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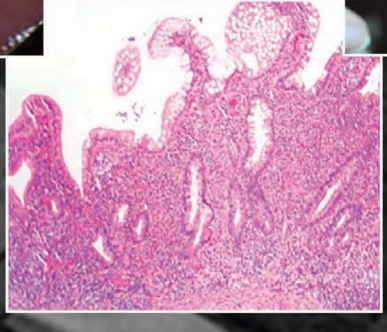
Clinical Problems in Gastroenterology







Her-Hsin Tsai

Foreword
Jonathan Rhodes

JAYPEE

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CHAPTER 4

Constipation

Her Hsin Tsai

WHAT IS CONSTIPATION?

When patients report having constipation, they may mean a range of different symptoms:

1. Infrequent emptying of bowels, lack of urge to go
2. Painful defecation with hard stools
3. Bloating and abdominal pain with infrequency of defecation
4. Need to strain
5. Feeling of incomplete evacuation
6. Having to sit for long periods in the toilet.

It is remarkably difficult to come to a definition. It is often accepted that less than three spontaneous evacuations a week may be regarded as constipation and this is often the definition used in clinical trials to evaluate laxatives. However, there is little correlation between this definition and patient symptoms. Many may feel very comfortable with fewer than one or two evacuations, while others may be very symptomatic despite spending a considerable amount of time in the toilet. In fact, one definition (Rome III) classifies everyone with at least two of the above symptoms in the past 6 months as having constipation. Of course, this is a completely arbitrary definition. In the final analysis, the physician's task is to alleviate symptoms and exclude important organic disease.

One observation is that the appearance of the stool does correlate very well with symptomatic constipation. This has led to the widespread and helpful use of the Bristol stool chart in evaluating constipation. Patients with hard lumpy stools whether pellet-like or stuck together (Bristol types 1 and 2) can be described as having constipation. There is a reduced content of water in the stool due to its longer transit in the colon and rolled into pill-like shape by the non-propulsive contractions of the lower colon (Fig. 4.1).

If there is any doubt, a whole gut transit study is simple and cheap to perform. This involves swallowing a radiopaque marker and then performing

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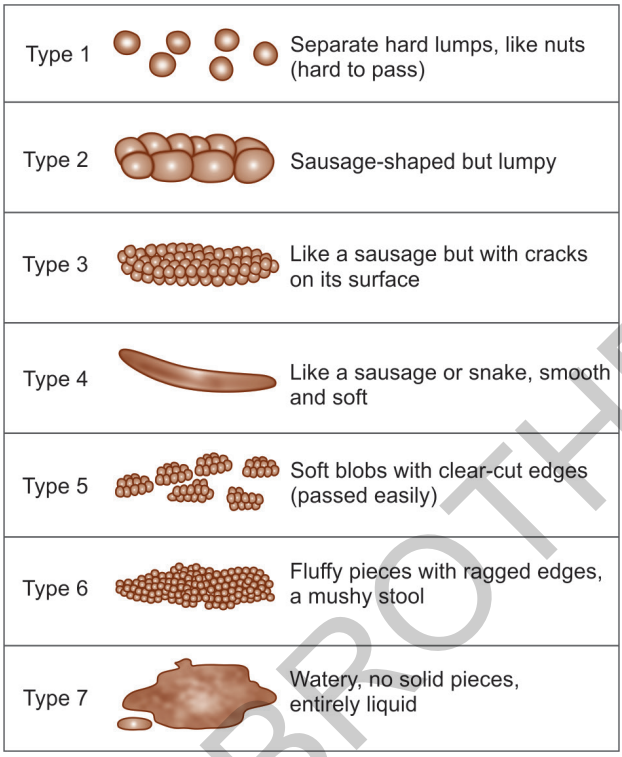

Fig. 4.1: Bristol stool chart.

a plain X-ray 5 days later. Sometimes, two different-shaped markers are used, one swallowed 2 days after the first. This simple test could also show if there is slowing down of the whole colon with markers spread throughout the colon or if the markers are all aggregated in the pelvis when there is obstructed defecation.

Pathophysiology

Constipation may arise from:

- A generalized abnormality of colorectal motility
- Disordered anorectal physiology
- Involuntary overriding of normal response perhaps due to social fear of public toilets or painful anal condition
- Stricture or tumor obstruction
- Inadequate fluid or fiber intake.

The primary function of the gastrointestinal (GI) tract is to digest food and extract nutrients and fluid. Hence, it is not a conveyor belt moving in one direction only. Most of the time, the peristaltic contractions are a

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to-and-fro activity exposing the food to the absorptive surface. In the colon, about 7–9 times a day, there are coordinated propulsions toward the rectum termed as high-amplitude propagated contractions (HAPC). This is suppressed at night during sleep but increases upon awakening, are much more common during the day, and increases after meals and exercise. They originate in the proximal colon but mostly do not propagate beyond the mid-colon and <5% reach the rectum. When contents reach the rectum, it may lead to internal anal sphincter relaxation stimulating the urge to defecate. HAPCs are reduced in slow-transit constipation and increased in diarrhea predominant irritable bowel syndrome (IBS) and may explain disturbances of colonic transit in these conditions.

When the fecal material reaches the rectum it is held continent by a complex of sphincters and the puborectalis sling that creates an acute angle at the anorectal junction. These are in turn controlled by the sacral and pudendal nerves. Efferent nerves feed into the lower spinal cord where a combination of local reflex and higher control allows for the complex control of continence. In fact, remarkably, the human rectum is capable of distinguishing between solids, liquids and gas and can selectively expel the latter while remaining continent of the former two. At the point of defecation, the anorectal angle straightens up with the relaxation of the puborectalis muscle, the internal and external sphincters relax and defecation takes place. It is worth noting that the angle is at its most straight in the crouching position which is how humans are evolved to defecate and less so (more acute) in the sitting position of Western toilets (Fig. 4.2).

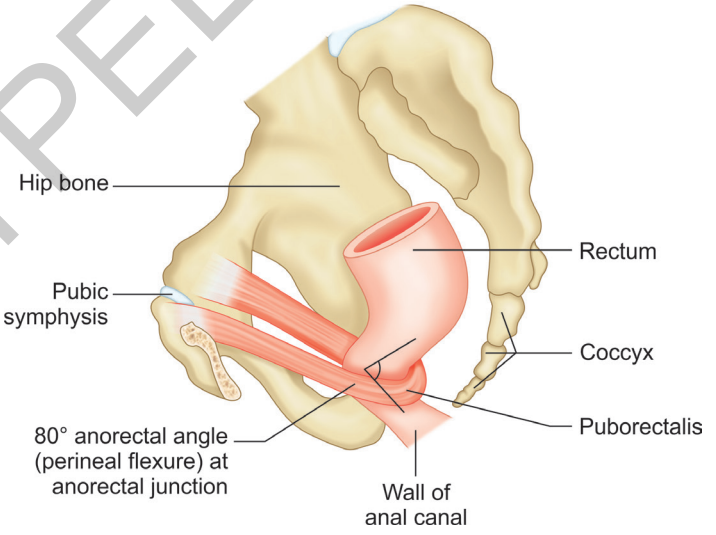

Fig. 4.2: The anorectal angle acts as an effective gatekeeper, relaxation of the puborectalis straightens it up and allows passage of stool.

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Approach to the Diagnosis

Taking a good history and taking the patient's age into account helps to make the correct diagnosis and avoids unnecessary unpleasant investigations like a colonoscopy. History of diabetes, cerebrovascular disease and drugs both prescription and over-the-counter remedies gives important clues. The main initial assessment would be to distinguish between primary constipation (also referred to as functional or idiopathic) and secondary causes. In the patient of 45 years or older, where colonic neoplasia needs to be excluded, a colonoscopy should be performed although the pickup for chronic constipation is low. In other patients, abdominal examination may pick up a loaded colon and evidence of bowel spasm or tenderness. Anorectal examination may reveal a prolapsed mucosa or painful fissures or perianal hematomas. A digital examination may reveal abscesses and assess tone of the anal sphincter. A biochemistry profile and thyroid-stimulating hormone could identify metabolic causes of constipation. A flexible sigmoidoscopy is simple and requires only an enema rather than a full bowel prep and may identify rectal conditions like solitary rectal ulcer.

IS IT PRIMARY CONSTIPATION?

Primary constipation can generally be subdivided into the following 3 types, although there may be considerable overlap:

- Irritable bowel syndrome with predominant constipation (IBS-C)
- Slow-transit constipation
- Pelvic floor dysfunction (also referred to as pelvic floor dyssynergia).

IS IT CONSTIPATION-PREDOMINANT IRRITABLE BOWEL SYNDROME?

It is important to try to make a positive diagnosis to avoid unnecessary investigations in this group. Patients are commonly younger women. They often have the classic triad of colicky abdominal pain, bloating and constipation. This meets the criteria for making a diagnosis of IBD-C. In these patients, stool passes through the colon at a normal rate, but they find it difficult to evacuate their bowels. There may be alternating with episodes of diarrhea and pain may be relieved by defecation. The presence of weight loss, rectal bleeding or nocturnal pain requires further investigation. A fuller discussion of IBS may be found in Chapter 1.

Management of IBS-C

Management can be very difficult. An understanding listening sympathetic approach is vital. The doctor is often the best medicine. Occasionally, it is possible to coax the patient to reveal some deep-seated psychological

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disturbance as a precipitating cause. The physician is then obliged to offer some clinical psychological support. Cognitive behavioral therapy and hypnotherapy wave their advocates. Postinfective IBS tends to lead to diarrhea predominant IBS but may be a long-forgotten trigger. Dietary improvement is also a vital element. In general, patients with constipation should be counseled to eat more fiber. Soluble fibers, which are found in fruits and leafy vegetables, are preferable to non-soluble fibers like bran. They absorb more liquid and produce softer faces. If the predominant symptom is bloating, then advice about FODMAP foods (*see* Chapter 9) avoidance may be helpful. Gluten sensitivity may cause constipation, even if celiac disease is serologically discounted, hence a trial of gluten or wheat avoidance can be helpful. A referral to a dietitian can be very helpful. Drug therapy may include the use of laxatives or antidepressants. Stimulant laxatives are best avoided for long-term use. Start with a bulking agent in these patients with soluble fibers such as fybogel or methylcelluose with encouragement to drink more fluids. However, these may cause more bloating. Osmotic laxatives like macrogol (polyethylene glycol) are effective and safe. Newer agents have been licensed for use if patients fail on the traditional laxatives of which linaclotide and lubiprostone have been licensed specifically for IBS-C. Linaclotide is a peptide that acts on the guanylate cyclase-C receptors in the intestinal neurons leading to increased cyclic guanosine monophosphate, anion secretion, fluid secretion and stimulating intestinal transit. It appears to work topically as it is not absorbed. Lubiprostone is a bicyclic fatty acid derived from prostaglandin E1 that acts by stimulating ClC-2 chloride channels on the apical aspect of GI epithelial cells, producing a chloride-rich fluid secretion. Both these drugs have NICE approval for use if traditional, cheaper laxatives fail. Antidepressants have a role here. Selective serotonin reuptake inhibitors are preferred to tricyclics as the latter is somewhat constipating.

IS IT SLOW-TRANSIT CONSTIPATION?

This is characterized by infrequent bowel movements, decreased urgency or straining to defecate. Patients usually have a long history and predominately occur in the young females. Slow-transit constipation as the name implies has impaired phasic colonic motor activity. A 5-day colonic marker test would show considerable retention of markers that may be scattered through the colon. Often there is abdominal distention or palpable stool in the sigmoid colon but pain is unusual. Patients may report alarmingly infrequent bowel movement that can be believed from the amount of marker retention (Fig. 4.3).

Management

This group of patients would normally have gone through the full gamut of drugs mentioned earlier by the time they visit secondary care physician.

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Fig. 4.3: Colonic transit study: these markers have been ingested 5 days earlier and are still in the ascending colon showing marked slow-transit constipation.

Hence, management of the patients at the severe end is very challenging. Psychological factors may play a role. A dietitian consultation is also helpful. Laxatives must be selected with care. Bulking agents generally are best avoided. They may lead to bloating, although soluble fibers could be tried. Stimulant laxatives should be avoided. Osmotic laxatives remain the cornerstone but may quickly lose effect and combination laxatives are often needed. Sometimes, patients may need full doses of macrogol used for bowel preparations for a proper evacuation.

Biofeedback and coaching by an experienced physiologist can be helpful. Provision of a twice weekly irrigation using a self-administered enema pump is helpful to many who are refractory to oral laxatives. Operative procedures include an appendicostomy. Here the appendix is brought to the surface of the abdominal wall and antegrade fluid can be pumped into the colon as a flushing agent at regular intervals. Colectomies should only be reserved for the extreme cases as a last resort. Sacral nerve stimulators have also a role, but long-term results are disappointing.

IS IT PELVIC FLOOR DYSFUNCTION?

In pelvic floor dysfunction, patients often report prolonged or excessive straining, a feeling of incomplete evacuation, or they may report digital evacuation of stool with a finger inserted into the rectum or into the vagina pressing posteriorly. Careful history taking usually leads to the diagnosis. Patients may have nerve damage from traumatic virginal deliveries, particularly forceps deliveries.

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Here a lower GI physiologist can be very helpful. There is often a failure to coordinate between the relaxation of the puborectalis and the relaxation of the anal sphincters. This is why rectal digitization works. Vaginal pressure posteriorly also straightens the angle allowing passage of feces. Of course, these practices are best discouraged, and patients best find more physiological solutions. Manometry is usually performed and biofeedback is the cornerstone of management. As in the slow-transit constipation, osmotic laxatives are best. Patients should be coached to establish a good bowel habit. Toilet position is helpful, patients could have a child's stool to rest the feet to simulate a more squat position at defecation. Sacral nerve stimulation holds some promise but as a rule in this group, surgery is best avoided.

IS IT SECONDARY CONSTIPATION?

By far the commonest cause of constipation is poor diet (or recent change of diet) accompanied by inadequate water intake or inadequate fiber intake or excessive coffee, tea or alcohol. Ignoring the urge to defecate because of phobias of public toilets or during long-distance travel and reduced levels of exercise may play a factor.

Other secondary constipation includes anal fissures, thrombosed hemorrhoids, colonic strictures, obstructing tumors, volvulus and idiopathic megarectum/megacolon (Hirschsprung's disease).

Table 4.1 lists the systemic diseases that may lead to constipation and the list of drugs known to induce constipation is given in Table 4.2.

Table 4.1: Systemic diseases that may cause constipation.
Endocrinological and metabolic disorders
Hypercalcemia and hyperparathyroidism
Hypokalemia
Hypothyroidism
Pregnancy
Diabetes mellitus (constipation is the most common gastrointestinal problem affecting the diabetic population)
Neurological disorders
Hirschsprung's disease
Stroke
Parkinson's disease
Multiple sclerosis
Diabetic autonomic neuropathy
Spinal cord lesion
Head injury
Cerebrovascular accident
Chagas disease

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Table 4.2: Drugs that may lead to constipation.
Antidepressants (e.g. cyclic antidepressants and monoamine oxidase inhibitors)
Metals (e.g. iron and bismuth)
Anticholinergics (e.g. benztropine and trihexyphenidyl)
Opioids (e.g. codeine and morphine)
Antacids (e.g. aluminum and calcium compounds)
Calcium channel blockers (e.g. verapamil)
Non-steroidal anti-inflammatory drugs (e.g. ibuprofen and diclofenac)
Sympathomimetics (e.g. pseudoephedrine)
Many psychotropic drugs especially tricyclics
Cholestyramine and stimulant laxatives after prolonged use may lead to the development of a dilated atonic

Management

Treatment of the primary condition usually leads to improved bowel function. If drugs are involved, then selection of the less constipating agent is obvious. However, some patients may need that class of medication. Most commonly encountered situation is patients requiring long-term opioids. Patients on palliative care regiments often include several drugs that constipate. There are now non-absorbable opioid antagonists that prevent opioid drugs from binding onto gut receptors. These are the peripherally acting mu-opioid receptor antagonists, the most widely used of which is naloxegol.

IS THERE HIRSCHSPRUNG'S DISEASE?

This disease is usually identified by the classic toothpaste feces in childhood, but some do go undetected till adulthood. It is a neurological defect with an absence of ganglions in the myenteric plexus. Colon and rectum become pathologically distended. A straight abdominal film will show dilated megacolon. Treatment would involve resection of the aganglionic segment.

SOLITARY RECTAL ULCER SYNDROME

This is a rare curious condition in which ulceration occurs in the rectum in the absence of chronic inflammatory bowel disease like Crohn's. Histologically, there is evidence of ischemia and fibrosis. The name is a misnomer as there may be more than one ulcer. There is often associated history of constipation, straining and rectal prolapse. Patients are often accused of digitally induced trauma but there is little evidence of that. It is more likely that it is due to rectal prolapse and subsequent ischemia. At sigmoidoscopy, the most common site is the posterior wall. Drugs inserted rectally like indomethacin can also cause similar ulceration. Treatment involves correcting

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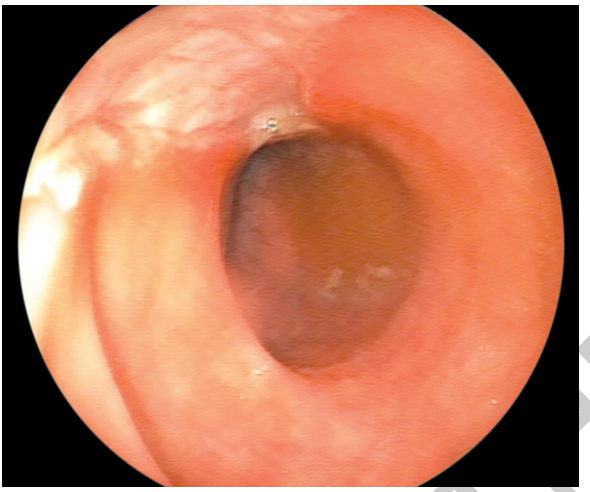

Fig. 4.4: Solitary rectal ulcer.

underlying constipation but can be difficult. Rectal prolapse may need surgical intervention (Fig. 4.4).

FURTHER READING

1. Chatoor D, Emmnauel A. Constipation and evacuation disorders. Best Pract Res Clin Gastroenterol. 2009;23(4):517-30.
2. Thayalasekeran S, Hani A, Tsai HH. Novel therapies for constipation. World J Gastroenterol. 2013;19(45):8247-51. PMC. Web. September 16, 2017.

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Clinical Problems in Gastroenterology

Traditional organ-based gastroenterology texts are often unhelpful to the doctor endeavoring to reach a diagnosis or in managing real-life clinical situations in a timely manner. Patients present with a clinical problem, a symptom or complaint and it is often not obvious which organ is involved. Few textbooks address the skills and knowledge required to solve these problems and arrive at a correct diagnosis by choosing the right diagnostic tool, without wasteful unnecessary expensive and unpleasant investigations. This book Clinical Problems in Gastroenterology helps equip the practitioner to approach the subject more practically by considering each of the major problems patients present with and guides the clinician through the process of arriving at a diagnosis. Today, there are many disease-orientated texts and countless online and mobile applications to help the doctor once the correct diagnosis is made. Arriving at the right diagnosis remains an indispensable clinical skill that is still poorly taught at medical schools and there are few texts that address this glaring inadequacy. It is the hope of the authors that this book bridges that knowledge gap. This book would suit the trainee in gastroenterology, especially in their first year to ground them in clinical gastroenterology.



Her-Hsin Tsai MD FRCP FECG qualified from University of Aberdeen and then did research in IBD with Prof JM Rhodes in Liverpool where he obtained an MD with honours. He is a fellow of the Royal College of Physicians and Fellow of the European Board of Gastroenterology. He has been a consultant gastroenterologist for over 23 years and is still a fully practicing clinician. He is active in clinical research and has published over 40 peer-reviewed papers mainly on inflammatory bowel diseases. He is Editor-in-Chief of GastroHep and was formerly honorary Senior Clinical Lecturer at Hull York Medical School and latterly visiting Professor of Gastroenterology. He has a wealth of teaching experience in the knowledge and skills required for equipping the trainee gastroenterologist and this book is a summation of his clinical philosophy.

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