

## Case Report

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# A Novel Alternative to Colectomy for Severe Intractable Constipation in Adults: How to Avoid Surgery in Severe Cases?

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### Abstract

We report on two cases of severe intractable constipation that underwent insertion of a percutaneous endoscopic gastrostomy (PEG) tube to facilitate home colonic irrigation, both resulting in dramatic clinical response. The first case was of a 59 year old lady who developed severe constipation following multiple failed surgical procedures. The second was a 52 year old lady with absent pelvic floor function on magnetic resonance defecating proctography. Both had failed to respond to medical management, including sodium picosulphate and were being frequently admitted to hospital. As we detail in this report for both patients the PEG tube was inserted with the intention of facilitating colonic irrigation with 2-3 litres of polyethylene glycol laxative daily. One patient went from receiving 25 endoscopically-administered high sigmoid enemas per year to 0, the other patient avoided colonic de-functioning. We propose that PEG tube insertion to facilitate colonic irrigation with polyethylene glycol is a viable novel treatment option which appears to be effective and safe for the management of severe constipation in selected cases. As we detail in this paper this approach comes with several advantages over traditional approaches and appears to be associated with a lower complication rate.

**Keywords:** Constipation; Surgery; Colon; Irrigation

### 1. Introduction

It is well established that constipation is a common problem with a prevalence of around 16% amongst adults [1]. Of these it has been estimated that up to 50% will have a degree of either dys-synergic defecation [2] and/or delayed colonic transit [3]. A minority of these will go on to develop severe intractable constipation, which doesn't respond to first, second or third line medical treatment. We report on a potential novel, less-restrictive & well tolerated technique for the management of severe constipation in adults recently trialled at University Hospital Southampton (UHS). This report is intended to raise awareness amongst particularly Gastroenterologists and Surgeons involved in

the care of patients with severe constipation, who might traditionally wish to proceed to colonic defunctioning / colectomy, anterior continence enema (ACE) or percutaneous endoscopic caecostomy (PEC) insertion in this context. These procedures are often associated with significant risks.

## **2. Cases**

### **2.1 Case 1**

The first case, was a 59 year old female who had, over many years, undergone hysterectomy, oophorectomy, Burch culposuspension, cystectomy & formation of ileal conduit, subsequent apronectomy and revision of conduit. After all this she underwent two laparotomies for division of adhesions and small bowel excision. By this point she had both severe delayed transit constipation and evidence of significant pelvic evacuatory dysfunction on both anorectal manometry and MRI defecating proctography. She was trialled on movicol 8 sachets a day, picolax, bisacodyl, prucalopride and leccarbon suppositories all to no avail. She also received biofeedback to no avail. During this period she had many admissions to hospital. In 2014 alone, she received 25 phosphate enemas delivered by flexible sigmoidoscope and over time these became increasingly ineffective. Surgical intervention was felt to be too high risk for her, so an NG tube was inserted and 2 sachet's of Macrogol 3350 iso-osmotic laxative were administered daily. This proved efficacious but the patient was unable to tolerate the volumes orally and continued to be admitted to hospital. Therefore, in 2015 a percutaneous endoscopic gastrostomy (PEG) tube was inserted. Since 2015 this has resulted in sustained remission from significant symptoms and she has not been readmitted for this issue, nor has she received any further endoscopically administered enemas.

### **2.2 Case 2**

The second case, a 52 year old female, suffered with slow transit constipation and severe defecatory dysfunction for over 10 years following the birth of her children. She had initially been managed under the care of a different hospital over several years who had tried first, second and third-line oral laxatives + enemas without success. By the time she was referred to us she had firmly decided she would like a defunctioned ileostomy fashioned. She had abnormal anorectal physiology and effectively absent pelvic floor activity on MRI defecating proctography combined with severely delayed colonic transit on SHAPE study.

After failing to improve with biofeedback, picolax and peristeen pump irrigation at home. She was admitted for a trial of Macrogol 3350 via NG tube. This proved efficacious and after 2 weeks of intensive treatment her bowels returned to a regular once a day pattern with clearing of the impaction visible on abdominal imaging. However, upon discharge, she was also unable to tolerate the Macrogol 3350 and rapidly became constipated again. After two more admissions she was once again determined to undergo surgery. However, given the success with the previous case, we broached the option of insertion of a gastrostomy tube to facilitate colonic irrigation. This was inserted in early 2018 and the patient has not been readmitted in the intervening year.

Both patient's remained on linaclotide after the gastrostomy tube had been inserted although other laxatives were stopped & careful blood test & fluid balance monitoring was deployed to look for evidence of electrolyte dysfunction. In neither case did this develop despite prolonged treatment.

### **3. Discussion**

Severe intractable constipation is an increasingly common problem with limited surgical treatment options. Traditional models of treatment escalation propose that surgery should follow the use of drugs like prucalopride [4]. However, this protocol doesn't follow the least-restrictive option first principle. Other oral drugs can prove more efficacious than prucalopride, including: linaclotide, lubiprostone and sodium picosulphate +/- enemas. Colonic irrigation with Macrogol 3350 is unfortunately not tolerated particularly well orally given the volumes required (typically 2-4 litres a day). This can be overcome via the use of an NG tube in an inpatient setting. Subsequent administration via a PEG tube can then facilitate successful discharge and management in an outpatient setting.

### **4. Potential Concerns with this Technique**

#### **4.1 Electrolyte concerns**

Electrolyte disturbance remains a concern, however, we now have good, robust evidence that as well as being an effective treatment for chronic constipation Macrogol 3350 and other polyethylene glycol laxatives are comparatively safe compared to other laxative classes [5]. They are also generally well tolerated, although they do cause bloating and cramps in some individuals [6]. Electrolyte disturbances in patients taking iso-osmolar Macrogol 3350 are thankfully very rare. In a recent meta-analysis only 1 patient developed hypokalaemia amongst 12 separate studies assessing this laxative class and this patient was also taking a diuretic [7].

This class of laxative is thus rapidly becoming the most popular choice of bowel preparation prior to colonoscopy in Europe [8]. Since commencement of the therapy, no significant electrolyte derangements have been noted in either of our cases. Other long term studies looking into this have concluded that even amongst the elderly, these drugs are safe to use long term albeit at slightly lower doses [9]. The same is true of usage in children from what we can observe [10, 11].

#### **4.2 Incontinence concerns**

A second concern is incontinence, particularly in the elderly. Some of the older polyethylene glycol preparations caused faecal incontinence [12] However, there is now good evidence to suggest that Macrogol 3350 is no worse in this regard than magnesium based laxatives [13] which have long been known to be relatively well tolerated. Other studies have subsequently recently corroborated the relatively low rate of faecal incontinence amongst patients taking this medication [14] & suggest that it is a very effective regimen in the treatment of constipation amongst children. Further experience will be required in order to fully quantify this.

#### **4.3 Volume concerns**

Finally, some may object to the need for the PEG tube. In the case of Picolax a PEG tube is not necessary as the daily volume of drug is typically just 250-500 mls/day. In our experience not many individuals with severe constipation are able to tolerate the 2-3 litres of daily oral prep required for colonic irrigation with Macrogol 3350. This is in part because most of these patients have issues with chronic abdominal pain which may be worsened by the rapid consumption of these large volumes. PEG tube delivery can help to spread out the delivery of the prep, however, this obviously leads to certain restrictions on activity which may not be acceptable to all patients depending on their lifestyles thus an individualised approach is required. Both patients in our series reported that they found the method convenient & that it fit in well with their lifestyles.

#### **4.4 Effectiveness in pelvic evacuatory dysfunction**

Both patients had evidence of extremely poor pelvic function as well as slow transit, yet gained dramatic clinical benefit from this therapy. Most studies looking at this have found rates around 50% in patients with slow transit [15, 16]. The economic burden of this is heavy [17]. Because pelvic evacuatory dysfunction is commonplace, any truly effective therapy for constipation must be able to help overcome it. It is well known that lifestyle change alone is normally insufficient [18, 19]. The most well regarded and evidence-based treatment for the pelvic evacuatory disorder is biofeedback [20]. Biofeedback and pelvic physiotherapy had proved ineffective, however for both our patients; In fact the second case had entirely absent pelvic floor activity on a defecating MRI proctogram which is well known to be associated with a poorer prognosis [21]. Yet, both patients responded well to colonic irrigation. Whilst irrigation does nothing to strengthen the pelvic floor, it appears in these cases to have overcome the need for reasonable defecator functionality without resulting in incontinence.

### **5. Surgical Options for the Treatment of Severe Intractable Constipation**

#### **5.1 Transanal Irrigation**

Failing this there are several pre-existing surgical options available: Transanal irrigation has been trialled with very good results being obtained from trials on children with congenital abnormalities [22] & those with spinal injuries [23] or post surgery [24]. However, this treatment is very time and effort intensive. As such, around 50% will discontinue the treatment by 3 years [25].

#### **5.2 Sacral nerve stimulator**

Another option is the sacral nerve stimulator. However, the results of trials looking into these have been disappointing thus far [26]. A systematic review published only last year has urged caution with this usage [27].

#### **5.3 Anterograde colonic enema**

ACE was first described in 1990 [28] as the ‘Malone’ procedure. This involves the formation of a small stoma constructed using the appendix. Through the appendicostomy a catheter is inserted to administer enemas directly to the caecum. A recent meta-analysis concluded that this was a good option to consider prior to colectomy as it represents a less restrictive option with a reasonable body of evidence behind it [29]. However, it would be hard to

argue that an ACE procedure has a lower rate of complications than a PEG tube. Indeed, in one long term follow up study [30] 10% required the removal of the ACE and 63% suffered a stoma related complication. 31% of the procedures were also considered 'unsuccessful' at improving symptoms. One major advantage of a PEG tube is that it is possible to perform nasogastric therapeutic trials prior to insertion of the PEG. This is not possible with an ACE. PEG-site complications are also comparatively rare and availability of the procedure is more widespread.

#### **5.4 Percutaneous endoscopic caecostomy**

A similar, procedure to the ACE is a PEC. In this procedure a tube is passed directly into the caecum. Some case series describe this being effective, however, it appears to be commonly associated with leakage, pain and catheter displacement. At one year post-insertion in this particular series [31] only 61% of the patients still used their PEC and one quarter had asked to have the PEC removed due to chronic wound pain. This technique is can only really be recommended presently as a treatment for sigmoid volvulus.

#### **5.5 De-functioned ileostomy / colectomy**

If all of the above options fail or are unsuitable then we are left with either a defunctioned loop-ileostomy or colectomy. Both of these procedures, and in particular colectomy, are known to be associated with a higher degree of risk of complications [32] & morbidity. In addition, they often don't deal with the underlying symptoms of abdominal pain [33], and in some cases pain is worsened post-operatively. They represent the most restrictive treatment option and should only be considered when all other avenues have been fully explored.

### **6. Conclusion**

These cases highlight the potential value of this novel approach for the management of carefully selected patients with severe intractable constipation, irrespective of the presence of pelvic dysfunction. Where a traditional medical, therapeutic approach has failed as per the traditional treatment escalation ladder for constipation [34] we now locally consider this novel approach prior to the consideration of surgical options such as ACE/PEC, de-functioned ileostomy or colectomy as it appears to be relatively safe and effective in the right patients. However, further research now needs to follow in order to corroborate this experience.

### **Conflicts of Interest**

The Authors have no conflicts of interest to declare.

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