Constipation and Encopresis in Children

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Chronic constipation is defined as a decrease in frequency or the painful passage of bowel movements present for several weeks. Retentive encopresis is the term reserved for the involuntary and uncontrollable soiling that occurs in children with chronic constipation. Constipation is a relatively common paediatric complaint accounting for up to 3% of general paediatric outpatient visits and 25% of visits to a paediatric gastroenterologist.[1] Encopresis is also common, occurring in at least 1.5% of all children.

Despite its prevalence, most constipation in children tends to be functional or idiopathic. The natural history of functional constipation is that of an adaptive pattern of behaviour in a child who voluntarily withholds faeces followed by painful defecation. Retained stool eventually loses moisture to become harder and thus exacerbates the pain and difficulty with stooling. Eventually, the dilated distal colon is rendered mechanically ineffective to expel even stool of normal consistency. Since encopresis evolves through longstanding stool retention the dilated rectal vault becomes relatively insensitive to the presence of stool which is an essential prelude to conscious defecation. Rectal impaction with stool will compromise the functional integrity of the anal sphincter, and the process is further exacerbated through the intermittent attempts at treatment with laxatives leading to spurious diarrhoea. Withholding patterns usually follow changes in diet, toilet training, travel, viral illnesses, and obstacles to the use of toilet facilities outside the home including unsanitary conditions or lack of privacy.

A thorough history and physical examination are critical in the assessment of the child with constipation, and in most cases is sufficient to allow the doctor to establish the diagnosis of functional constipation. An appreciation of the age-dependent variability in stool frequency is essential to define the degree of severity of the process (Table 1). From this table, one can note that breast-fed babies pass more stools than formula-fed babies. No data is given for 3-6 months old babies, however extrapolatingly it also depends on whether they are breast- or bottle- fed. Salient historic points include background other gastrointestinal symptoms and growth parameters, age at, and difficulty with, toilet training, current diet, and previous episodes of constipation and perianal fissures. Multiple, organic and behavioural – emotional precipitants have to be borne in mind and, depending on the index of suspicion, ruled out (Table 2). Withholding behaviours of children include stiffening of buttocks or legs, wriggling, rising on toes, and assuming unusual postures and avoidant behaviour. The physical examination should include a rectal exam; important components of this part of the assessment include inspection for sacral dimple and in most cases digital examination of the rectum to determine perianal sensation, tone, anal reflex, amount and consistency of stool, while checking externally for fissures, skin tags and perianal erythema.

The management of the child with functional constipation includes reassurance and education of the patient and parents, initial disimpaction of retained stool followed by maintenance therapy with long-term laxatives and behaviour modification.

Education – It is important that the pathophysiologic process involving stool retention, be explained in understandable form to the parents. Encopresis, when present usually entails an adversarial interaction between caregivers and the patient, the latter being accused of voluntary soiling which is, most often not the case. Other aspects of treatment include an explanation of the chronicity of the condition along with long term aspects of care.

Disimpaction – This is necessary before initiation of maintenance therapy. It can be achieved preferably with oral medication. In infants, rectal disimpaction can be achieved with glycerin suppositories. In children, a range of medications exist such as mineral oil, polyethylene glycol, lactulose, sorbitol, senna, magnesium hydroxide and citrate; including enemas. In refractory or severe cases, inpatient admission with a Nasogastric tube placement and polyethylene glycol drip may be necessary.

Maintenance therapy – the aim here is to prevent recurrence. Dietary changes, namely increase in insoluble fibre, can be implemented but are rarely sufficient. Although recent literature has questioned the validity of chronic non-stimulant (bulk-forming) laxative use,[2] chronic administration of a non-stimulant laxative appears to be the standard of care. Given the slow evolution of chronic constipation, and the risk of developing a relatively atonic colon, patients are usually treated with non-stimulant laxatives on a long-term basis, sometimes for years.

Behavioural modification – The use of medications in combination with behavioural management can decrease the time to remission in children. Regular unhurried toilet

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Referral for further investigation is needed when therapy fails and when there is evidence of organic disease. Abdominal imaging is indicated only when there is doubt about the underlying diagnosis or to reinforce the severity of the problem, should the parents be hesitant to embark on long-term therapy.

There is insufficient data about the long term prognosis of childhood constipation and its persistence into adulthood. A study in the Netherlands found that 60% of children referred to a tertiary centre for chronic constipation where treated successfully at 1 year of follow up. But it also noted that 30% of children followed up after puberty had persistent distressing symptoms.[3] Another study showed significantly better results in children referred to a tertiary centre, with the duration of symptoms less than 3 months before referral.[4]

Constipation and encopresis are potentially curable. Children who follow the appropriate, usually long-term treatment including behaviour modification will eventually regain control of their bowel habits. Long term sequelae include relapse but this can be addressed with repeat therapy, although reassessment for possible underlying organic disease then becomes more pertinent.

Age	Bowel movements per day
0-3 months	2.9 (breast-fed)
	2.0 (formula-fed)
6-12 months	1.8
1-3 years	1.4
More than 3 years	1.0

Table 1:
Normal frequency of bowel movements. *Adapted from the North American Society for Pediatric Gastroenterology, Hepatology and Nutrition constipation guidelines, 2006.*

Anatomic malformations i. Anterior displaced anus ii. Pelvic mass (sacral teratoma) iii. Imperforate anus iv. Anal stenosis	**Intestinal nerve or muscle disorders** • Hirschsprung Disease • Intestinal neuronal dysplasia • Visceral myopathy • Visceral neuropathy
Metabolic and gastrointestinal • Celiac Disease • Cystic fibrosis • Hypothyroidism • Hypercalcemia • Hypokalemia • Diabetes mellitus • MEN type 2B	**Abnormal Abdominal musculature** • Down syndrome • Prune belly • Gastroschisis
Neuropathic conditions • Tethered cord • Static encephalopathy • Spinal cord abnormalities • Spinal cord trauma • Neurofibromatosis	**Other** • Cow's milk protein intolerance • Heavy metal ingestion (lead) • Vitamin D intoxication • Botulism

Table 2:
Organic Aetiologies of Constipation in Infancy and Childhood.

References
1.Constipation Guideline Committee, Evaluation and Treatment of Constipation in Infants and Children: Recommendations of the North American Society for Pediatric Gastroenterology, Hepatology and Nutrition. J Pediatr Gastroenterol Nutr 2006; 43(3):e1-13.
2.Pijpers MAM, Tabbers M, Benninga MA, et al. Currently recommended treatments of childhood constipation are not evidence based. A systematic literature review on the effect of laxative treatment and dietary measures. Arch Dis Child 2009; 94:117–31. 3.van Ginkel R, Reitsma JB, Buller HA, et al. Childhood constipation: longitudinal follow-up beyond puberty. Gastroenterology 2003;125(2):357-63. 4.Van den Berg MM, Van Rossum CH, de Lorijn F, Reitsma JB, Di Lorenzo C. Functional constipation in infants: a follow-up study. J Pediatr 2006; 147(5):700-4.