

An Update on Current Options in Treating Chronic Constipation

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Abstract

Background: Affecting up to a third of the general population, constipation is a very common medical problem. Despite its high prevalence and a large pool of possible treatment options there is still a lot unclear, causing the treatment to fall short in numerous occasions.

Objectives: To provide an overview of current options and new developments in the treatment of idiopathic constipation as well as proposing a step-by-step treatment algorithm.

Conclusion: This treatment algorithm can help doctors a proper course of treatment. Despite recent developments in this area there are still patients with seriously crippling symptoms for which there seems to be no treatment. More research is undoubtedly required.

Keywords: *Chronic invalidating constipation*

Introduction

Constipation is a common problem and is characterized, among other things, by a decrease in bowel motility, difficult evacuation of stools as well as abdominal pain and bloating, leading to a diminished quality of life. The prevalence varies from 1.9 to 27.2% [1]. More women than men are afflicted and the incidence rises with age [2].

Constipation could be caused by certain drugs used or by an organic condition. In those cases treating the underlying cause should be included in the treatment protocol for the patients' constipation.

Despite the high prevalence there is still a lot unclear about the treatment of it, causing it to fall short in numerous occasions. This article is an overview of current options in the treatment of idiopathic constipation including general advice and options tailored to the specific types of constipation. As a whole this article serves as a proposal for a step-by-step treatment algorithm.

Patient assessment

Use of the Wexner score 3 and Rome III criteria 4 helps identify patients suffering from constipation and helps to objectively assess the severity of the constipation. The Wexner score can also serve as a baseline in quantifying possible improvement after starting a course of treatment [3]. When selecting a patient one needs to take into account the presence of red flags that could point towards possible organic causes of constipation. In that case the treatment should be concentrated on the underlying condition [5].

Treatment algorithm and overview of the currently available therapies

The proposed treatment algorithm is a multistep plan to ensure patient-specific minimal therapy with a sufficient result. (see flow-chart) No difference is made between slow or normal transit constipation since the type is often difficult to determine in individual patients and the same treatment protocol can still apply.

Step 1: Recognition and education. It is paramount to adequately recognize patients that suffer from chronic constipation, simultaneously identifying possible organic or secondary causes of constipation.

In case of idiopathic constipation, patients need to be educated on the variability of bowel function in regular individuals and the production of stool from food, as well as the mechanism of normal defecation. They need to understand that defecation is a simple and natural process that happens spontaneously and is seriously impaired when forced. It is generally accepted that the gastro-colic reflex can aid defecation and is more pronounced after a meal. Patients are therefore advised to attempt to defecate at least once a day after a meal in a calm fashion, during a maximum of 30 minutes and preferably in the morning since the gastro-colic reflex seem maximal that time of day. Furthermore 30 minutes of exercise each day, for example taking a brisk walk, seems to stimulate the passing of stool. A thorough clinical examination might identify patients with paroxysmal puborectal contractions leading to dysfunctional defecation; instead of releasing tension in their pelvic floor, they increase it, thereby retaining stool instead of passing it. Upon diagnosis of pelvic floor dyssynergia, these patients should be referred to a physiotherapist since they could benefit from biofeedback training [6,7]. This treatment causes a clinically proven improvement of defecation difficulties in patients with isolated pelvic floor dyssynergia [8,9]. In some patients though, simple reassurance with muscle training is potentially equally effective [10]. Treatment with botuline toxin type-A injections in the puborectal muscles has also been described to relieve symptoms in these patients, although there is only limited experience with this technique [11].

Medication	Neurogenic conditions	Non-neurogenic conditions
Analgetics	Peripheral	Hypothyroidism
Anticholinergics	Diabetes Mellitus	Hypokalemia
Nerve-affecting products (e.g. opiates)	Autonomous neuropathie	Anorexia nervosa
Cation-containing products (e.g. iron supplements)	Hirschprung disease	Pregnancy
	Chagas disease	Panhypopituïtarism
	Intestinal pseudo-obstruction	Systemic sclerosis
	Central	Myotonic dystrofy
	Multiple sclerosis	Malignancy
	Spinal cord injury	Rectum prolaps
	Parkinsons disease	Intussusception
		Rectocele Outlet obstruction

Table 1: Examples of possible organic causes of constipation that require specific treatment to improve symptoms of constipation.

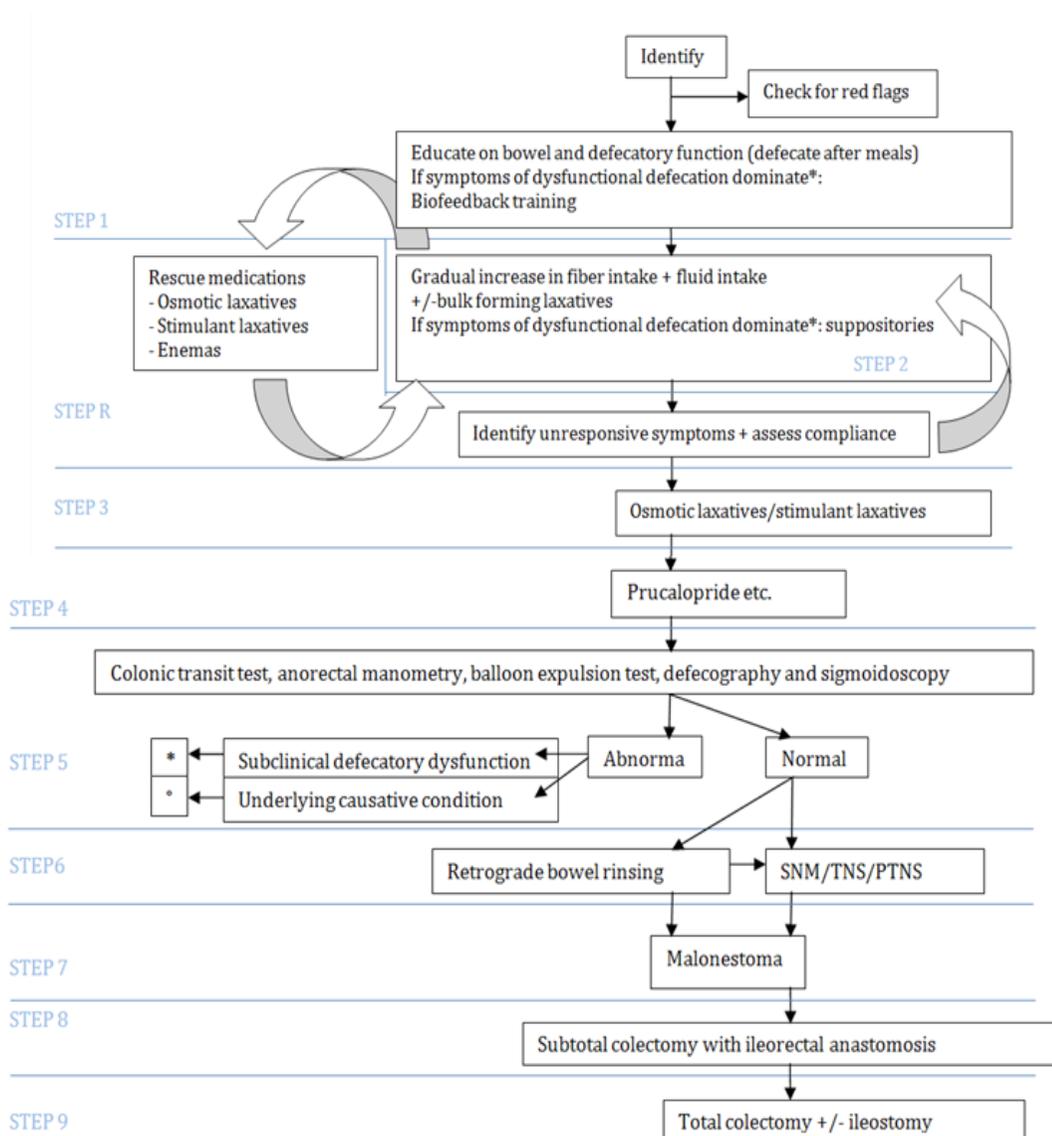


Figure 1: Flowchart summarising the proposal of a step-by-step treatment protocol for chronic constipation.

*If defecatory dysfunction contributes to the constipation problem in an obvious or subclinical way than measures specific to this problem need to be explored such as biofeedback training or suppositories

°Surgery appropriate for the diagnosed underlying causative condition

Step 2: Dietary measures, bulk forming laxatives and suppositories A fibre intake of on average 30-40grams a day leads to an improved stool consistency and frequency of defecation. Fibers can be found in a variety of products such as multigrain bread, muesli, potatoes and pulse.

It can also be ingested as a supplement in the form of bulk forming laxatives [6]. They contain psyllium (e.g. metamucil) or methyl-cellulose (e.g. citrucel). There is a lot of evidence based experience with these products [12]. Especially patients with a normal colonic transit time seem to experience their benefit; in patients with a slow colonic transit time, an increased fibre portion could lead to more bloating, requiring a slow build-up of the fibre intake.

In case of pelvic floor dyssynergia, suppositories (e.g. bisacodyl supp, glycerine supp) can facilitate defecation. They can be used for a prolonged time without any evidence of dependency [5].

Although a lot of conflicting evidence exists, it is empirically accepted to advice patients to drink at least 1½ - 2½ liters of fluid/24h in addition to an increase in fiber intake.

These measures lead to an increase in water contents of the stool resulting in a higher defecation frequency and better consistency. They give the patient a certain autonomy where they can apply minimal changes to their treatment in an aim to achieve stool similar to the number 4 in the Bristol Stool scale [13]. (See table 2)

Step R- Rescue medications

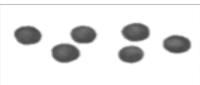
Rescue medications can be used as quick and short-term solutions when patients have infrequent short-acting blaze-ups of symptoms. This includes a short course of osmotic laxatives, stimulant laxatives or an enema. It can be used in addition to step 2 and 3 medications to avoid a step-up in therapy.

Osmotic laxatives such as polyethylene glycol (e.g. macrogol), lactulose and magnesium citrate are effective in stimulating the defecation frequency as well as its consistency [12]. Stimulant laxatives such as bisacodyl and senna enhance the electrolyte transport in the intestinal mucosa and increase intestinal muscle activity.

When these blaze-ups are of a more long-acting nature, analysis is needed with regard to the individual symptoms of constipation as well as the compliance of the patient. Additional education can be necessary to guarantee the compliance of the patient for the recommended therapy with no additional need for a change in the maintenance medication. In case of persistent symptoms despite good patient compliance and the use of rescue medication, a step-up in the treatment is necessary.

Step 3: Osmotic or stimulant laxatives

This step-up would comprise adding osmotic or stimulant laxatives to the maintenance medication on a daily basis rather than using them for short periods of time as a rescue medication. Surfactants (e.g. surfak) could also be used in this step to provide relieve of symptoms by lowering the surface tension of stool facilitating the absorption of water. Yet there is still little known with regard to their effectiveness [12].

No. 1		Separate hard lumps, like nuts
No. 2		Sausage-shaped but lumpy
No. 3		Like a sausage but with cracks in the surface
No. 4		Like a smooth and soft sausage
No. 5		Soft blobs with clear-cut edges

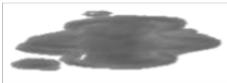
No. 6		Fluffy pieces with ragged edges, mushy
No. 7		Entirely liquid

Table 2: The Bristol Stool scale.

Step 4: Prokinetics

Prucalopride, linaclotide and lubiprostone have their own unique way of influencing the functionality of the bowels. Prucalopride especially is suggested as second-line therapy for patients who don't respond to laxatives but the ultimate role of all these products in the field of chronic constipation treatment and their long-term risks and benefits are still inadequately known [17].

Step 5: Imaging when unsatisfactory results persist, further investigation can steer the choice of the next step in the treatment.

A colonic transit test, anorectal manometry and a balloon-expulsion test can identify patients with subclinical pelvic floor dyssynergia. In such cases these patients require therapy that concentrates on the pelvic floor specifically (see prior). A defecography and a sigmoidoscopy are in order at this point in the protocol as well to rule out underlying causative conditions such as an intussusception. Experience tells us that most people with a subclinical causative condition benefit well from the previously described treatment options. Therefore performing these diagnostic tests to identify which patients should follow this protocol would not alter their treatment and should be avoided. But when patients prove refractory to these treatment options, identification is required in order to choose the optimal surgical option for this patient. In case of a subclinical causative condition such as an intussusception this would mean a rectopexy. When pelvic floor dyssynergia and a subclinical causative condition are ruled out, patients should proceed to the next step.

Step 6: Retrograde bowel irrigation or nerve stimulation Retrograde (Trans anal) irrigation is a relatively easy and safe procedure that can be applied long-lastingly. It is most effective in patients with neurogenic dysfunction of the bowel but has also been successfully applied in patients with idiopathic constipation [18,19].

As an alternative a relatively new but upcoming technique called sacral nerve stimulation (SNM) was introduced in this field a couple of years ago. This minimally invasive surgical technique was first developed for urologic conditions but is now applied within the area of colorectal surgery to treat incontinence, constipation and functional anorectal pain too. An electrode is usually inserted in the third sacral foramen and powered by a stimulator. Stimulation causes changes in motility and functionality of the bowel in an as yet unknown fashion. The reported success rates vary from 79% for fecal incontinence to 74-92% for obstipation in patients not responding to any other type of therapy, though these results are based on small studies as yet [20-22].

Continuing on this principle new techniques are always in development. The most recent ones being transcutaneous electrical stimulation (TES) and percutaneous tibial nerve stimulation (PTNS), though the results of bigger series have not been published so far. The posterior tibial nerve finds its roots in the sacral plexus and stimulating this nerve at the level of the ankle presumably causes a similar response as stimulation at the sacral foramen. With the transcutaneous technique an electrode is used on the belly and back at the level of the belly button [23-25].

Step 7: Antegrade bowel irrigation

In some patients chronic bowel irrigation in an antegrade way can be considered when more conservative treatment options fail or minimally invasive surgery didn't provide relief (see prior).

Antegrade colon irrigation can be performed by a Malone stoma. It was first applied in young patients with anorectal malformations or spina bifida. Meanwhile it has proven its usefulness in patients with chronic constipation as well.²⁶ It reduces the frequency of soiling, improves quality of life and makes other more aggressive measures redundant when successful [26,27].

Step 8: Subtotal colectomy

Sometimes irrigation is still not enough to relieve patients of their symptoms. In that case they can benefit from a subtotal colectomy with ileorectal anastomosis. This invasive surgical treatment is only applied in carefully selected patients (selection criteria: chronic severe and incapacitating symptoms refractory to minimally-invasive treatment, no intestinal pseudo-obstruction, no pelvic floor dys-synergia, abdominal pain is not the most prominent symptom) [28]. Despite frequent association with complications such as incontinence, diarrhoea and abdominal pain [29], patients report up to 90% increase in quality of life and 97% of the patients are content with the treatment [30].

Step 9: Total colectomy with or without ileostomy

Despite subtotal colectomy, in rare cases relapse of constipation occurs in the residual colon leaving total colectomy with or without ileostomy as the only other available option left. Ileorectal anastomosis is the preferred way to go but in some patients permanent ileostomy is performed either as a primary procedure or after ileorectal anastomosis should satisfactory anal defaecation prove unattainable.

Success rates are very high. Yet the maximal invasive nature compels us to see this procedure as a last resort, also since the reported complication rates are high as well [29]. The most serious complication appears to be small bowel obstruction associated with adhesions.

Conclusion

A lot already seems known on the treatment of chronic constipation and at the same time very little. This treatment algorithm can help doctors in the treatment of chronically constipated patients. Despite recent developments in this area there are still patients with seriously crippling symptoms for which there seems to be no treatment. More research is undoubtedly required.

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