Medical Management of Fecal Incontinence in Challenging Populations: A Review

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Abstract

Keywords

- fecal incontinence
- anorectal dysfunction
- multiple sclerosis
- diabetes mellitus
- elderly

Fecal incontinence (FI) is a common and growing problem in the United States. Although there are multiple emerging novel interventions for the treatment of FI, the mainstay of initial therapy remains medical management. In this article, we review the available literature on the medical management of FI, with a special focus on patients with multiple sclerosis, diabetes mellitus, and the elderly.

CME Objectives: On completion of this article, the reader should be able to describe the medical management of fecal incontinence.

Fecal incontinence (FI) is defined as the inability to control the expulsion of fecal matter, or the involuntary passage of stool through the anus.^{1,2} It is subdivided into three subgroups: urge incontinence, passive incontinence, and fecal seepage.¹ Urge incontinence is the discharge of fecal matter despite attempts to actively avoid defecation. Passive incontinence is the involuntary passing of flatus or loss of fecal matter without awareness. Fecal seepage is the leakage of stool following normal evacuation.

Accurate reporting of the incidence and prevalence of FI is hampered by variations in the definition of FI and the populations studied. A recent analysis of the 2005 to 2006 National Health and Nutrition Examination Survey determined FI prevalence in the United States to be 8.3%, increasing with age.³ FI was prevalent in 2.6% of the 20 to 29 years old compared with 15.3% in the 70 years and older group. The management of FI poses a significant and growing health care burden in the United States, both within the community as well as in long-term care facilities. A study from 1995, for example, quotes the annual cost of adult diapers in the United States at \$400 million.⁴ In the long-term care setting, the annual cost of managing mixed urinary and FI in an institu-

tionalized patient was estimated at \$9,771 annually.⁵ This is in addition to other factors such as decreased quality of life and social dysfunction.^{1,6}

A variety of options are available for the management of FI, including medical, behavioral, and surgical. The initial approach to therapy in those with FI usually involves a combination of medical and behavioral interventions. Surgical intervention is usually considered after failure of one or more conservative treatment options, and is beyond the scope of this review. We have classified our recommendations (→ **Table 1**) based on the strength of the current evidence to help the readers make clinical decisions.

Medical Management—General Concepts

The first step in the management of FI is optimal management of any underlying medical conditions that may be contributing to the former. This involves withdrawal or minimization of any pharmacologic agents that may be exacerbating FI. It is also important to clarify FI as being the patient's chief complaint, as opposed to diarrhea or even constipation, as patients may confuse these terms in their initial reported history.

Once initial work-up is complete, we recommend as the next step in management a trial of conservative therapies, such as dietary or lifestyle modification. Dietary modifications

Table 1 Description of the grading system used to assign level of evidence

Level of evidence	Description
Level A	Data derived from multiple randomized clinical trials or meta-analyses
Level B	Data derived from a single randomized trial or nonrandomized studies
Level C	Consensus opinion of experts, case studies, or standard of care

include the addition of fiber and other related bulking agents to the patient’s diet. Lifestyle modifications include scheduled toileting and other behavior changes to preempt the occurrence of FI. Despite a paucity of large, well-controlled trials investigating the efficacy of these therapies, they are widely used and typically very well tolerated.

First, dietary supplementation with fiber has been shown in several studies to improve FI.^{7–9} Dietary fiber works primarily by bulking up watery stool, thereby decreasing the fluidity of the stool itself and thus making it easier for patients to remain continent. The actual degree to which dietary fiber improves FI remains unknown, as these studies often used fiber in conjunction with other pharmacologic agents such as loperamide. Still, these studies do suggest that fiber supplementation is usually well tolerated and can serve as a useful component of any regimen for FI.

Another conservative therapy option for FI is a scheduled toileting regimen whereby bowels are evacuated preemptively, thus lessening the chances of FI. This has best been studied in the nursing home setting. However, overall, there are few clinical trials that have examined the effect of prompted voiding on FI,^{10–12} with only one¹² demonstrating beneficial effects on FI frequency. In addition, the increased staffing time and attention needed to implement such a strategy for preemptively managing FI may be prohibitive.¹³

Recommendations

- Dietary fiber supplementation is a useful therapy in the management of FI (Level A).
- A scheduled toileting regimen may be useful for FI, and should be considered, if feasible, as part of a more comprehensive FI management strategy (Level B).

Pharmacologic Therapy

If conservative therapies fail to adequately control FI, the next step in management involves the selection of an appropriate initial pharmacologic agent. A variety of pharmacologic interventions for FI are currently available, although there is a relative paucity of large, well-designed controlled trials that have explored the efficacy of these various drugs in FI. The most recent Cochrane review from 2003 concluded that there is “little evidence to guide clinicians in the selection of drug therapies for FI.”¹⁴

The mainstay of medical therapy in FI has been antidiarrheal agents such as loperamide and diphenoxylate. Loperamide is a potent synthetic μ -opioid receptor agonist that has demonstrated effects in slowing small and large intestinal peristalsis, thereby increasing the transit time of effluent through the gut.^{15,16} Its utility in FI stems from additional studies that have established an independent effect of loperamide in increasing anal sphincter tone and reducing sensitivity of the rectoanal inhibitory reflex.^{17–19}

One of the main advantages of loperamide is the gut selectivity of its effects. Loperamide is well absorbed from the gastrointestinal tract, but it gets almost completely metabolized by cytochrome P450 in the liver (particularly CYP3A4), and subsequently excreted through the bile, thereby reaching only minimal levels in the systemic circulation.²⁰ Furthermore, despite being highly lipophilic, loperamide does not cross the blood–brain barrier, as it is actively shuttled out of the central nervous system (CNS) by virtue of being a substrate to P-glycoprotein,^{20–22} and thus it does not share the same CNS effects of other opioids.²⁰

Diphenoxylate is another opioid derivative that is helpful in the treatment of FI. It does cross the blood–brain barrier and can thus cause mild euphoria; it is distributed as a compound with atropine to reduce abuse potential.²³ In one double-blind crossover study comparing diphenoxylate to loperamide or codeine, diphenoxylate was found to be less effective than either loperamide or codeine in reducing fecal urge incontinence stemming from chronic diarrhea.²⁴ It is also associated with more CNS side effects than loperamide.²⁴

Another agent that has been tested in the management of FI is amitriptyline, a tricyclic antidepressant. There is only one small, open-label study that examined the efficacy of amitriptyline in FI.²⁵ In this study of 42 subjects, amitriptyline was found to significantly improve FI symptoms, postulated to be due to its effect in decreasing the amplitude and frequency of rectal motor complexes and increasing colonic transit time.²⁵

Topical application of phenylephrine, an α -1-adrenergic agonist, has been studied in several studies for its possible beneficial effects on FI. In healthy volunteers²⁶ as well as in patients with FI,²⁷ topical application of phenylephrine has been shown to improve resting anal sphincter pressure. However, its translation to clinical use has been stymied by mixed results from clinical trials of this agent: some studies have shown no significant clinical benefit in FI,^{28,29} whereas others have shown some improvement, specifically in those with an ileoanal pouch,³⁰ as also in post-irradiation FI.³¹

Cholestyramine, an anion exchange resin, has also been studied in the management of FI. A single study of cholestyramine use as an adjunct to biofeedback therapy versus biofeedback alone³² showed a significant decrease in the number of incontinence episodes in the cholestyramine adjunct group. Interestingly, the subjects who were part of the cholestyramine with biofeedback group had all tried and failed loperamide and/or diphenoxylate/atropine therapy in the past.

Recommendations

- The presence of FI should be verified by careful history, and efforts made to minimize any offending agents (Level C).
- Loperamide is a reasonable initial choice for FI (Level A).
- If the patient fails to respond to loperamide, alternative pharmacologic options may be tried, including cholestyramine or amitriptyline (Level B).
- Other alternatives, such as diphenoxylate/atropine or topical phenylephrine show less convincing efficacy against FI in comparison to other available agents, and may be tried after having exhausted other pharmacologic options (Level B).

Special Populations

Multiple Sclerosis

Case Scenario

A 49-year-old woman, an attorney, who was diagnosed 3 years ago with multiple sclerosis (MS), presents with complaints of episodic soiling of her underwear, with two episodes just in the past week. On further questioning, she also admits to periods of constipation over the past month.

Her MS is well controlled on immunomodulators, but she is very distressed about her incontinence symptoms, especially since they are hindering her daily work in the courtroom and asks for recommendations.

Anorectal dysfunction is a common complication in patients with MS, affecting up to 68% of patients.³³ Even in those with mild disease, FI was found in 24% of individuals.³³ This is one group of patients where it may be prudent to explore potentially iatrogenic causes of FI, as muscle relaxants, such as, baclofen that are commonly prescribed to treat muscle spasticity in this population have the potential to alter the response to rectal distention.³⁴ The management of FI in MS is also complicated by the frequent co-occurrence of FI with constipation.³³ Given this, antidiarrheal medications such as loperamide should be used with caution in such patients. Further, it may be prudent to routinely check for fecal impaction if such medications are used.³⁴

Behavioral training methods collectively referred to as “biofeedback therapy,” offer potential for reducing FI episodes and improving anorectal coordination, particularly in those with MS. The latest Cochrane review on biofeedback among the general population of FI patients found that data

Fig. 1 Algorithm for general management of fecal incontinence.

are lacking to definitively ascertain the therapeutic effect of biofeedback training.³⁵ Indeed, studies conducted on the effect of biofeedback among those with FI suffer from heterogeneity of technique protocols and outcomes measures that makes meta-analysis of their results difficult.^{1,2} Nonetheless, the current *American College of Gastroenterology* practice guidelines do advocate inclusion of biofeedback therapy for FI, given that these techniques are relatively safe and inexpensive (although labor intensive and usually limited to specialty care centers).¹ In patients with MS, biofeedback therapy has been studied in three small uncontrolled studies.^{36–38} Comparison among these studies, as in the biofeedback therapy literature at large, is complicated by the lack of consensus in terms of therapy techniques and outcome measures. Despite this, all three studies report an approximate 40% improvement in symptoms in those with MS with the use of biofeedback therapy.^{36–39}

Another intervention that has been studied for FI in the MS population is transanal irrigation. This involves the use of a rubber catheter inserted into the rectum as the patient is toiletied, with the infusion of tap water into the rectum. Once the catheter is removed, the irrigated water is voided with bowel contents.⁴⁰ Two trials have examined the use of transanal irrigation in managing FI in the MS population.^{40,41} The reported response rates in these two studies were 40%

and 53%, in line with the reported response rates of biofeedback therapy.

Recommendations

- Loperamide and other antidiarrheal medications should be used with caution in patients with MS, as their anorectal dysfunction is often characterized by a mixed picture of FI coexisting with constipation (Level C)
- Biofeedback therapy and transanal irrigation are both relatively safe therapies that may be beneficial in patients with MS, though the optimal treatment strategies utilizing these modalities have not yet been established (Level B).

Diabetes Mellitus

Case Scenario

A 62-year-old retired school teacher, with a long-standing history of poorly controlled type II diabetes mellitus (last hemoglobin A1C 11.0) complicated by diabetic neuropathy that requires the use of a motorized scooter for mobility, presents with new-onset FI.

FI is a common cause of morbidity among patients with diabetes mellitus. In one study, 20% of patients in specialty diabetes outpatient clinics reported FI.⁴² Furthermore,

Fig. 2 Algorithm for management of fecal incontinence in multiple sclerosis patients.

duration of diabetes for longer than 10 years may increase the risk of development of FI.⁴³ In addition, there seems to be a strong correlation between the use of metformin and the development of FI.⁴⁴ Despite these facts, there are very few studies that have examined the effectiveness of treatment for FI in the diabetic patient.

One study that examined the effect of biofeedback therapy in diabetic patients with FI found that among 11 patients, 8 experienced reductions in fecal soiling after therapy.⁴⁵ The authors' conclusion was that FI in diabetics was linked to decreased rectal sensation and/or impaired function of the external sphincter, and these abnormalities can be improved by biofeedback therapy.

Regarding specific pharmacologic therapy, there is a paucity of data available to guide drug therapy in diabetic

patients. As such, it may be reasonable to follow a similar approach to pharmacologic management of FI in diabetics as in those without diabetes.

Recommendations

- Consider switching metformin to another antiglycemic agent if medically appropriate (Level C).
- Biofeedback is safe and well tolerated by diabetic patients, and may offer some benefit in management of FI (Level B).

Elderly

Case Scenario

An 83-year-old man with a history of dementia, currently living in a long-term care facility, is noted to be frequently

Fig. 3 Algorithm for management of fecal incontinence in diabetes mellitus patients.

lying in soiled sheets when the nursing staff attends to him. It is difficult to assess his bowel habits, but the staff seems to think he may occasionally go days without having a solid bowel movement.

FI in the elderly patient provides a unique set of challenges for treatment and management. FI is a common problem among the elderly population, though prevalence estimates in the published literature have varied wildly. In the community setting, FI has been estimated at approximately 20%,⁴⁶ increasing to 50% or more in the institutionalized setting.⁴⁷ Often confounding the picture of FI in the elderly patients is the presence of fecal impaction with overflow incontinence.⁴⁸ In such patients, the key to alleviating FI may be the seemingly paradoxical use of laxatives and dietary fiber,^{7,49} as well as behavioral modifications such as regularly scheduled toileting.¹⁰

Other behavioral therapies, such as the biofeedback techniques previously discussed, have been minimally studied in the elderly population.⁵⁰ As biofeedback therapy relies on the intact cognitive function and cooperation on the part of the patient, it may not be the ideal therapy in the demented elderly.²

Finally, regarding pharmacologic options available for FI in the elderly patient, antidiarrheal medications may be tried once infection and fecal impaction/constipation have been ruled out as the source of the patient's incontinence.² Loperamide, being a gut-specific opioid, can be used as first-line therapy for the elderly patient.¹⁷ Diphenoxylate/atropine, as mentioned previously, has the potential to cross the blood–brain barrier and has been associated with anticholinergic effects, and so should be avoided if possible in the elderly patient.^{2,17} Similarly with most medications in the elderly population, it is prudent to start these agents at the lowest possible dose and slowly titrate to effect.

Recommendations

- Fecal impaction with overflow incontinence is a common cause of FI in the elderly patient, and so must be ruled out. Regular toileting with stool softeners, fiber, and laxatives may be helpful if fecal impaction is a concern (Level C).
- Biofeedback therapy may be helpful in this population, though the presence of dementia and other forms of

Fig. 4 Algorithm for management of fecal incontinence in elderly patients.

Table 2 Key points in the management of FI

FI is a common yet under-recognized problem that should be elicited based on a careful clinical history.
Every effort should be made to minimize any iatrogenic causes of FI.
Rule out fecal impaction with overflow incontinence as a potential source of FI, especially in elderly, institutionalized patients, and patients with MS.
For FI due to fecal impaction, the patient may benefit from laxatives, stool softeners, dietary fiber, and regular preemptive toileting.
Once impaction is ruled out, dietary and lifestyle modification may be tried as a first step, including dietary fiber supplementation and preemptive toileting.
For more severe cases, or cases refractory to conservative management, it is reasonable to try patients on loperamide as a first-line pharmacologic agent.
If the patient fails to respond to loperamide, alternative pharmacologic options may be tried, including cholestyramine or amitriptyline.
Diphenoxylate/atropine has the potential to cross the blood–brain barrier and has been associated with greater CNS side effects. Therefore it should be used cautiously in the elderly.
The effectiveness of topical phenylephrine is questionable based on currently available studies, and should be tried only after having exhausted other pharmacologic agents.
Biofeedback therapy is a relatively safe set of interventions that may be helpful for those with FI, including those with MS, diabetes, and the elderly, though its effectiveness is likely decreased in those with diminished cognitive function.
Transanal irrigation is another relative safe procedure that is well tolerated in those with MS and may also be helpful for FI.

Abbreviations: CNS, central nervous system; FI, fecal incontinence; MS, multiple sclerosis.

decreased cognitive function limit the effectiveness of therapy (Level C).

- If pharmacologic agents are being considered, we recommend loperamide over diphenoxylate, due to its gut specificity and inability to cross the blood–brain barrier (Level C).

Discussion

FI is a common yet often underdiagnosed malady that is a significant cause of morbidity among those afflicted and imposes a significant burden on the caregivers. Unfortunately, the body of literature that has examined therapy options for FI remains limited, and so therapy decisions are often guided by clinical experience and expertise.

In this review, we have attempted to consolidate the body of literature that is available on the various therapy options commonly used to treat FI, with special consideration given to patients with MS, diabetic patients, and elderly patients. As evidenced by the grades given to the recommendations throughout this article, this subject needs additional studies, preferably large, randomized controlled trials. On the basis of the best available evidence, however, we have made specific recommendations to help guide clinical decision making. Algorithms incorporating our recommendations are presented for the general case (►Fig. 1), as well as in MS (►Fig. 2), diabetes mellitus (►Fig. 3), and the elderly (►Fig. 4). Finally, ►Table 2 lists the key points of this review.

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Conflict of Interest

The authors have no conflict of interest to declare.

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