

A Biobehavioral Approach to the Treatment of Functional Encopresis in Children

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Abstract

Functional encopresis (FE) refers to the repeated passage of feces into inappropriate places at least once per month for at least 3 months. Treatment of FE targets the processes that cause or exacerbate the condition, including reduced colonic motility, constipation, and fecal impaction. The cardinal elements of successful treatment include “demystifying” the elimination process, bowel evacuation, stool softeners, prompts and reinforcement for proper toileting habits, and dietary modifications. Despite misinformation and misinterpretations of encopresis, the assessment and treatment of this condition actually represent one of the more successful achievements of behavior therapy.

Keywords: Encopresis, constipation, fecal incontinence.

Introduction

Functional encopresis (FE) is a common, under-treated and often over-interpreted elimination disorder in children. Although all forms of incontinence require evaluation and treatment, when left untreated FE is more likely than other forms, such as enuresis, to lead to serious and potentially life-threatening medical sequelae and impaired social acceptance, relations, and development. The reasons for the medical sequelae will be summarized briefly below. The primary reason for the social impairment is that soiling evokes more revulsion from peers, parents, and caretakers than other forms of incontinence (and most other behavior problems). As an example, severe corporal punishment for fecal accidents was still recommended by professionals in the late 19th century (Henoeh, 1889). Evidence-based practices in the treatment of FE have evolved substantially since then, but the approaches by lay persons (and still some professionals) have not kept pace. Children with FE are still frequently shamed, blamed, and punished for a condition that is most often beyond their control (Christophersen & Friman, 2004; Friman, 2003; Friman & Jones, 1998; Levine, 1982).

The definition of FE has remained relatively consistent across versions of the DSM; the DSM-IV (American Psychiatric Association, 1994) lists four criteria for FE: (1) repeated passage of feces into inappropriate places whether involuntary or intentional; (2) at least one such event a month for at least 3 months; (3) chronological age is at least 4 years (or equivalent developmental level); and, 4) the behavior is not due exclusively to the direct physiological effects of a substance or a general medical condition except through a mechanism involving constipation. The DSM-IV indicates that approximately 1% of five-year-olds meet the criteria for encopresis, and males are affected more frequently than females.

There are a number of classification schemes for encopresis, but the system most commonly used employs a retentive versus nonretentive dichotomy. Retentive encopresis is defined as fecal soiling with constipation and overflow incontinence, whereas nonretentive encopresis occurs without constipation and overflow incontinence (American Psychiatric Association, 1994). Christophersen and Mortweet (2001) describe constipation as the passage of large or hard stools, often accompanied by complaints of abdominal pain, infrequent bowel movements (fewer than three per week), the presence of abdominal masses upon physical examination, and emotional upset before, during, and

after defecation. Constipation is present in approximately 95% of children referred for treatment of encopresis, indicating that retentive encopresis is far more common than the nonretentive classification (Loening-Baucke, 1996).

Prevalence

Current prevalence rates for the occurrence of encopresis are scarce, and many commonly cited figures are based on studies conducted three or even four decades ago. Recent investigations indicate that the prevalence of encopresis is between 1% to 4% of children, depending on the source and age reported. A Swedish population-based study found that 0.6% of first grade students and 0.7% of fourth grade students experienced fecal incontinence (Soderstrom, Hoelcke, Alenius, Soderling, & Hjern, 2004). Encopresis was reported to occur in 4% of 8 to 12-year-old children in South India (Hackett, Hackett, Bhakta, & Gowers, 2001) and 3% of children between 3 and 12-years-old in the United States (Bloom, Seeley, Ritchey, & McGuire, 1993). Van der Wal, Benninga, and Hirasing (2005) indicated that the prevalence of encopresis was 4.1% in 5 to 6-year-old children and 1.6% in 11 to 12-year-old children in Amsterdam. The percentage of affected children in each age group who had consulted a physician, however, was only 38% and 27%, respectively, suggesting that prevalence rates based on physician referrals may be gross underestimates.

Underlying Process

Successful treatment of FE targets the processes that cause the condition or exacerbate stooling difficulties, including reduced colonic motility, constipation, and fecal retention, and the various behavioral/dietary factors contributing to these conditions, including: (1) insufficient roughage or bulk in the diet; (2) irregular diet; (3) insufficient oral intake of fluids; (4) medications that may have a side-effect of constipation; (5) unstructured, inconsistent, and/or punitive approaches to toilet training; and (6) toileting avoidance by the child. Any of these factors, singly or in combination, places the child at risk for reduced colonic motility, actual constipation, and corresponding uncomfortable or painful bowel movements. Uncomfortable or painful bowel movements, in turn, negatively reinforce fecal retention, and retention leads to a regressive reciprocal cycle often resulting in regular fecal accidents. When the constipation is severe or the cycle is chronic, fecal impaction may result from the collection of hard dry stool on the colon rectum. Not infrequently, liquid fecal matter will seep around the fecal mass, producing "paradoxical diarrhea." Although the child is actually constipated, the watery, foul-smelling leakage produced can be misdiagnosed as diarrhea. In such cases, parents may inadvertently worsen the problem by administering over-the-counter antidiarrheal agents (Christophersen & Mortweet, 2001; Levine, 1982).

In a minority of cases, fecal incontinence does not involve problems with colonic motility or constipation. For these children, fecal incontinence is characterized by regular, well-formed, soft bowel movements that occur somewhere other than the toilet. The process underlying these cases is not well understood except that they tend to be treatment resistant (Christophersen & Friman, 2004; Friman, 2003; Friman & Jones, 1998; Landman & Rappaport, 1985).

Assessment

The therapist faced with an encopretic child should essentially go no further with treatment until the child has received a medical evaluation. Table 1 displays a series of steps, beginning with

assessment, which outline a comprehensive biobehavioral treatment. The medical evaluation will typically involve a thorough medical, dietary, and bowel history. In addition, abdominal palpitation and rectal examination are used to check for large amounts of fecal matter, very dry fecal matter in the rectal vault, and poor sphincter tone. Approximately 70% of constipation can be determined on physical exam and detection can be increased to above 90% with a KUB (x-ray of kidneys, urethra, and bladder) (Barr, Levine, & Watkins, 1979). The medical risk posed by fecal matter accumulating in an organ with a limited amount of space is serious, and children's colonic systems can become painfully and dangerously distended, sometimes to the point of being life threatening (McGuire, Rothenberg, & Tyler, 1983).

Table 1
Sample Biobehavioral Treatment Plan

1. Refer to appropriately trained physician for evaluation.
 2. Demystify bowel movements and problems and eliminate all punishment.
 3. Completely evacuate bowel. Procedures are prescribed and overseen by physician.
 4. Establish regular toileting schedule. Ensure that child's feet are on a flat surface during toileting.
 5. Establish monitoring and motivational system.
 6. Provide feedback. Praise attempts and successes, and require child participation in clean up for accidents.
 7. Teach appropriate wiping and flushing.
 8. Implement dietary changes that include regularity of meals and increases in fluid and fiber intake.
 9. Utilize facilitative medication. What, when, and how much to be established by physician.
 10. Establish method for fading facilitative medication.
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Certain medical conditions can also be identified during a thorough examination. The most common organic cause of bowel dysfunction is Hirschsprung's disease, a condition involving segments of non-nerved tissue in the colon. Many symptoms of Hirschsprung's disease are rarely seen in children with encopresis. For example, fecal incontinence is rare in children with Hirschsprung's disease, whereas soiling is the primary symptom associated with encopresis. Therapists are encouraged to consult publications that further compare and contrast the two disorders (Christophersen & Mortweet, 2001; Levine, 1981). In addition, slow or absent weight gain in children who are below age expected weight levels may indicate a malabsorption syndrome and thus require specialized medical treatment (Barr et al., 1979).

Initial evaluation should also include a thorough psychological history. In a small percentage of cases FE is secondary to extraordinary emotional disturbance and thus resistant to behavioral/medical treatment focused primarily on FE (Landman & Rappaport, 1985). In such cases, the emotional condition may be a treatment priority especially when there is no evidence of constipation or fecal retention. It should be noted, however, that although some children with FE also have psychological problems, the incidence of clinically significant levels of behavior problems in encopretic samples is simply too low to suggest a causal relationship between the two conditions (Friman, Mathews, Finney, & Christopherson, 1988; Gabel, Hegedus, Wald, Chandra, & Chiponis, 1986; Loening-Baucke, Cruikshank, & Savage, 1987). Thus, targeting psychological problems in order to obtain fecal continence would seem imprudent from the perspective of the scientific literature. Rather, when FE and behavioral/psychological problems co-occur, they often have to be treated separately. For example, children who have poorly developed instructional control skills are at risk for being noncompliant with treatment and thus instructional control training may need to precede or accompany treatment for FE.

Assessment toward the management of encopresis should include a review of the child's medical history, toileting habits, and bowel movements, with particular attention to symptoms of constipation. Any prior interventions attempted by primary care physicians, other professionals, and the child's parents should be discussed, including an assessment of punishment history (e.g., Does the child hide soiled clothes?), parent motivation, and child motivation. Last, the interview should include questions about the child's diet and timing of meals, as a low-fiber diet and irregular eating schedule may contribute to encopresis (Christophersen & Mortweet, 2001; Christophersen & Friman, 2004; Friman, 2003; Friman & Jones, 1998).

Treatment of Retentive FE

Demystification. Although the child is the target of treatment, the parent or guardian is the delivery agent and thus the primary recipient of the information about treatment. With the child present, the therapist should discuss treatment in general terms, express optimism about potential outcomes, and "demystify" the elimination process (Levine, 1982). In most cases, the parents (and child) will benefit from viewing a diagram of abnormal bowel functioning that (a) describes how each element of treatment works and (b) communicates clearly that the child's bowel problems are not intentional or the result of stubbornness, immaturity, or laziness. It is essential that parents understand that FE should no more be a target for censure and blame than should a disordered process of respiration, digestion, or motor movement. As indicated above, the literature does not reflect a significant association between psychological profiles and child bowel problems. Thus, any punitive parental responses towards fecal accidents, whether perceived as intentional or unintentional, should be terminated. Requesting a verbal commitment to this effect from the parent, in the presence of the child, may substantially increase child motivation to participate.

Bowel evacuation. A critical step in the inauguration and continuation of effective treatment is complete bowel evacuation. The ultimate goal for treatment is for this step to be completed regularly by the child. At the beginning of treatment, however, they are usually unable and thus the process must be initiated by caregivers. Needed is a full cleansing of the bowel of resident fecal matter and this is accomplished using a combination of enemas, suppositories, or laxatives. Although the therapist can assist with the prescription of these (e.g., with suggestions about timing, interactional style, behavioral management, etc.) the evacuation procedure must be prescribed and overseen by

the child's physician. Typically, evacuation procedures are conducted in the child's home, but hospitalization may be necessary if constipation is extremely severe or home compliance is likely to be poor. The ultimate goal, however, should be complete parent management of evacuation procedures, because these techniques are to be used whenever the child's eliminational pattern suggests excessive fecal retention (Christophersen & Mortweet, 2001; Levine, 1982).

Toileting schedule. Once fecal matter has been successfully evacuated, the parent and therapist should choose one or two regular times per day (5-10 minutes) for the child to attempt bowel movements, regardless of the child's perceived "urge" to defecate. The time should not be during school hours, because unpleasant social responses to bowel movements in the school setting may negatively reinforce retention. Choices among the times that remain (morning, afternoon, or evening) should be guided by the child's typical habits and child-parent time constraints. Establishing a time shortly after food intake may increase chances of success through the influence of the gastro colonic reflex. The time the child is required to sit on the toilet should be limited to 10 or fewer minutes in order to avoid unnecessarily increasing the aversive properties of the toileting experience. The child's feet should be supported by a flat surface (e.g., floor or a small stool) to increase comfort, maintain circulation in the extremities, and facilitate the abdominal push necessary to expel fecal matter from the body. During the initial week, parent modeling of the "Valsalva maneuver" (grunting push necessary to produce a bowel movement) may be used to facilitate skills and avoid the perception of punishment (Cox, Sutphen, Ling, Quillian, & Borowitz, 1996). Allowing children to listen to music, read, or talk with the parent can improve child attitude toward toileting requirements. Generally, toileting should be a relaxed, pleasant, and ultimately private affair.

Monitoring. Frequent monitoring will allow for early detection of accidents, assessment of progress, and multiple opportunities for praise. Two levels of monitoring are usually employed. First, a regular "pants check" should be conducted by parents that results in praise when pants are accident free and a cleaning routine when they are not. Second, a daily record of toileting successes and accidents, along with the size and consistency of both should be documented. Recording is made easier by providing the parent with a user-friendly data sheet (Friman & Jones, 1998).

Feedback. If the child has a bowel movement in the toilet, he or she should be praised and, in the early stages of treatment, provided with a salient reward (e.g., stickers, grab bag). Performance feedback in the form of a dot-to-dot chart, with a prize awarded when all dots are connected, may also be employed (Christophersen & Friman, 2004; Friman, 2003; Friman & Jones, 1998). Children should earn praise and rewards for any bowel movements in the toilet, even if they had a prior accident. If the child does not have a bowel movement, their effort should be praised and another session should be scheduled for later in the day. Accidents, on the other hand, should not be the object of punishment or criticism. Rather, the child should participate in cleaning up the mess that has been made. With younger children, a one-step procedure that involves merely bringing soiled clothing to the laundry area may be sufficient. With older children, the cleaning routine may include complete management, including loading the laundry, cleaning their person, and redressing (Reimers, 1996). Regardless, parents should use a neutral and matter-of-fact tone and refrain from verbal reprimands when directing these consequences.

In treatment resistant cases, however, mild aversive consequences are sometimes used. Although there is little documentation of their effects, there is ample evidence of their use. A procedure called positive practice involves intensive practice of appropriate toileting behaviors following detection of an accident. One example of this type of overcorrection procedure includes a series of 'dry run' trips to the bathroom from locations near detection of the accident (Christophersen & Mortweet, 2001).

Cleanliness training. Successful toileting is a complex arrangement of small tasks and two that are critical to overall success but often overlooked in fecal incontinence programs are wiping and flushing. The therapist should provide the parents instructions on how to motivate and teach children to complete these tasks.

Dietary changes. Diet often plays a causal role in FE and dietary changes are almost always part of treatment (Stark, Owens-Steely, Spirito, Lewis, & Government, 1990; Williams, Bollela, & Wynder, 1995). Fiber increases colonic motility and the moisture in colonic contents and thus facilitates easier and more regular bowel movements. Fruits, vegetables, bran-based cereals, peanut butter, and unbuttered popcorn will appeal to even the most finicky eaters. To aid the parents, therapists should provide an educational handout outlining the actual grams of dietary fiber per (Christophersen & Mortweet, 2001), as well as a guide for over-the-counter preparations with dense fiber content (e.g., Metamucil, Perdiem).

Facilitating medication. Successful treatment of FE will almost always require inclusion of medications that soften fecal matter, ease its migration through the colon, and/or aid its expulsion from the rectum. The most frequently used substance is mineral oil, either alone or in combination with other ingredients, such as milk of magnesia. Although there has been some concern regarding the possible deleterious effects of such lubricants on child nutritional status, recent research has not detected any negative effects (Christopherson & Mortweet, 2001). Prescription of the substance (and the type) is the physician's prerogative, but therapists can monitor and ensure compliance. Children will often resist the odd taste and texture of these substances, and it may be necessary to mix the laxatives with a preferred juice.

In rare cases, a more invasive substance such as glycerin suppositories are prescribed by physicians, because their use increases the predictability of bowel movements and reduces the likelihood of an out-of-home accident. It is recommended that suppositories be used in the following sequence. Prior to the meal closest in time to the regularly scheduled toileting, the child should attempt a bowel movement and, if successful, no suppository is given. If unsuccessful, the suppository should be inserted by the parent, and another attempt made after the meal. Suppositories will often lead to child resistance, but therapist can assist the process by teaching the child relaxation skills and providing parents with instructional and motivational procedures to enhance compliance.

Fading facilitative medication. After the child is routinely accident free and achieving successful bowel movements in the toilet, a withdrawal of facilitative medication may begin. A frequently used withdrawal method is to eliminate the medication one day a week, contingent upon a series of 14 consecutive accident free, successful toileting days. The child may be allowed to choose the day. This system should continue, as the child and parent negotiate a gradual decrease in the criterion number of successful days, until the medication is completely faded out.

Evidence of Effectiveness

The genesis of combined medical/behavioral approaches to managing encopresis was Murray Davidson's three-phase treatment protocol (Davidson, 1958). The regimen involved cleaning out the colon with enemas and putting the child on a daily dose of mineral oil. Next, diet management included a decrease in dairy products and increases in fruits and vegetables, while eliminating enemas and establishing successful bowel habits. The final phase involved the gradual fading of mineral oils. Initial evaluation revealed a 90% success rate (Davidson, Kugler, & Bauer, 1963).

During the past 20 years, several descriptive and controlled experimental studies have established the efficacy of multi-component biobehavioral approach, based largely on Davidson's pediatric regimen, which is now listed among empirically supported treatments by the *Journal of Pediatric Psychology* (McGrath, Mellon, & Murphy, 2000). This literature indicates that a relatively simple treatment consisting of bowel evacuation, stool softeners, and positive reinforcement of toileting routines is an appropriate first-step approach (Wright, 1975; O'Brien, Ross, & Christopherson, 1986). A group format for delivering parent education components has also been highly successful (Stark et al., 1990) as has an interactive internet based program (Ritterbrand et al., 2003).

Relatively few studies have compared the isolated or additive effects of medical or behavioral treatment components. Two studies by Cox and colleagues (Cox et al., 1996; Cox, Sutphen, Borowitz, Kovatchev, & Ling, 1998) compared the additive effects of laxative therapy, enhanced toilet training, and biofeedback. Enhanced toilet training included the gradual reduction of laxatives, parent education, incentives for proper toileting routines, as well as modeling and instructions on defecation straining (e.g., constriction of the external anal sphincter). Results of both studies supported a combination of intensive laxative therapy and enhanced toilet training. Importantly, reductions in encopresis were also associated with increases in the frequency of bowel movements, which is consistent with the assumption that encopresis is a function of constipation and overflow incontinence.

At least two studies have undermined the concern that direct treatment approaches target only the symptoms of FE, and thus may produce behavioral or psychological side effects (e.g., symptom substitution). The first study used a behavioral inventory conducted before treatment, post-treatment, and at 3-year follow-up to compare a group of treatment responders and non-responders to determine whether any significant symptom substitution occurred in children cured of FE (Levine, Mazonson, & Bakow, 1980; Young, Brennen, Baker, & Baker, 1995). Both studies concluded that successful treatment was not accompanied by any problematic behavioral side effects.

Nonretentive Encopresis

Treatment of nonretentive FE (without constipation) is not well established, thus recommending an optimal course of treatment is premature. The nonretentive encopretic child has only one or two accidents a day, with normal stool size and consistency. Virtually all investigators who have described this subsample of children report emotional and behavioral problems and treatment resistance (Landman & Rappaport, 1985), thus the best approach would begin with a comprehensive psychological evaluation that includes behavioral assessment techniques. Treatment for this subgroup has employed combinations of medical and behavioral strategies, with a particular emphasis on supportive verbal therapy (Landman & Rappaport, 1985) and parent management of children's misbehavior (Stark et al., 1990). Clearly, the various behavioral challenges warrant some form of treatment, but the soiling itself needs direct treatment as well.

Conclusion

FE is a commonly observed condition that has been misunderstood, misinterpreted, and mistreated for centuries. Recent studies, however, have led to a biobehavioral understanding of FE's causal conditions and an empirically supported approach to its treatment. The biobehavioral approach addresses the physiology of defecation primarily and addresses the psychology of the child as a set of variables that are not causal but can be critical to active participation in treatment. Although evaluation and treatment of

FE absolutely require the direct involvement of a physician, ideal management involves a partnership between the physician, therapist, and family. In simple terms, the physician prescribes the treatment for FE, especially the parts pertaining to defecation dynamics and evacuation of the colon, changing the texture of fecal matter, and increasing colonic motility in particular. In an alliance with the physician (and family), the therapist addresses the educational, behavioral, and motivational variables that are critical to the implementation of treatment and successful outcome.

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