CONSTIPATION – A DIFFERENT APPROACH

Abstract

Constipation is a common condition a doctor encounters in their day-to-day clinical practice. Due to multiple definitions, the incidence of constipation differs in different studies and is generally higher than the published data. It affects our daily activities and can cause an imbalance in our personal and professional life. In this chapter, a new classification and staging system for constipation is proposed. Staging is essential to assess the severity of this condition. A modified management algorithm has also been proposed. The various effects of constipation are preventable provided a regular bowel habit is maintained. This condition apart from awareness also requires administrative support from the government for improving the toilets, sanitation, and water supply to every region of the country.

Keywords: Constipation, Surgery

Authors

Dr. M. Someswara Rao
MS, (MCh Surgical Oncology Resident)
FACRSI, FISCP, FMAS,Colorectal Surgery Fellowship (Apollo)
General, Laparoscopic, Colorectal and Onco Surgeon.
MNJ Institute of Oncology & Regional Cancer Center
Hyderabad, Telangana, India.

Dr. Gade Veena
MS, FISCP, FMAS
General and laparoscopic surgeon
Assistant professor
Department of General Surgery
Government medical college
Nagar Kurnool, Telangana, India.

KEY POINTS

- A simple definition for constipation is proposed.
- A new classification of constipation is introduced.
- The constipation cycle is described.
- 4 stages of constipation have been described along with alarm symptoms.
- A modified algorithm for constipation management is introduced.
- BED - Bowel Evacuation Days regimen has been introduced and described.
- Without a change in the treatment of constipation, a novel approach to the management of constipation has been described in this chapter.
- A need for a declaration of "National Constipation Day" is highlighted.

I. INTRODUCTION

The word constipation is derived from the Latin word *constipatio* which means to press or crowd *together*. In medical terminology, it denotes overcrowding of stools inside the colon.

Most of the definitions of constipation in the literature are physician-centric where in the physician with the help of certain criteria diagnose constipation. One such guideline is the Rome-IV criteria [1]. It defines functional constipation as having 2 or more of the following features: Straining during more than ¼ (25%) of defecations, Lumpy or hard stools (Bristol Stool Form Scale 1-2) more than ¼ (25%) of defecations, Sensation of incomplete evacuation more than ¼ (25%) of defecations, Sensation of anorectal obstruction/blockage more than ¼ (25%) of defecations, Manual maneuvers to facilitate more than ¼ (25%) of defecations (e.g., digital evacuation, support of the pelvic floor), fewer than three bowel movements per week, and Insufficient criteria for irritable bowel syndrome. So as per guidelines, if a patient has only one criterion like fewer than 3 bowel movements per week with Straining during less than ¼ (25%) of defecations does that mean the patient is not suffering from constipation? Is constipation a symptom or a disease? I opine that constipation is a symptom that can be simply defined as a condition in which there is **"difficulty in complete evacuation of stool and flatus from the colon and rectum."**

Due to its variety of definitions, the reported prevalence of constipation from various studies is around 1%-80% with wide geographical variation [2]. By simplifying the definition, the lifetime prevalence of constipation is 100% as every person at least once in their lifetime will experience this difficulty in the evacuation of stools and flatus. Considering the patient's distress with difficulty in evacuating the stools and flatus, any type of constipation requires immediate treatment without delaying the time in diagnosis.

II. PATHOPHYSIOLOGY

To understand the pathophysiology of constipation one must understand the basic anatomy, innervation, physiology, and function of the colon and rectum, the defecation reflex, and the anatomy and innervation of the anal sphincter complex. The relevant physiology of the colon and rectum and defecation reflex will be discussed briefly here.

Migratory motor complexes (MMC) are electrical waves that originate in the stomach and move along the small intestine triggering peristaltic contractions [3]. This MMC will

push the stomach contents through the small bowel. The colon does not have MMC [4]. The colonic innervation comprises the intrinsic enteric nervous system (ENS) and the extrinsic parasympathetic and sympathetic autonomic nervous system [5]. Peristalsis is initiated and propagated exclusively by the intrinsic ENS but can be modulated by the extrinsic nervous system with the parasympathetic system tending to augment and the sympathetic system suppressing the peristalsis [6]. Interstitial cells of Cajal are the intestinal pacemakers and generate peristalsis in the colon [5]. The colon has High-amplitude propagated contractions (HAPCs) which are responsible for the urge to defecate upon awakening and also Low-amplitude propagated contraction which also helps in forward stool propulsion [4].

Colon peristalsis has local afferent and efferent components in the enteric nervous system. The stimulus for the afferent pathway is by two mechanisms 1) reflexive (stretch or mechanoreceptors) & 2) parasympathetic stimulation (via acetylcholine), and efferent pathway via the myenteric plexus to the muscularis propria which causes contraction and segmental peristalsis in the colon [7]. All these segmental contractions are till the rectosigmoid which propels the feces into the rectum which is the stool reservoir.

Rectum is the distal part of the colon that acts as a conduit and stores feces and expulses it when required by the defecation reflex. There are four phases of defecation 1) the basal phase, 2) a pre-defecation phase, 3) the expulsive phase, and 4) termination of the defecation phase. In the normal basal phase, there is no desire for defecation and the rectum remains empty or with little stool the pelvic muscles, and sphincter complex are in continuous contraction where the pelvic muscles bear the weight of the pelvic organs and the sphincter complex keeping the anus closed preventing leakage of rectal contents [8]. The rectum and sigmoid have recurrent cyclical bursts of motor activity called motor complexes (MCs). The sigmoid MCs propagate the stool into the rectum but the rectal MCs are seen to propagate in a retrograde direction which acts like a “braking mechanism” to the untimely flow of colonic contents into the rectum which occurs especially at night [8, 9]. In the pre-defecation phase, there will be an urge to defecate with most of the colonic propagative sequences being the HAPCs. After continuous rectal distension with stool and flatus, there is an initial constant vague sensation, which leads to a persistent urge to defecate, that in turn culminates in a sense of discomfort and an intense urge to defecate as the tolerable maximal volume and pressure is reached within the rectum. The extra rectal tissues and the pelvic floor muscles mechanoreceptors also contribute to the defecation urge [10-12]. The rectal pressure surpasses the anal canal pressure which leads to exposure of the rectal contents to the specialized upper anal canal mucosa which samples the type of stool (sampling reflex) and if a conscious decision to evacuate the stools and flatus is made, the anal canal, puborectalis, and the sphincter complex relax along with abdominal straining by Valsalva maneuver results in evacuation of variable contents of the rectum [8]. In the termination of the defecation phase, the rectal pressure decreases, the pelvic floor, and sphincter complex becomes contracted and a sense of complete rectal emptying is achieved [8]. The conscious decision to evacuate depending on the favorable surrounding is developed in childhood through toilet training. Here comes the role of the cerebral cortex in regulating bowel function. Other than the local colorectal factors, any condition which alters the cerebral cortex's role in the brain-gut axis and defecation reflex can cause constipation.

Gastrointestinal motility follows a circadian rhythm which is characterized by inactivity in the night, rapid activity upon awakening, and increased activity throughout the

day [3]. Any disturbance in the normal circadian rhythm can result in altered bowel habits like constipation or Irritable bowel syndrome (IBS) [13-14]. Different clock genes regulate the central and peripheral circadian rhythm [15]. Food intake is the important entraining factor that governs the gastrointestinal circadian rhythm. The colon and rectum have their peak activity immediately after awakening and increased activity during the day and decreased activity at night [16]. A regular sleep-wake cycle is a necessity for normal bowel function [3].

Normal walking exercise increases bowel motility and helps in the evacuation of the bowel [17]. A person, who is sedentary because of his occupation (administrative officials, clerks, software employees, etc.,) his lifestyle (lazy unemployed, obese, gamers, etc.,) or medical issues (chronic bedridden, after major surgery, old age) will be at high risk of constipation than a person whose work involves physical activity. Regular physical activity increases colonic motility and decreases the risk of constipation [18].

Considering the above physiology of normal bowel function, any deviation in any of the above mechanisms can result in altered bowel habits. Any disturbance in normal circadian rhythm can cause constipation. Diseases that interfere with gastrointestinal motility and circadian rhythm cause disturbance in bowel movement. Waking up at a specific time in the morning, having adequate sleep, eating healthy food regularly at the scheduled time, not skipping meals, respectfully attending the nature call, not suppressing the defecation urge, maintaining soft stool consistency by drinking adequate water and eating high fiber diet, adequate physical exercise, non-sedentary lifestyle, etc., will help maintain a regular bowel habit. Doing rotation shifts (altered circadian rhythm), working in administrative and support (official) sections, (sedentary lifestyle, Low physical activity, stress), and consuming a low-fiber diet increases the risk of constipation [17 - 24]. Increased age increases the incidence of constipation due to associated medical comorbidities, decreased colonic motility, and disordered defecation practices accumulated over the person’s lifetime.

1. **Constipation - Work Efficiency and Quality of Life:** Chronic constipation can lead to other symptoms like dullness and inactivity, abdominal pain and bloating, perianal pain or bleeding, frustration, irritability, decreased appetite, and urinary and sexual dysfunction [25]. It significantly decreases the productivity of an organization and increases healthcare utilization [26-29]. The constipated employees have decreased focus on work which is due to a sense of incomplete bowel evacuation, associated perianal pain or bleeding secondary to various anorectal conditions, frequent hospital visits and increased health expenditure, increased sickness absenteeism, regular visits to the bathroom at the workplace which decrease the effective working hours, can affect decision-making skills, leads to quarrel with colleagues, frequent late entry and early exit from workplace, pressure of meeting the work targets itself stresses out the employee and further increases the symptoms. Unfortunately, all these factors are not considered for the poor performance of an employee and the associated taboo of exposing his/her condition also deteriorates the patient’s symptoms and the organization's growth. Due to this decreased quality of life, a constipated person has poor performance personally and professionally which disturbs the families, societies, companies, states, and a country's prospect. Hence, this condition needs to be given the importance it deserves by increasing its awareness in society, and by practicing a healthy lifestyle which helps in the prevention and treatment of constipation.

2. **Pediatric Constipation:** Constipation in children is a vast topic. The entire pathophysiology cannot be discussed here but a person's bowel movements pattern is developed in childhood. Habitual constipation is the commonest cause of pediatric constipation [30]. Children tend to ignore their nature call either because of pain or extremely interesting activities, and the stool in the rectum becomes hard due to the reabsorption of water which in turn cause painful defecation leading to a vicious cycle [30]. These children suffer from abdominal pain, fissure, bleeding per rectum, increased school absenteeism, decreased appetite, misleading diagnosis of symptomatic cholelithiasis, appendicitis; intussusception, etc. Due to the social taboo of expressing the urge to defecate in the classroom, the child will consistently stop the nature call and this leads to hardened stools and a vicious cycle of constipation. No proper access to bathrooms, unhygienic school bathrooms, and bullying, verbal, and sexual abuse all contribute to childhood constipation. Due to improper bowel training and increased rectal compliance with loaded stools the normal defecation reflex is disturbed and this improper training if not given due importance can persist [31] in adulthood which makes constipation a life-long condition if not recognized and intervened properly. These children suffer from recurrent and chronic abdominal pain. The parents of these children also have work absenteeism due to frequent hospital visits.

3. **Negative Effects of Straining:** An increase in abdominal pressure requires the Valsalva maneuver which is forced expiration with closed glottis. The complications of Valsalva maneuver during straining at stool in constipation are due to raised intra-abdominal, intra-thoracic, and intra-ocular pressures manifesting as chest pain, syncope, arrhythmia or cerebral stroke in patients with known cardiovascular and cerebrovascular disease, abdominal wall hernias in people with the weak abdominal wall, headaches, dizziness, nausea or altered vision, retinal or macular hemorrhage (Valsalva retinopathy or maculopathy) due to increased intra-ocular pressure, increased risk of Alzheimer's disease, increased peripheral intra-arterial and intra-venous pressure [32]. All these conditions can be seen in patients with chronic constipation.

III. CLASSIFICATION

Constipation is classified as primary and secondary. The primary is classified as normal transit constipation, slow transit constipation, and pelvic floor dysfunction constipation [33]. The causes for secondary constipation include organic causes like colorectal cancer, colonic strictures, extra-intestinal masses, endocrine or metabolic causes like diabetes mellitus, hypothyroidism, hypercalcemia, chronic renal insufficiency, panhypopituitarism, neurological causes like Spinal cord injury, Parkinson's disease, paraplegia, multiple sclerosis, autonomic neuropathy, Hirschsprung's disease, chronic intestinal pseudo-obstruction, myogenic causes like Myotonic dystrophy, dermatomyositis, scleroderma, amyloidosis, chronic intestinal pseudo-obstruction, anorectal causes like fissure, fistula, intersphincteric abscess, hemorrhoids, medications like Opiates, antihypertensive agents, anti-epileptic drugs, iron preparations, anti-Parkinsonian agents (anticholinergic or dopaminergic), tricyclic antidepressants, etc. [33].

According to me, constipation cannot be classified strictly into primary (idiopathic) and secondary (disease). A person with diabetes mellitus, hypothyroidism, anorectal diseases,

or on some medications can have constipation not only because of the disease but also due to the disordered defecation mechanisms. A more relevant classification is given below.

Somesh Meegada's classification of constipation

Constipation is classified as sensorimotor, structural, and hysteric constipation. The sensory-motor is further divided into proximal and distal depending on the level of the disorder (Table-1).

Table 1: Somesh Meegada's Classification of Constipation

	Somesh Meegada's Classification of Constipation	
1	Sensorimotor constipation	a) Proximal (above anorectum)
		b) Distal (at anorectum)
2	Structural constipation	
3	Hysteric constipation	

1. **Sensorimotor Constipation:** As discussed in the pathophysiology, the defecation reflex is a complex process that involves sensory and motor neuromuscular activity of the enteric, autonomic, and central nervous system. Alteration in this sensory and motor activity causes Sensorimotor constipation. In this type of constipation, there is decreased GI motility and or decreased sensation to defecate. The etiology is multifactorial. The common causes are diet, sedentary lifestyle, immobility, abnormal circadian rhythm, inadequate water intake, increased age, postponing defecation, stress, disordered defecation practices, systemic conditions like hypothyroidism, chronic diabetes mellitus, anticholinergic drugs, tricyclic antidepressants, etc. This is the commonest type of constipation.

   It is divided into proximal and distal types. In the distal type, there is an abnormality in the Sensorimotor function of the anorectum like pelvic dyssynergia, increased rectal compliance, rectal hyposensitivity, and Hirschprung's disease. Any colonic motility issues like colonic inertia, megacolon, pseudo-obstruction, decreased intestinal motility seen in hypothyroidism, and spinal cord lesions can cause proximal Sensorimotor constipation. This is seen in chronic bed ridden patients, parkinson's disease patients. One can divide this into primary and secondary.

   The peculiar thing about defecation sensation is that it is due to colonic motor activity called HAPCs. The sensation of defecation is not due to stool in the colon but because of the motor activity of the colon. Whereas in the rectum, rectal distention and stretch stimulate the rectal, and extra rectal mechanoreceptors cause an urge for defecation (sensory). The rectal contraction along with increased abdominal pressure by Valsalva helps evacuate the rectal contents by the pressure gradient (motor). Hence, difficulty in performing Valsalva, seen in tracheostomy patients leads to constipation.

2. **Structural Constipation:** Structural causes like colorectal cancer, colorectal strictures, adhesions, redundant sigmoid colon, sphincter spasms due to a fissure in ano, intersphincteric abscess, and fistula in ano, post-operative anorectal stricture, obstructed

defecation, huge hemorrhoids, enterocele, rectocele, rectal prolapse, sigmoid volvulus, extra-intestinal compression, etc., are the reasons for structural constipation.

3. **Hysteric Constipation:** In this condition, patients exaggerate their symptoms of constipation. All investigations will be normal or show minimal abnormality but they exaggerate their symptoms out of proportion to the underlying cause. These patients will have frequent hospital visits and laxative drug abuse. Persistent symptoms after treatment of sensorimotor and structural constipation denote hysteria. If required a re-evaluation can be done before coming to this diagnosis.
   All the 3 types of constipation can co-exist.

IV. 3 PHASES OF THE CONSTIPATION CYCLE

There are 3 phases of the constipation cycle.

1. **Pre- Constipation Phase:** the patient does not have symptoms of difficult evacuation but there is colonic overload with feces and gas. May have mild abdominal discomfort.
2. **Constipation Phase:** the patient has symptoms of difficulty in evacuation. Requires some intervention for relief of symptoms either medical or dietary.
3. **Post- Constipation Recovery Phase:** the patient is relieved of constipation and has regular bowel function.

The duration of these three phases varies depending on the patient's lifestyle and treatment interventions. These phases repeat leading to an increase in the severity of constipation. With recurrent cyclical phases, the patient will remain in the constipation phase and late cases cannot reach the post-constipation recovery phase (Figure -1).

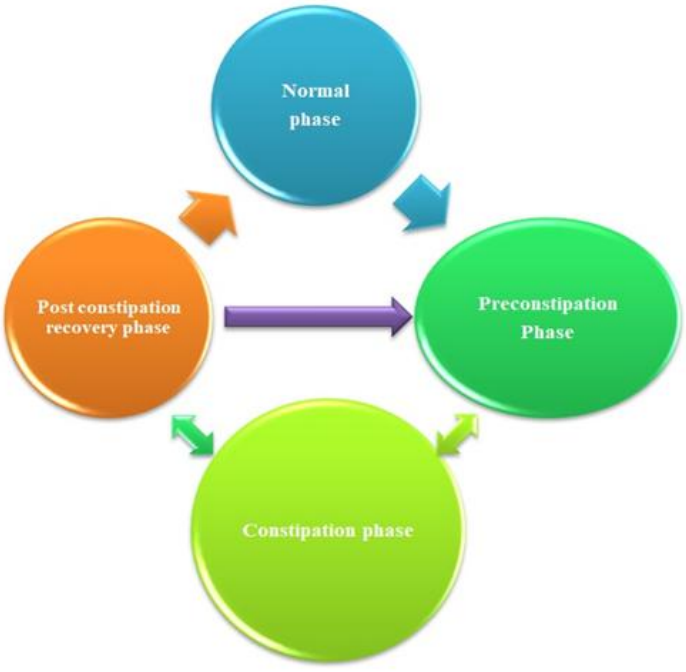

Figure 1: Showing the Phases of the Constipation Cycle

V. 4 STAGES OF CONSTIPATION

The constipation phase can be divided into 4 stages and suffixes can be used for alarm symptoms as shown in Table – 2 (**Somesh Meegada's** staging of constipation). The purpose of staging in constipation is for objective severity assessment and for treatment follow up.

Table 2: Shows 4 Stages of Constipation with Alarm Symptoms- *Denotes Common Laxative Medications

Stage	***Somesh Meegada's* staging of constipation – features**
Stage-I	Constipation is relieved with diet and lifestyle modification, medications are not required.
Stage-II	Constipation is relieved after using medications* intermittently.
Stage-III	Constipation is relieved only after taking medications* – laxative/medication dependent.
Stage-IV	Constipation is refractory to medications*. Despite using medication there is little or no relief.
Suffix	Alarm symptoms
(A)	Abdominal pain & bloating
(B)	Bleeding PR with or without anemia
(D)	Discharge
(W)	Weight loss (unexplained and significant)

Ex- Stage-IVB means refractory constipation with bleeding PR with or without anemia which requires further workup. Stage- IID means constipation requiring intermittent laxative use with perianal discharge (pus, mucus, serous). Stage IIIA means laxative-dependent constipation with abdominal pain and bloating. Stage-IVAB means refractory constipation with abdominal pain and bleeding PR (gross or occult blood in stool). Stage-IW means constipation relieved with diet alone but with unexplained significant weight loss which requires further workup.

The staging of constipation is to know the severity of constipation and the need to further workup. Unexplained weight loss if associated with constipation also requires further evaluation.

A stage-I constipation without any alarm symptoms doesn't usually require further workup but stage-IV constipation with or without alarm symptoms requires further evaluation.

Sometimes it might be difficult to classify adjacent stages, in that case, a Stage II to III or Stage I to II can be used.

Normal Bowel Frequency: Using Rome criteria the prevalence of constipation in India is 2-17% [34-37]. But the prevalence of self-perception constipation is above 40% [38]. The normal frequency of bowel movements is 3 motions per week as per the Western criteria but for the Indian population, a frequency of 5 motions per week is reasonable whereas the normal stool frequency in 90% of the population in several Asian countries is 1-2 motions/day [39- 41].

VI. BOWEL EVACUATION DAYS (BED - REGIMEN)

It is a scheduled plan of evacuating the bowel with either a laxative diet or laxative medications on particular days at regular intervals.

The preferred regimen for a normal person, pre-constipation phase, stage-I, and II constipation would be weekly once preferably the night before a holiday with an osmotic laxative like Lactulose 30ml at bedtime followed by a glass of water after the medication. The interval can be changed to weekly twice depending on the severity of symptoms. 5mg of tablet bisacodyl (Dulcolax) can also be added. The patients can use any other type of laxative with which they are comfortable. They can also take high-fiber and laxative diets in place of medications. In Stage –III and IV constipation one can use polyethylene glycol along with a prokinetic or enemas at regular intervals. Whichever laxative medication is used, the ultimate goal is to evacuate the bowel at regular intervals, the frequency, dose, and type of medication are tailored according to the stage of the patient.

A BED regimen twice a week for 1 month denotes using a laxative medication/diet twice a week on specific days for 1 month. BED regimen is preventive as well as therapeutic.

These bowel evacuation days will help people concentrate on their bowel habits and help them empty their bowel regularly. This will help in the reduction of abdominal pain and bloating episodes, increases their appetite, and make them active in their day-to-day activities. This can help detect some colonic disorders at an early stage. Physical activities like walking, jogging, running, and dancing will also help in the clearance of gas and stools.

VII. HISTORY AND PHYSICAL EXAMINATION

Constipation is common in the geriatric population, children, and women compared to men. It is more common in shift workers and sedentary jobs. Constipation is common in people from cool climates, and low socioeconomic areas [42]. People with sensorimotor type constipation have issues with the urge to defecate or decreased colorectal propulsive movements. Sensorimotor constipation can be proximal (colon, small bowel-rarely) and distal (anorectal). Structural constipation includes any mechanical causes or structural abnormalities in the lower GI system. They can have constipation due to severe perianal pain seen in acute fissure, anorectal sepsis, thrombosed hemorrhoids, and post-surgery. Other associated history of abdominal pain or bloating, bleeding per rectum, discharge, and weight loss is to be noted. Hysteric constipation also presents like sensorimotor constipation but with exaggerated symptoms. They have recurrent visits to multiple hospitals and have already

been worked up extensively. History of diabetes, hypothyroidism, parkinsonism, or any neurological diseases are to be noted. Drug history is to be taken and the causative drug can be withheld if possible. Sometimes constipation presents as frequent passage of stools due to inadequate emptying of the rectum at one go. These patients term this as diarrhea and take anti-diarrheal agents. Another condition called overflow incontinence is seen in fecal impaction wherein the multiple hard masses of feces (fecoliths) obstruct the outlet, and the liquid stools percolate between the fecoliths and come out of the anus presenting as fecal incontinence. These patients also use anti-diarrheal agents which in turn worsens the condition. History of previous abdominal and perianal surgeries is to be noted. Any history of finger evacuation of stools is also to be asked.

On abdominal examinations look for scars, distention, tenderness, any palpable masses, any hernias, percussion for tympanic note, and auscultate for bowel sounds. On Digital rectal examination (DRE) perianal skin, anal canal tone, and rectal lumen and wall need to be examined.

VIII. INVESTIGATIONS

Routine hematological tests like complete blood picture, renal and liver function tests, serum electrolytes, and thyroid profile are to be done.

One can remember the investigations as pneumonic ABCD shown in Table – 3.

Table 3: Showing the Relevant Investigations for Constipation

	Investigations
A	Anorectal Manometry (ARM)
B	Balloon expulsion test (BET), Barium meal follow-through, Barium defecography
C	Colonoscopy, Colon transit studies, Computed Tomography (CT-enterography, colonography)
D	Defecography (MRI),

The diagnostic algorithm described in this chapter is my modification of the already described standard algorithm.
See Figure-2 for the constipation algorithm.

The initial investigation of choice is Anoscopy and or colonoscopy depending on the symptoms. For Stage-I & II constipation with alarm symptoms and stage III & IV constipation, a Colonoscopy can be done initially to rule out structural causes for constipation. If there are no alarm symptoms then the patient can directly undergo ARM and Balloon expulsion tests. The choice of investigation depends on the patient's presenting symptoms and economic status.

I prefer Colonoscopy as the initial investigation for constipation because of

1. It rules out any benign/malignant causes of structural constipation and

2. The colon preparation given before colonoscopy is itself a therapeutic intervention for constipation. If completely evacuated then the colonic motility is fine, if not completely evacuated then there are some motility issues.

   Before doing ARM, BET, Colonic transit studies, and Defecography this colon preparation for colonoscopy helps to empty the bowel so that the feces in the colon do not interfere with these tests.

   But as shown in the algorithm a patient can undergo ARM/BET directly if symptoms are suspicious of pelvic floor dyssynergia or DRE suggestive of high resting and squeeze pressures which can be appreciated by an experienced physician/surgeon.

   Frequently there are incidental findings that do not cause constipation like small polyps and hemorrhoids knowing which the patient wants to get them removed and undergo surgery.

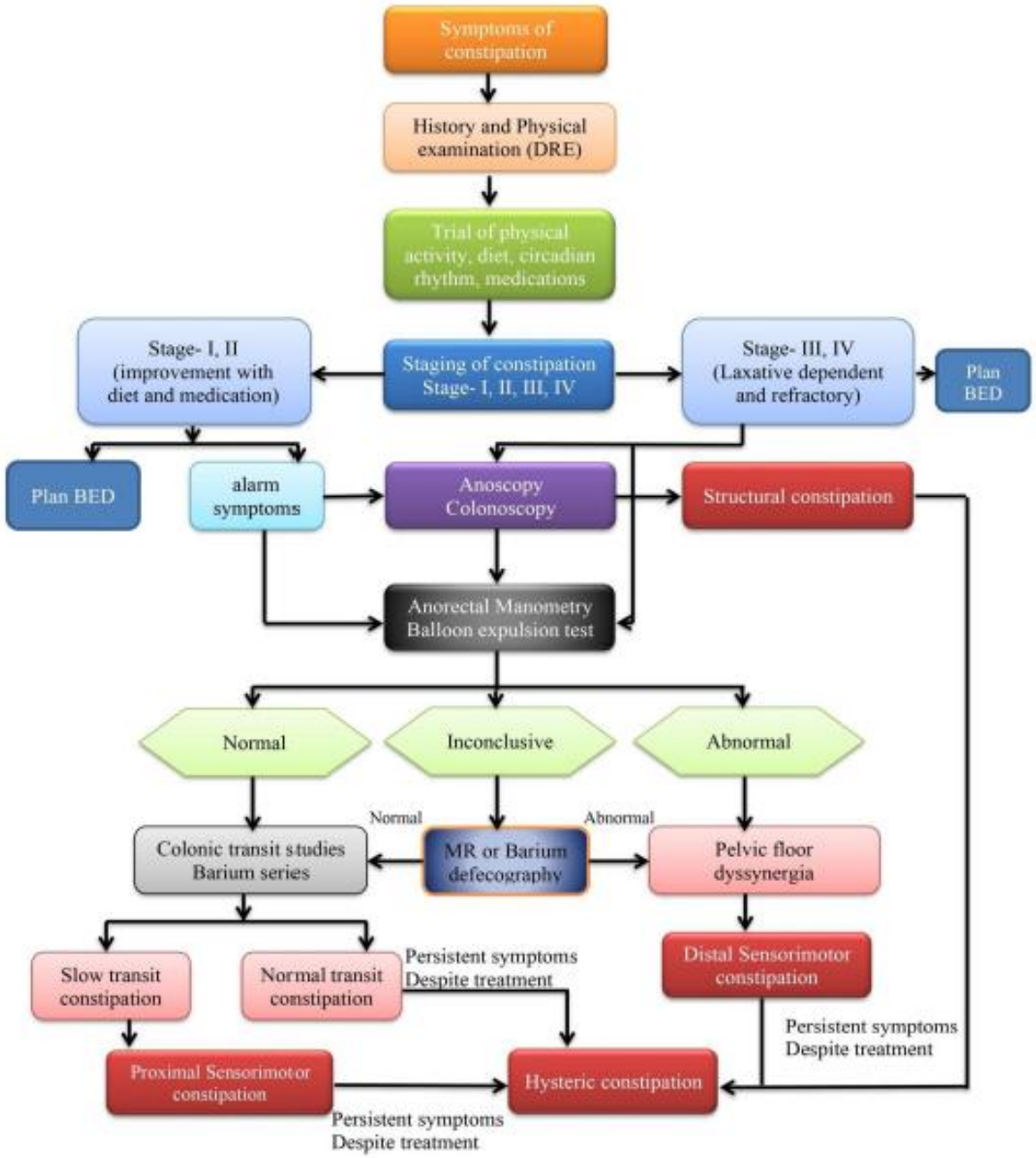

Figure 2: Showing the Algorithm for Constipation Management

The majority of the patients believe that hemorrhoid surgery relieves constipation but that's not the case. It may even worsen the symptoms due to post-operative rectal stricture and anal stenosis.

After colonoscopy ARM and BET should be done for further evaluation. If it is normal then colonic transit study or barium studies can be done to see the colonic motility. If it is abnormal then it is slow transit constipation which classifies constipation as proximal Sensorimotor constipation and if the motility is normal then it is normal transit constipation. This can be termed Hysteric constipation if a patient has persistent symptoms after re-evaluation and despite giving adequate treatment. If ARM and BET are abnormal then it is

dyssynergic pelvic floor disorder (distal sensorimotor). If inconclusive then do MR defecography, if it is abnormal then it is dyssynergic pelvic floor, if normal do colonic transit study or barium series. The barium series is equally effective compared to a sitzmark colonic transit study. This delineates the anatomy of the small intestine and colon better. A CT enterography can be advised to see the small intestine if all the tests are normal or suspecting a small bowel pathology. Some even do CT colonography initially in place of colonoscopy.

IX. TREATMENT

A normal person passes motion daily immediately upon awakening without any intervention and has the sense of complete evacuation after the defecation.

In any type of constipation, diet, physical activity, adequate hydration, and lifestyle modifications are basic interventions. Maintaining a good circadian rhythm sets the biological clock and is needed for normal bowel function. The relevant abnormal blood parameters must be normalized. Any drug causing constipation needs to be stopped and replaced if possible. Along with the above the following necessary specific medications are to be used. Any case of constipation suspected to be an intestinal obstruction should be managed as an emergency and a CECT abdomen and pelvis should be done and managed as per acute abdomen protocol.

In Stage-I patients, high fiber and intake of laxative fruits like mango, guava, grapes, sapota, papaya, banana, kiwi fruit, plum, etc. relieve the symptoms. These patients can consult a dietician if required and prepare a food chart accordingly. These patients after relief of their symptoms should be kept on BED regimen as described.

In Stage-II patients, medications (laxatives, stool softeners, and stimulants) like lactulose, milk of magnesia, liquid paraffin, castor oil, sodium picosulfate, psyllium husk, sorbitol, docusate sodium, and bisacodyl will relieve their symptoms. These patients after relief of their symptoms should be kept on BED regimen as described.

In stage–III constipation the patients are dependent on common osmotic and stimulant laxatives stopping which they have symptoms. People who are not relieved with osmotic and stimulant laxatives need to be started on prokinetics and secretagogues [43]. Secretagogues like lubiprostone and linaclotide and prokinetics like prucalopride 1 or 2 mg can be given in severe cases. Bisacodyl is a stimulant laxative that increases the normal colonic HAPCs and can be tried before. Usually, these patients have associated systemic causes for constipation like hypothyroidism.

In stage-IV constipation patient is refractory to any medications. If not in obstruction, laxatives like Polyethylene glycol, sodium phosphate enemas, or oral bowel preparation solutions can be given along with prokinetic and secretagogues laxatives. Enema is helpful in the distal colon and rectal fecal impaction. Fecal impaction leads to overflow fecal incontinence which presents like diarrhea. This should be suspected in people with frequent passage of liquid stools with abdominal distention which can be confirmed by DRE. A bisacodyl suppository also can be used but irritates the rectum.

The stages described here are based on the use of common laxative medication. For example, a patient who is refractory to lactulose or bisacodyl which is stage-IV will respond to polyethylene glycol or prokinetics like prucalopride which is stage-III. This simply means downstaging constipation with newer laxatives.

Along with the above, specific medical treatment for anal fissure to relieve the perianal pain like analgesic creams, sitz baths, antibiotics to relieve the perianal infection, and flavonoids for hemorrhoids need to be given. Necessary surgeries should be done if indicated.

In pelvic dyssynergia syndrome, biofeedback helps in relieving the symptoms of constipation.

Hysteric constipation requires psychotherapy and proper counseling. May even require referral to a psychiatrist

Making use of the physiologic gastro-colic reflex which is the normal colonic response to food ingestion by a series of coordinated signals via the enteric nervous system and neuropeptides like gastrin, serotonin, prostaglandin E1, and cholecystokinin causing bursts of increased colonic MCs and HAPCs causing propulsion of stool from the colon to the rectum and culminating in defecation which is more in the morning. Defecation immediately after breakfast as a daily routine helps to relieve constipation [44].

The type of commode is also an important factor for constipation. Indian toilet (squatting position) has more benefits than a western commode (sitting position) [45]. In a sitting position, to have a satisfactory sensation of bowel emptying one has to strain and spend longer duration on a Western toilet than on an Indian toilet [46-48]. Due to modernization, health issues, and because of the leg pains associated with squatting, people opt for a Western toilet. On the western toilet, bending forwards and resting the legs on a stool in front to flex the hip joint creating an angle instead of sitting straight 90 degrees will help improve defecation.

Yoga is also an important therapy that helps improve digestive health and improves symptoms of constipation [49].

X. SURGERY IN CONSTIPATION

The role of surgery in constipation is mainly in structural constipation. The surgeries include internal anal sphincterotomy for fissure in ano, fistula surgeries, excision of thrombosed hemorrhoids, anoplasty for anorectal strictures, rectal prolapse surgery (sigmoid resection & rectopexy), STARR procedure in obstructed defecation syndrome, rectocele and enterocele repairs, colorectal cancer and stricture surgeries like Abdominoperineal resection (APR), Anterior resection, left, right hemicolectomy, adhesiolysis for intestinal adhesions, hernia surgery, small bowel resection anastomosis, etc.

Sensorimotor constipation surgery is indicated in colonic inertia, colonic atony, toxic megacolon, and chronic refractory constipation (segmental, subtotal, total proctocolectomy, ileostomy, ileorectal or cecorectal anastomosis). Botulinum toxin injection into puborectalis

and external anal sphincter for pelvic dyssynergia. Malone antegrade colon enema for pediatric slow transit constipation.

In hysteric constipation which can be associated with the above two types of constipation, the relevant surgery can relieve the exaggerated symptoms. The patient persistently requests the physician to remove any colonic polyps and low-grade uncomplicated hemorrhoids seen incidentally during a colonoscopy which are not the cause for constipation. These patients will not get satisfied till the procedure is performed. These patients get relief by consulting a senior famous doctor even if he/she prescribes the same medicine as prescribed by a junior doctor. These patients are difficult to deal with. They often come with nonspecific symptoms. Care must be taken before classifying any patient as hysteric. If in doubt consider re-evaluating the patient before finally classifying him/her into hysteric constipation.

XI. PREVENTION OF CONSTIPATION

Constipation is not completely preventable; one has to experience this at some or other point in life. The only thing which is preventable is the number of episodes of constipation. A healthy lifestyle, high-fiber food, fruits, physical activity, adequate fluid intake, maintaining a good circadian rhythm, and not postponing defecation, adequate food intake helps decrease the number of episodes of constipation and its associated complications. Good toilet training in childhood and maintaining that in adulthood also helps minimize the episodes. One of the important risk factors for constipation is the taboo associated with the expression of the urge to defecate [50]. This is particularly important in school children and adult women though equally important in men and adult populations. This taboo has to break. Not just breaking the taboo, but the provision of proper toilets, sanitation, and water facilities in schools, workplaces, and outdoors is the need of the hour. For these to occur there should be awareness of constipation. The international foundation for gastrointestinal disorders (IFFGD) recognized December as the constipation awareness month but in India, there is not much awareness created. A National Constipation Day has to be declared in India to create awareness regarding constipation and its complications to the general public. As a part of creating awareness schools should educate students regarding constipation and should help break the taboo associated with it. My only point is to give constipation the importance it deserves. Though the condition looks simple it affects everyone’s day-to-day activities and increases health care burden. The high prevalence of constipation in rural and low socioeconomic populations [42] can be due to limited access to toilets, overcrowding, and diet. Hence this condition apart from awareness also requires administrative support from the government for improving the toilets, sanitation, and water supply to every region of the country.

XII. SUMMARY

To summarize, constipation is a condition that requires proper management. Understanding the pathophysiology helps manage constipation. The classification proposed in this chapter is based on the pathophysiology which guides management. The phases and stages of constipation described in this chapter is to give an objective severity assessment of the condition and for treatment follow-up. Apart from medication, prevention and relief of constipation episodes needs a healthy fiber diet, healthy lifestyle, and undisturbed biological

circadian rhythm, good physical activity, breaking the taboo, practicing yoga, attending the nature call without delay, and most importantly concentrating on evacuating the bowel regularly. The BED regimen described in this chapter is to make people concentrate on their bowel habits. All these measures help improve a person's quality of life.

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