

MANAGEMENT OF FAECAL INCONTINENCE BY PELVIC FLOOR MUSCLE EXERCISE, FARADIC ELECTROSTIMULATION AND BEHAVIOURAL TRAINING - A Case Study

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SUMMARY

The existing methods of faecal incontinence management have met with mixed success. Recently, there has been increased interest in pelvic floor contraction and electrostimulation of the pelvic floor muscles.

This paper presents a case study of a 10-year old girl with a diagnosis of faecal incontinence secondary to sexual assault. Before the commencement of treatment, the strength of the pelvic floor muscles was assessed using a pelvic floor muscle grading system. The severity and frequency of incontinence, as well as the subject's attitude to incontinence were also assessed with the aid of a questionnaire. The assessment was followed by six weeks of physiotherapy treatment with pelvic floor muscle strengthening exercises, faradic electrostimulation and behavioural training. The frequency of treatment was twice a week for six weeks (12 sessions).

The outcome of the treatment revealed no remarkable improvement for the first and second weeks of treatment. At the third week of treatment, however, an increase in the pelvic floor muscle strength from 2/5 to 3/5 was observed, the severity of incontinence was reduced from 'soiling the outer clothing' to 'soiling the underwear'. The time between meal and defecation also increased from 2 minutes to 20 minutes. By the end of the 4th week, the frequency of incontinence was further reduced. By then, the subject no longer perceived the

incontinence as a major problem but as a minor inconvenience, since she could now hold on for 60 minutes after eating before defecating.

The outcome of this study has demonstrated the efficacy of pelvic floor exercises, faradic electrostimulation and behavioural training as an effective method of treatment for faecal incontinence.

Key words: incontinence, exercise, electrostimulation, behavioural training

INTRODUCTION

Faecal incontinence is the unintentional or uncontrolled passage of faeces. When less severe, there may be minimal soiling of clothing sometimes associated with inadvertent passing of flatus. When most severe, there is uncontrollable, complete emptying of the bowel with little or no warning.¹ Faecal incontinence seems to be less common than urinary incontinence, though it appears difficult to determine accurately the prevalence of this condition in this environment because many sufferers are so embarrassed and ashamed that they hide their problem.

The prevalence of faecal incontinence in other countries has been reported. A prevalence of 1 per 1000 was reported in the UK in 1975,² while in 1985 a prevalence of 1.7 per 1000 women under 65 years and 13.3 per 1000 in women over 63 years was

reported in the US.³ It is more common in women than in men at a ratio of 8:1, and most of the affected women have had children.

The most important factor in the maintenance of faecal continence is the integrity of the anorectal angle and flap valve.² It follows that damage to the muscle itself or to the innervations of the pelvic floor musculature, which affects the puborectalis and external anal sphincter, could cause faecal incontinence. Examples of conditions or events that could cause abnormal functioning of the sphincter and pelvic floor are:

- Constipation or a history of habitual straining, encouraging stretching and perineal descent.
- Prolonged or difficult labour, forceps delivery, third degree perineal tears or rupture of the external anal sphincter
- Trauma involving the perineum or sacral nerve roots, e.g., fractures or surgery
- Rectal prolapse, which causes stretching of rectal tissue
- Sexual abuse, possibly in childhood
- Brain damage or dementia, preventing awareness of the urge to defecate
- Fault in another part of the system such as recto vaginal fistula

Faecal incontinence is devastating for the individual concerned, even when it is just a temporary problem.¹ It may be associated with infective diarrhoea or inflammatory bowel disease as well as psychological distress and social isolation on the part of the individual affected. Its treatment basically consists of medical, surgical and physiotherapy interventions. Where the stool is too loose, management is directed toward curing any underlying infection or disorder, and if necessary administering a simple constipating agent. Where faecal impaction is the cause, the rectum must be professionally cleaned, under anaesthesia if necessary. Education on diet and bowel management to avoid recurrence will also be required.³ Surgical management may involve the repair of the external anal sphincter, either directly or by muscle grafts.⁴ Loss of anorectal angle may be improved by means of a posterior repair. This involves suturing the pelvic floor together behind the rectum, which pushes the anorectal angle forward and restores it.⁴

The existing methods of management of the condition have been used with mixed success. Recently, interest has focussed on the use of pelvic floor contractions and electrostimulation with ring

electrodes on an anal plug. The present case study was designed to report the clinical presentation of faecal incontinence as well as the efficacy of physiotherapeutic modalities such as pelvic floor muscle contraction (Kegel exercise) and electrostimulation on faecal incontinence.

Initial Presentation

History. The subject for this study was a 10-year old girl who was sexually assaulted at her home on the 5th of August 2002 by a 20-year old boy (house help). The parents of the patient did not know until 6 days after the incident, when they noticed that the patient was unable to hold her faeces anytime she ate solid foods. She was taken to a private hospital from where she was referred to the Lagos University Teaching Hospital, where she was diagnosed to have faecal incontinence and was referred to the Physiotherapy Department.

Height - 4.3m
Weight - 43kg

Previous medical history. No history of previous hospitalization.

Previous surgical history. Not significant.

Family and social history. The patient is the first child of her parents, both of whom are traders. She has dropped out from her extra-coaching classes because of the constant embarrassment caused by the faecal incontinence.

ASSESSMENT

Internal evaluation of pelvic floor muscle strength

This test was carried out to evaluate the strength of the pelvic floor muscles. The equipment used for the test included perennial drape, lubricants, gloves, towel and wash cloth.

Patient's position preparation

The patient was positioned crook lying (underpants removed) with pillow support under her head and under the knees. The patient was adequately draped to permit minimal exposure. The purpose of the test was explained to her and she was encouraged to relax.

Procedure

Gloves were put on and the fingers were lubricated. The middle and the index fingers were gently inserted into the vaginal canal and the finger pads turned towards the sacrum. The patient was then

instructed, ‘on the count of three’ to squeeze the pelvic floor muscles as hard as she could and hold the contraction as long as she was able to. This instruction was reinforced by the command, ‘Do not let me pull my finger out’. The muscle strength was then graded using the pelvic floor muscle grading scale shown below.⁵

Rating	Meaning	Indication
0/5		No contraction
1/5	Trace	Contraction held for less than 1 second
2/5	Weak	Contraction held for 1-3 seconds
3/5	Moderate	Contraction held for 4-6 seconds
4/5	Strong	Contraction held for 7-9 seconds.
5/5	Unmistakably	Contraction held for more than 9 seconds; repeat four times.

The pelvic floor grading scale has no unit

Modified pad test

The purpose of this test was to determine objectively the severity of faecal incontinence during a specified period of time. Sanitary pads were used for the test⁷.

Patient preparation

The patient was allowed to defecate before the procedure was started and was told what to expect.

Procedure

The patient was asked to wear the sanitary pad in her underpants such that it covers the anal opening. She then sat down quietly and rested for 30 minutes. After this, she began walking and climbing stairs for a total period of 15 minutes. She was then made to perform the following activities.

- a. Sit and stand (10 times)
- b. Cough (10 times)
- c. Run in place (1 minute)
- d. Pick up objects from the floor
- e. Wash hands

The whole procedure (including activities a-e) took about 60 minutes. The sanitary pad was then removed and inspected for faecal discharge. Faecal incontinence was rated as follows in order of decreasing severity.⁷

Few drops
Soil outer clothing
Soil floor

This grading system has no unit.

Frequency of incontinence

Faecal incontinence was rated as follows in increasing order of frequency⁷.

Almost everyday
More than (>) once in a week
Less than (<) once in a week
Once in a month
This rating scale has no unit

Attitude to incontinence

Subject’s attitude (in decreasing order) to faecal incontinence was rated as:⁷

Major problem
Big problem
Slight problem
Minor incontinence

This grading system has no unit.

PROBLEMS

1. Initial pelvic floor muscle grading revealed weak and ineffective pelvic floor muscles of grade 2/5.
2. Ineffective anorectal sphincter control during physical stress evidenced by the faecal material soiling the floor was seen during the initial modified pad test.
3. Patient reported daily occurrence of faecal incontinence, which she also perceived as a major problem.

TREATMENT GOALS

1. To increase pelvic floor muscle strength from 2/5 to 4/5
2. To increase anorectal sphincter control with physical stress of coughing.
3. To decrease the frequency and severity of faecal incontinence
 - By decreasing the frequency from almost everyday to either once in a week or once in a month. The initial interval between meal and defecation reported was 2 minutes (on the first week of treatment).
 - By increasing the time lapse between meal and onset of defecation from 2 minutes to 60 minutes.
 - Decreasing faecal leaks to a few drops or no leakage at all.

TREATMENT PROCEDURE

1. Strengthening exercise program for pelvic floor muscle

Patient Preparation

The patient was in a prone position - lying with a pillow support under the abdomen and the ankle. She was adequately draped to allow minimal exposure. The therapist wore gloves on both hands and applied lubricants on the index and middle fingers. These two fingers were gently inserted into the anus of the patient. The patient was then asked to contract the pelvic floor muscles to prevent the removal of the fingers. This contraction was held for six seconds and repeated ten times with a 10-second resting interval between contractions. This treatment was carried out twice weekly for a total period of six weeks (see plate 1).

2. Electrostimulation using faradic current

The goals of this treatment were to increase the strength of the pelvic floor muscles and to normalize

the reflex activity via stimulation of the afferent and efferent fibers to the anorectal sphincters.^{6,7} An EMS electrical stimulator (Norfolk, Germany) with sinusoidal, faradic and interrupted direct current output was used (plate 2).

Patient preparation

The patient was made to lie in a prone position with a pillow under the abdomen and under the ankle. She was adequately draped to allow minimal exposure of the treatment area (plate 2).

Electrode Placement

A four pole electrode (6 by 8cm) application was used. Two electrodes were placed medial to ischial tuberosities on each side of the anus and the remaining two electrodes were placed along an imaginary line joining the posterior inferior iliac spine, 5 centimeters each from the mid-line (plate 2).



Plate 1. Subject performing pelvic floor muscle contraction exercise with the therapist's hand inserted into the anus.

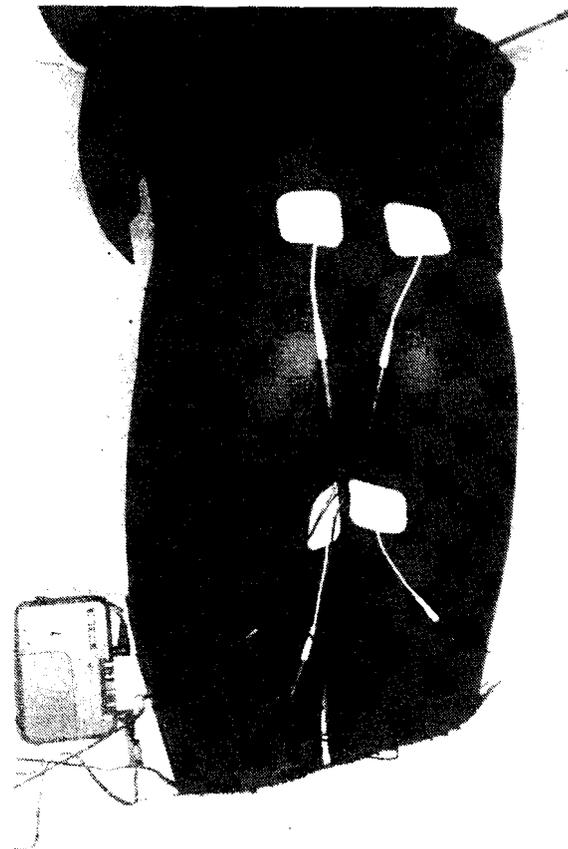


Plate 2. Faradic electrostimulation of the pelvic floor muscle

Treatment Protocols

The intensity of the current was gradually increased from zero to the minimum that could be tolerated by the patient and which also produced a perceptible muscular contraction.

The rate of stimulation was maintained at 15HZ with a duty cycle of 2 (off) 1 (on) ratio. The pulse width was set at 1 microsecond. Treatment sessions of 20 minutes two times a week for six weeks were conducted.

HABIT TRAINING (TIMED VOIDING)

Habit training has to do with voiding on a planned schedule. The goal is to keep the patient dry by telling her to void at regular intervals.

The initial interval between meal and defecation reported was 2 minutes (on the first week of treatment). Delaying the urge immediately after meals was accomplished by encouraging the patient to inhibit the urge to void by using any of the techniques below:

- i. Sitting or standing still, rather than rushing to the toilet
- ii. Doing pelvic floor exercises
- iii. Performing breathing exercises⁸

POST-TREATMENT RESULT

The patient was seen and treated from August 5, 2002 to September 19, 2002, a period of six weeks. At the second week, there was no remarkable

difference in the subject's frequency and severity of incontinence. The pelvic floor muscle strength and the subject's attitude to incontinence still remained unchanged.

At the third week, an improvement in the pelvic floor muscle strength from 2/5 (weak) to 3/5 (moderate) was recorded (figure 3). The severity of incontinence also reduced from 'soiling the outer clothes' to 'soiling the underwear only' (figure 2). The elapsed time between meal and defecation increased from 2 minutes to 20 minutes. The frequency of incontinence and the subject's attitude to incontinence however remained unchanged up to the end of the third week.

At the fourth week of treatment, though the pelvic floor muscle strength still remained 3/5, a decrease in the frequency of incontinence from almost every day to once in a week was reported by the subject (figure 1). The elapsed time between meals and defecation further increased to 40 minutes. She no longer perceived her incontinence as a major problem (figure 4). From the fifth to the sixth week of treatment, improvement in the pelvic floor muscle strength from 3/5 (moderate) to 4/5 (good) was recorded (figure 3). The severity of incontinence was further reduced from 'soiling the underwear' to 'few drops'. The subject now perceived her incontinence as just a minor inconvenience, since she could now hold on for 60 minutes after a meal before defecation.

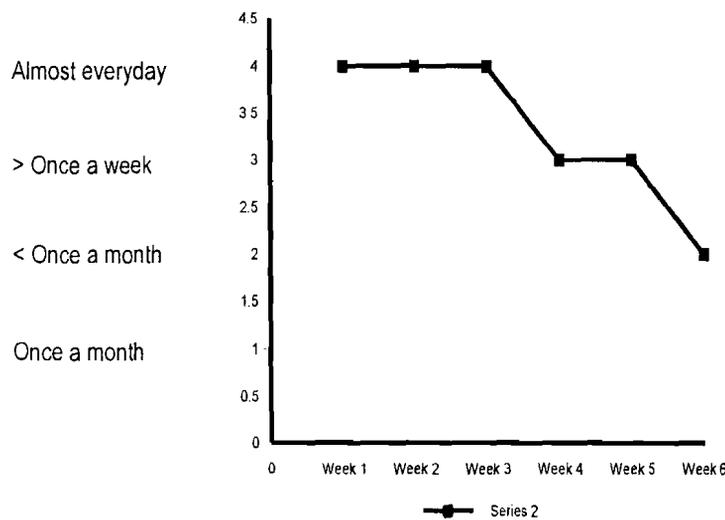


Figure 1. Frequency of incontinence of the subject

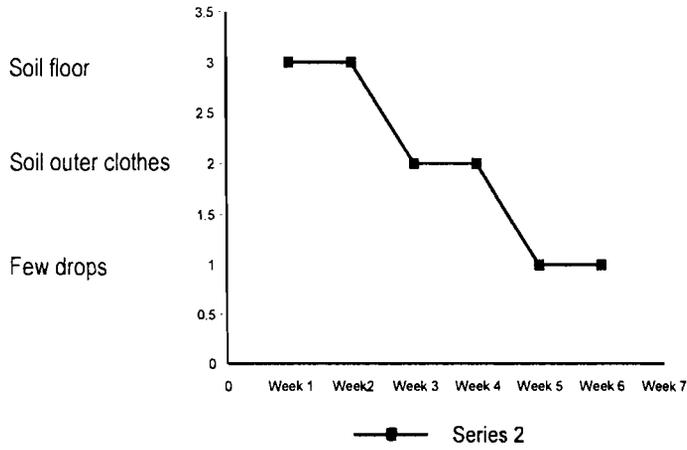


Figure 2. Severity of incontinence

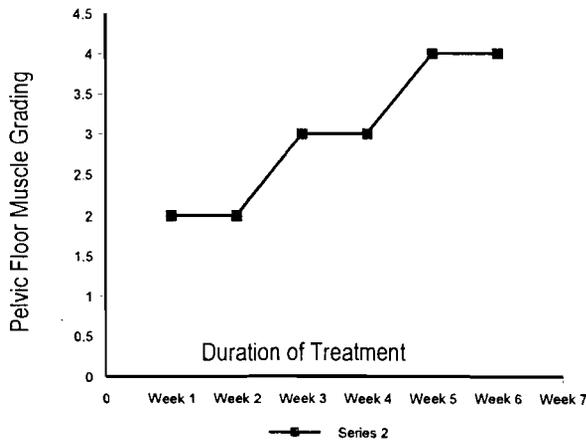


Figure 3. Subject's Pelvic Floor Muscle Strength

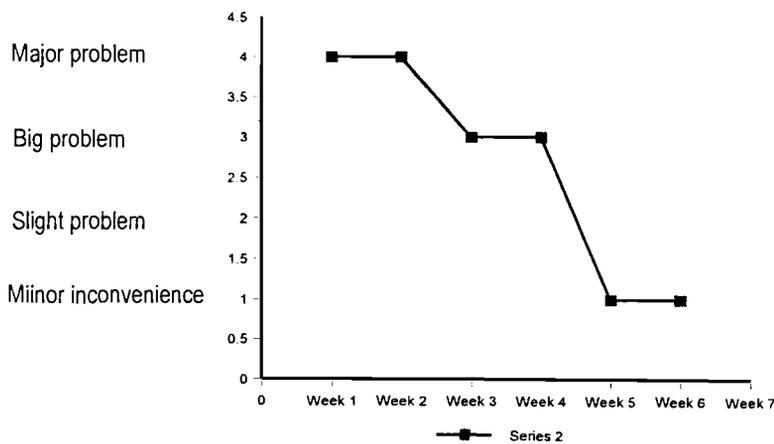


Figure 4. Subject's attitude to incontinence

DISCUSSION

The outcome of the study revealed the efficacy of pelvic floor muscle strengthening (Kegel exercises), electrostimulation of the anorectal sphincter muscle, and behavioural training in the management of faecal incontinence. This is consistent with the results of previous studies^{9,10} all of which unequivocally reported the efficacy of physiotherapy treatment in the management of faecal incontinence.

The therapist's hand (index and middle fingers) was used in this study in place of the popular vaginal cones, which are mostly used in pelvic floor muscle strengthening exercise, following urinary stress incontinence. The hand was used because, unlike in urinary incontinence, the anorectal sphincter was more affected and there was no vaginal cone of the size and volume required for insertion into the anus as at the time of this study. The rating of the pelvic muscle strength using the therapist's fingers was repeated thrice and the average of the three readings was recorded. The increase in the strength of the pelvic floor muscles brought about by this exercise might be due to an increase in the rate of activation and the number of activated motor units associated with pelvic floor muscle contraction; an increase in endurance and provision of direct proprioceptive feedback that the correct muscles are tightening.⁵ It could, however, be suggested that if the patient has no difficulty in holding two fingers during the exercise, the exercise can progress to the use of only one finger.¹⁰

The use of faradic electrostimulation from the first week of treatment in this case study was necessary because the patient presented with pelvic floor muscle strength below 3/5. After the fourth week of treatment, although the strength of the pelvic floor muscles increased above 3/5, the use of faradic electrostimulation was continued to normalize the reflex activity of the anorectal sphincter in addition to increasing the strength of the pelvic floor muscles.⁵

Stimulation of the afferent fibres can inhibit faecal incontinence by modifying the sensation around the anorectal region, whereas stimulation of the efferent fibres can induce voiding by stimulating

contraction of the same region.^{5,6,7} The use of electrical stimulation has been suggested to transform intermediate fibre types from type II (fast twitch) motor units to units with mainly type I (slow twitch),⁸ thereby increasing the tone of the pelvic floor muscle and resulting in a decrease in the symptoms of incontinence⁸.

The outcome of this study has demonstrated the efficacy of physiotherapy management in the form of pelvic floor muscle strengthening exercise and faradic electrostimulation in the treatment of faecal incontinence.

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