

Personal Practice

Management of Faecal Incontinence in Children

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Abstract

Faecal incontinence is a common condition in childhood. It is often associated with constipation. Children affected by faecal incontinence may be suffering from pre-existing anorectal/spinal conditions. However, idiopathic functional incontinence is not uncommon. This article reviews the epidemiology, clinical features and recent advances in diagnosis and treatment of faecal incontinence in children.

Key words

Children; Faecal incontinence

Epidemiology

Faecal incontinence is a frustrating condition in children. Only few population-based studies had investigated the prevalence of this problem. Söderstrom et al reported that it affected 5.6% to 9.8% of primary school children.¹ Hansen et al revealed that 8.3% of boys and 5.6% of girls had Faecal soiling.² Alnaif and Drutz reported a prevalence of 38% in teenage girl suffering from minor soiling.³ Undoubtedly, Faecal incontinence is associated with pre-existing anorectal or spinal conditions, such as Hirschsprung's disease, anorectal malformation, and spina bifida. In children without pre-existing pathology, constipation is the most common condition related to Faecal incontinence. Also, Faecal incontinence is more common in children with urinary incontinence¹ and in obese children.⁴

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Definitions

In July 2004, the 2nd World Congress of Pediatric Gastroenterology, Hepatology and Nutrition in Paris made a consensus on childhood constipation terminology (PACCT).⁵ *Faecal incontinence* was defined as *passage of stools in an inappropriate place*. It may be a result of *organic Faecal incontinence*, which can be resulting from neurologic damage or anal sphincter abnormalities. *Functional incontinence* can be sub-classified into *constipation-associated Faecal incontinence* and *non-retentive Faecal incontinence*. According to the Rome III criteria, definitions of Faecal incontinence are applied to children with a developmental age of at least 4 years.⁶ In everyday clinical practice, encopresis and soiling are frequently used terms. *Encopresis* was first introduced by Weissenberg in 1926 (*kopros* = stool in Greek), meaning the loss of stool in underwear as the Faecal equivalent of *enuresis*.⁷ *Soiling* refers to involuntary passage of small amount of stools, resulting in staining of underwear. Although the two terms imply a different degree of Faecal incontinence, they are often used indistinguishably and can sometimes cause confusion.⁸

Clinical Features

In history taking and physical examination for children with Faecal incontinence, it is essential to answer two questions.

1. *Is the Faecal incontinence due to organic or functional cause?*

Many children are referred to us with Faecal incontinence after surgery for anorectal and spinal conditions. In spite of the recent advances in operative techniques, the long-term prognosis in intermediate and high type anorectal malformation remains poor. Thirty percent to 56% of patients have significant Faecal soiling after surgery.⁹⁻¹¹ 12.1% to 23% of children with Hirschsprung's disease suffered from Faecal incontinence after Duhamel and Soave operations respectively.^{12,13} Verhoef et al reported that 34.1% of young adults with spina bifida aperta or occulta suffered from Faecal incontinence regardless of the bowel management they used.¹⁴

Thus, it is essential to determine whether the Faecal incontinence has an organic cause. We should know the detailed history for any anorectal or spinal abnormalities, together with the type of operations and any post-operative bowel management programs performed. Co-existing urinary incontinence, sacral dimple and other cutaneous markers may be associated with occult spinal dysraphism.¹⁵

2. *Is the Faecal incontinence related to constipation?*

Loening-Baucke reported that 95% of Faecal incontinence in children was associated with constipation. 18.3% of constipating children suffered from Faecal incontinence, whereas only 0.3% of non-constipated children had Faecal incontinence.¹⁶ Functional non-retentive Faecal incontinence (FNRFI) is an entity defined in Rome II criteria such that Faecal retention is absent in the incontinent patient. It accounts for only 3% to 21% of children with Faecal incontinence.^{17,18} Thus, in most cases, successful management of constipation can cure Faecal incontinence.

According to Rome III criteria, children with functional constipation must fulfill two of the following features: (1) two or fewer defaecations in toilet per week; (2) at least 1 episode of Faecal incontinence per week; (3) history of retentive posturing or excessive volitional stool retention; (4) history of painful and hard bowel movements; (5) presence of a large Faecal mass in the rectum; and (6) history of large diameter stools that may obstruct the toilet.⁶

Children with FNRFI usually have a normal defaecation frequency and normal stool consistency. They have less frequent abdominal pain than children with constipation.¹⁹

Preliminary Investigations

The Daily Bowel Diary

Every patient who visits our clinic has to fill up the daily

bowel diary at home. This is the chart that records the frequency of defaecation, stool amount and consistency, degree of Faecal incontinence of the patient (Figure 1).⁸

The Continence Score

Kelly score is a simple clinical assessment on continence, soiling and puborectalis contraction, with maximum score of 6.²⁰ In our clinic, a more complex clinical scoring system by Rintala on seven different aspects of defaecation patterns is used. The score ranges from 1 to 20 (Table 1).¹⁰ Our specialty nurse assesses the Rintala score of every patient in each clinical visit. Thus the progress of the treatment can be monitored.

Radiological Examinations

Plain X-ray

At first consultation, an abdominal X-ray including lumbosacral spine can help to assess the presence of Faecal retention and megacolon (Figure 2). Lumbosacral spine defect may associate with underlying occult spinal dysraphism²¹ such that further MRI spine investigation is necessary.

USG Rectum

Singh et al reported the application of transpubic pelvic ultrasonography to measure the rectal crescent of constipated children.²² He showed that the median rectal crescent size in children with constipation was significantly wider than that of normal children. This noninvasive USG investigation is now widely used in our centre and replaces the classical barium enema that causes radiation exposure to the children (Figure 3).

Colonic Transit Study

To identify Faecal incontinent children with slow colonic transit constipation, colonic transit study (CTS) is sometimes necessary. The conventional CTS involves measurement of transit time of ingested radio-opaque markers by abdominal X-rays.²³ Recently scintigraphic CTS is performed in our patients with improved accuracy and less radiation exposure.²⁴

MRI Spine and Pelvis

MRI is sometimes used to evaluate patients with suspected spinal abnormalities. Risk factors include concomitant bladder pathology or urinary incontinence, cutaneous lesion or bony defect at sacrum and motor or

Table 1 The Rintala continence score

Assessment of bowel function	Score
Ability to hold back defaecation:	
Always	3
Problems less than 1/week	2
Weekly problems	1
No voluntary control	0
Feels/reports the urge to defaecate:	
Always	3
Most of the time	2
Uncertain	1
Absent	0
Frequency of defaecation:	
Every other day – twice a day	2
More often	1
Less often	1
Soiling:	
Never	3
Staining less than 1/week, no change of underwear required	2
Frequent staining/soiling, change of underwear often required	1
Daily soiling, requires protective aids	0
Accidents:	
Never	3
Less than 1/week	2
Weekly accidents, requires often protective aids	1
Daily, requires protective aids during day and night	0
Constipation:	
No constipation	3
Manageable with diet	2
Manageable with laxatives	1
Manageable with enemas	0
Social problems:	
No social problems	3
Sometimes (foul odours)	2
Problems causing restriction in social life	1
Severe social and/or psychic problems	0

intermediate anorectal malformation, the sphincter pressure is usually weak. In patients with FNRFI or slow transit constipation, the sphincter pressure can be normal. Defecatory sensory threshold and mean rectal tolerable volume may be abnormal in patients with megarectum.³¹ In patients with Hirschsprung's disease the recto-anal inhibitory reflex is impaired.

Rectal Biopsy

Rectal biopsy is reserved for children showing feature of severe constipation such that Hirschsprung's disease or rarely intestinal neuronal dysplasia is suspected. Disposable kits for suction rectal biopsy are now commercially

available such that the procedure could be done in day case with no anaesthesia required.

Treatment

Education

In our opinion, the most important part of management of paediatric Faecal incontinence is to develop the rapport with the patients and parents. Most children we saw had long history of incontinence with unsuccessful management. They should know that Faecal incontinence is a common problem and they must not feel guilty of this



Figure 2 Abdominal X-ray of a constipating child.



Figure 3 Transpubic USG rectum of a constipating child.

condition. Faecal incontinence can be well controlled if the treatment protocol is followed. Both the patient and parent are encouraged to follow the treatment plan.

Toilet Training

The patient is instructed to have a designate time to go to toilet for defaecation. For many patients, it is more physiological to teach them to have defaecation after meal. During toilet training, the children should focus on defaecation only without any distraction. In some institutes, toilet training is part of the behaviour therapy such that a reward system is incorporated.^{32,33}

Dietary Advice

Functional constipation is associated with low fibre diet. In normal children, the daily requirement of fibre is (age + 5) grams. Fibre promotes gut motility by its osmotic and mechanical effects. Osmotic stimulation is caused by the short chain fatty acid produced after decomposition of fibre by gut flora fermentation. The undigested components of fibre account for the mechanical effect, resulting in the increase in water holding ability, increase in colonic flora and the gas production during fermentation of fibre.³⁴ However, in children with non-retentive Faecal incontinence associated with watery or loose stool, a constipating diet should be advised.

Medications

Laxatives

Laxatives soften stool and have a positive effect on bowel motility. It is useful adjunctive treatment in patients with Faecal incontinence associated with constipation or Faecal retention. However, in children with FNRFI and those of organic incontinence not associated with constipation, laxatives may aggregate Faecal soiling and should be avoided.¹⁹

Bulk or hydrophilic laxatives such as psyllium and osmotic laxatives such as lactulose are commonly used in children with constipation. Polyethylene glycol (PEG) is a non-absorbable, non-metabolised osmotic agent that is often used in bowel cleansing before colonic procedure. It gains popularity recently in treatment of constipation in adults and children when using in low dose.³⁵ Studies have shown that it is a more effective laxative than lactulose with fewer side effects.^{36,37}

Loperamide

Loperamide is an opioid receptor agonist used as an anti-diarrheal agent. There is some evidence that it can increase anal sphincter pressure that contributes to better sphincter function.³⁸ In some Faecal non-retentive incontinent patients with neurological or anorectal abnormalities, loperamide is useful to control the Faecal incontinence.³⁹

Enema

In patients with severe organic Faecal incontinence, such as high type anorectal malformation and spina bifida, most of them still have Faecal soiling in spite of the toilet training, dietary restriction and oral medications. Regular phosphate enema should be introduced for adjunctive treatment. It is

an important measure to maintain the patient "dry and clean" socially. The dose and frequency of application of enema should be individualised. In patients with severe functional constipation, short period of application of enema for 3 to 7 days in adjunctive to oral laxative is useful to relieve the Faecal retention.⁴⁰ Specialty nurses in our bowel continence clinic are involved to teach the parents and patients for positioning during enema administration. In intractable soiling patients, high retrograde colonic enema with rectal tube instillation of saline and enema should be considered.⁴¹ There are reports of metabolic complications after phosphate enema, including hypocalcaemia and hyperphosphataemia.⁴² Although such complications are rare, enema should be used with caution in patients with pre-existing metabolic and renal disorder.

Antegrade Continence Enema (ACE)

The Malone ACE procedure is a continent appendicostomy operation. It involves the construction of a valve mechanism between the appendix and caecum and placement of appendix conduit to the abdominal wall or umbilicus.⁴³ Thus the patients can administer the enema with saline for bowel cleansing in an antegrade manner while sitting on the toilet.

Electrical Stimulation and Biofeedback Exercise of Pelvic Floor Muscle

Biofeedback is a technique based on 'learning through reinforcement' to control the body functions.⁴⁴ Electrical stimulation of pelvic floor muscle together with biofeedback exercise may improve the strength of anal sphincter mechanism and help maintain bowel continence in children with anorectal malformation after surgery.⁴⁵ Twelve patients with severe anorectal malformation post-operation had biofeedback and electrical stimulation exercise of pelvic floor muscle in our hospital. Improvement in soiling frequency, Rintala continence score, pelvic muscle EMG and anal sphincter pressure were noted after the training (Figure 4).⁴⁶

Intersphincteric Botulinum Toxin Injection

Botulinum toxin type A (BOTOX[®], Allergan, Inc., Irvine, CA) is a potent neurotoxin that inhibits acetylcholinesterase release from nerve terminal endings, resulting in muscle flaccid paresis that lasts for about 3 to 6 months. It has

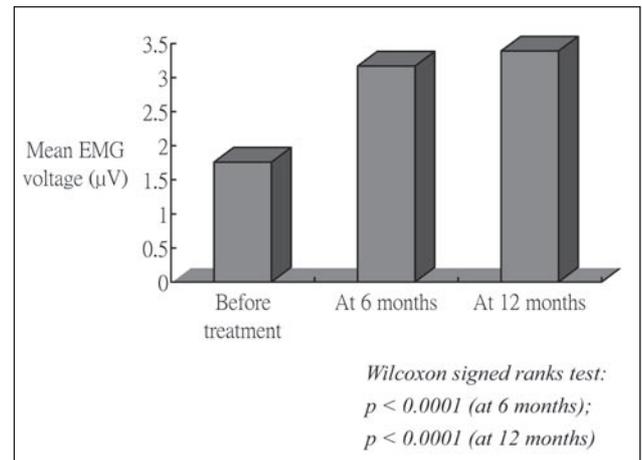


Figure 4 Pelvic floor muscle electromyography (EMG) before and after biofeedback training in 24 children with faecal incontinence.

been widely accepted as the drug of choice to improve several forms of dystonia, and a possible therapy in many other disorders due to increased muscle tone. It has been used as an agent for chemical sphincterotomy for children with severe constipation and retentive Faecal incontinence.^{47,48}

Summary

The causes of Faecal incontinence are multi-factorial. Detailed clinical history and physical examination is the cornerstone of successful management. It is essential to know whether the incontinence is associated with constipation and other organic causes. We have discussed a large variety of investigation and treatment options, which means that there is no single treatment protocol for every patient (Figure 5). Rapport development, together with education of the children and their family is important to get their cooperation in the management. Multi-disciplinary approach with liaison with specialty nurses, dietitians and physiotherapists is essential. Since 2001 we have established the paediatric bowel continence clinic in our hospital, providing comprehensive and individualised bowel management programs to our patients.

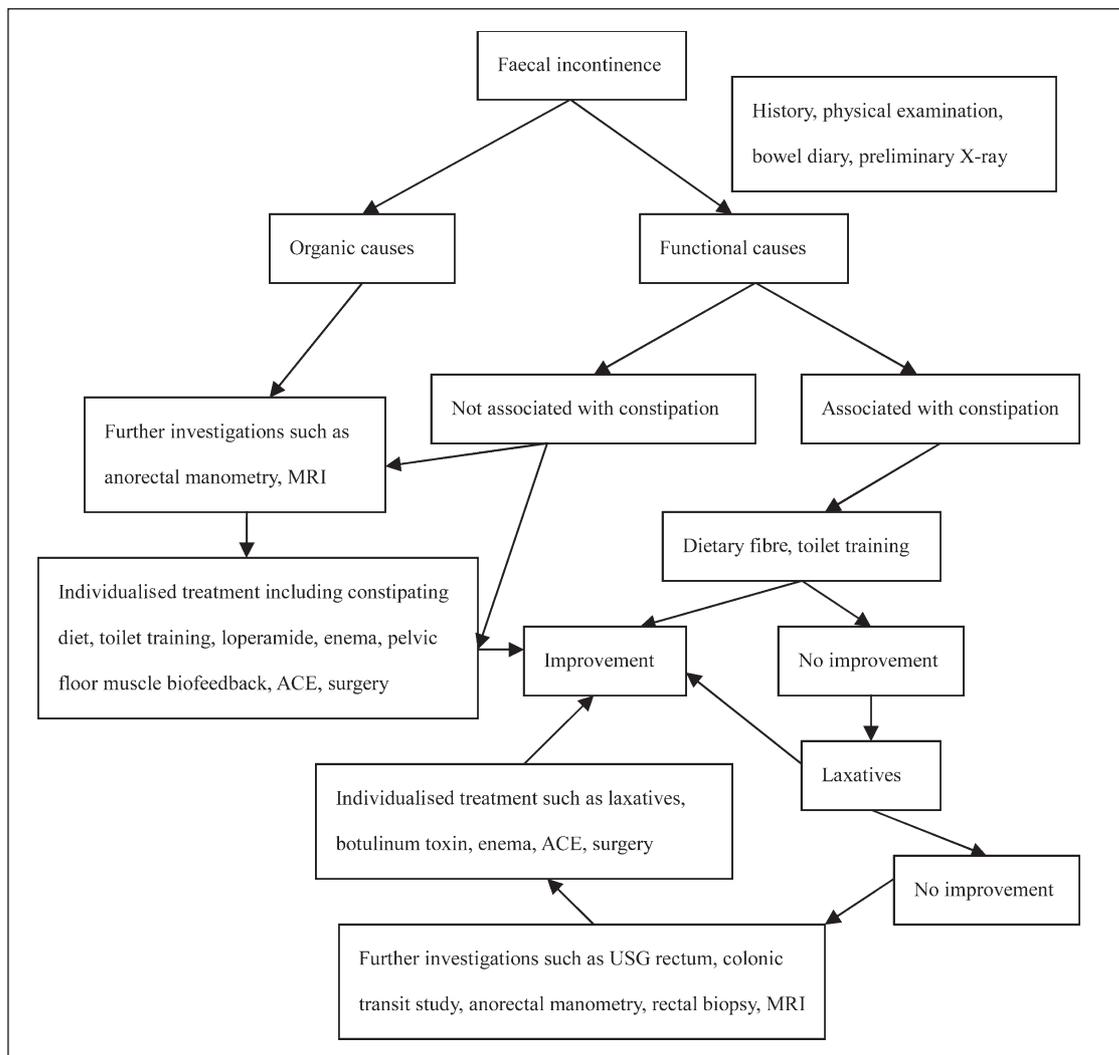


Figure 5 Algorithm for management of faecal incontinence in children.

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