecal incontinence symptoms remote from delivery, it is unlikely that a previously undiagnosed anal sphincter injury is the primary reason for her symptoms; thus, anal sphincteroplasty is not generally recommended. The American College of Gastroenterology guidelines recommend consideration of anal sphincteroplasty only for patients with fecal incontinence refractory to conservative therapies and with an anal sphincter defect.[32] The American Society of Colorectal Surgeons' guidelines state that sphincteroplasty may be offered to symptomatic patients with a defined defect of the external anal sphincter, based on moderate quality of evidence, but repeat anal sphincter reconstruction after a failed overlapping sphincteroplasty generally should be avoided unless other treatment modalities are not possible or have failed, based on low or very low quality of evidence.[33] The American College of Obstetricians and Gynecologists suggests sphincteroplasty "can be considered in women with anal sphincter disruption and fecal incontinence symptoms who have failed conservative treatments."[23] If anal sphincteroplasty is undertaken, both external and internal sphincter defects should be repaired and perineal reconstruction performed.

Surgical Correction of Other Pelvic Floor Defects

Obvious anatomic defects such as rectovaginal fistula, rectal or hemorrhoidal prolapse, fistula in ano, and cloaca-like deformities should be corrected as part of fecal incontinence treatment.[33] Rarely, fecal incontinence may be related to stool trapping in the setting of posterior vaginal wall prolapse, or rectocele, and some patients with fecal incontinence may benefit from posterior repair.[71]

Other Surgical Options

Continence can be reliably achieved only through colonic diversion, and, for select patients with severe, refractory, and bothersome fecal incontinence, colostomy is appropriate. Artificial bowel sphincter implantation may be considered before colostomy[32,33] but is associated with high complication rates and risk of explantation or revision.[72–74]

The Fenix Continence Restoration System is a small, flexible band of interlinked titanium magnetic beads on a titanium string placed around the anal canal using a perineal approach.[75] Robotic placement has also been described in the literature.[76] This device received a Humanitarian Device Exemption from the U.S. Food and Drug Administration in 2015 for patients who are not candidates for less invasive

treatment options or for whom those treatments have failed. A large multicenter randomized trial in the United Kingdom is currently being conducted to compare the efficacy of this procedure with sacral nerve stimulation.[77] There is currently limited evidence to support its routine use in the management of fecal incontinence.

CONCLUSION

Fecal incontinence is common, underdiagnosed, and undertreated, and its prevalence is anticipated to increase as the population ages. As obstetrician–gynecologists, we routinely discuss sensitive topics with our patients and are thus uniquely prepared to screen for fecal incontinence. We recommend inquiring about symptoms both in writing and verbally and using written disclosure as an opportunity to broach the topic. Many women who experience fecal incontinence have not heard the medical terms "fecal incontinence" or "bowel incontinence," so it is better to use simple, nonjudgmental language, such as "accidental bowel leakage" or "stool leakage." When a patient reports symptoms, she should be reassured that fecal incontinence is common, but not normal, and that treatments exist to improve her symptoms. The initial fecal incontinence evaluation requires nothing more than a thorough history and physical examination. Red flag symptoms or chronic diarrhea should prompt referral to a gastroenterologist. First-line management includes dietary changes, fiber supplements, and medications to optimize stool consistency and rate of delivery. Referral to pelvic floor physical therapy should be considered when feasible. Most symptoms will improve with these conservative options; for those with persistent symptoms, rectal or vaginal inserts, nerve stimulation, and surgical intervention can be considered. Sacral nerve stimulation should be considered first-line among surgical interventions, even among patients with an anal sphincter defect. Sphincteroplasty should be performed primarily for those women whose symptoms immediately follow trauma to the anal sphincter or with cloacal-like defects, given sphincteroplasty's high rate of complications and suboptimal durability of symptom improvement.

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