



CHILDREN'S[®]

Health Experts

Constipation

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Dr. Nelson Spinetti
M.D., F.A.A.P.

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CONSTIPATION

Constipation is passing stool with difficulty.

The definition of constipation varies widely, and its definition depends on the child's behavior, frequency of bowel movement (BM) with associated pain, bleeding, and straining, and careful observation of the stool consistency.

Constipation could have all or few of these accompanying symptoms: infrequent BM, hard consistency, large caliber, straining, painful defecation, and the presence of blood.

What it makes the concept of constipation easy to understand is the differentiation of a normal versus an abnormal defecation pattern.

In a normal stool pattern, defecation could occur 3 times a day to 3 times a week in the vast majority of the people, but this will vary a bit depending upon the person age.

Consistency is soft, and the BM is quick and effortless.

Constipation is better defined through consistency. It is useful to compare the stool with something we already know well as uniformly soft in nature, such as mashed potato. This consistency can be considered normal. If the stool is as hard as or harder than Play Dough, then it is considered hard enough to be retained, to induce constipation, and to impact future fecal movement. The soft consistency is important to know well, for it is good to know that diarrhea's consistency is when stool passes, and it cannot be lifted with a fork. Between these two consistencies is considered soft stool.

Withholding behavior or retentive posturing are repetitive behaviors which dissipate the urge to defecate. The natural position to defecate is squatting; a position that gets far from squatting is considered withholding posturing. Strong straining posture on position away from squatting position is very confusing for a parent, but the patient actually is trying to avoid passing stools through the anus. These positions can include tip-toeing, holding on to furniture, stiffening or crossing legs, and hiding in places.

Etiology and pathogenesis of constipation.

A single modification of the person's routine from the person normal stool pattern could potentially create functional constipation. Any change in the person's inner or outer environment can produce changes in the stool consistency and will cause harder stool, pain to defecate, and a subsequent withholding stool pattern. The consequence, functional constipation, is very common in children and adults if it is not corrected early. It is also common to find families with constipation, suggesting a predisposition as genetic, anatomic (malposition of the anus), or cultural (diet).

Frequently, children with constipation have purposeful and/or unintentional stool withholding after a painful experience while passing stool.

At an early age, any factor that could change the stool consistency could potentially generate constipation. From formula changes to the protein composition, new foods such as cereals or other solids could generate this phenomenon.

The same can apply to older children. In this group, not only can there be dietary or environmental changes, but they may also experience a strong fear of being hurt during defecation or even voluntarily withhold for further independence from the parent.

The withholding behavior is voluntarily done to avoid defecation by contracting the defecation muscle via pelvic, gluteal, and body positions with the intention to dissipate and eliminate defecation stimuli. The American Academy of Pediatric recommended is for the child to have his toilet training skills completed.

Children at school will face other challenges as unclean restrooms or teachers' unwillingness to grant restroom breaks.

Any changes outside from the child's environment, such as traveling a considerable distance by car, visiting a family member, hospitalization, beginning daycare or school, and family dynamic changes (vacation, caregiver, parent at work, etc.) could also change diet and time to eat, thus affecting stool consistency and precipitating constipation. Other additional triggers, in children is that at school they will face other challenges as unclean restrooms or teachers' unwillingness to grant

restroom breaks.

The colon and its colonic mucosa are like a dryer in which, if the stool is exposed to this lining for some time, it will make the stool harder, dryer, and larger, thus producing a painful and hard defecation.

The rectum size is similar to a small trash bag at the beginning developing constipation; it will progress to a large trash bag size if the stool increases in size. Once the rectum becomes large, a very large, compacted, and concrete-like stool will accumulate and affect fecal impaction, and, when newly formed soft stool passes around the concrete stool, it can leak with no control, inducing fecal soiling. There are two small muscle rings called sphincters. Once the hard tip of the stool sits at the internal muscle ring sphincter, it cannot close, and soft stool will leak out with no control, and the child can not feel it, cannot smell it, and does not know when it happens. However, the child will take note this situation after having it mentioned by other family members after the fecal soiling has occurred. The family will believe that the child does it on purpose, but it is completely out of the child's control and is beyond his or her awareness.

Clinical presentation

In most cases, the diagnosis of functional constipation can be easily made. In the absence of red flag symptoms, no further testing is needed.

Patients can have vague symptoms as abdominal pain, abdominal distension, frequently they have urinary tract infection, change in appetite, weight loss or poor weight gain Abdominal pain associated with functional constipation is usually nonspecific and not well localized. Failure to thrive (no weight proper weight gaining), developmental delay, presence of extra intestinal symptoms, and bladder disease are red flags and necessitate further testing.

An inquiry about psychological and behavioral problems should also be performed. Prognosis may be worse in children with behavioral disorders and poor social situations.

Encopresis (involuntary fecal incontinence) may occur intermittently or several times a day, with passage of small smears to a full bowel

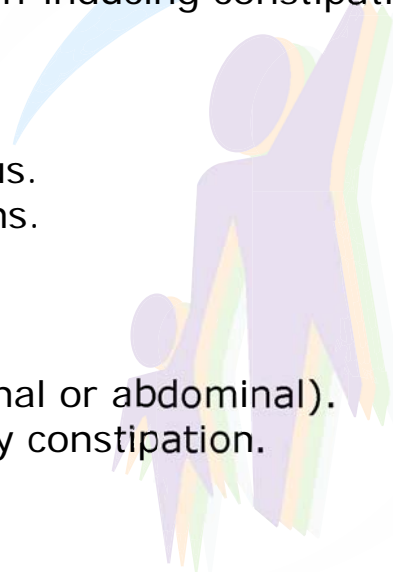
movement into the underwear. It can be mistaken as diarrhea by some parents. Passage of large stools may be followed by a short interval of decreased soiling and abdominal pain until a new rectal fecal mass accumulates. Fecal incontinence can be a source of considerable social embarrassment for children. Low self-esteem, depression, shame, social withdrawal, and fear of discovery may lead the child to hide the soiled underwear. Parents may accuse the child of laziness, carelessness, or reluctance to use the toilet, occasionally leading to punishment or negative reinforcement.

When to look for medical advice in a child with constipation:

- * Onset less than 12 months.
- * Delayed passage of meconium (the first stool from the new born) after the first day of life.
- * No stool withholding.
- * No soiling.
- * Intermittent diarrhea and explosive stools.
- * Failure to thrive.
- * Gushing of the stool while defecation.
- * Abnormal neurological exam.
- * Mucous and bloody stools.
- * Blood in stool.
- * Bladder disease.
- * No response to conventional treatment.






When a medical reason induces constipation we consider secondary constipation. There are many reasons that secondary constipation can be generated (e.g., disease or condition-inducing constipation):

- * Anal or colonic stenosis.
- * Imperforate anus.
- * Anteriorly displaced or ectopic anus.
- * Spinal cord or neurologic conditions.
- * Hirschsprung's disease.
- * Intestinal neuronal dysplasia.
- * Endocrine dysfunction.
- * Abnormal muscle function (intestinal or abdominal).
- * Drugs that could lead to secondary constipation.
- * Genetic conditions.
- * Cystic fibrosis and celiac disease.



Investigation for constipation.

A complete medical history and a thorough physical examination are usually sufficient to confirm the diagnosis of functional constipation in most children. Obtaining symptom diaries about defecation and soiling characteristics may help establish the diagnosis and aid with the follow-up monitoring. In a small subset of children, clinical evaluation is not adequate and further diagnostic interventions are warranted to establish or refute organic etiologies. These may include plain abdominal radiographs, colon transit studies, anorectal manometry contrast studies, or rectal suction biopsies. The important tests for constipation and their meaning include:

-  Abdominal x-ray to establish fecal mass, air in the rectum, and air-fluid pattern.
-  Contrast studies, to evaluate transition zone or anatomic condition and partial therapy for disimpaction.
-  Colon transit studies to establish the gastrointestinal time of transit the food/stool passes through gastrointestinal tract before defecation.
-  Manometry to establish the muscle condition involved in and leading to constipation.
-  Rectal or intestinal biopsies to establish the muscle and ganglia environment.

General consideration in the management for constipation.

The goals of treatment of childhood constipation are to restore a regular defecation pattern (soft and painless stools, no fecal incontinence) and to prevent relapses. Oral laxatives and structured toilet training are the main pillars of a successful treatment. In a position paper published by NASPGHAN (North American Society of Pediatric Gastroenterology, Hepatology and Nutrition), the following 4 important steps were recommended for the evaluation and treatment of childhood constipation:

- 1) education.
- 2) disimpaction.
- 3) prevention of reimpaction.
- 4) regular follow up.

The treatment starts with explaining the problem to the child and family.

It is paramount to understand that rectum must be clear from fecal impaction (hard and large stools) to prevent overflow fecal impaction or fecal incontinence which is beyond the child's control. A clear understanding of this condition will eliminate the parents' negative attribution and relieve tension. Children will continue to withhold the stools even after laxative is started, though; this will behavior will continue until the child confirms that there is no pain during defecation.

The length of the treatment is long, between 6 to 24 months and sometime even longer. It is very important to know that, as soon therapy is begun, the stool will be soft, but many families will then feel that the constipation has been resolved and they therefore stop the medication before rectum normalizes in size and the withholding behavior disappears. In this instance, the stool will become hard and constipation will recur very soon.

Dietary modifications are commonly recommended for constipated children. This may include increasing fluid, carbohydrate, or fiber intake. The role of dietary modification in functional constipation is not well established, though. Extreme dietary intervention could lead to nutritional deficiencies and negatively impact growth.

The relationship between constipation and low fiber intake is not well known; however, the recommended dietary fiber intake is the age of the child in years plus 5 that will give the grams of fiber to take per day. Fiber supplements such as Phyllium, Metamucil, and Citrucel are well accepted by children. More soluble fiber such as Benefiber will help with constipation especially in cases of encopresis and neurologically impaired children with no effect on colonic motility.

For infants, milk modification is supported after the child fails to respond to standard therapy or to milk protein allergy testing (in an older child). Low iron modified formulas have no role in constipation

in infants and can induce anemia. There is a better response with protein modification and hydroxylated formula in infants (as Alimentum or Nutramigen).

Medical treatment.

The rectum must be empty and fecal disimpaction is critical prior to maintenance therapy to ensure success and to reduce the amount of overflow incontinence and abdominal pain.

Rectal disimpaction could be achieved through the following routes:

Orally: MiraLax (Polyethylene glycol), Magnesium citrate, Mineral oil and Lactulose, but the dosage needs to be higher than the maintaining dosage.

Rectally: In an older child, Phosphate soda enema (fleet), saline, or mineral oil enema, and, in an infant, the glycerin suppository could help.

Not recommended and, indeed, toxic are soapsuds, tap water, and magnesium enemas. Milk and molasses enemas have been occasionally fatal.

The goal in maintaining therapy is to achieve soft and painless stools, to prevent impaction, and to break withholding behaviors.

Bulking agents such as dietary or processed natural fibers, chemically modified cellulose, and synthetic polymer can increase the stool size and improve constipation, but they can also produce bacteria fermentation and oily stool, and they are not used commonly in children.

Osmotic laxatives: These are poorly absorbable ions (magnesium, phosphate and sulfate salts), agents that are not absorbed in the small bowel but are rather metabolized in the colon (Lactulose and sorbitol). Metabolically inert compounds, osmotic laxatives soften the stool by retaining water within the colon through osmosis.

After confirming functional constipation and excluding other potential reasons from secondary constipation, make sure there is no fecal im-

paction. This usually follows a period of no defecation, and tenderness over pubic area to deep palpation. The patient's doctor could perform additional evaluations such as rectal examinations or X- rays of the abdomen to confirm the impaction.

After medication is available and prescribed under medical supervision, it is very important for the parent and patient to see if the stool consistency is harder than mashed potato. If so, then a small adjustment can be made by increasing the medication amount based on the stool consistency until the desired consistency is achieved. If the stool becomes too soft, such as pudding or even watery, then adjust by small decreasing intervals until the stool becomes as soft as mashed potatoes again. Once the stool is kept soft, continue adjusting up or down, depending upon the consistency, for the indicated period of 6 to 24 months without stopping the medication. It is very important not to stop the medication before the withholding behavior disappears completely or it will return again.

After completing the indicated period without stopping the medication and keeping the stool soft and the withholding behavior disappeared, then give extra fluid to the child, such as two half glasses of juice a day. Then, begin weaning the medication by skipping every other day for 2 months, then twice per week for 2 months, then stop it completely.

If constipation reappears, then it is important to evaluate for other possible etiologies such as food allergies, celiac disease, or thyroid disease.

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