

Evaluation and Treatment of Constipation and Fecal Impaction in Adults

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Constipation is a common complaint that physicians encounter. Understanding the patient's definition of constipation and focusing the history and physical examination provide clues to the underlying cause. Initially, an empiric treatment trial is recommended. For patients with warning symptoms or those in whom treatment fails, a limited diagnostic work-up is suggested. Tests of physiologic function are reserved for patients whose condition is

refractory to therapy. Fecal impaction can be considered extreme constipation. The pathophysiologic features of fecal impaction are discussed, and recommendations are provided for treatment and prevention.

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IBS = irritable bowel syndrome; STC = slow transit constipation

An accurate determination of the prevalence of constipation is difficult because of the various definitions used. One epidemiologic study showed that constipation affects up to 20% of the population at any one time.¹ Although as many as 60% of elderly outpatients report laxative use, the percentage with actual constipation is likely much lower.² Patients have some unusual beliefs about their bowel habits. Many patients believe that "regularity" is an important factor for good health. Regularity may be defined as a daily bowel movement or a bowel movement at the same time each day (or both). Successful management of constipation necessitates an understanding of the patient's symptoms, evaluation for secondary causes, and treatment based on the underlying disorder.

DEFINITION

A satisfactory definition of constipation remains a challenge. Although delayed colonic transit can be documented in some patients with complaints of constipation, it is not a required component of the definition. The medical community typically defines constipation as infrequent stools. In contrast, patients consider constipation to be passing of hard stools or straining to have a bowel movement. Because the diagnosis of constipation relies on symptomatic criteria and various definitions exist, a medical team of experts reached a consensus on the definition of functional constipation.³ Two or more of the following

factors must be noted for at least 3 months: (1) straining with defecation at least one-fourth of the time; (2) lumpy or hard stools (or both) at least one-fourth of the time; (3) sensation of incomplete evacuation at least one-fourth of the time; or (4) two or fewer bowel movements in a week. The term "functional" indicates that no secondary cause for the symptoms can be identified.

ETIOLOGY

The general public and many medical professionals state that inadequate fiber and fluid intake are the most common causes of constipation. No compelling medical evidence shows that inadequate fluid intake results in constipation. Other causes can be classified into one of the following categories: congenital, medication-induced, irritable bowel syndrome (IBS), systemic (endocrine, metabolic, or neurologic disorder), structural abnormality, slow transit constipation (STC), or pelvic floor dysfunction.

Dietary

Constipation and sequelae of constipation, such as hemorrhoids, are rarely described in Third World countries. The consumption of a fiber-depleted Western diet has been implicated in constipation and other disorders.⁴ Although the current American Dietetic Association daily recommendation for fiber is 25 g, few adults consume this level of fiber. Increased dietary fiber intake accelerates colonic transit and produces more frequent, bulky stools.⁵

Congenital

Congenital causes of constipation are rarely seen in the adult patient. Nonetheless, Hirschsprung's disease has been diagnosed in all age-groups. This disorder is excluded by identifying the presence of the rectoanal inhibitory reflex on anorectal manometric testing.

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Medications

The list of medications that may cause constipation is lengthy. A partial list, including some of the more common pharmacologic agents that may induce constipation, is shown in Table 1.

Irritable Bowel Syndrome

Symptoms of IBS are common, and constipation is the predominant symptom in many patients with this disorder. In those with constipation-predominant symptoms, the constipation typically responds well to increased dietary fiber.

Systemic Disease

In a community sample of patients with diabetes mellitus, constipation was the most common gastrointestinal complaint.⁶ Neurologic disorders including autonomic neuropathy, multiple sclerosis, Parkinson's disease, and spinal cord injury may be associated with constipation. Other systemic disorders associated with constipation include hypercalcemia (for example, hyperparathyroidism) and hypothyroidism. Patients with renal failure may also complain of constipation.

Structural Abnormalities

Although often suspected, a structural explanation for constipation is rarely found. Structural abnormalities associated with constipation include those that impede the passage of stool and those that result in pain with defecation. These include anal fissure, mass lesion (for example, rectal cancer), mucosal prolapse, Crohn's disease of the anorectum, or stricture (benign or malignant). Clinical clues suggesting a structural problem that can be elicited from the history include the passage of blood from the rectum, weight loss, prior history of colon polyp, or diverticula. A family history of colon cancer should prompt the physician to consider performing a structural examination of the colon. Rarely, rectoceles and enteroceles may cause constipation; they are clinically important only if obstruction to stool outflow is evident, for which defecating proctography is necessary.

Slow Transit Constipation

Normal colonic transit ranges from 18 to 72 hours (mean, 35). In patients with STC, transit is greater than 72 hours. This uncommon cause of constipation is identified in only 20% of patients referred to a tertiary center because of refractory constipation.⁷ STC is thought to result from disorders of the myenteric plexus. STC may be part of a more generalized gastrointestinal motor disorder such as chronic intestinal pseudo-obstruction. Colonic inertia is a subset of STC and is

Table 1.—Medications Commonly Associated With Constipation

Antacids (containing aluminum and calcium)
Anticholinergics (antidepressants and antihistamines)
Barium
Bismuth
Calcium channel blockers
Clonidine
Iron
Levodopa
Nonsteroidal anti-inflammatory drugs
Opiates
Sucralfate

defined by a lack of response to colonic stimulants such as bisacodyl.

Evacuation Disorders

Several distinct disorders are included in the more general category of evacuation disorders, also labeled pelvic outlet dysfunction. High resting pressure in the anal canal or failure of anal sphincter relaxation during defecation (or both) impedes the outflow of stool. This disorder is commonly termed "anismus." The puborectalis syndrome refers to failure of the puborectalis to relax or a paradoxical increase in contraction with straining, the result of which is a functional obstruction to stool outflow. The descending perineum syndrome describes excessive ballooning of the perineum, usually the result of years of straining, multiple vaginal deliveries, and poor defecation dynamics. Rectoceles and enteroceles may obstruct defecation and also occur as the result of years of straining, but they rarely cause constipation.

ELICITATION OF THE HISTORY

Elicitation of the history should provide clues of other causes of constipation manifesting as simple or functional constipation. Determining the patient's main complaint (infrequent stool, hard stool, straining with defecation, incomplete evacuation, or some combination) is important. Pain is rarely the initial symptom in patients with functional constipation. Pain suggests the presence of IBS or some other cause (for example, a fissure). Likewise, weight loss or the presence of rectal bleeding should alert the physician to search for a more sinister cause of the constipation. The need for the patient to use perineal splinting (manual perineal support to facilitate defecation) or digital disimpaction or to assume unusual positions during defecation suggests pelvic outlet dysfunction. If a sensation of rectal fullness predominates, this could indicate rectal prolapse, internal intussusception, or rectocele. Episodes of fecal incontinence may

indicate a neurologic cause or overflow in the case of fecal impaction.

PHYSICAL EXAMINATION

The physical examination is performed to search for evidence of systemic disease such as scleroderma or Parkinson's disease. Anal sphincter tone at rest and with squeeze should be appraised. Perineal descent with straining is determined by visual inspection and during digital examination. Normal descent is 2 to 4 cm in the left lateral decubitus position. A lack of descent may indicate a failure of pelvic floor relaxation. Excessive descent and ballooning likely indicate the descending perineum syndrome. Both result in an obstruction to stool outflow. A digital examination may reveal internal mucosal prolapse during straining and defects in the anorectal wall.

FIRST-LINE MANAGEMENT OF CONSTIPATION

The first steps in the treatment of simple constipation include increasing the intake of dietary fiber and the use of a fiber supplement. Most patients will respond to these simple measures. A gradual increase in the intake of dietary fiber to 25 to 30 g per day is suggested. Some patients will experience bloating with this change in diet. Cautioning the patient about this side effect and sequentially increasing the fiber by about 5 g per day each week may be helpful. With time, the bloating typically becomes less severe. Patients unable to meet the dietary recommendations may be managed with supplemental fiber (bran, methylcellulose, or psyllium) of 6 to 12 g per day. Only minimal scientific evidence supports the use of increased fluid intake or exercise, although both are often recommended.

Patients with pronounced constipation or those unable to comply with the recommendation of intake of fiber may benefit from the addition of a stool softener or an osmotic laxative (or both). For patients dependent on stimulant laxatives and enemas, use of these should be tapered. Typical pharmacotherapeutic agents for constipation are listed in Table 2.

LABORATORY STUDIES

Laboratory studies are usually performed when the patient's constipation fails to respond to conservative treatment measures; they are not usually part of the initial evaluation. Most blood tests are ordered because of a clinical index of suspicion. Tests may include sensitive thyroid-stimulating hormone, calcium, glucose, creatinine, and a complete blood cell count. All patients with persistent constipation should undergo flexible sigmoidoscopy. If the patient is older than 40 years of age at the onset of symptoms, a barium enema examination is also indicated.

Table 2.—Medications Used in the Treatment of Constipation*

Type of laxative	Dose	Frequency
<i>Bulk</i>		
Psyllium	3-6 g	q.d.-t.i.d.
Methylcellulose	2.4-4.8 g	q.d.-t.i.d.
Raw bran	1-3 tablespoons	q.d.-t.i.d.
<i>Stool softeners or emollients</i>		
Mineral oil	15-45 mL	q.h.s.
Docusate sodium	100-200 mg	q.d.-b.i.d.
Docusate calcium	240 mg	q.d.-b.i.d.
<i>Osmotic laxatives</i>		
Magnesium sulfate	15-45 mL	q.h.s.
Magnesium citrate	200 mL	p.r.n. (q.d.)
Fleet Phospha-soda	20-45 mL	p.r.n. (not more than weekly) [†]
Lactulose	5-60 mL	q.d.-b.i.d.
Sorbitol (70%)	15-60 mL	q.d.-b.i.d.
Polyethylene glycol solution	200-1,000 mL	p.r.n.-q.i.d. (up to 2 L/day)
<i>Stimulant laxatives</i>		
Aromatic cascara fluidextract	5 mL	p.r.n. (up to 2-3 times/wk)
Senna	8.6-17.2 mg	q.d.-b.i.d.
<i>Miscellaneous</i>		
Glycerin	3-g suppository	p.r. p.r.n.

*b.i.d. = twice a day; p.r. = per rectum; p.r.n. = as needed; q.d. = daily; q.h.s. = daily at bedtime; q.i.d. = four times a day.

[†]Sodium load may be problematic for patients with renal or cardiac disease.

In the setting of iron deficiency anemia or if a first-degree relative has colon cancer, colonoscopy may be preferable. A barium enema examination provides information about the size of the colon, the presence of diverticuli, and, when defecation is included, the presence of disordered evacuation (that is, paradoxical contraction of the puborectalis, mucosal intussusception, or enterocele).

INTRACTABLE CONSTIPATION

Intractable constipation should not be suspected unless the aforementioned measures fail. Patients with intractable constipation are likely to benefit from physiologic studies. When the physician performs a thorough assessment, a cause for constipation can be detected in about three-fourths of patients.⁷ Identification of the underlying abnormality, such as STC or pelvic floor dysfunction, allows determination of patients who may benefit from surgical treatment or pelvic floor retraining, respectively.⁸

In order to understand the information provided by the physiologic tests, a review of defecation dynamics is necessary. For normal defecation, the following coordinated

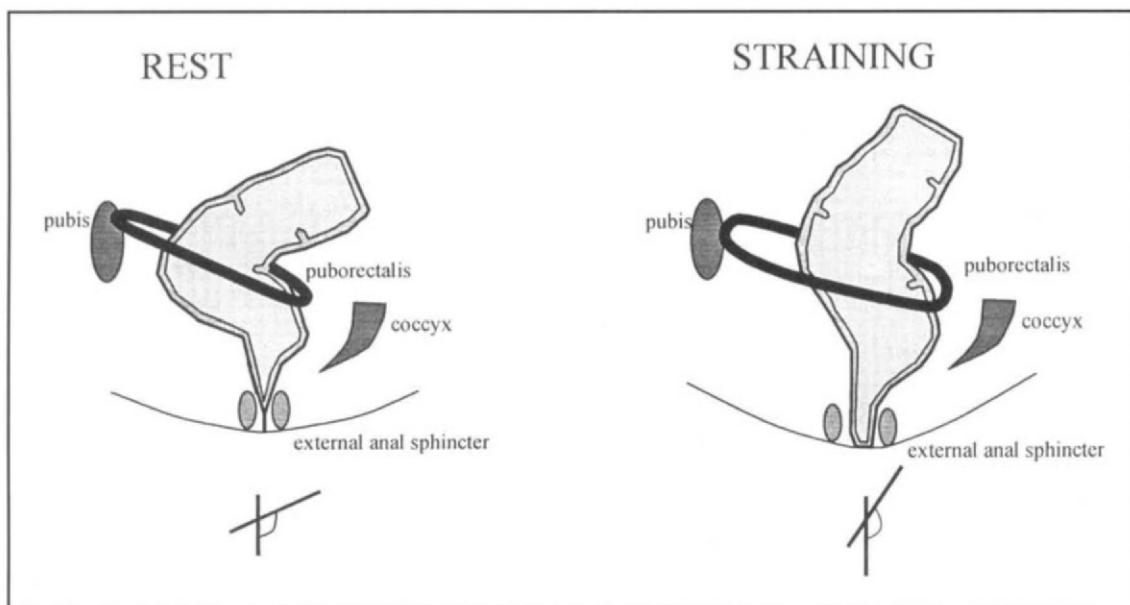


Fig. 1. Sagittal view illustrating that puborectalis relaxes with straining, resulting in straightening of rectum and opening of anorectal angle.

series of events (Fig. 1) must occur: relaxation of the puborectalis, relaxation of the external anal sphincter, straightening of the anorectal angle, and increased intraluminal pressure by straining.

The physiologic tests subsequently discussed can be performed to examine and diagnose abnormalities in defecation dynamics.

Anorectal Manometry

Anorectal manometry provides information about resting anal sphincter tone and squeeze pressure. Manometry also includes testing for the presence or absence of the rectoanal inhibitory reflex. Patients with chronic constipation may have a capacious rectum and require an increased distention volume before internal anal sphincter relaxation occurs. An absence of this response in the adult patient is much more likely due to an inadequate stimulus than to the presence of Hirschsprung's disease. The presence of high resting anal pressures suggests anismus.

Balloon Expulsion

Balloon expulsion is the single most useful screening test of pelvic floor function. A 50- to 60-mL balloon is placed in the rectum and inflated while the patient is in the left lateral decubitus position. A string connects the balloon to a container for the purpose of adding weights if necessary. The patient is asked to expel the balloon. If the balloon is not expelled spontaneously, sequential weights

are added to the container to facilitate expulsion (sometimes needed to overcome the lack of gravity that assists expulsion when the patient is in the more typical seated position). The normal range of weights is 0 to 200 g. Failure to expel the balloon suggests pelvic floor dysfunction or anismus.

Anorectal Angle Measurement

Anorectal angle determination is helpful in patients with symptoms of outlet dysfunction and in those with an inability to expel the balloon. This is measured during defecating proctography with use of barium or during scintigraphy. The angle should open by more than 15°. Failure to open or a decrease in angle is abnormal. Perineal descent, measured at the same time, detects failed relaxation.

Defecating Proctography

With defecating proctography, barium is instilled into the colon, and videoradiographic images are obtained while the patient is defecating into a commode. This study will identify functional obstruction such as intussusception or rectocele.

MEASUREMENT OF COLONIC TRANSIT

Radiopaque Marker Transit Test

The radiopaque marker transit test is a simple, readily available, well-validated test of overall colonic transit.⁹

The patient ingests a capsule containing 24 prepackaged radiopaque markers. An abdominal radiograph is obtained on day 5. Abnormal colonic transit is indicated when more than 20% of the markers remain in the colon or rectum. When this test is used, the patient must avoid laxatives and enemas during the 5-day period.

Scintigraphic Transit

Colonic transit can also be measured scintigraphically. The patient ingests a delayed-release capsule that contains radiolabeled particles designed to be delivered to the distal small bowel and emptied in bolus fashion into the colon.¹⁰ For 24 hours, transit through the colon is quantified. The advantage of this test is the short time needed. This test, however, is more expensive than the radiopaque marker test and requires the availability of special materials.

MANAGEMENT OF IDENTIFIED "PHYSIOLOGIC" DISORDERS

Slow Transit Constipation

Initial treatment of STC includes bulk laxatives, stool softeners, and osmotic agents. In patients in whom these measures fail, stimulant laxatives are used. Other medications that may be of benefit include polyethylene glycol and prokinetics (for example, bisacodyl). Surgical treatment can be considered in patients with normal pelvic floor function in whom aggressive medical management has failed. The surgical procedure of choice is colectomy with ileorectostomy. Segmental resection is less likely to be beneficial. Carefully selected patients undergoing abdominal colectomy with ileorectostomy for colonic inertia have a success rate of almost 100%. Postoperative complications include small bowel obstruction in 10% of patients and, rarely, fecal soiling. Surgical failure usually relates to failure to exclude pelvic floor dysfunction or failure to exclude a generalized motility disorder preoperatively.

Pelvic Floor Dysfunction

Biofeedback (pelvic floor retraining) remains the mainstay of the treatment of pelvic floor dysfunction (obstructed defecation). This treatment is aimed at reeducating the muscles of the pelvic floor to relax appropriately during defecation. The program may include dietary manipulation, behavioral modification (psychologic counseling), and intense physical therapy. After successful completion of this program, 70% of patients will experience improvement.¹¹

FECAL IMPACTION

Obstipation is the absolute inability to pass stool. Fecal impaction is the inability to pass a hard collection of stool.

These conditions occur in all age-groups. Physically and mentally incapacitated persons and institutionalized elderly patients are at particular risk of fecal impaction, as are those who have chronically used drugs for constipation. A combination of factors predisposes certain groups of patients, particularly elderly patients, to this problem: poor eating habits, decreased colonic motility, decreased rectal sensation, and ignoring the urge to defecate because of depression, dementia, physical weakness, immobility, or inadequate access to toilet facilities.¹²

Cause

The sensory function of the rectum and anus decreases with age. This may result in an inability to sense stool in the rectum. Painful lesions of the rectum and anus may also result in the reflex inhibition of stool passage. Regardless of the cause of stool retention, the normal absorption of water persists and hardens the stool. Continued colonic motility or peristalsis may also contribute to packing of stool. The result is a large, hard bolus of stool that becomes impossible to pass through the relatively fixed diameter of the anus. Fecal impaction and obstipation are extreme constipation, and, as such, the underlying causes are the same.

Clinical Manifestation

Symptoms of fecal impaction may include constipation, rectal discomfort, anorexia, nausea, vomiting, abdominal pain, paradoxical diarrhea, fecal incontinence, urinary frequency, and urinary overflow incontinence. If abdominal distention is pronounced, it may compromise ventilation and produce symptoms due to deficient oxygenation. The symptoms may be as nonspecific as a decline in clinical status in a patient in whom stool frequency or consistency has changed. Some patients may have fever and leukocytosis. When these conditions are present, other causes should be excluded (for example, urinary tract infection or pneumonia) before such signs are attributed to fecal impaction.

Findings on physical examination may include a fever and abdominal tenderness or distention. On examination of the abdomen, a stool mass may be palpable. The rectal examination typically shows hard stool in the rectum; however, the stool may be of a softer consistency or may be absent, an outcome that could be the result of prior enemas or suppositories that did not relieve a more proximal stool impaction. The perineal examination should be performed to search for inflammatory lesions, anal fissure, or anal deformity (for example, from Crohn's disease).

Laboratory studies may yield electrolyte abnormalities or an increased leukocyte count. An abdominal radio-

graph typically shows a large amount of stool in the colon and rectum. Dilated bowel or air-fluid levels occur in extreme cases. The presence of fever, abdominal tenderness, and an increased leukocyte count may indicate colonic ulceration or perforation. When these more serious signs are present, radiographs should be performed while the patient is in the supine and upright positions in order to search for evidence of perforation. An enema that uses a water-based contrast medium (for example, meglumine diatrizoate) may be considered to exclude perforation (this also may be therapeutic). These tests should be performed before administration of cathartics or other enemas.

Treatment

Fecal impaction should be removed manually. This is performed by using a local anesthetic lubricant. Anal dilatation is accomplished with gradual insertion of two fingers that are then used in a scissors motion to fragment the fecal mass. In the female patient, transvaginal pressure with the other hand may aid fragmentation and expulsion. Successful disimpaction should be followed by attempts at removing the stool rectally. Options are outlined in Table 3.

If the stool is higher than can be reached with enemas and the patient has no signs of bowel obstruction (including fever and increased leukocyte count), laxatives can be administered orally with caution. Polyethylene glycol balanced electrolyte solution is typically used for preparing the colon for colonoscopy or barium enema examination. It can also be used as a cathartic in other situations and will result in less luminal electrolyte losses than those associated with osmotic or stimulant laxatives. Stool softeners can also be given, although mineral oil is generally avoided in the acute situation. Surgical consultation is occasionally necessary when conservative measures fail.

The best treatment of fecal impaction is prevention. For patients at high risk of constipation, a bowel regimen should be initiated, and these patients should be monitored with the goal of one bowel movement every 1 to 2 days. This is achieved with adequate fluid intake, supplemental fiber, stool softeners, and sufficient time after meals for defecation. A sample regimen is as follows: (1) increase dietary fiber; (2) provide a dedicated time for defecation, approximately 1/2 hour after breakfast, and appropriate assistive devices if needed (for example, handrails on the sides of the commode, seat extender); (3) provide supplemental fiber (for example, psyllium, 3 g in water daily); (4) administer a stool softener (for example, docusate sodium, 100 mg twice a day); (5) give an osmotic laxative every three to four evenings if patient has no bowel movement;

Table 3.—Treatment of Fecal Impaction

<i>Enemas*</i>	
Oil retention	
Tap water	
<i>Suppositories</i>	
Glycerin	
Bisacodyl	
<i>Miscellaneous</i>	
Water-soluble contrast media enema (for example, meglumine diatrizoate)	

*Soapsuds enemas should be avoided because of irritant effect on colonic mucosa.

and (6) give glycerin or bisacodyl suppository for unrelieved constipation.

CONCLUSION

Constipation can be a challenging disorder to manage. Discovering the patient's main symptoms and focused testing determine the underlying cause. Most patients respond to intake of dietary fiber. The few patients with intractable constipation require further testing to classify the underlying disorder in the hopes of determining the most appropriate treatment options.

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Questions About Constipation and Fecal Impaction

(See article, pages 881 to 886)

1. Which one of the following is considered the most common cause of chronic constipation?
 - a. Slow transit constipation
 - b. Hirschsprung's disease
 - c. Colorectal neoplasm
 - d. Hypothyroidism
 - e. Inadequate dietary fiber
2. Which one of the following is the best test to screen for pelvic outlet dysfunction?
 - a. Barium enema
 - b. Flexible sigmoidoscopy
 - c. Anorectal manometry
 - d. Rectal balloon expulsion
 - e. Colonoscopy
3. Which one of the following is a risk factor for fecal impaction?
 - a. Caucasian race
 - b. Immobility
 - c. Long-term use of fiber supplementation
 - d. Caffeine consumption
 - e. Antibiotic therapy
4. Which one of the following should be avoided in the treatment of fecal impaction?
 - a. Docusate sodium
 - b. Polyethylene glycol solution
 - c. Lactulose
 - d. Soapsuds enema
 - e. Meglumine diatrizoate enema
5. Which one of the following is not a warning symptom in patients with constipation?
 - a. Bloating
 - b. Severe anal pain
 - c. Rectal bleeding
 - d. Weight loss
 - e. First-degree relative with colon cancer at age 45 years

Correct answers:

1. e, 2. d, 3. b, 4. d, 5. a