CHAPTER 3

CONSTIPATION AND FECAL INCONTINENCE

INTRODUCTION

The distal colon, rectum and anus together serve to store and eliminate feces. In neurological disease either of these functions may be affected independently causing constipation, fecal incontinence or a combination of both problems. Constipation is a decreased frequency of bowel actions (less than one every 3 days) that may also be associated with excessive straining during the passage of stool. Fecal incontinence is the involuntary or inappropriate passage of stool; the term "anal incontinence" includes incontinence of flatus also.

Lack of bowel control can have devastating effects upon the individual, lowering their self-esteem and confidence. Patients who have this problem may restrict their lives and become socially isolated. Constipation and fecal incontinence can be a cause of considerable morbidity (e.g. fecal impaction or skin excoriation) and can present a significant challenge to the healthcare team, both in terms of nursing issues and therapeutic strategy.

From the diagnostic viewpoint, it can be difficult to distinguish between the impact of neurological diseases on bowel function and other contributing factors, such as side effects of medication or chronic immobility. Whilst some data exist relating to the prevalence and pathophysiology of bowel dysfunction in neurological disorders, there have been few trials on practical management issues.

PREVALENCE

Constipation is a common complaint affecting approximately 5% of Western populations.

Fecal incontinence affects men and women of all ages, but increases with age. Daily or weekly episodes of incontinence occur in about 2% of the adult population and in about 7% of healthy independent adults over the age of 65. The incidence of the problem increases with infirmity and a third of elderly people in hospital or residential care are incontinent of stool [1].

The incidence of bowel symptoms in neurological patients is considerably higher than in the general population as shown in Table 1. Chapters 5-9 describe bowel disorders in specific neurological disorders and this topic is also reviewed in a recent chapter by Norton and Henry [2].

Confusingly, in the colorectal literature, the term "neurogenic incontinence" is often used to describe fecal incontinence secondary to pudendal nerve damage following childbirth, rather than secondary to major neurological disease.

ANATOMY

The gastrointestinal tract may be viewed as a continuity of organ systems with specific functions (i.e. mouth, esophagus, stomach, paraintestinal organs, small and large bowel and anus). The striking homogeny in innervation and vascular supply that transcends these specific functions is related to its embryological development.

Pelvic floor. The anatomy of the pelvic floor musculature, and its importance in the support of the pelvic organs is discussed in detail in Chapter 2. Puborectalis, which is one of the named muscles that comprise the pelvic floor, plays an important role in both fecal continence and defecation. The muscle

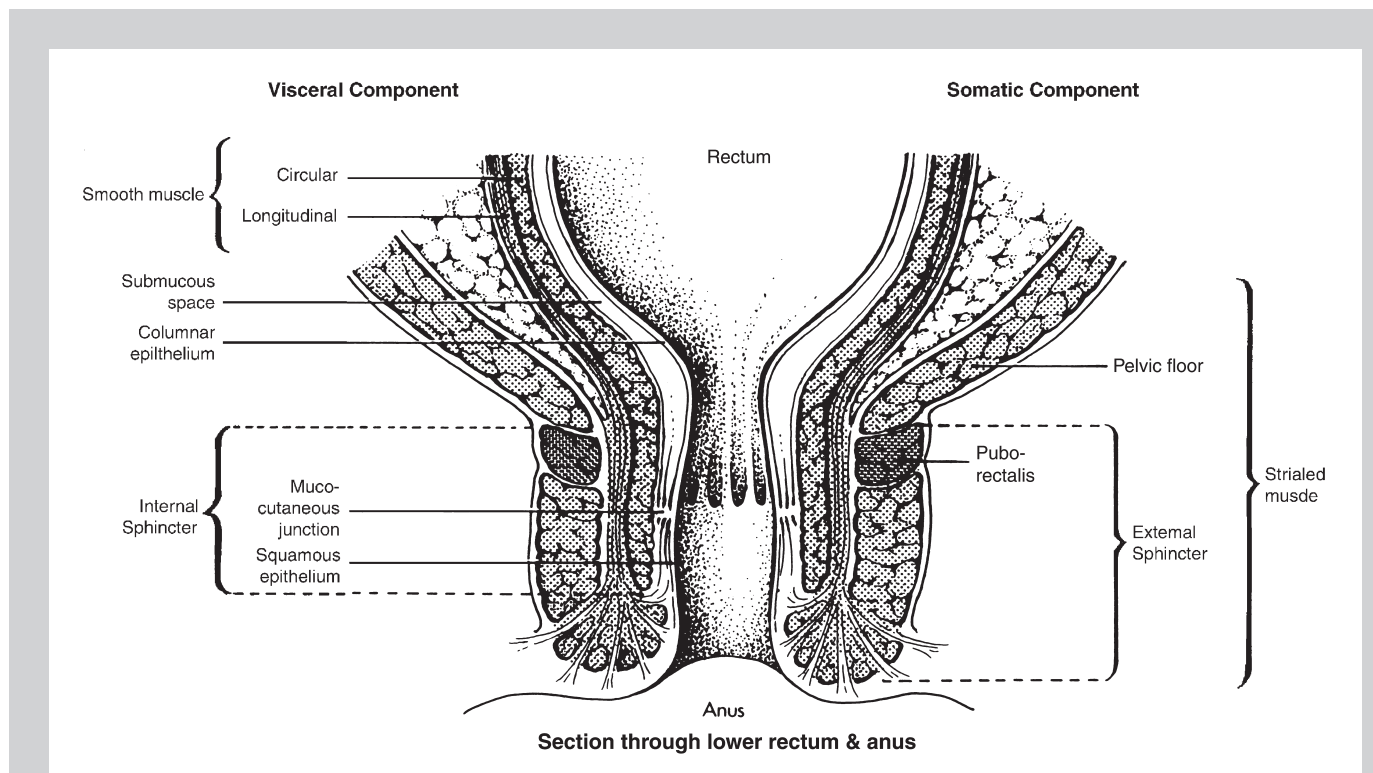| TABLE 1	Incidence of bowel dysfunction in patients with neurological disease	
	Constipation	**Fecal incontinence**
Cerebro-vascular accidents		30-40% at admission 9% at 6 months [3]
Parkinson's disease	50% [4]	
Multiple sclerosis	43% [5]	51% [5]
Spinal cord injury	17% [6]	11% weekly 50% occasionally [6]

FIGURE 1 The internal and external anal sphincters.

From Bendall MJ. Fecal incontinence. In: The Wallace Teaching Pack for Continence Advisors, Wallace; 1989. Reproduced with permission.

KEYPOINTS:

■ The tone of the puborectalis maintains the so-called "anorectal angle" which is vital for continence. Full relaxation of the puborectalis is necessary for normal bowel emptying.

originates at the pubis and passes posteriorly on either side of the pelvic viscera, to wrap around the junction of the lower one third of the rectum and the anal canal, and is closely related to the external (voluntary) anal sphincter (Figure 1) [7]. The tone of the puborectalis maintains the so-called "anorectal angle" which is vital for continence. Full relaxation of the puborectalis is necessary for normal bowel emptying. The perineal body consists of fibromuscular tissue and marks the point of insertion of most of the pelvic floor muscles. In the female, the perineal body lies between the vagina and anus and is anterior to the anus in the male. Damage to this structure (which occurs during parturition) is associated with fecal incontinence.

Anal sphincters. The anus is made up of internal (involuntary) and external sphincters (voluntary). The internal sphincter is comprised of smooth muscle, arranged in inner circular and outer longitudinal layers. The external sphincter is comprised of striated, voluntary muscle closely related to the puborectalis muscle (Figure 1).

PHYSIOLOGY

Colonic function. The large intestine starts at the ileocecal valve and consists of the cecum, colon and rectum. The principal role of the proximal half of the colon is the absorption of water and electrolytes. Approximately 2 liters of fluid daily passes into the colon from the small intestine and absorption takes place mainly in the right colon so that only 150 ml of fluid is lost in the feces each day.

The muscle wall of the large intestine consists of an inner circular and incomplete outer longitudinal layer (tenia). Parallel bundles of individual muscle cells are connected by gap junctions that facilitate the transmission of impulses in all directions, but more rapidly in the orientation of the bundles. Thus each muscle layer acts as a syncytium. Two distinct types of colonic contraction occur: mixing movements and mass movements. Mixing movements are

powerful contractions of both the outer longitudinal and inner circular muscle layers and serve to facilitate absorption and stool formation by repetitive moulding of the semi-solid feces. Mixing movements are not peristaltic, although some anal-ward movement of the fecal material does occur, particularly in the proximal colon. Colonic "mass movements" are peristaltic contractions that propel the feces towards the rectum and are predominate from the transverse colon onwards.

Defecation (Figure 2) [8]. Fecal material stored in the colon is propelled past the rectosigmoid sphincter, a so-called "physiologi-
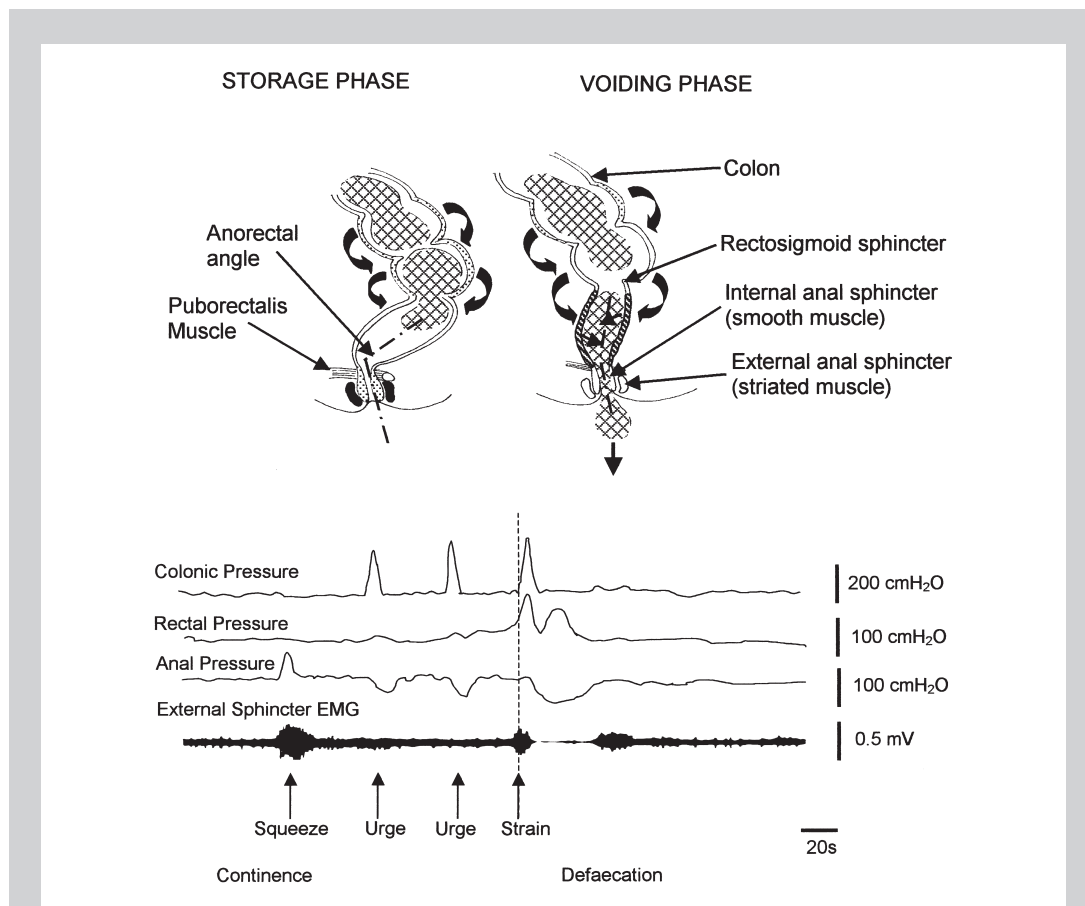
FIGURE 2 Control of the anorectum during continence and defecation. Until the act of defecation begins, the rectum is kept empty by tonic concentration of the rectal wall and the rectosigmoid sphincter. Thus intrarectal pressure is higher than the intrasigmoid pressure and the rectal material remains in the sigmoid colon. The rectum also exhibits retropulsive peristaltic activity to return feces back into the colon. Rectal filling eventually occurs when a series of powerful colonic mass movements propel the feces distally into the rectum. There is an awareness of the need to defecate when the rectum is distended to approximately 150 ml, at which time the intrarectal pressure is approximately 25 cm H_2O. At this stage, continence is maintained by the anorectal angle, formed by the puborectalis muscular sling, and the internal and external anal sphincters. Continued distension of the rectum initiates the rectoanal inhibitory reflex, which results in internal sphincter relaxation and opening of the proximal anal canal, with a consequent drop in intra anal pressure. Reflex contraction of the rectum is then combined with voluntary Valsalva straining and relaxation of the puborectalis muscle and external sphincter. The traces demonstrate recordings of pressures in the colon, rectum and anus during the events described above.

From Craggs MD, Vaizey CJ. Neurophysiology of the bladder and bowel. In: Fowler CJ, editor. Neurology of bladder, bowel and sexual dysfunction. Butterworth Heinemann; 1999. Reproduced with permission.

KEYPOINTS:

- Distension of the distal rectum initiates afferent signals that are associated with a conscious sensation of needing to defecate (at a volume of 150 ml).

- The rectoanal inhibitory reflex results in internal anal sphincter relaxation (a decrease in anal canal pressure is observed on manometry) and voluntary relaxation of the external sphincteric and pubococcygeal muscles.

- Stimulation of the enteric plexi by parasympathetic fibers increases the overall activity of the gastrointestinal tract by promoting peristalsis and increasing local blood flow and intestinal secretion.

cal sphincter" into the normally empty rectum by colonic mass movements prior to defecation. Distension of the distal rectum initiates afferent signals that are associated with a conscious sensation of needing to defecate (at a volume of 150 ml, Figure 3) [7]. These afferent signals also spread through the myenteric plexus to initiate further contractions of the descending and sigmoid colon and rectum. If it is judged to be appropriate, a final series of neurologically controlled events are initiated and defecation occurs. Using volitional Valsalva straining, an increase in intraabdominal pressure is produced, which is followed by pelvic floor descent and the rectoanal inhibition reflex is initiated. The rectoanal inhibitory reflex results in internal anal sphincter relaxation (a decrease in anal canal pressure is observed on manometry) and voluntary relaxation of the external sphincteric and pubococcygeal muscles. When pubococcygeal relaxation occurs, the anorectal angle increases, thus facilitating the passage of stool. Defe-

cation can be delayed by contraction of the external anal sphincter and the urge to defecate gradually decreases in intensity over a period of minutes.

NEUROLOGICAL AND HORMONAL CONTROL OF THE GASTROINTESTINAL TRACT

Enteric innervation. The gastrointestinal tract has its own intrinsic innervation, the enteric nervous system, which is comprised of an outer myenteric plexus and an inner submucosal plexus. The former regulates smooth muscle activity, whilst the latter influences the secretory and absorptive functions of the mucosa as well as local blood flow. The enteric nervous system can function in isolation, but some modulation by both the parasympathetic and the sympathetic nervous systems occurs.

Afferent nerves that originate in the epithelium and gut wall are also connected to the enteric nervous system, the prevertebral ganglia and the vagus nerve. The afferent nerves are stimulated by mucosal irritation, gut distension and specific chemicals in the gut (e.g. cholecystokinin) and can elicit local reflexes or convey information to other centers [9].

The secretion of hormones (e.g. thyroxin) and parahormones (e.g. vasoactive intestinal polypeptide), which follows various stimuli, has a significant effect on bowel function.

Parasympathetic innervation. The parasympathetic innervation of the colon is divided into cranial (vagus nerve) and sacral (pelvic nerves) divisions. The vagus nerve innervates the foregut and midgut, ending at the splenic flexure. The pelvic nerves originate from the second, third and fourth divisions of the sacral parasympathetic outflow and innervate the hindgut (descending and sigmoid colon and the anorectum). The density of parasympathetic innervation is greater for the sacral division compared to the cranial outflow. Stimulation of the enteric plexi by parasympathetic fibers increases the overall activity of the gastrointestinal tract by promoting peristalsis and increasing local blood flow and intestinal secretion. The parasympathetic nervous system is also an integral component of the defecation reflex.

Sympathetic innervation. The sympathetic innervation of the gastrointestinal tract originates in the thoracolumbar outflow (T5-L2).
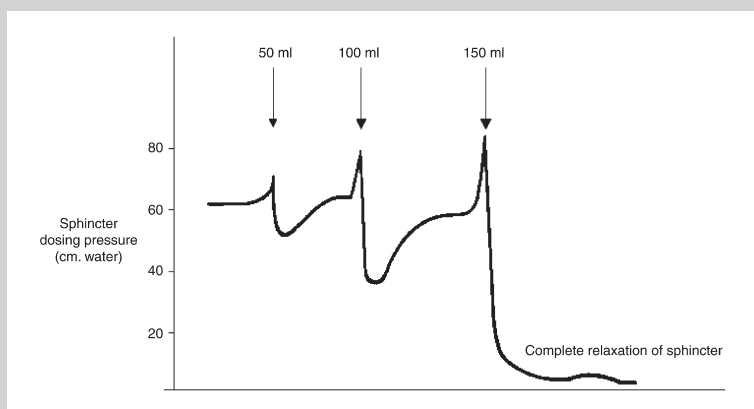

FIGURE 3 The effect of progressive rectal distension on sphincter closing pressure. In this example, rectal distension to 50 ml is accompanied by an initial rise in sphincter tone. However, the rectoanal reflex results in partial relaxation of the internal sphincter, when a decrease in sphincter closing pressure (intra anal pressure) is observed. Distension to 100 ml provokes even stronger sphincteric contraction, with higher sphincter closing pressure, to maintain continence. Despite these high pressures, the rectoanal inhibitory reflex again causes internal anal sphincter relaxation. Note also that sphincter tone does not return to previous levels. When a critical volume of 150 ml is reached, the reflex causes complete relaxation of the internal anal sphincter. Continence at this point depends primarily on external anal sphincter tone.

From Bendall MJ. Fecal incontinence. In: The teaching pack for continence advisors, vol I. Portex, Kent: SIMS; 1987-1991. Reproduced with permission.

After leaving the spinal cord, the sympathetic fibers pass through the paravertebral ganglia to relay in the celiac and mesenteric ganglia. Postganglionic sympathetic fibers terminate principally on the enteric nervous system. Contraction of the internal anal sphincter is responsible for resting anal pressure and is probably regulated by the sympathetic nervous system. The sympathetic nervous system inhibits the gastrointestinal tract through the inhibitory effect of noradrenaline on the enteric nerves and also causes vasoconstriction when appropriate.

Somatic innervation. The innervation of the external sphincter is via the pudendal nerve (S2 [3,4]). Cutaneous sensation from the perianal area and perineum is carried in branches of the pudendal nerves, whereas sensations related to tension and stretch in the rectal wall and proximal part of the anal canal is carried in the pelvic nerves.

Central nervous system. The medial prefrontal area and the anterior cingulate gyrus appear to represent two important higher centers that contribute to the regulation of bowel function. It is thought that these centers are involved in the timing and initiation of defecation with their effects over voluntary control being mediated through spinal pathways.

CONSTIPATION

Constipation is a common condition for which there are many different causes and assocations (Table 2). Elderly people are most commonly affected because other factors, such as immobility, are likely to worsen the situation.

Discrete pathophysiological mechanisms for constipation have not generally been identified; however, two broad categories of constipation have been described — a decreased colonic transit time (colonic inertia) and outlet obstruction. Colonic inertia results in a slow transit of feces and is thought to be secondary to a defect in the smooth muscle, its innervation or other stimuli of contractions. In outlet obstruction, there is difficulty evacuating the rectum completely, due to a failure of relaxation of the pelvic floor or anus during defecation [1].

People with simple constipation occasionally present with abdominal pain and investigations generally do not detect any abnormality. Based on history alone, it can be very diffi-cult for the physician to differentiate between slow colonic transit time and outlet obstruction. Severe cases of constipation secondary to slow colonic transit can present with decreased appetite and uncommonly with nausea and vomiting. Patients who have difficulty in evacuating the rectum generally have outlet type obstruction, and constipation occurs because the feces desiccate and harden in the rectum causing fecal impaction. This acts like a mass causing abdominal discomfort, bleeding, and "overflow" incontinence when liquid stool bypasses the hard mass in the colon. The majority of colorectal fecal impactions occur in the rectum. In patients with high spinal lesions, impaction can precipitate autonomic dysreflexia.

In patients with severe constipation and difficulty with defecation it is important to exclude intussusception as a remedial cause of intrarectal obstruction. Intussusception occurs when a segment of intestine involutes into the section immediately distal to it and can result from chronic straining and hard stools. A rec-

TABLE 2	Conditions that cause or are associated with constipation

General
- Irregular bowel habit (ignoring call to stool)
- Simple (low fiber diet)

Drugs
- Opiates, aluminum antacids, antidepressants, iron, anticholinergics, diuretics

Hormonal/metabolic
- Hypothyroidism, hyperparathyroidism, Addison's disease

Neurological diseases
- Communication and/or mobility problems (e.g. dementia, post CVA)
- Multiple sclerosis
- Parkinson's disease
- Spinal cord injury
- Cauda equina injury
- Diabetic neuropathy

Other
- Increased ileal segmental contractions or decreased colonic mass movements of unknown etiology
- Failure of relaxation of the pelvic floor muscles and/or sphincters during defecation of unknown etiology
- Abnormal rectal enteric innervation (e.g. congenital megarectum)
- Post operative ileus (abdominal or other surgery)
- Colonic disease (e.g. diverticulosis, carcinoma)
- Painful anal conditions (e.g. hemorrhoids, anal fissure)
- Rectocele, intussusception or rectal prolapse

tocele occurs when the anterior wall of the rectum prolapses forwards, creating a bulge or pouch in the posterior vagina. It is a condition which is caused by weakened posterior vaginal tissues and is generally seen in older women. Most rectoceles are asymptomatic, but sometimes can cause incomplete emptying so that patients have to reduce their rectocele in order to facilitate the process of bowel emptying.

FECAL INCONTINENCE

Complete bowel emptying at an appropriate time and place requires the culmination of multiple, interdependent physiological and psychosocial events. When the integrity of this chain of events is disrupted at any point, fecal incontinence can occur. However, in most cases, numerous dysfunctions combine so that fecal incontinence has a multifactorial etiology (Table 3).

Fecal incontinence in non-neurological patients may be a significant problem in the elderly. The principal causes of incontinence in these patients are fecal impaction with overflow diarrhea, anal sphincteric incompe-tence and diarrhea from other causes. Dietary factors can cause either excessively loose stools or constipation with impaction and overflow incontinence. An institutionalized patient with poor mobility can become incontinent of feces simply due to inadequate care or facilities and those with cognitive decline or decreased communication abilities (e.g. post CVA) can suffer from incontinence, despite having an intact sphincter mechanism.

Damage to the anal sphincters or their innervation can result in incontinence, and obstetric injury is the commonest cause of these defects [10]. Fecal leakage without awareness causing soiling is usually associated with dysfunction of the smooth muscle of the internal sphincter or impacted stool in the rectum. Fecal urgency

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TABLE 3	Conditions that cause or are associated with fecal incontinence

Anal sphincter/pelvic floor incompetence
- Obstetric injury to the anal sphincter
- Age-associated decrease in anal sphincter squeeze pressure
- Pudendal neuropathy (following pregnancy)
- Traction neuropathy (associated with chronic constipation)
- Denervation atrophy following pudendal nerve injury
- Post surgery (e.g. following anal stretch for recurrent anal fissure or low anterior resection for rectal carcinoma)

Diarrhea
- "Overflow" incontinence in patients with fecal impaction
- Infection
- Medication (e.g. antimicrobials, excessive laxatives)
- Post radiation therapy
- Colonic disorders (inflammatory bowel disease, diverticulosis, colorectal carcinoma)

Neurological diseases
- Communication and/or mobility problems (e.g. dementia, post CVA)
- Spinal cord injury
- Cauda equina injury
- Multiple sclerosis
- Parkinson's disease
- Absent or decreased sensation of rectal filling (e.g. diabetic neuropathy)

Others
- Reduced rectal compliance
- Rectal prolapse

TABLE 4	Questions in the assessment of bowel function

Bowel habit and stools
- Diet
- Usual bowel pattern
- Usual stool consistency
- Blood and/or mucus
- Use of medications

Sensation
- Sensation of bowel fullness
- Urgency, ability to defer defecation and urge incontinence
- Ability to distinguish flatus from stool
- Pain prior to or with defecation
- Ability to control flatus
- Passive soiling (loss of stool without a prior urge to defecate)

Defecation
- Straining
- Digital stimulation or extraction of stool
- Use of suppositories, enemas
- Sensation of incomplete emptying

General
- Obstetric history
- Urological history
- Use of pads
- Ability to use toilet independently
- Toilet adaptations
- Attitude and availability of carers
- Effect on lifestyle and relationships
- Psychological factors (e.g. depression)

and urge incontinence are generally related to dysfunction of the striated external anal sphincter or to high bowel pressures and a normal sphincter as may occur with diarrhea.

Sensory defects can result in impaired sensation of rectal fullness or an inability to distinguish between feces or flatus.

HISTORY AND EXAMINATION.

The assessment of bowel symptoms should include questions relating to ability of toileting and the availability of carers. The most important areas for assessment are listed in Table 4.

Physical examination should focus on pelvic floor assessment, in particular looking for rectocele, anal tone and signs of damage to support structures (e.g. perineal body) or the anal canal (e.g. obstetric injury). Digital rectal examination will identify fecal impaction or an ano-rectal mass. Neurological examination should include a full assessment of the lower limbs and perineal sensation.

INVESTIGATIONS

Anorectal physiology and radiology tests used in the assessment of bowel function are outlined in Tables 5 and 6. The technique of anal manometry is described in Pullout 1.

Non-neurological causes of fecal incontinence or constipation can affect anyone. A sudden change in bowel habit or rectal bleeding always warrants assessment of the large bowel by colonoscopy and/or barium enema to exclude malignancy (bowel cancer being the second most common malignancy in the developed world).

MANAGEMENT OF BOWEL DISORDERS

General measures and advice. The practicalities of bowel management can be difficult for anyone with a physical impairment to manage independently. Patients with bowel problems often need considerable psychological support, together with information on the normal workings of the bowel and an explanation of the underlying mechanism of their problem. Solutions often need to be imaginative and creative, tailored to the individual's abilities, lifestyle, physical environment and the availability of help at appropriate times [2]. There are a large variety of adaptations that can be made to a toilet to facilitate access and stability in use. The use of a footstool while sitting on the toilet can increase the ano-rectal angle and thereby facilitate evacuation. Biofeedback and bowel training programs may

KEYPOINTS:

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■ Patients with bowel problems often need considerable psychological support, together with information on the normal workings of the bowel and an explanation of the underlying mechanism of their problem.

TABLE 5	**Ano-rectal physiology tests used in the assessment of fecal incontinence and constipation**

Test	Method	What it tests
Anal manometry	See Pullout 1.	Resting pressure (internal sphincter contractile activity) and squeeze pressure are measured.
Balloon distension	A rectal balloon is slowly filled with air or water and first sensation, urge and maximum tolerated volumes are recorded.	Sensitivity of the rectum to distension is measured and the presence of a megarectum can be excluded.
Recto-anal inhibitory reflex	An anal balloon is quickly filled with air and the consequent drop in anal pressure is measured.	Absence of the reflex is diagnostic of Hirschsprung's disease, but the reflex can be impaired in neurological conditions.
Balloon expulsion test	Rectal balloon and surface EMG electrodes.	Pelvic floor co-ordination on attempted defecation.
Saline retention test	A fixed volume of saline is instilled into the rectum.	Continence and rectal compliance to distension.
Electrosensitivity threshold	Sensation to electrical stimulation in the anus and rectum is measured.	Hindgut denervation can be identified.
Pudendal terminal motor latency	See Chapter 1.	Prolongation in conductance of distal pudendal nerve.
Anal sphincter EMG	See Chapter 1, Pullout 1.	Denervation and reinnervation of external anal sphincter.

PULLOUT 1 **Anorectal manometry**

Anorectal manometry is used to determine rectal sensation and anal sphincter competency and function. The test is generally performed after a cleansing enema. A 4-mm-diameter catheter with four lumens is used for recording pressures. Each lumen has a distal side opening, spaced 5 mm apart from the next. Distilled water is continuously perfused into the rectum at a rate of 0.5 ml/min through three of the lumens, which are connected to external pressure transducers. A latex balloon, 6.5 cm long and 4 cm wide with a capacity of 50 ml is attached to the tip of the catheter and covers the fourth lumen. Intraluminal-balloon pressures are transmitted to a fourth transducer.

With the subject in the left lateral position, the catheter is introduced into the rectum so that all recording holes are positioned within the distal rectum. The balloon is then filled with water or inflated and the volume at which various sensations (e.g. normal desire to defecate or fecal urgency) are recorded. The patient can be instructed to expel the balloon or the rectal catheter can be withdrawn through the anal canal, with the recordings taken at fixed distances from the anal verge. Voluntary anal sphincter squeeze and abdominal straining pressures are also recorded.

TABLE 6 **Radiology tests used in the assessment of fecal incontinence and constipation**

Test	Method	What it tests
Transit studies	Radio-opaque markers are ingested on 3 successive days and plain a abdominal X-ray is taken after five days.	Slow transit constipation/inefficient evacuation.
Evacuating proctography	Barium paste is filled into the rectum and the patient is asked to defecate.	Ability of the rectum to retain the paste, integrity of the sphincters, co-ordination of pelvic floor relaxation with attempted emptying, megarectum, prolapse, rectocele or intussusception are identified.
Anal ultrasound	An intra-anal ultrasound probe is inserted into the anal canal.	Structural integrity of the internal and external anal sphincters.

TABLE 7 **Commonly used medications used in the treatment of constipation**

Category	Examples
Bulking agents	Natural bran Ispaghula husk Sterculia
Stool softeners	Castor oil Docusate sodium (osmotic also)
Osmotic	Magnesium salts Lactulose Dioctyl (softener also)
Colonic stimulants	Senna Bisacodyl
Rectal stimulants	Suppositories (e.g. glycerin, bisacodyl) Enemas (e.g. phosphate, sodium-based micro-enemas)

have a role in certain neurological patients, especially those with non-progressive neurological lesions.

Constipation (see algorithm for fecal loading, Figure 4) [11].

Dietary advice. Adequate fluid intake should be recommended for all patients, irrespective of the presence of constipation. The diet should contain daily portions of fruits and vegetables along with insoluble fibers. Normal daily stool weight in the UK average 50-300 g whereas in developing countries with a higher fiber intake, average stool weight is 500 g or more with two or three bowel actions per day. Patients should be educated about the gastrocolic reflex and be encouraged to identify those times during the day when the urge to defecate following meals is greatest ("timed bowel movements").
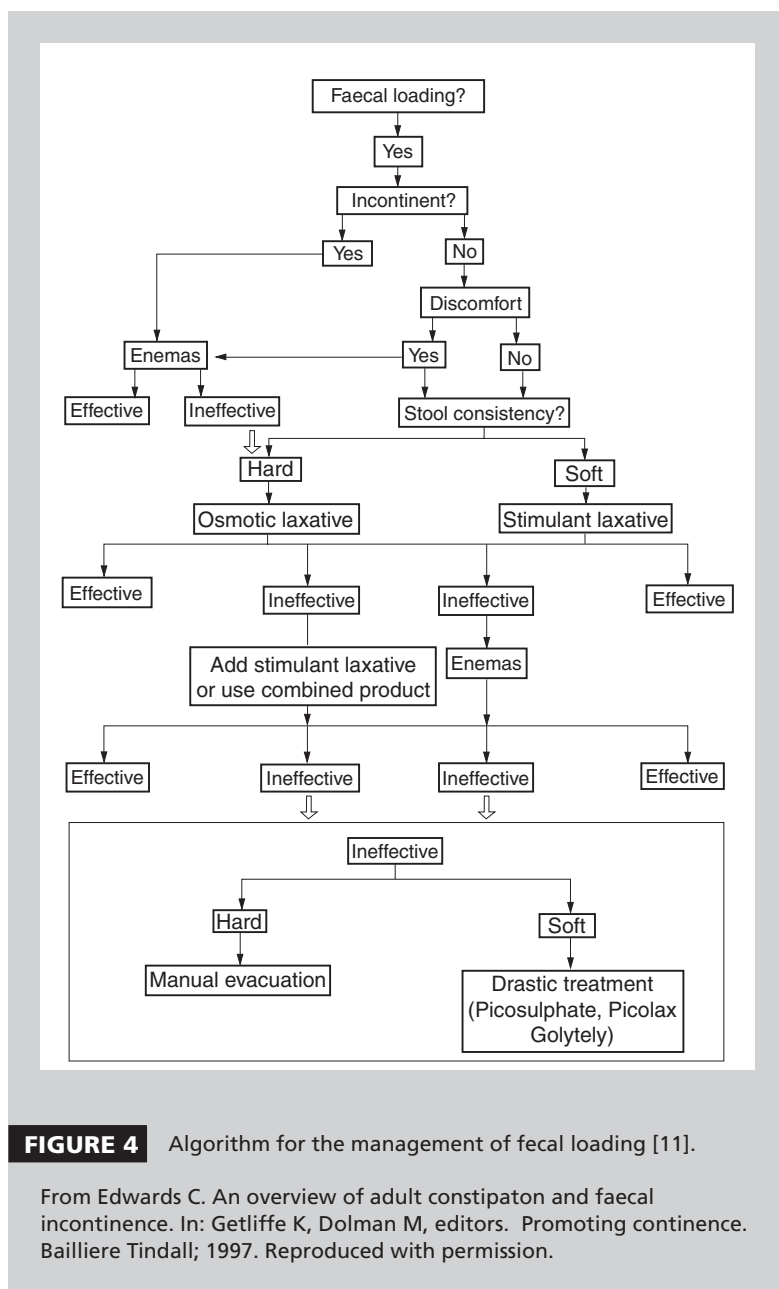
FIGURE 4 Algorithm for the management of fecal loading [11].

From Edwards C. An overview of adult constipaton and faecal incontinence. In: Getliffe K, Dolman M, editors. Promoting continence. Bailliere Tindall; 1997. Reproduced with permission.

Drug treatment. Table 7 summarizes the most widely used preparations used in the treatment of constipation. Different approaches are indicated for different types of constipation. Little work on the effects of various treatments of constipation and fecal incontinence in specific neurological conditions has been carried out.

Bulking agents. When simple measures of diet change fail to resolve constipation, fiber supplements (bulking agents) are rec-

ommended. Bulk-forming laxatives stimulate peristalsis by maintaining hydration and therefore size of the stool. These are useful in those with an inadequate oral diet. Many of the bulking agents available contain psyllium, an insoluble form of fiber. However, bulking agents can be counter-productive if peristalsis is impaired and can contribute to impaction in immobile individuals.

Stool softening agents. Stool softeners may help where the main problem is difficult evacuation and agents such as dioctyl sodium sulfasuccinate can also improve intestinal function. Hyperosmotic agents, typically sugar solutions, can be effective in promoting bowel movements when fiber supplementation and hydration strategies fail.

Colonic stimulants. Colonic stimulants may help with slow transit. Mineral and other types of oils can soften the stool and promote motility. For patients with more severe problems, laxatives (e.g. bisacodyl) can be employed, but should

be restricted to occasional use in order to avoid dependency. Stimulant laxatives should be used with extreme caution if it is suspected that the patient is fecally impacted.

Rectal stimulation. Rectal stimulation facilitates evacuation. Glycerin suppositories provide a source of lubrication, while the act of rectal insertion can promote sphincteric relaxation and thereby promote evacuation. Other suppositories available provide similar actions along with the added feature of a chemical

KEYPOINTS:

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- Stool softeners may help where the main problem is difficult evacuation and agents such as dioctyl sodium sulfasuccinate can also improve intestinal function.

- Colonic stimulants may help with slow transit.

- Rectal stimulation facilitates evacuation.

NEUROLOGIC BLADDER, BOWEL AND SEXUAL DYSFUNCTION

bowel stimulant. A variety of enema solutions can also be employed to promote defecation, but can potentially predispose the patients to electrolyte losses. Therefore "mini-dose" enemas (e.g. liquefied glycerin with docusate) provide a simplified enema strategy that is effective in many patients.

Bowel washout regimes. An enema may assist in clearing the rectum and if given in the morning may reduce the risk of fecal incontinence occurring at some other time during the day. The response to rectal washouts is variable and depends on the content, volume and temperature of the instillate.

Manual evacuation. There is no evidence that regular manual evacuation of feces is harmful. Patients with little or no reflex activity in the lower colon who cannot stimulate peristalsis have to use manual evacuation of their bowels.

MANAGEMENT OF INCONTINENCE

Patients can adjust their diet, fluid intake and medications in order to have a harder stool, as this facilitates bowel control whilst taking care to avoid troublesome constipation.

Constipating agents. Patients who experience incontinence of feces associated with loose stool or who have a passive anal seepage of soft stool may benefit from low-dose constipating medication, although there are no data on use specifically in patients with neurological problems. Loperamide or Codeine phosphate reduce fecal incontinence, and improve stool consistency. These medications need to be taken prior to eating, and the dose individually titrated. Some patients may choose to effectively stop spontaneous evacuation by using these agents and are able to plan evacuation at a convenient time, using suppositories or a micro-enema. Such a regime can give an element of control and predictability to bowel function, but risks the development of side effects of constipation.

Managing intractable fecal incontinence. Other than pads, very few products have been designed specifically for fecal leakage. Disposable anal plugs, placed either inside the rectum or in the anal canal, are available but can be uncomfortable and give a constant sensation of rectal fullness.

SURGERY

Stoma. A stoma can bring a significant improvement in quality of life in selected patients. People with severe physical disabilities often find that inability to cope independently with toileting severely restricts their scope for social, work and personal activities. It is very difficult for a person in a wheelchair to manage an episode of fecal incontinence, or even defecation, alone in a public toilet. A stoma is much more accessible. When bowel function remains unpredictable and uncontrollable or for those with fecal incontinence a stoma will permit social continence.

Anal sphincter repair. Anal ultrasonography can identify damage to the external anal sphincteric ring, which generally follows obstetric injury and causes incontinence. Good results can be achieved with repair of the sphincter ring.

Post anal repair. Patients with fecal incontinence whose sphincter ring is intact but denervated can expect some improvement in anal function with this procedure. The puborectalis muscle is sutured so that the anorectal angle is decreased and the length of the anal canal is increased.

Antegrade continence enema (ACE). This procedure is mainly used in children with spina bifida. The appendix is brought onto the abdominal surface as a small continent catheterizable stoma which enables antegrade irrigation and evacuation of the colon. The aim is to washout the entire contents of the colon while sitting on the toilet, thus facilitating continence.

Dynamic graciloplasty. In specialized centers, over 75% of carefully selected non-neurological patients have had good results with this technique, which involves the reconstruction of a damaged or absent anal sphincter using a gracilis muscle flap and electrostimulation.

Artificial bowel sphincter. The artificial urinary sphincter is now a recognized option in the management of some cases of urinary incontinence. It has recently been modified and enlarged for use as an artificial anal sphincter, but long-term results of its use are awaited.

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This study of 935 acute stroke patients determined the prevalence of fecal and urinary incontinence on admission and after 6 months.

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