

# Fecal Incontinence: Hope for an Underdiagnosed Condition

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## ABSTRACT

Fecal incontinence is often suffered in silence leading one to become a social recluse. This has led to the belief that the problem does not exist and therefore underdiagnosed. In the last decade, much has been learnt about the understanding of continence and defecation. Quantification of appropriate physiological parameters associated with fecal incontinence have allowed the patients to be assessed using a logical algorithm. More importantly, parallel developments in management techniques of fecal incontinence now allow the categorised patients to be managed logically. The assessment is thus translated into appropriate management plans which range from simple non-operative medical and dietary manipulation to pelvic floor retraining, sphincter augmentation and finally sphincter reconstruction.

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## INTRODUCTION

Patients suffering from fecal incontinence are frequently social hermits because they are too embarrassed to discuss their problems with their friends or their physicians. Even if this problem was shared, they are frequently turned away because of inadequate understanding of the methods of evaluation, diagnosis and therapeutic options.

In the past ten years, much has been learned about the normal physiology of the anus and rectum, in particular, the mechanisms of continence and factors related to incontinence<sup>(1)</sup>. We have since come a long way and are now able to quantitate these physiological parameters associated with fecal incontinence. Importantly, this assessment can now be translated into appropriate management plans which range from non-operative medical management to pelvic floor retraining, sphincter augmentation and finally sphincter reconstruction.

## EPIDEMIOLOGY AND INCIDENCE OF ANAL INCONTINENCE

There are no good statistics on the magnitude of the problem of fecal incontinence in Singapore. However, with the speciality of Colorectal Surgery evolving, it appears that the problem is not as uncommon as was once assumed and certainly comparable to that found in the west. In the United States, fecal incontinence is a significant health problem. In fact, more health care dollars are spent on fecal and urinary incontinence each year than is spent on cancer. Studies to estimate the prevalence is fraught with problems mainly because of patients' reluctance to report the symptoms<sup>(2,3)</sup> and therefore the scarcity of well designed and studied reports. Of the six population based studies that have been reported, the prevalence rates varies from 0.5 to 11 percent<sup>(2,4-8)</sup>. Interestingly, fecal incontinence has been shown to be as prevalent or more prevalent in men<sup>(2,4-8)</sup>, but women are more willing to report this symptom than men<sup>(7)</sup>. As expected the problem increases with advancing age, especially in the above sixty age group<sup>(2)</sup>.

Several diseases had been associated with fecal incontinence. This includes diabetes, multiple sclerosis, Parkinson's disease, spinal cord injury, systemic sclerosis, myotonic dystrophy and amyloidosis<sup>(9)</sup>. In addition, there is a significant number of congenital anal abnormalities that can result in fecal incontinence. This includes imperforate anus and megarectum.

Surgery as a cause of fecal incontinence does not appear to be a major etiology. These include perianal surgery like internal sphincterotomy (whether midline or lateral), fistulotomy, fistulectomies, proctectomy including an ileal pouch-anal anastomosis, low anterior resection and total abdominal colectomies<sup>(9-15)</sup>. These conditions are often associated with mild fecal incontinence which is usually self limiting. All of these are usually easily controlled with dietary modification, medical therapy or simple pelvic floor re-training.

## EVALUATION OF INCONTINENCE

Clinical evaluation which includes a full history and physical examination is vital. This identifies patients with

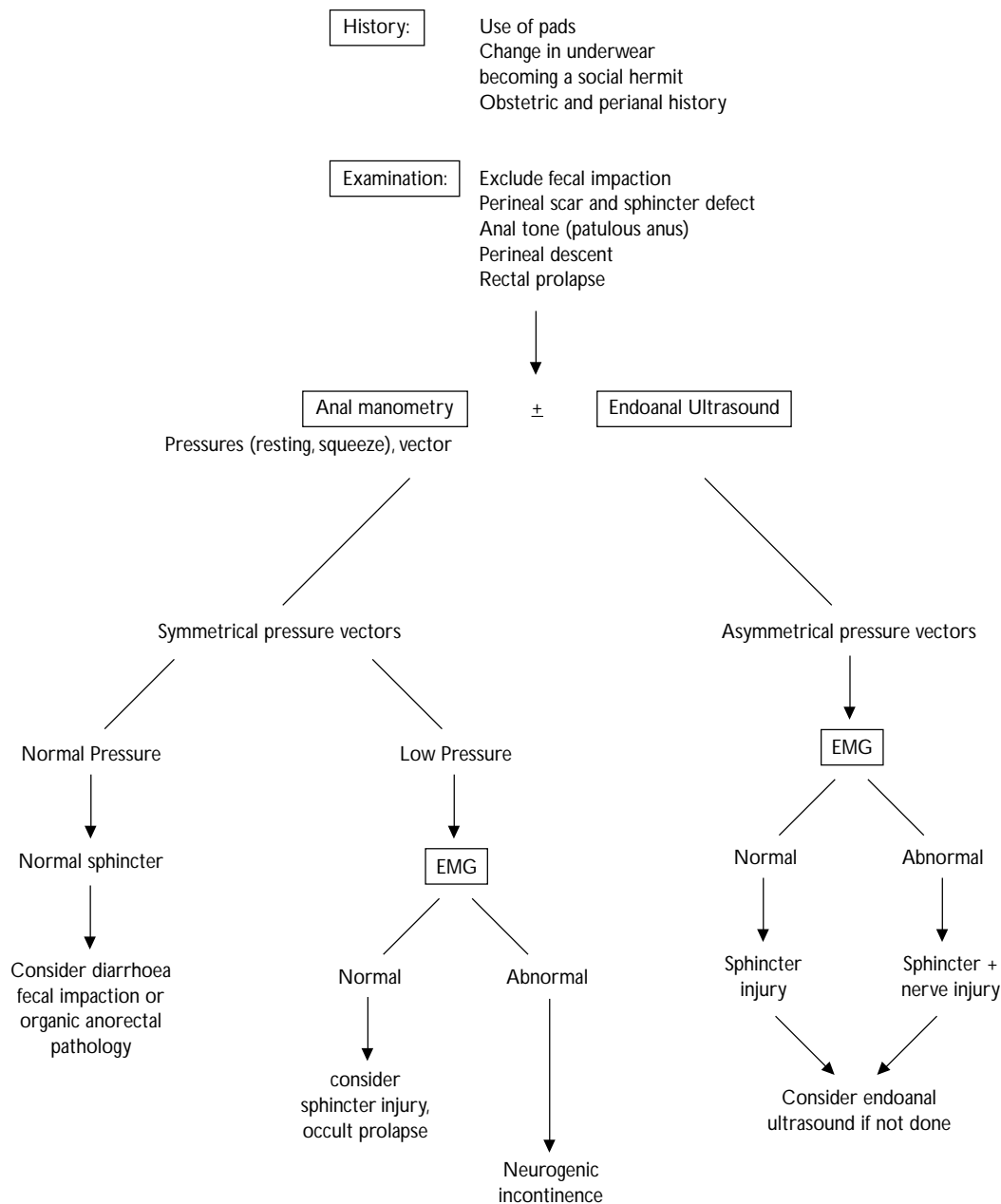
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a previous obstetric or iatrogenic injury to the sphincter muscles. The influence of diet and medication must also be documented as manipulation of these factors could easily alleviate the symptoms of fecal incontinence especially in the mild cases. Anorectal physiology tests will help to further quantify the function of the anus and rectum and provide the diagnosis in subgroup of patients who do not respond to simple manipulations and, in addition, have no clear etiology for their incontinence after the physical exam. The battery of physiologic tests may include anal manometry,

electromyography, ultrasonography and proctography<sup>(16-25)</sup>. While not all the tests may be indicated, they are frequently complimentary to each other. In addition to providing a clue to the diagnosis, they also evaluate and quantify function and potentially identify residual problems. Following a complete evaluation, an algorithm for the assessment of fecal incontinence can be constructed. This algorithm is very important because it allows stratification of the problem and subsequently a management plan to be outlined. This is described in Fig. 1.

Fig. 1 Algorithm for Investigation of Fecal Incontinence



## MANAGEMENT AND FECAL INCONTINENCE

### 1. Non-Operative Medical Management

The cornerstone to medical management of fecal incontinence is the alteration of stool consistency, stool volume, intestinal transit, and patterns of defecation. It is the first approach for all patients who do not have surgically correctable defects. In addition, it is often used as an adjunct combined with either surgery or pelvic floor re-training to augment the results. Therefore, the first step in any management of fecal incontinence is usually dietary manipulation, medication and bowel management.

#### ***Dietary Manipulation***

The main goal of dietary manipulation is to lengthen intestinal transit time and improve stool consistency. This is done through avoiding specific foods or the addition of constipating foods or foods that increase bulk. In the Singapore population, where lactose intolerance is high the ingestion of a lactose containing diet may induce a soft stool or even diarrhoea which precipitates incontinence. On the other hand, excessive caffeine because of the methylxanthines can also cause a secretive diarrhoea<sup>(26)</sup>. Depending on particular patients, ingestion of excessive alcohol and fruit juices may also decrease intestinal transit time. Prunes, figs and licorice are natural laxatives and may cause diarrhoea. Other fruits associated with loose stool include beans, broccoli, cauliflower, bean sprouts, cabbage, green leafy vegetables and spicy foods. Individuals should be asked to keep a diary so that specific sensitivity can be identified and thus avoided.

On the other hand, calcium containing foods like cheese, will often constipate patients and improve control. Bananas, apple sauce, boiled rice, pasta yogurt have been indicated in decreasing the intestinal transit time and thus aggravating the symptoms of minor fecal incontinence.

The most common form of dietary modification would be the addition of high fiber food or fiber source. These act to improve the stool form, increase bulk and improve control<sup>(27,28)</sup>. Fiber components are essentially classified on their water solubility. Most foods contain a mixture of soluble and insoluble fibers. It is important to note that when taking fiber in order to decrease the transit time and increase stool bulk a concomitant decrease in fluid intake should be emphasized. This is because the bulking action would be lost and watery stools result if a high amount of fluids is taken together with fiber supplement.

Paradoxically, occasionally fecal impaction with overflow incontinence is a cause of fecal incontinence. In this situation, which is easily diagnosed by the presence of hard stools in the rectum on a per rectal

examination, the symptoms are cleared by relieving the constipation often with a enema and laxative or purgatives. Recurrence is then avoided by regulating the bowel habits with a combination of medication and dietary manipulation.

#### ***Medication***

##### *Anti Diarrhoea*

The three most common anti diarrhoea drugs that can be use to increase intestinal transit time include loperamide, diphenoxylate and codeine<sup>(29)</sup>. These are the main medication that have been found useful for fecal incontinence.

##### *Absorbents*

This include kaolin, pectin and attapugite. These have not been tested in control trials for fecal incontinence. They act mainly by altering the stool consistency and absorbing fluids. They are more useful for acute episodes of diarrhoea.

Other agents that had been found to be useful including coating agents like bismuth and aluminium hydroxide. Binding agents likes cholestyramine may be indicated in specific instances.

#### ***Bowel management***

Patients with poor rectal compliance or decreased rectal sensation will benefit from a bowel management problem. This bowel retraining programme attempts to modify the pattern of defecation through regular use of stool softness, fiber and adequate of fluid intakes. Defecation pattern is controlled by attempting regular bowel movements approximately 30 minutes after a meal to take advantage of gastrocolic reflex. This may be done with the help of oral laxatives or enemas<sup>(30)</sup>.

By regulating the bowel movements pattern it is hoped that the rectum can be emptied periodically so that an overflow of the rectal capacity is not reached in patients with impaired rectal compliance. Furthermore, incontinence in the elderly is very often due to fecal impaction and overflow incontinence. Treatment in these circumstances consists of disimpaction and prevention<sup>(21)</sup>. Regular use of enemas may be necessary. This should be in the form of saline or phosphate enemas and not soap enemas as the latter tends to cause mucosal damage.

### 2. Pelvic floor retraining

This concept is based on the fact that deferment of defecation till a socially acceptable situation presents is a learned reflex. Thus, the anorectal sphincters can be augmented by a modification of "operant conditioning" or "learning through reinforcement"<sup>(32)</sup>. It is particularly useful in fecal incontinence where the anatomy is normal

and thus not amenable to surgery. In these situations, pelvic floor retraining has been successful in improving control of fecal continence in about 2/3 of patients<sup>(33,34)</sup>. We have a similar experience in Singapore. In addition, pelvic floor retraining has now an increasing role complimenting even surgical correction such that results can be maximized by allowing patients to optimize the use the repaired muscles.

The components of pelvic floor retraining include:-

- (1) teaching the patients to recognize and optimize the contractor of the external anal sphincter. (motor component)
- (2) teaching patients to discriminate the rectal sensations. (sensory) and then combining (1) and (2).
- (3) to synchronize the external sphincter contraction in response to rectal distention.

This is done through a combination of visual and auditory feedback signals which the patients can easily pick up and practice.

Recent results in the long term analysis of pelvic floor retraining for fecal incontinence suggests that a percentage of these patients relapse following improvement at 3 to 5 years<sup>(35)</sup>. They may benefit from a refresher course of retraining. The advantage of this procedure is the fact that it is non invasive and has no detrimental side effects.

### 3. Surgical Management for fecal incontinence

The armamentarium of surgical management has evolved over the last few years. There are now two groups of procedures: one that involves the repair and augmentation of existing pelvic floor and sphincter muscles and another that involves reconstruction of a neosphincter utilising muscles apart from the former.

#### REPAIR / AUGMENTATION PROCEDURES

##### *Sphincteroplasty*

Defects in the sphincters can be repaired surgically using various techniques including anatomical apposition, reefing and overlapping<sup>(36,37)</sup>. The main principle behind all these repairs is to complete the cylinder of sphincters thus recreating a symmetrical vector on manometry resulting in a concentric pull towards the centre and a contraction without a keyhole type of deformity which would cause fecal leakage.

##### *Levatorplasty*

This is usually done in conjunction with a sphincteroplasty<sup>(38)</sup>. It involves the plication of the puborectalis muscle between the vagina anteriorly and the anorectum posteriorly. It serves to augment the

anterior sphincter as well as to recreate the deep aspect of the perineal body. The combination of levatorplasty and sphincteroplasty appears to have a slightly better results compared with sphincter repair alone.

##### *Post anal repair*

This is mainly an European operation<sup>(39)</sup> being virtually unknown in the U.S. Although some success has been reported with this procedure, the exact reason, anatomic or physiologic for this unknown<sup>(40)</sup>.

##### *Total pelvic floor repair*

This consists of a combination of sphincter repair, levatorplasty and post anal repair<sup>(41)</sup>. This has been argued by proponents to combined all the advantages of the three repair, especially in severe fecal incontinence associated with pudendal neuropathy.

#### NEOSPINCTER RECONSTRUCTION

When the anal sphincters are destroyed beyond intrinsic repair or after unsuccessful attempts at repair, a situation arises where a stoma may be considered. Alternatively the creation of a neosphincter may be considered. This usually involves the transposition of voluntary skeletal muscle with an intact neurovascular supply to take over the function of the anal sphincter. The two muscles that have been used are the gluteus maximis and the gracilis muscle. Of the two, the gluteus maximus has been the more successful by nature of its action as an accessory muscle to the anal sphincters. Even so, it has not gained much popularity as the results vary from a dismal 25% to 80% improvement in fecal continence<sup>(42,43)</sup>.

##### *Dynamic graciloplasty*

More recently the use of an electrically stimulated graciloplasty has increasingly been reported with good results in patients with severe fecal incontinence, one step away from a stoma. Here, the gracilis is wrapped around the anus as a neosphincter. It is stimulated by an implanted pulse generator which results in a muscle capable of sustained contraction which is necessary for continence<sup>(44,45)</sup>. This contraction can be controlled so that voluntary defecation and continence can be achieved. We have adopted this procedure with the same success in Singapore.

##### *Artificial Bowel Sphincter*

This is a new treatment that was devised a couple of years ago as a modification of the artificial urinary sphincter. This totally implantable, semi automatic artificial prosthesis utilizes a balloon cuff which can be inflated and deflated through the transfer of liquid between the cuff and an implanted reservoir. Initial studies have been very promising and the quality of life

achieved satisfactory<sup>(46)</sup>. The contribution of the ABS in the management of severe fecal incontinence, remain to be evaluated in longer term studies.

## CONCLUSION

The development of anorectal physiology has resulted in an improved understanding of normal and subsequently abnormal parameters in the control of continence. With the evolving understanding of these abnormalities, patients can now be rationally categorised. With the concurrent development of a wide range of treatment modalities that evolved in parallel with the investigative modalities, management outlines can now be logically applied to the different categories of patients resulting in improved results.

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