Functional Constipation & Fecal Soiling

Prevalence

Functional constipation is a common problem in children. The mean prevalence rate of functional constipation in children worldwide is 14% (0.7-29%) and 16% in North America. It starts in the first year of life in 17-40% of children. The peak incidence of constipation is during the time of toilet training, around 2-3 years of age. Boys and girls are equally affected. There is no difference in prevalence between the size of the family, the age of the parents, or the child's ordinal position in the family. Retentive fecal incontinence (related to constipation) occurs more frequently in boys as compared to girls with constipation. Retentive fecal incontinence has been reported in up to 75% of children with a defection disorder.

Non-retentive fecal incontinence affects 0.8-4.1% of children in Western societies. It occurs in children with normal defecation frequency without evidence of retained stools, with normal motility parameters on anorectal and colonic motility testing, and cannot be explained by any other medical condition. It might be a manifestation of emotional disturbance in children.

Symptoms

Children with constipation can present with infrequent stools, straining, hard or pebble-like stools, withholding and painful defecation. They also can have associated symptoms such as abdominal pain, which is seen in close to three quarters of constipated children around the time of defecation. Bloody stools also occur in some children due to fissures (other etiologies such as cow's milk protein allergy in infants, polyps, inflammatory bowel disease and other organic causes of blood in the stool should be considered if there are any alarm signs or symptoms).

- Stool withholding follows passing a hard painful stool, creating a vicious cycle of pain which leads to further withholding, stool hardening and increase in stool size with subsequent enlargement of the rectum and decrease in signaling for defecation. Parents may mistake such withholding behavior as straining.
- Fecal incontinence (retentive) is when children involuntarily pass stool in their clothing. It has been reported in up to 90% of children with constipation. This can result in poor quality of life, anxiety, social phobias, depression, and oppositional defiant disorders.
- The majority of children with constipation and fecal soiling will have a history of painful defecation beginning before 3 years of age and secondary withholding behavior.
- Some children present with fecal Impaction, which is the presence of a hard mass in the lower abdomen. This can be felt on abdominal examination, as a dilated rectum with large stool matter on rectal exam, or seen on an abdominal radiograph as large stool load in the distal colon.
- Urinary symptoms can be seen in children with constipation, including enuresis and urinary tract infections. Stool in the rectum can compress the urinary bladder resulting in an early sensation to void due to decreased bladder capacity.
- Constipation is considered intractable after 3 months of optimal conventional treatment without an appropriate response.

Alarm symptoms and signs in children

- **Term baby with passage of meconium > 48 hours**
- **Abnormal anal tone**
- **Family history of Hirschsprung's disease**
- **Blood or mucus mixed in the stool without anal fissure on exam**
- **Severely distended abdomen**
- **Absent reflexes (anal or cremasteric reflexes)**
- **Decreased tone or strength in the lower extremities**
- **Sacral dimple**
- **Deviation of the gluteal cleft**
- **Anal scars**
- **Abnormal anal position**
- **Perianal skin tags or fistulae**
- **Ribbon stools**
- **Bilious vomiting**
- **Failure to thrive**
- **Sensitivity to cold, fatigue, dry skin, pallor (signs of hypothyroidism)**

Risk factors

- Psychological stress: school or home
- Low socioeconomic class
- Poor child rearing styles
- Diet low in fiber
- Not having regular meals with parents
- Childhood obesity
- Physical abuse, sexual abuse, or emotional abuse

Investigations

- Routine allergy testing for cow's milk allergy is not recommended in children with constipation in the absence of alarm symptoms
- Laboratory testing to screen for hypothyroidism, celiac disease, and hypercalcemia is not recommended in children with constipation in the absence of alarm symptoms
- The main indication to perform anorectal manometry in the evaluation of intractable constipation is to assess the presence of the rectoanal inhibitory reflex
- Rectal biopsy is the gold standard for diagnosing Hirschsprung's disease
- A barium enema should not be used as an initial diagnostic tool for the evaluation of FC

Differential diagnosis

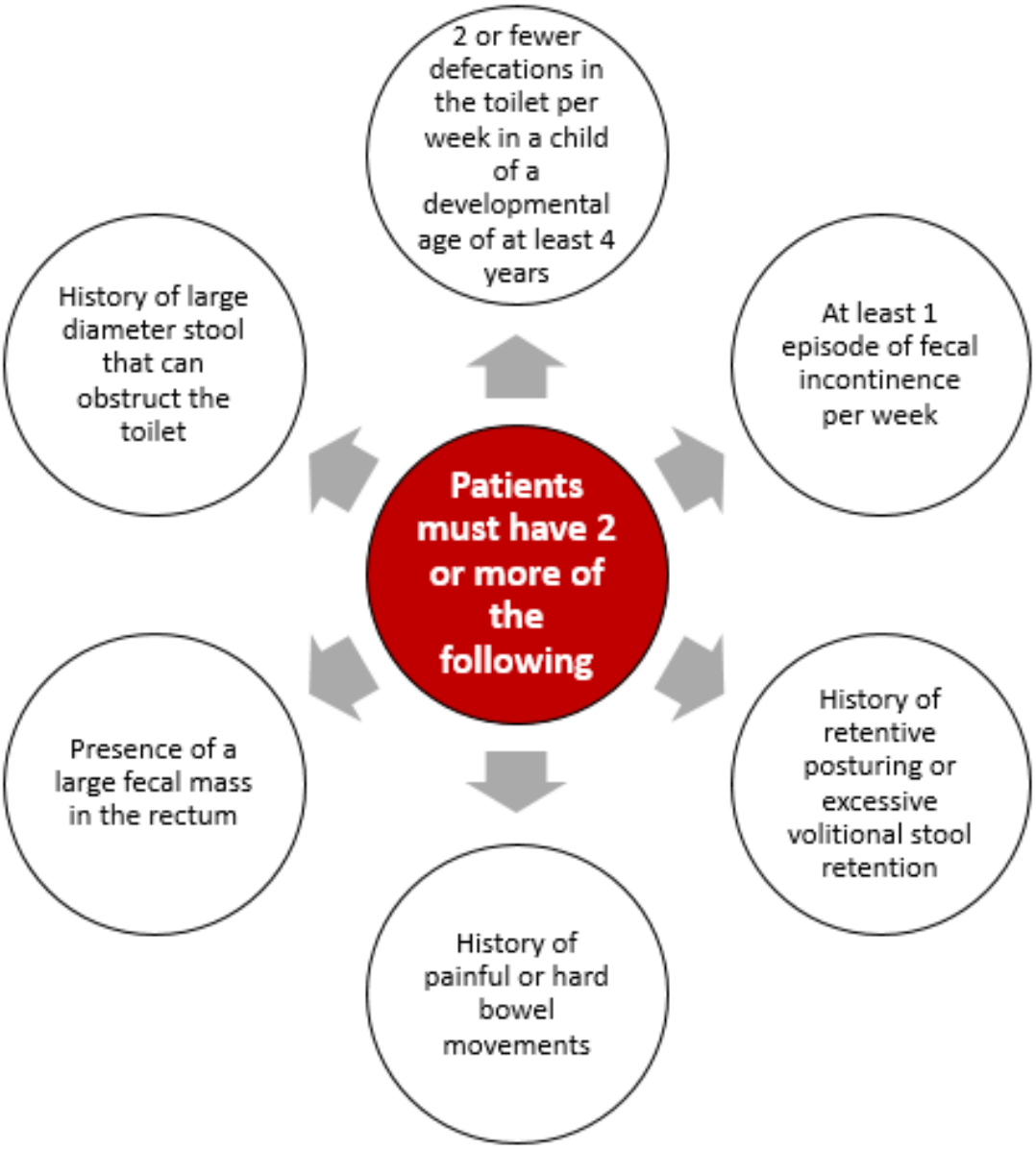
- Hypothyroidism
- Celiac disease
- Electrolyte imbalances: hypercalcemia, and hypokalemia (more likely in younger children)
- Diabetes mellitus (more likely in older children)
- Dietary protein allergy
- Drugs & toxic substances: opiates, anticholinergics, antidepressants, chemotherapy, heavy metal ingestions
- Vitamin D intoxication
- Botulism
- Cystic Fibrosis
- Hirschsprung's Disease
- Colonic inertia (more likely in older children)
- Anal achalasia
- Anatomic malformations: imperforate anus, anal stenosis
- Pelvic mass (sacral teratoma)
- Spinal cord anomalies, trauma or tethered cord
- Pseudo-obstruction (visceral neuropathies, myopathies, mesnchymopathies)
- Abnormal abdominal musculature (prune belly, gastroschisis, Down syndrome)
- Multiple endocrine neoplasia type 2B (more likely in older children)

Diagnosis: Rome IV criteria

Rome IV criteria are used to diagnose functional constipation using history and physical exam.

- There is no role for the routine use of an abdominal x-ray to diagnose functional constipation.
- A plain abdominal radiograph may be used in a child if fecal impaction is suspected with an unreliable or not possible physical examination. The Rome criteria are used for all age groups.

To meet criteria for functional constipation, children must have 2 or more of the following occurring at least once a week for a minimum of 1 month with insufficient criteria for a diagnosis of irritable bowel syndrome:



Intervention	Treatment By Type	Description
Behavior Modification	Toilet Training	Appropriate explanation and guidance for toilet training should be done for children with a developmental level of 4 years and older.
Dietary Modification	Fiber	A normal intake of fiber and fluid is recommended in children with constipation.
Adjunct Therapies	Biofeedback	Data from adult patients have demonstrated a benefit from select patients. Anecdotal data does suggest that some children may benefit from this therapy.
	Probiotics	Although some probiotics have promising results in treating several conditions, there is insufficient evidence to support the use of prebiotics and probiotics in the treatment of constipation in children. Only a few small studies suggest an improvement in the consistency of stool and frequency of defection on probiotics.

Intervention	Treatment By Type	Description
Medication for Constipation	Emollient Agents	Makes stool easier to pass through intestines by lubricating the intestinal tract. These work within 12-72 hours. An example is docusate sodium. These are available in oral and rectal forms.
	Osmotic Agents	Brings water into colon to stimulate a bowel movement. Can be given orally or rectally. These work within 12 – 72 hours. Examples are Polyethylene Glycol (MiraLAX) and lactulose. Polyethylene glycol is the most effective medication in treating constipation in children, and is recommended as first-line treatment for maintenance therapy as well as for fecal impaction.
	Stimulant Agents	Acts on intestinal surface to alter water and electrolyte content. Can also stimulate contraction of bowel to produce a bowel movement. These work within 6-10 hours. Examples are Senna and Bisacodyl. These are available in oral and rectal forms.
	Saline Laxative Agents	Attracts and retain water in the intestinal lumen and increases pressure to stimulate a bowel movement. Can be given orally or rectally. These work within 1-3 hours. Examples are magnesium citrate and milk of magnesia
	Lubricant Agents	Coats the stool with slippery lipids and slows colonic absorption of water so that the stool slides through the colon more easily. These work within 6-8 hours. An example is mineral oil. These are available in oral and rectal forms.

References

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