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Objective Assessment and Guided Management of Constipation complicated by Faecal Incontinence in Children

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ABSTRACT

Faecal incontinence remains one of the most challenging problems in the paediatric population. This prospective 3-year study evaluated 51 children (aged 3–15 years) with functional faecal incontinence secondary to constipation. Management included phased disimpaction, maintenance with laxatives, dietary and behavioural therapy, and tapering. Objective assessment using Wexner scores showed significant improvement, with 96% fully continent at 6 months, demonstrating effectiveness of algorithmic bowel management..

1. INTRODUCTION

Faecal incontinence (FI) in children refers to the involuntary passage of stool from the rectum through the anus, leading to the occurrence of bowel movements at inappropriate times, typically beyond the age of expected toilet training [1]. Functional Faecal Incontinence (FFI) secondary to constipation is the most common cause of FI in children. If constipation remains inadequately treated, it leads to functional faecal incontinence (FFI), in as much as one-third to one-half of the affected patients. The severity of this condition can vary ranging from occasional stool leakage during the passage of flatus to complete loss of bowel control. It is an incapacitating and socially distressing condition that carries substantial socioeconomic consequences. Not only the morbidity associated with FI is complicated, but its management also poses substantial challenges for all individuals involved in the care of affected children. At present there is no well-defined protocol to treat such patients which are usually managed by loads of laxatives without satisfactory results. Owing to this we tailored available modalities of treatment in an algorithmic form to improve the outcome of our patients.

2. MATERIALS & METHODS:

This was a prospective study conducted over a duration of 3 years (2021-2023). Children aged between 3 and 15 years who presented with FFI and completed follow up for at least 8 months after starting the treatment were included in the study. Patients with underlying organic causes for constipation and those having undergone anorectal surgeries were excluded.

Rome-IV criteria were employed to establish a diagnosis of functional constipation. Furthermore, a thorough physical examination was conducted, for assessment of the spine and perineal region. Faecal loading was categorised into four grades:

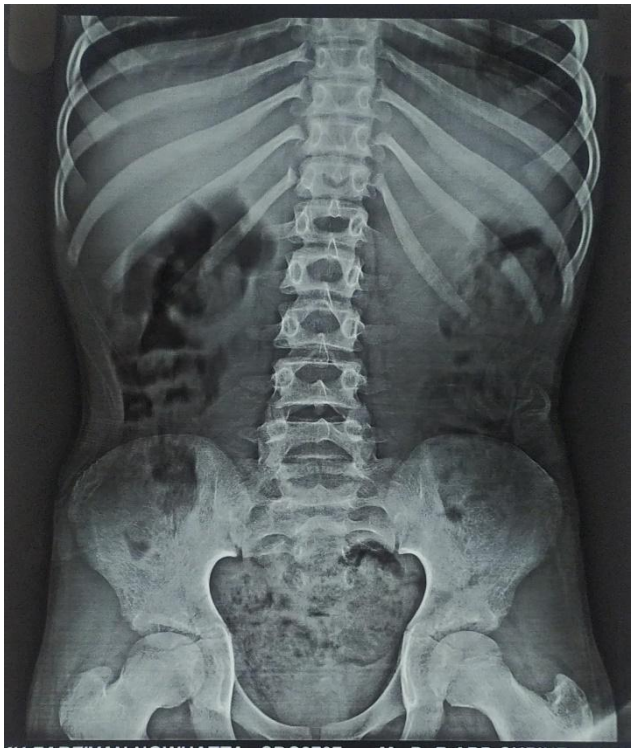
Grade I: faecal loading involving Rectum only (Picture 1)

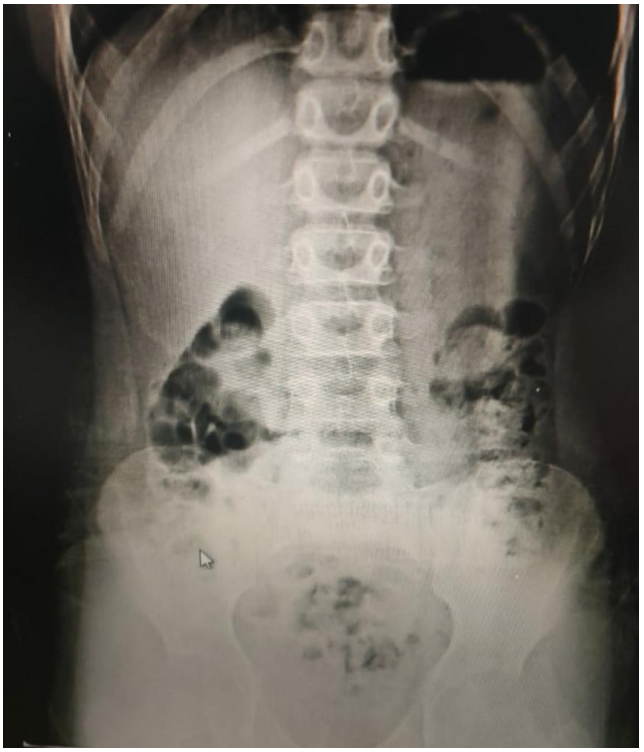
Grade II: faecal loading wxtending to sigmoid and Descending colon (Picture 2)

Grade III: faecal loading extending to Transverse colon (Picture 3)

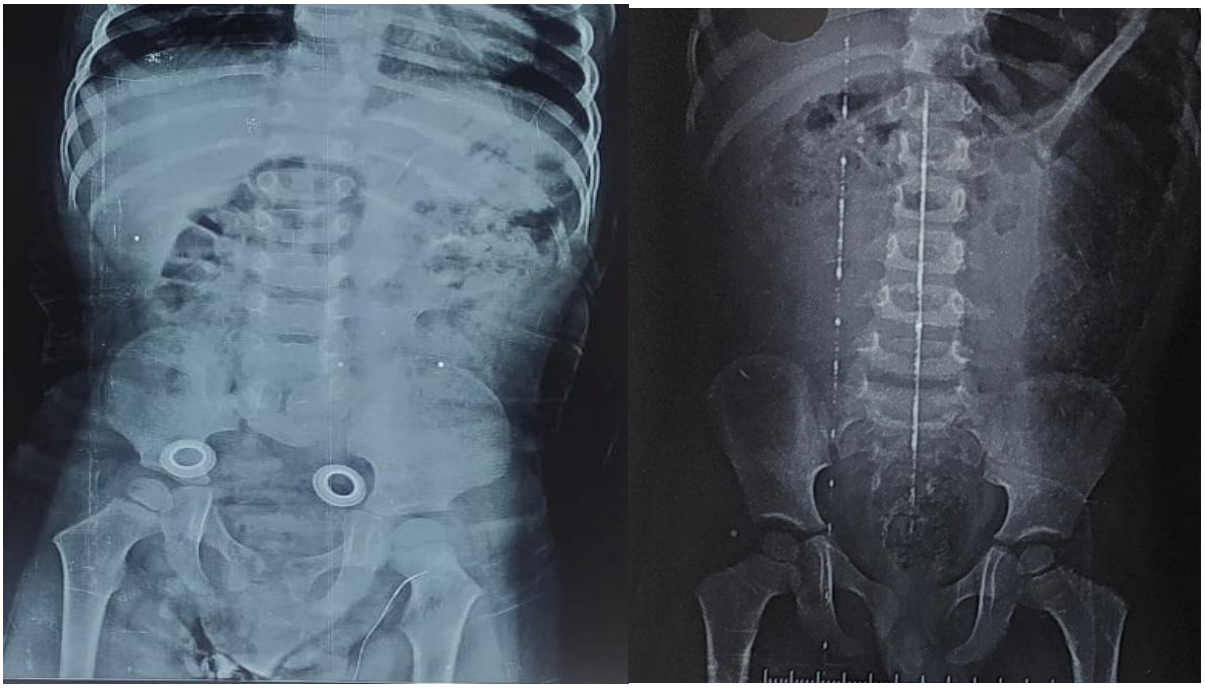
Grade IV: faecal loading involving whole colon including the Ascending colon with or without scybala of faecal matter (Picture 4)

Picture 1





Picture 2



Picture 3

Picture 4

Treatment was instituted in 3 phases:

Disimpaction:

Disimpaction was carried out by stimulant laxatives including Polyethylene Glycol (PEG), Glycerine rectal suppositories or saline enemas. The dose of PEG in disimpaction phase was 1-1.5g/kg bodyweight. Saline enema was administered in the dose of 5-10 ml/kg. Disimpaction phase was continued for 10-15 days. X-ray was done every visit to look for the clearance of faecal loading. After complete disimpaction patients were subjected maintenance phase.

Maintenance phase:

For maintenance PEG was used with a dose 0.5-2 grams per kg of body weight which was gradually tapered over time, as the patients showed persistent improvement.

In patients who showed suboptimal response to PEG, Sodium Picosulphate was initially started till the desired response was obtained and later on they were also shifted to PEG. For patients who didn't tolerate PEG, Lactulose or rectal saline enemas were instituted. Maintenance phase was continued for 6 months, and X-ray abdomen were obtained every 4 weeks. Once there was no soiling, no faecal loading on X-ray and regular bowel movements, tapering of medicines was done.

Emphasis was laid on behavioural therapy and establishing a habit of regular bowel movements. Patients and parents/caregivers were advised for regular toilet sittings, every day after every major meal, for 10-15 minutes. This part was difficult but pivotal to success of the therapy.

Tapering:

Tapering was done by continuing the patient on bowel training, dietary modification and a small tapering dose of evening PEG or lactulose. Laxatives were tapered over a couple of months.

Before the start of treatment, the severity of the disease was assessed using the Wexner score following which appropriate bowel management strategies were implemented. The effectiveness of therapy was evaluated by reassessment using the same Wexner Score at specific time points: 1 week, 2 weeks, 4 weeks, 6 weeks then four weekly for 26 weeks after the initiation of bowel management strategies. Data was analysed using IBM-SPSS, Microsoft excel and Origin Pro 8.5. ANOVA was performed and means plot were obtained to analyse the differences in means of incontinence scores obtained at various time

periods of study. P value of < 0.05 was taken as significant.

3. RESULTS & OBSERVATIONS:

A total of 405 patients attended our bowel management clinic during the study period out of whom 88 patients were diagnosed with FFI. However, 37 patients did not complete the follow up and were excluded. Mean age of patients in this group was 6.41 ± 2.88 ranging from 3 to 15 years with maximum number of patients in the age group of 3-6 years (52.94%; n=27). Male: Female ratio was 0.82. Duration of incontinence ranged from 1 month to 8 years with a mean of 1.42 ± 1.34 years. Constipation was present in all of them for an average duration of 3.40 ± 2.67 years ranging from 1 month to 13 years. Disimpaction was achieved using PEG in 49% (n=25), rectal saline enemas in 19.6 % (n=10) and a combination of PEG & glycerine rectal suppository in 31.3 % (n=16) of patients. Rectal suppository as an adjunct to PEG was used in patients who had hard palpable faecaloma. The faecalomas were finger-fractured at the time of digital rectal examination and PEG and rectal suppositories were instituted for complete clearance.

In maintenance phase majority of patients were prescribed initially PEG (60.78%; n=31). In 37.25 % (n=19) patients' sodium picosulfate was employed because of patient preferences and/or incomplete response to PEG therapy. One patient was managed with saline enema throughout the course of treatment. Maintenance phase was continued for 6 months and when the patients reported regular bowel movement in addition to x-ray evidence of no residual faecal loading, weaning was started. Maximum improvement in severity scores was seen at 1 month from start of treatment with about half of patients achieving Wexner score of 0. At 6 months of follow up, almost all (n=49) had achieved score of 0 and became fully continent. Remaining 2 patients also showed satisfying improvement and had a score of 2 and 4 respectively at six months (Table 1).

Table 1: Descriptive statistics for FFI using Wexner score

Wexner score for FFI		Number of patients	Mean	Standard Deviation	Std. Error	95% Confidence Interval for Mean		Min.	Max.
						Lower Bound	Upper Bound		
Before start of BMP	12	19	13.57	1.46	0.204	10.65	16.49	12	18
	14	25							
	16	6							
	18	1							
	Total	51							
After one week	6	1	9.61	1.790	0.251	9.10	10.11	6	14
	8	21							
	10	18							
	12	9							
	14	2							
	Total	51							
After two weeks	6	14	6.24	2.421	0.339	5.55	6.92	2	12
	8	9							
	10	6							
	12	2							
	Total	51							
After four weeks	0	24	2.55	3.074	0.431	1.68	3.41	0	10

	2	8							
	4	9							
	6	3							
	8	5							
	10	2							
	Total	**51**							
After twenty-six weeks	0	49	**0.12**	0.621	0.087	-0.06	0.29	0	4
	2	1							
	4	1							
	Total	**51**							

4. DISCUSSION:

Functional constipation is an increasingly common problem among children. The rise of sedentary lifestyles and increased screen time combined with unhealthy dietary habits such as junk food consumption has exacerbated this issue particularly in toddlers and younger children. The situation becomes further complicated when functional constipation leads to faecal incontinence which not only causes significant mental stress for the patients but also creates considerable concern for their parents. Paediatric physicians usually administer high doses of laxatives which seldom yields the desired results, besides imposing financial burden on families. Furthermore, there is limited research available on algorithmic management of these patients, optimal duration of laxatives and impact of bowel training.

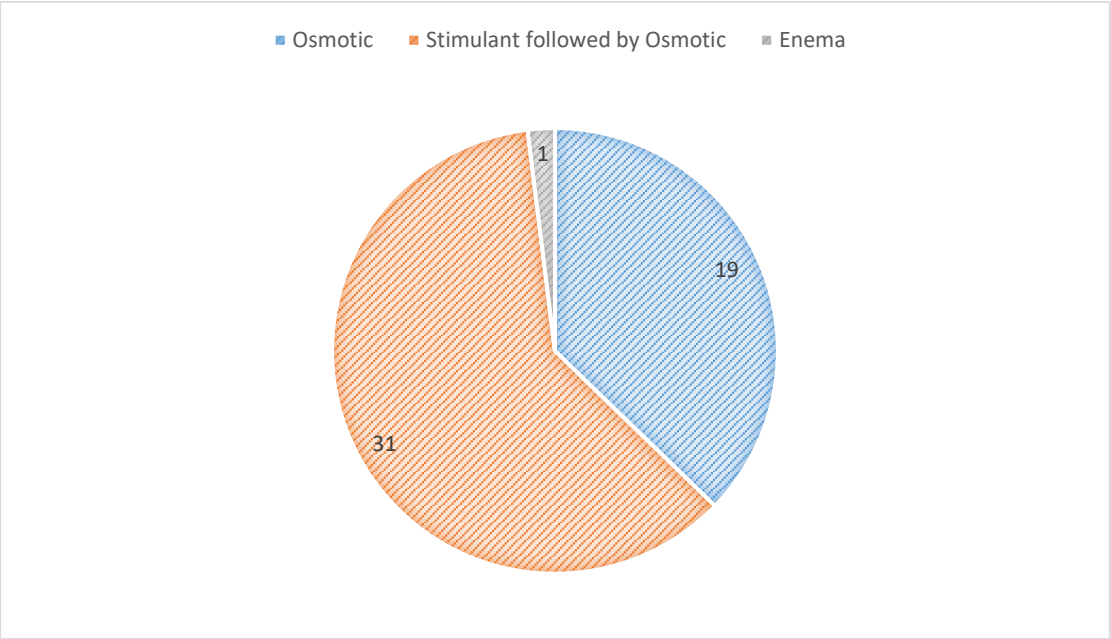
The mean age in our patients was 6.41 ± 2.8 9years. This observation aligns with the notion that FI typically emerges after toilet training and corresponds with the occurrence of constipation [6] . We defined FI for children older than 3 years (instead of the more commonly used 4 years in Western literature) because, in our region, toilet training and voluntary bowel control are typically achieved by around 3 years of age. Several studies from Asia have documented earlier toilet training practices, supporting our use of 3 years as the cutoff. [7,8,9]. Interestingly, our cohort had more females than males (M:F ratio 0.82:1). This contrasts with some reports in literature that show a male predominance in paediatric constipation/FI. One possible explanation is that in our cultural context parents may be more inclined to seek medical care for bowel issues in girls than in boys, leading to a higher representation of females in clinics. Social factors and attitudes could thus influence healthcare presentation, an aspect that might differ by region.

The duration of FI exhibits considerable variability, ranging from one month to as long as eight years, with a mean duration of 1.42 ± 1.34 years (CI 95%). These findings emphasize the substantial suffering endured by affected children. [10,11]. Almost all these children had associated constipation which is reflective of the underlying pathophysiology of FI. The mean duration of constipation was 3.40 ± 2.67 years (CI 95%) with minimum of 1 month and maximum of 13 years.

To comprehensively assess the severity and treatment response in these patients, we employed the Wexner score which has direct relationship with severity of FI. While there is no universally accepted scoring system to evaluate the severity of FI and its response to treatment, Wexner score have been widely employed globally. Furthermore, its relevance and relative ease of comprehension make it particularly suitable for this purpose [11].

Among the total of 51 patients, the selection of appropriate treatment interventions for faecal disimpaction was guided by the severity of the condition and the results obtained from abdominal radiographs. Specifically, disimpaction was accomplished through oral medication administration in 80.4 % (n=41) of the patients. Rectal regimens were implemented in 19.62% (n=10) of the patients. A combination approach utilizing both oral medication and rectal suppositories (typically glycerine) was employed in 16 patients (31.3%). Subsequent to the successful disimpaction procedure, maintenance therapy was prescribed to address the needs of the patients as shown in the Fig 1.

Fig 1: Maintenance laxatives used in patients with FFI



All except one were effectively managed through a combination of oral laxatives, dietary modifications, and behavioural therapy. Cultural practices in our region, such as early toilet training expectations and a diet that can be low in fiber (traditional diets or high rice intake), may influence the presentation and management of constipation in children. We emphasized dietary modifications (adding fibre, etc.) as a key part of therapy, which is particularly relevant in our setting. Behavioural therapy, a central pillar and primary focus of the BMP for this subset of patients (n=50), entailed regular toilet sittings lasting ten to fifteen minutes after major meals, typically three times a day.

We observed that all the patients with FFI showed persistent improvement over the duration of treatment as depicted in the Figure 2. Statistical analysis showed a definite improvement in severity score (p value < 0.05). We encountered relapse in two patients during the treatment which were managed with oral treatment only. These patients were not following behavioural therapy properly. Their response improved with reinforcement of behavioural therapy. These results agree with the previous research carried out by various researchers globally [10,12,13].

One patient with underlying cerebral palsy required daily saline enemas as their parents were more comfortable with rectal enema administration as opposed to oral laxatives. This patient's unique circumstances justified this approach. The combined implementation of laxatives, dietary modifications, and behavioural therapy, referred to as Bowel Retraining, has proven to be an effective treatment modality for patients with FFI, and our results align with the findings reported in published literature [12].

Parental education and engagement were crucial, as successful outcomes depended on consistent habit training. We found families to be receptive to the structured approach, especially after seeing improvements – indicating that even in a setting where such problems carry social stigma, a clear plan can empower caregivers to help their children.

Research findings have indicated that non-retentive FI constitutes approximately 20 percent of the patients diagnosed with FFI [13]. However, our research endeavours have led us to assert that the prevalence of non-retentive FI may not be as widespread as depicted in existing scientific literature, as our diligent investigation of the study population did not reveal any instances of this condition. It is plausible to posit that such observations may stem from geographical dissimilarities, highlighting the potential influence of regional factors on disease manifestation. Alternatively, those cases might simply not have presented to our clinic during the study period. Further population-based research would be needed to determine if a true regional difference exists.

Figure 2: Severity of incontinence in patients with FFI after bowel management

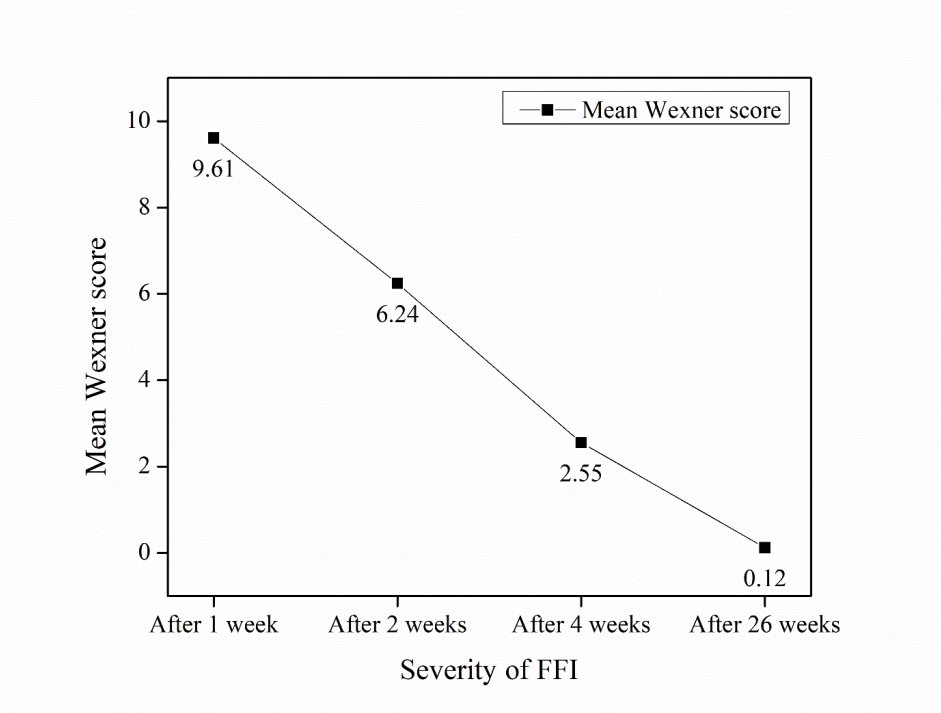


Fig 2: Approximately 50% of the children (n=25) had a Wexner score of 14, followed by 19 children with a score of 12, 6 children with a score of 16, and one child with a score of 18. The mean Wexner score at the beginning of the BMP was 9.61, and there was a significant decrease in the score by the end of the twenty-sixth week (Wexner score 0.12). The consistently declining curve suggests a reduction in the Wexner score, reflecting the effectiveness of the treatment

5. =CONCLUSION:

Functional incontinence in children often results from functional constipation with prolonged stool impaction. Algorithmic management guided by objective assessment has proven to be successful and cost effective providing targeted and efficient treatment outcomes.

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