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True Fecal Incontinence and Its management In Children: Review Article

Wael Mohamed El-Shahat, Amr Ibrahim El-Yasargy, Khaled Sheriff, Amr Mohamed El-Shaer
Pediatric Surgery Department, Faculty of Medicine, Zagazig University, Egypt
***Corresponding author:** Amr Mohamed El-Shaer, **Mobile:** (+20) 01060004425, **Email:** amr.elshaer40@gmail.com

ABSTRACT

Background: Fecal incontinence (FI) resembles a disastrous challenge for those who suffer from it. True faecal incontinence occurs when a patient's physical restrictions prevent them from having voluntary bowel movements, necessitating the use of an artificial mechanism to empty the colon. FI frequently makes it more difficult for children to fit in with society, resulting in serious psychological consequences. More children than previously believed are affected by this problem, including those who were born with anorectal malformations, Hirschsprung's disease (HD) and spinal cord disorders, or spinal injuries. Few post-operative complications have a greater impact on patient's quality of life.

Objective: This article aimed to review true fecal incontinence and possible modalities of management in children.

Methods: We searched Google Scholar, Science Direct, and other online databases for true faecal incontinence and management. The authors also reviewed references from pertinent literature, however only the most recent or comprehensive studies from January 2000 to February 2022 were included. Documents in languages other than English were disqualified due to lack of translation-related sources. Papers such as unpublished manuscripts, oral presentations, conference abstracts, and dissertations that were not part of larger scientific studies were excluded.

Conclusion: Following surgery for Hirschsprung disease, faecal incontinence may develop. Incontinence is persistent, severe, and most likely irreversible when the anal canal is injured. This issue might be prevented by maintaining the anal canal.

Keywords: True fecal incontinence, Management, Children.

INTRODUCTION

When these muscles are tensed, the anus may appear to close in a circular form, but in fact, these parasagittal fibres connect one side to the other, posterior and anterior to the anal orifice. The parasagittal fibres really follow the muscle complex parallel. The funnel-shaped muscle mechanism's top part is called the "levator," while its bottom part is called the "muscle complex" at random. The parasagittal fibres and the muscle complex's junction serves as a representation of the sphincter's borders [(1)].

The anorectal sphincters' anatomy is made easy to explain and comprehend by this straightforward explanation. Traditional anatomy theories are full of details or notions that have no therapeutic use and have been handed down from generation to generation. Medical students are often expected to understand some of those principles. Three extremely crucial components are required for bowel control: A. Sensation, B. Sphincter, C. Rectosigmoid motility and reservoir function [(2)].

Magnetic resonance imaging has also been used to characterise the anatomy of the anal canal [(3)]. The rectum joins the puborectalis muscle at the pelvic hiatus, where the anal canal develops proximally. The muscular anal canal might be conceptualised as a “tube within a tube” beginning at this point. The inner tube, which is innervated by the autonomic nervous system, is the longitudinal layer and visceral smooth muscle of the internal anal sphincter. Somatic muscles, such as those of the puborectalis and external anal sphincter, comprise the outer muscular tube [(4)].

If the new canal is lodged inside the striated muscle complex, which is then its only sphincter, the anal canal created in patients presenting a congenital rectourethral fistula is endowed with a high degree of sensibility, content discrimination, and muscular sphincter function. The colon lacks awareness of its contents and all control over faeces if the canal is diverted to the perineum through the muscular diaphragm posterior to the sling [(5)].

The surrounding muscles must be taken into account while performing surgeries ranging from low anterior excision to anal fistulotomy, which is how the anal canal is surgically defined. Digital inspection and ultrasound imaging make it simple to spot the surgical anal canal, which is formed by the puborectalis, external anal sphincter, and internal anal sphincter [(6-7)].

Males often have a longer surgical anal canal than females do. Men's surgical anal canals are believed to be 4.4 cm in length on average, compared to women's 4.0 cm, according to intraoperative measurements of the posterior anal canal. Furthermore, it was demonstrated that the anal canal constituted a distinct muscle unit due to its age-invariant length [(3)].

Fecal Incontinence in Children:

FI is defined as the full ejection of formed faeces with a developmental age of at least 4 years or the inadvertent seepage of tiny amounts of liquid faeces (also known as soiling or leakage) into knickers [(7)]. Children with FI have considerably worse QOL than their counterparts who are healthy. Those who look after children with FI also report experiencing extremely high levels of parental stress [(8)].

Bullying, peer rejection, and feelings of humiliation are common in children with FI, which negatively impacts their physical and psychological

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wellbeing [9, 10]. The more thorough definition of involuntary passage of faeces via the anal canal provided by the American Psychiatric Association is continuous or recurring uncontrolled passage of faeces >10 mL for at least one month in a patient older than four years [11, 12].

In the pediatric population, FI may result from:

(i) The absence of typical continence mechanisms is a defining feature of true faecal incontinence. Paediatric patients receiving surgery for anorectal abnormalities, Hirschsprung's disease, and spinal issues that can be either congenital or acquired include individuals who are really incontinent. The majority of patients undergoing anorectal malformation correction have functional defecation disorders, and all of them have anomalies in their faecal continence mechanism. A deficit in these systems that is severe enough to impede a spontaneous bowel movement occurs in around 25% of patients. A modest but considerable percentage of Hirschsprung's disease patients (5%) experience faecal incontinence. Individuals suffering from spinal ailments or traumas might not be able to move their bowels freely, or they could be able to do so to differing degrees. Patients who truly experience faecal incontinence require bowel control, an artificial technique that maintains them clean and dressed normally [13, 14].

(ii) Due to faecal impaction, pseudo-incontinence results in involuntary stool leaking. Pseudo-incontinence patients are individuals who can regulate their bowel motions but have overflow or encopresis because of severe constipation. Proper management of constipation is necessary for patients with pseudo incontinence [14].

- **Epidemiology:**

Children experience functional constipation at rates of 1% to 30% and FI at 1.6% to 4.4%. Idiopathic FI accounts for around 3% of all primary care visits [15, 16].

Most children (75–90%) who have FI have faecal retention; it affects males more frequently than girls [17]. A recent cross-sectional research of this age group indicated that the prevalence of constipation was 15.6% in children and 22.8% in young adults. The prevalence of FI was found to be around 7% in both age groups. Additionally, this study revealed that 43% of children had symptoms for more than five years and 26% of young adults had experienced constipation since childhood [18]. These findings demonstrate that a sizable portion of kids who have constipation as young children don't "outgrow" it. Many kids with defecation disorders don't think it's an issue and often don't seek for assistance [15].

Other times, it's said that parents mistakenly believe their child is lazy or careless with having accidents, which can lead to verbal and/or physical abuse directed at the child in question. Children with FI are substantially more likely than their healthy counterparts to encounter emotional, sexual, and physical abuse [10, 11].

- **Evaluation:**

They all undergo a renal ultrasound, voiding cystourethrogram, X-ray study of the lumbar spine, X-ray study of the sacrum AP and lateral, contrast enema with water-soluble material, and an MRI of the spine to rule out the presence of tethered cord in order to make a diagnosis and determine a potential aetiology. With the use of these examinations, we may identify comorbid conditions [19], mostly urologic and spinal, that occasionally the parents were unaware of and provide them with the necessary care. Pseudomonasal discharge of blood, mucus, and pus is commonly misdiagnosed by patients as incontinence. Nonetheless, it might be beneficial to clarify why trousers stain [20].

In order to pinpoint the problem's root cause and then design the most effective course of action, it is crucial to differentiate between real incontinence and faux incontinence [21]. For the reasons listed, the typical mechanism of bowel control is inadequate in patients with genuine faecal incontinence [22]. When a patient acts as though they are incontinent of faeces but actually has severe constipation and overflow soiling, this is known as pseudo incontinence. The patient becomes continent once the disimpaction is addressed and adequate laxatives are given to prevent constipation [23].

Which children have a bad prognosis and which children have a favourable functional prognosis should be predicted by the surgeon beforehand. The most typical prognosis predictors are shown in figure (1) [22].

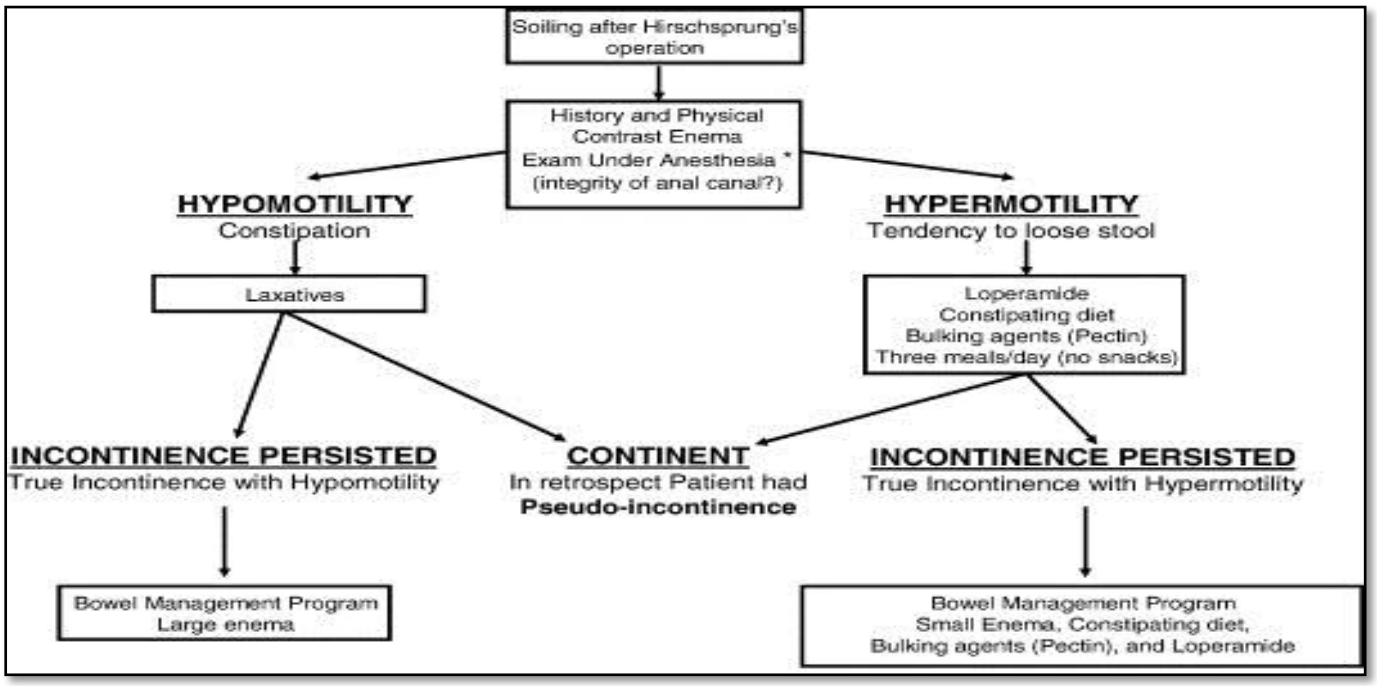

Figure (1): Treatment plan for individuals presenting with post-operative faecal incontinence from Hirschsprung disease

After the primary repair and colostomy closure, the functional prognosis may be determined. In order to save needless frustration later, parents must be given accurate information about their child's possibilities for bowel control [(21)]. It is essential to determine each child's functional prognosis as soon as possible, often even during the neonatal stage, to prevent giving the parents unrealistic expectations. The functional prognosis can be estimated when the diagnosis of the particular impairment is made [(23)].

If a kid has a condition that has a positive prognosis, such as vestibular fistula, perineal fistula, rectal atresia, rectourethral bulbar fistula, or imperforate anus without a fistula, one should anticipate that by the time they are 3 years old, they would be able to urinate on their own [(19)]. In order to prevent constipation, faecal impaction, and soiling, these kids will still require care [(22)]**.** The parents must be aware that their child will likely require a bowel management programme to remain clean if the defect is one that is associated with a poor prognosis, such as a very high cloaca with a common channel longer than 3 cm, a recto-bladder neck fistula, or if they have a very hypodeveloped sacrum or associated spinal anomalies. Before the child starts spending a lot of time away from home at age 3 or 4, this should be put into place [(23)].

Almost equally likely to have spontaneous bowel motions or be incontinent are children with recto prostatic fistula [(20)]. By the time these kids are three years old, potty training should try to be accomplished. Bowel management should be used in the event that this fails [(22)]. Retests of the child's toilet training proficiency might be performed every summer during the break from school [(23)].

- **Treatment:**

Due to the fact that patients with real incontinence and an intact anal canal had a trial of medical therapy without enemas, we believed they had the potential for bowel control. Patients who were fecally incontinent and had a damaged or missing anal canal continued to get enemas with no intention of discontinuing them [(24)].

I-True Fecal Incontinence:

In this case, a bowel management programme that instructs the patient and their parents on how to do a daily enema to empty the colon is the best course of action. This will ensure that the patient stays entirely clean for 24 hours before the next enema. This is achieved by holding the colon motionless in between enemas. If laxatives or stool softeners are administered to such a patient, they will soil more. Despite being simple, the programme is best performed by trial and error over the course of a week [(20)].

The best strategy is a bowel management programme that teaches the patient and the parents how to do an enema once a day to thoroughly clear the colon, ensuring that they remain clean for 24 hours before the next enema. By keeping the colon still in between enemas, this is accomplished. Such a patient will dirt more if given laxatives. Despite being straightforward, the programme is best implemented over the course of a week via trial and error. Every day the patient is examined, and a radiograph of the abdomen is taken to check for the quantity and position of any faeces still in the colon (Figure 2). Additionally observed is the presence or absence of faeces in the pants. Every day, it is decided whether to

modify the kind and/or quality of the enemas, as well as any dietary or pharmaceutical adjustments [24].

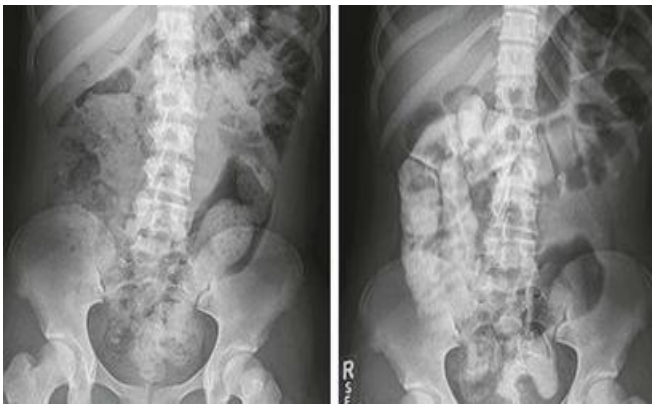

Figure (2): Abdominal radiographs taken during inpatient bowel care demonstrate the improvement made with daily enema adjustments towards a totally clean colon [24].

In order to monitor the quantity and position of any faeces lingering in the colon, the patient is inspected daily and an abdominal radiograph is obtained. The presence or absence of stools and instances of soiling are observed. The kind and/or quality of the enemas, as well as any dietary or pharmaceutical modifications, can all be modified each day based on this information [23].

When a kid with anorectal malformation (ARM) reaches the proper age for a bowel management programme, there are two distinct groups, and each requires a different approach to therapy. (a) Patients with faecal incontinence and a propensity for constipation make up the first and largest group [21]. (b) Faecal incontinence and loose stools are seen in the second group [22].

Constipation is more common in patients in the first category, particularly in those with spinal abnormalities and those who had faecal incontinence after HD procedures. Only a tiny portion of HD patients fall into the second (hyper motile) group. A contrast enema on these individuals reveals a non-dilated colon despite the several faeces they pass each day. Interestingly, aberrant colon innervation in patients with spinal disorders can cause severe constipation even in the absence of a dilated colon [20].

II-Children constipation and true faecal incontinence (colonic hypomotility):

Enema programs are preferred over laxatives as a type of therapy for patients with genuine faecal incontinence and a predisposition for constipation. These kids have sluggish colon motility. The mainstay of their bowel management programme is the daily insertion of an enema into the child's colon. No specific diet or drugs are required [24].

Low motility (hypomotility) is advantageous to them since it keeps them hygienic in between enemas. Finding the appropriate enema that can successfully empty the colon is the true issue. To demonstrate with absolute certainty that the rectosigmoid colon is empty after an enema, a plain abdominal radiograph is required. Soiling episodes, often known as "accidents," take place when there is inadequate colonic evacuation, which then seeps out throughout the next 24 hours prior to the next enema because of the patient's underlying incontinence [25].

III-True Faecal Incontinence and Loose Stools (Colonic Hypermotility) in Children:

Prior to the development of the posterior sagittal technique, most children with loose stools and ARMs had surgery. In earlier operations, a rectosigmoid resection was commonly employed [26].

The youngsters in this group have a hyperactive colon because they do not have a rectal reservoir. Diarrhoea bouts occur often as a result of rapid transit of the stool. This suggests that even after an enema is able to thoroughly clean their colon, faeces still moves somewhat swiftly from the cecum through the colon and out the anus. Treatment for this problem involves a constipating diet and/or drugs (loperamide, water-soluble fibre, or pectin to slow the colon). Slowing down the colon can also be achieved by avoiding meals that result in loose stools [24].

Only a tiny number of HD patients have behaviours comparable to hypermotility, and they can be managed similarly. An effective bowel management programme requires the patient and family to be involved, as well as the medical staff to be sensitive and committed. The program's major objective is to maintain the colon empty and silent so that the patient stays clean for 24 hours following the enema. It is an ongoing process that requires flexibility in response to each child's needs. After a week, when the regimen has been modified via trial and error by the patient, family, physician, and nurse to suit the specific needs of the patient, it typically starts to work [27].

CONCLUSION

Faecal incontinence following Hirschsprung disease surgery is a possibly preventable consequence that reduces the quality of life for the patient. Incontinence is persistent, severe, and most likely irreversible when the anal canal is injured. This issue might be prevented by maintaining the anal canal. To reach a successful conclusion and to maintain success over the long run, a great deal of communication, education, and encouragement of the family is frequently necessary. Most youngsters who participate in this kind of programme are maintained artificially clean throughout the day and are able to lead regular lives.

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