



Childhood Defecation Disorders: Constipation and Stool Incontinence

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The purpose of this publication is to describe the characteristics and treatment for pediatric functional gastrointestinal disorders that prompt parents to bring their child to the doctor for constipation and/or stool incontinence: infant dyschezia, functional constipation, and non-retentive fecal soiling. A *functional* disorder refers to a condition where the abnormality is an altered physiological function (the way the body works) rather than an abnormality that is characterized by tissue damage or inflammation. In the context of this article, "functional" means that the symptoms occur within the expected range of the body's behavior. (Examples: Shivering after a cold swim is a symptom, but not due to disease; a runner's leg cramp is very painful, but the muscle is healthy.)

Genetics, diet, social habits, convenience, cultural beliefs, relationships within the family, and timing of daily activities influence how often a child has a bowel movement. In healthy children, the number of bowel movements (BMs) changes with age and diet. Infants average four BMs each day during the first week of life. There is a decline to about two BMs each day by age two, and one BM each day by age four. Healthy breast-fed infants may have no BMs for weeks. New parents may want to have the symptom checked by a pediatrician, but should be reassured by the absence of alarm symptoms such as vomiting, fever, failure to gain weight, or abdominal distention. Any of these alarm symptoms, along with the infrequent passage of stool, should prompt a visit to the pediatrician.

Constipation is defined by a reduced stool frequency, or by painful BMs, even when the stool frequency is not reduced. Constipation accounts for 3% of visits to the pediatrician, and about 25% of visits to the pediatric gastroenterologist. Constipation is a problem for about 1 in 6 children at some time. Boys and girls are equally affected.

Infant Dyschezia

Dyschezia means difficulty coordinating the two voluntary acts that are necessary to pass a bowel movement: contracting abdominal muscles and relaxing the pelvic floor. Parents visit the clinician during their infant's first six months of life concerned that their child is constipated. The parents describe a healthy infant, who cries for 20–30 minutes, screaming, and turning red in the face with effort, until a bowel movement finally takes place. The stools are soft and free of blood. These crying episodes, exhausting for the infant and anxiety provoking for the

parents, occur several times daily. Assessment includes charting the infant's growth, history (including diet), and a complete physical examination (including rectal examination) as the parents watch. All are normal, and the parents are reassured by the clinician's careful examination.

For everyone, a successful bowel movement requires two coordinated events: relaxation of the pelvic floor muscles (a thick sheath of muscles that span the underlying surface of the bony pelvis), and an increase in abdominal pressure to squeeze out stool. Infants with dyschezia have not yet learned to coordinate those two required actions. Crying is how they increase their abdominal pressure. They cry until, by chance, they relax their pelvic floor muscles at the same time and a BM occurs.

For the first few weeks of life many activities such as sucking, swallowing, urinating and stooling are accomplished by instinct alone. As development proceeds, instinct goes away and the child learns how to eat based on smell, taste and texture, how to urinate based on the physical urge, and how to have a BM. Dyschezia is a brief time between the normal loss of instinct and the mastery of responding to the body's signal to have a bowel movement by relaxing the pelvic floor and tensing abdominal muscles.

Reassurance to the parents is all that is needed. No tests or treatments are necessary. The infant is not crying from pain. The infant will learn to have bowel movements more easily in a few days to a few weeks. Suppositories and rectal stimulation interfere with the infant's learning to coordinate the act. They should not be part of the treatment.

Functional Constipation

The transition from breast to formula feeding is a common time for the start of functional constipation. In most cases, laboratory and x-ray examinations are not necessary for the diagnosis of functional constipation. However, if there are worrisome signs like poor weight gain, persistent abdominal distention, unexplained fevers, Down syndrome, bilious vomiting, occult spinal dysraphism [neurological involvement of Spina Bifida], then a thorough evaluation is appropriate.

Infants and children who pass soft stools at intervals greater than a week apart and fail to thrive will require a diagnostic evaluation for an abnormality in gastrointestinal anatomy or metabolic disease. Delayed passage of meconium, the sticky dark, first BM of the newborn is associated with Hirschsprung's

disease. Hirschsprung's disease is a lack of nerve (ganglion) cells in a segment of the bowel. This interferes with the squeezing action called peristalsis, which normally moves stool through the intestines.

Fruit juices such as prune and pear may increase stool water by virtue of their fructose and sorbitol content, carbohydrates that are poorly absorbed by the small intestine. When changes in diet do not help, non-stimulant laxatives like polyethylene glycol, mineral oil, lactulose, and Milk of Magnesia can be effective, but only under a doctor's supervision.

The diagnosis of functional constipation requires no testing. The diagnosis is based on symptoms alone. From infancy to 16 years old there must be two or more of the criteria at least once a week for at least two months.

Diagnostic criteria:

1. Two or fewer BMs per week.
2. At least 1 episode of stool incontinence per week (after the acquisition of toileting skills or 4 years of age)
3. Retentive posturing or excessive volitional stool retention (A child uses pelvic floor muscles in an attempt to avoid having a BM.)
4. Painful or hard bowel movements
5. Presence of a large fecal mass in the rectum
6. Large diameter BMs that may obstruct the toilet

Accompanying symptoms include soiling of the underclothes, irritability, abdominal cramps, and decreased appetite. These symptoms disappear immediately following the passage of a large or enormous bowel movement. Sometimes retentive constipation is associated with bedwetting, and 10% of affected girls get urinary tract infections.

Functional constipation begins in young children when there is a painful or frightening bowel movement, and the child learns to fear the urge to have a BM. They begin to hold back when they get the urge and a huge stool builds up in their rectum. Often, children are able to hold back the huge stool for weeks, but when they pass gas, small amounts of liquid or solid come out with the gas, soiling the underclothes. (See Figure) Some people refer to soiling as stool *incontinence* or *encopresis*.

Functional constipation often begins during one of three times: 1) in infants, at the time of weaning from breast milk to formula, with a change in bowel movements from soft to hard pellets, 2) in toddlers during toilet training as they struggle with issues of controlling bowel movements, and 3) in children beginning school, where they must hold back the urge to have a BM to stay seated in class.

A history and a careful physical examination provide reassurance to the clinician and parents that there is no disease, but that there are symptoms caused by a failure to relax the pelvic floor and push out the bowel movement. Often, there is a mass of stool that the physician can feel on either side of the abdominal muscles when examining the belly. When the diagnosis is functional constipation, no testing is necessary. Diseases of the colon have a different history and physical examination than functional constipation. (See Table) If there is a history of constipation from birth, no retentive posturing, or no passage of huge bowel movements, then it is important to test for Hirschsprung's disease and other rare colon motility diseases. Remember that 1 in 6 children will have constipation, and

Hirschsprung's disease is the most common colon motility disease, with a rate of 1 in 5000 children, so chances of having Hirschsprung's or any other serious disease is small.

Infants and toddlers

From a developmental point of view, functional constipation is a failure in toilet learning. Normally, when an infant senses a need for a bowel movement, he or she relaxes their bottom and at the same time increases abdominal pressure. Infants have months to practice this behavior before the opportunity to hold back a bowel movement becomes a social choice. Functional constipation begins when the child fears passing a BM, most often because BMs are big and hard and hurt as they come out. When you are fearful, you cannot relax your bottom. The child's bottom contracts instead of relaxing, as the child attempts to avoid having a bowel movement. The inside walls of the colon stretch to hold the contents, and the urge to have a bowel movement passes. Over weeks and months the end of the colon stretches out. The infrequent passage of very large stools may cause not only pain, but also tears in the *anus*, the short canal at the end of the digestive tract. These painful tears, called anal fissures, bleed and frighten child and parents.

Children with functional constipation sit on the toilet and push, but because they are afraid, they are unable to relax their bottoms, so the BM does not come out. Parents often report that the child tries really hard to push it out. It is true that they do, but at the same time they are not relaxing their bottom. When you are afraid, you cannot relax your bottom.

Parents become increasingly distressed by their child's symptoms, and contact a clinician. Some clinicians recommend suppositories or enemas, thinking that as uncomfortable as the procedure is, it will succeed in expelling the big bowel movement. In adults this makes sense, but in children, it is shortsighted. Suppositories and enemas take control away from the child, and may frighten the child even more. These interventions do not help the child relearn how to relax their bottoms and have a bowel movement. The next time there is an urge for a bowel movement, the child may be more frightened, and hold back even more. Instead, we recommend reassurance that the stool is not toxic to the body, the colon never pops, and the child should go home and take oral medicine to help melt away the large BM. The child remains in control of the decision to have a BM. This child-friendly plan is developmentally appropriate at all ages.

School-age children

Sometimes functional constipation lasts only a few weeks, but sometimes it lasts for years. Many affected school-age children develop negative thoughts about themselves, and wrongly believe that they are the only ones with this problem. To cope, they behave with nonchalance concerning soiling and denial about constipation. They claim to be unaware of odors. Some hide soiled underclothing or pieces of stool around the house. Their denial of the problem is a big part of the problem. The child is unable to cooperate with parents, school or clinician because the child denies that there is a problem. These children shrug their shoulders and tell the doctor that they do not know why they are in the doctor's office. They show little interest in treatment, and they frustrate their parents. Parents who follow doctor's instructions find that treatments fail. Treatments fail because regardless of how much stool collects in the colon and how uncomfortable the child may be, the child may refuse to relax the

pelvic floor to allow a BM. Treatment succeeds only after the child decides to participate by attending to the sensations that signal a need to have a BM, and behaving by going to the restroom and relaxing his or her bottom.

Treatment

It is important to understand the problem as the child understands it. In infants and preschool children, it is all about fear. As soon as they experience a period of painless BMs, their fear goes away and they learn how to relax their bottoms. In school age children, they may be secretive about the problem, and pretend that it does not exist. Before treatment works for them, they must accept responsibility for recognizing the urge to have a BM and cooperate by taking their medicine and relaxing their bottoms.

Treatment goals for the clinician are to educate the child and family about the problem, to use medication to assure painless defecation, and to provide continuing availability and interest.

Education includes teaching the parent and child that functional constipation: 1) is not a disease, but symptoms due to failed toilet learning, 2) always gets better when the child chooses to relearn the correct way to have a bowel movement, 3) is not dangerous – it never causes cancer, the colon never bursts, toxins never go back into the bloodstream, no matter how long between bowel movements, and 4) is very common. The child is not alone.

To assure painless defecation, non-stimulant stool softeners may be given safely every day for months or even years, under the direction of your child’s physician. The goal is to make sure that there will always be soft bowel movements, with a diameter less than that of a quarter. Polyethylene glycol has become the most popular medicine, because it mixes colorless, odorless, and tasteless into the child’s favorite drink. Mineral oil is a lubricant and softener with many favorable qualities. There is a commercial form of mineral oil (Kondremul plain) that mixes easily into infant formula or flavored milk, so that infants and children who are reluctant to take medicine are unaware of the mineral oil. Milk of magnesia, lactulose, and sorbitol (the substance found in

they want. In the end, the most appropriate choice and dose of stool softener for your child are determined by the physician.

Two problems must be overcome for the child to stop holding back – the large hard stools and the fear. Although the non-stimulant stool softener solves the problem of large hard stools, the fear of a painful BM often takes months to subside. It is important for parents to be consistent about medicating the child every day, because one painful bowel movement will cause more fear, and more holding back. Usually, polyethylene glycol or other stool softeners can be stopped after several months free from pain and soiling. Relapses are common, especially during vacations and times of stress. A successful initial treatment plan serves as the model for relapse treatment. Relapses tend to resolve quickly.

The clinician should provide continuing availability. The clinician is an empathetic teacher who helps the child relearn how to have a BM without pain, and helps the family understand the nature of the problem. Weekly visits and telephone or e-mail accessibility provide effective reassurance and an opportunity for positive reinforcement for good results.

Some patients benefit from other interventions:

1. Star charts or stickers for appropriate behaviors like sitting on the toilet or having a BM in the toilet.
2. Anorectal biofeedback may be helpful for older children seeking a way to relearn faster than trial and error at home.
3. Drugs that stimulate an urge to go may be helpful in training some patients to recognize and respond to the sensation.
4. Collaboration with a mental health professional is helpful when functional constipation is one of a cluster of behavioral symptoms such as temper tantrums and sleep disorder in toddlers, associated with attention deficit disorder in schoolchildren, or the presenting symptom of a distressed family situation.

In general, it is not necessary to fuss with diet and fiber. What parent wants to battle their child about diet when they are already struggling over bowel movements? The wise clinician prescribes sufficient stool softener and lifts dietary restrictions.

Non-retentive Fecal Incontinence

Fecal incontinence refers to passage of BMs into the underclothing, or other inappropriate places. Fecal incontinence commonly accompanies functional constipation, when liquid BM leaks out as the child attempts to pass gas. Fecal incontinence without fecal retention occurs when someone has diarrhea, as the muscles of the bottom fatigue and cannot hold back anymore. *Non-retentive fecal incontinence* is the diagnosis applied to children with a developmental age of at least 4 years, who have bowel movements in places and at times that are inappropriate, at least once a month for at least 2 months, in the absence of a disease to explain it, and without signs of fecal retention. About one in ten incontinent children has non-retentive fecal incontinence. The rest have functional constipation. Most children with non-retentive fecal incontinence have BMs daily during waking hours, and do not complain of constipation. Soiling may be in small amounts, or consist of an entire bowel movement. In contrast to children with functional constipation

Differentiating Functional Constipation from Disease*

Feature	Functional Constipation	Disease
Starts at Birth	Rare	Common
Fecal Soiling	Common	Rare
Fecal Mass Above Rectum	No	Common
Retentive Posturing (holding back)	Common	Rare
Passage of Very Large Stools	Common	Rare
Painful Bowel Movements	Common	Rare

*This table is not intended to replace diagnosis and treatment of your child by a qualified pediatric doctor.

prune juice that makes BMs soft) are other choices for softening the BMs. Finally, there is a new medicine lubiprostone (Amitiza) which induces secretion of water into the bowel to promote soft BMs. Some teens prefer to take a tablet rather than to drink a polyethylene glycol. Adherence to instructions may be improved when teenagers make their own choices about which treatment

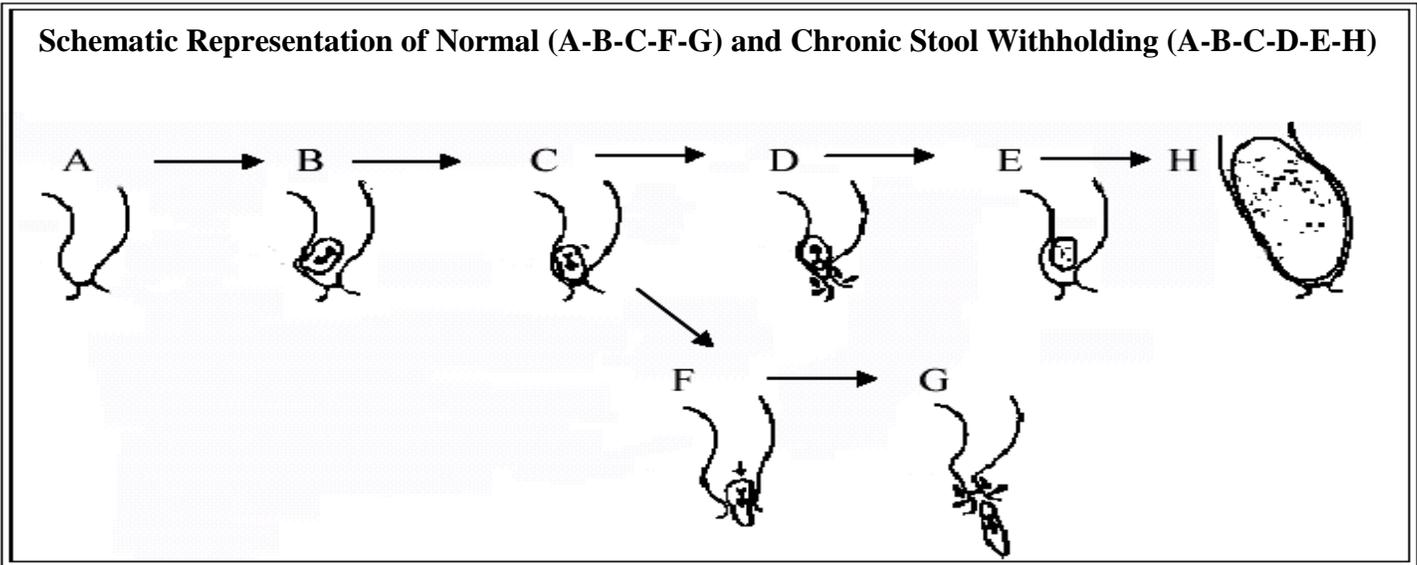
and incontinence, children with non-retentive incontinence do not hold back their BMs and do not accumulate a big stool.

Sometimes non-retentive fecal incontinence is caused by an emotional disturbance in a school-aged child. Often the soiling episodes have a relationship to a person or time of day, because defecation may be triggered by anger in children who meet diagnostic criteria for oppositional-defiant disorder or conduct disorder.

Treatment goals are to help the parent to understand that there is no medical disease, and to accept a referral to a mental health professional. Parents need guidance to understand that incontinence is a symptom of emotional upset, not simply bad behavior.

Suggested IFFGD Reading

Levy, J., Volpert, D. *Know Thy Laxatives: A Parent's Guide to the Successful Management of Chronic Functional Constipation in Infants and Children.* IFFGD. Fact Sheet No. 828.



- A. The rectum is empty. There is no urge to defecate.
- B. Stool enters the rectum and stretches the rectal wall, causing a sensation of fullness.
- C. Rectal wall distention causes relaxation of the internal anal sphincter, allowing the stool to descend into the proximal anal canal. This movement causes awareness that stool passage is imminent.
- D. The pelvic floor muscles contract to maintain continence, moving the stool upward and out of the anal canal.
- E. If the stool remains in the rectum after the pelvic floor returns to its resting state, then stool will no longer be in contact with the anus. The rectal wall relaxes; reducing the pressure and wall tension, and the urge to defecate abates.
- F. Defecation occurs when the pelvic floor relaxes, and the pressure in the rectum is greater than pressure from the external anal sphincter and the pelvic floor. Stool moves from the region of higher pressure to the area of lower pressure. The accompanying increase in intra-abdominal pressure propels stool through the anus.
- G. The pelvic floor contracts again when stool is no longer in contact with the anus, and this forces out any remaining stool.
- H. If a child repeatedly responds to the urge by withholding (C and D), a fecal mass accumulates. Over time the fecal mass becomes too large and too firm to be extruded without painful stretching of the anus. The mass is too bulky to be shifted out of contact with the anoderm lining of the anal canal. As pelvic floor muscles fatigue, the anus becomes less competent and retentive fecal soiling with soft or liquid stool occurs. The child resorts to retentive posturing, attempting to preserve continence by vigorous contraction of the gluteal muscles.

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