

# Chronic Constipation

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## Introduction

Chronic constipation is a common medical problem. In the Western population, the prevalence was reported as high as 24% in elderly subjects and more commonly among women<sup>1</sup>. A recent survey conducted in Hong Kong showed a prevalence of 14% according to the Rome criteria<sup>2</sup>.

Constipation can lead to complications such as anal fissures, rectal prolapse, faecal impaction or haemorrhoids. In addition, the symptoms of constipation adversely affect the patients' psychological health and their quality of life. Despite that we are gaining more insights into the pathogenesis of functional constipation; the mechanism of colonic motility and defecation, and the associated psychological disorders are still not fully understood. In addition, the treatment available for functional constipation is still not satisfactory. This current article presents a review of the epidemiology, investigations and management for functional constipation.

## Epidemiology

The prevalence of patients reporting constipation symptoms in five European countries is summarised in Table 1<sup>4</sup>, with the prevalence rate ranged from 6% to 23% whereas the prevalence of constipation in the US was reported to range from 2% to 28%<sup>3,5,6,7</sup> depending on the definition of constipation. The Society of American Family Physicians reported in 1998 that constipation affects as many as 26% of elderly men and 34% of elderly women<sup>8</sup>. Exact epidemiological data however are lacking, mainly because of the difference between self-reported constipation and scientifically defined constipation. Moreover, most of the studies investigated the prevalence of constipation only, and not the incidence of constipation. We have previously conducted a population-based telephone survey in the Hong Kong Chinese population on constipation using the diagnostic criteria of Rome II<sup>2</sup>. We observed that there were 14.3% among the 3,282 interviewees diagnosed to have constipation. Among these interviewees, there were 33% of them complained of incomplete evacuation, and 12% complained of bowel opening less than 3 times per week.

## Diagnostic Criteria For Constipation In Adults

Definitions of constipation vary widely, and therefore true prevalence estimates are difficult to compare across studies<sup>9</sup>. The diagnosis of functional constipation was based on the Rome III criteria. The diagnostic criteria was two or more of the following for at least 12 weeks in the preceding 12 months:

1. Straining in more than 25% of defecations
2. Lumpy or hard stools in more than 25% of defecations
3. Sensation of incomplete evacuation in more than 25% of defecations
4. Sensation of anorectal obstruction or blockade in more than 25% of defecations
5. Manual manouvres (e.g., digital evacuation) to facilitate more than 25% of defecations
6. Fewer than three defecations per week

Loose stools are not present, and there are insufficient criteria for the diagnosis of irritable bowel syndrome.

However, these criteria may not apply when the patient is taking laxatives. In addition, the Rome III criteria do not assess the severity of constipation. The Chinese population has a different cultural background diet habit. Therefore we have designed a Chinese constipation questionnaire<sup>10</sup>. The sensitivity and specificity of the questionnaire is 91%.

**Table 1 - European Survey of Bowel Symptoms (%) in Five Countries**

Characteristic	Countries				
	Italy	France	Spain	Germany	United Kingdom
A. Self-perceived constipation	23	19	17	10	6
*B. Difficult defecation	16	13	11	10	13
C. Laxative use	20	19	20	20	19

\*: Straining and/or hard stools and/or incomplete evacuation at least once a month.

## Causes Of Constipation

The causes of constipation can be categorised into symptoms due to extraintestinal causes or intestinal and anorectal causes. For the intestinal causes, it can be further subclassified into functional or organic causes (Table 2). Functional constipation can be further subcategorized into: slow transit, normal transit, outlet blockade and mixed type. Some patients with normal transit have features of irritable bowel syndrome.



## Management Of Functional Constipation

The management of patients with constipation should include a detailed medical history and physical examination to exclude secondary causes for constipation such as anatomical or systemic lesions. Laboratory evaluation does not play a large role in the initial assessment of the patient. Baseline investigations should include thyroid-stimulating hormone (TSH) levels to rule out hypothyroidism in patients refractory to dietary management, serum electrolyte profile, including potassium, calcium, glucose, and creatinine, in patients with recent-onset constipation to assess an acute electrolyte imbalance and in chronically constipated patients for whom initial medical management has failed. Faecal occult blood should be tested in the chronically constipated middle-aged or elderly adult to exclude an obstructing neoplasm of the colon (Figure 1). In those patients who have been taking laxatives, detailed assessment of their use of and the possible side-effects should be made.

Extensive testing usually is reserved for people with severe symptoms, for those with sudden changes in number and consistency of bowel movements or blood in the stool, and for older adults. Because of an increased risk of colorectal cancer in older adults, barium enema, sigmoidoscopy or colonoscopy is indicated in elderly patients.

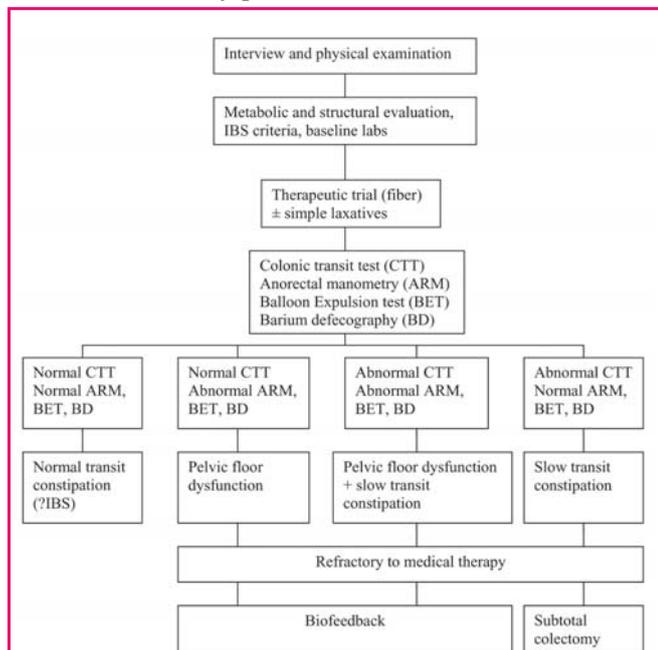


Figure 1. Flowchart for the Management of Patients with Constipation

### Colonic Transit Time

Transit time studies may help differentiate colonic from pelvic floor dysfunction causing constipation. The colonic transit test quantifies the transit time of small radio-opaque markers through the colon. Subjects ingest one capsule (in which 20-24 markers have been placed) each morning for 3 days, abdominal x-rays are taken on days 4 and 7. Transit through the right, left and rectosigmoid segments of the colon can be calculated. Laxatives should be stopped prior to this test. The upper limit of normal colonic transit times ranged from 67-93 hours<sup>11,12,13,14</sup>.

### Balloon Expulsion Test

This is a simple office test for screening the presence of obstructed defecation. A balloon is inserted to the rectum and inflated with 50ml of air. The patient is asked to expel the balloon. If the patient fails to expel the balloon in one minute, the patient is likely to have obstructed defecation problems. However, the methodology of performing the balloon expulsion test has not been standardised.

### Anorectal Manometry

Anorectal manometry evaluates the rectal propulsive force and the relaxation of the anal sphincter. A catheter or air-filled balloon inserted into the anus is slowly pulled back through the sphincter muscle to measure muscle tone and contractions. Failure to relax or presence of paradoxical contraction of the anal sphincter suggest the presence of obstructed defecation and identifies the underlying mechanism. In addition, the absence of the rectoanal inhibitory reflex suggests the presence of Hirschsprung's disease or megarectum. It is an accepted investigation by the American Gastroenterology Association for constipation and of potential value in the diagnosis and management of outlet obstruction<sup>15</sup>.

### Defecography

This is an x-ray of the anorectal area that evaluates completeness of stool elimination, identifies anorectal abnormalities, and evaluates rectal muscle contractions and relaxation. During the examination, man-made stool is intilled into the rectum. The patient sits on a toilet positioned inside an x-ray machine and then relaxes and squeezes the anus and expels the solution. The detection of rectal intussusception (occult rectal prolapse) is the most important use of defecating proctography. In addition, defecating proctograms are used to calculate resting and straining anorectal angles and outlet obstruction.

Table 2. Causes of Chronic Constipation

#### Extraintestinal causes

- Endocrine: hypothyroidism, diabetes
- Metabolic: hypercalcemia, hypocalcemia
- Neurologic: Parkinson's disease, CVA, multiple sclerosis, spinal cord lesions, muscular dystrophies, autonomic neuropathy
- Rheumatologic: systemic sclerosis
- Psychological: depression, eating disorders
- Medications: narcotics, anticholinergics, antipsychotics, calcium channel blockers, anti-parkinson's therapy, anticonvulsants, TCA, iron, calcium, aluminium antacid, sucralfate

#### Intestinal and anorectal causes

- Functional disorders: slow colonic transit, anorectal dyssynergia, IBS
- Organic:
  - neoplasms, strictures
  - Anal stenosis
  - Rectocele, enterocele
  - Rectal intussusception, rectal prolapse
  - Hirschsprung's disease
  - Others: megarectum, solitary rectal ulcer

## Treatment

### Diet and Lifestyles

A diet with enough fibre (20 to 35 grams each day) helps form soft, bulky stool. Sufficient dietary fibre is needed to promote normality in bowel movement frequency over the long term<sup>17</sup>. Other changes that can help treat and prevent constipation include drinking enough water and other liquids, engaging in daily



exercise, and reserving enough time to have a bowel movement. Inactivity is a frequent cause of constipation in institutionalised or bedridden patients<sup>18</sup>. In addition, the urge to have a bowel movement should not be ignored.

### Traditional Medicaitons

1. Bulk-forming laxatives - also known as fibre supplements, are taken with water. These laxatives are the safest but can interfere with absorption of some medicines.
2. Stimulants - increase motor activity of the bowels by direct action on the intestines.
3. Stool softeners - promote water retention in the faecal mass, thus soften the stool.
4. Lubricants - lubricate intestinal mucosa and soften stool.
5. Osmotic laxatives

It is unfortunate that most patients with chronic constipation are not satisfied with these traditional treatments.

### Newer Medications

Tegaserod: Activation of 5-HT<sub>4</sub> receptors triggers the release of neurotransmitters from the enteric nerves resulting in increased contractility and stimulation of the peristaltic reflex<sup>19,20,21,22,23</sup>. Tegaserod (Zelmac) is a classical example of 5-HT<sub>4</sub> agonist. It has been shown in RCTs, including one study from our team, to be effective in chronic constipation, with a responder rate of about 42-47%<sup>24,25,26</sup>. However, it has been withdrawn from the market in 2006 because of potential cardiovascular side effects in patients with underlying heart disease.

Prucalopride: another 5-HT<sub>4</sub> agonist. It has been shown to significantly accelerate bowel transit in healthy volunteers and in patients with functional constipation<sup>27,28,29</sup>. A large RCT has recently been published<sup>30</sup>, demonstrating its efficacy in chronic constipation.

Polyethylene glycol: It has been previously used as a bowel cleansing agent. But recently found to be efficacious in patients with chronic constipation as demonstrated in RCT (52% in the treatment group vs 11% in the placebo group)<sup>31</sup>.

Lubiprostone: it is a chloride channel secretor. It has been reported that after 4-week treatment, 80% of the patients reported spontaneous bowel motions within 48 hours. Further studies on its efficacy in patients with chronic constipation are still on-going.

### Biofeedback

Benefits of biofeedback in chronic constipated patients is well proven. There were reports of outpatient biofeedback therapy with success rates ranging from 50 to 90%<sup>33</sup>. The improvement in the biofeedback group was 80% versus 22% in laxative-treated group<sup>34,35,36</sup>. The benefits were sustained at 12 and 24 months. The therapy involves a number of outpatient sessions with a dedicated therapist during which the patient learns to

appropriately relax rather than contract the pelvic floor during evacuation. Progress is monitored by either electromyographic or manometric methods; other biofeedback adjuncts include sensory retraining with an intrarectal balloon, a portable home-training unit or both.

### Surgery

For those refractory to any conservative or even aggressive approach, surgical treatment with colectomy and ileo-rectum anastomosis, should be taken into consideration. These patients are often young females with depressive symptoms and colonic inertia. It is necessary to ascertain that these patients have normal anorectal function, to assess whether the motor abnormality also affects the stomach and small bowel by scintigraphy or manometric studies, and whether there is underlying psychopathology<sup>37</sup>. In addition, the benefits of this surgery must be weighed against possible complications, which include abdominal pain and diarrhoea.

### Conclusion

Chronic constipation is one of the commonest functional gastrointestinal diseases, associates with psychological ailments and affects patients' quality of life. However, the current treatment for constipation is far from satisfactory. Further investigations directed towards the underlying pathogenesis and better treatment, both physiologically and psychologically oriented, are deemed necessary.

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