Pediatric Surgery International (2019) 35:243–245
https://doi.org/10.1007/s00383-018-4403-5

ORIGINAL ARTICLE

Bowel management program in patients with spina bifida

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Accepted: 18 October 2018 / Published online: 7 November 2018

Abstract

Purpose Our center has been successfully implementing a bowel management program (BMP) for fecal incontinence consecutive to anorectal malformation and Hirschsprung disease. Recently, the number of patients with spina bifida requiring management for fecal incontinence has increased. The purpose of this study was to review the results of bowel management in patients with spina bifida and the challenges unique to this population.

Methods A retrospective chart review was performed including all patients with spina bifida who attended our BMP from February 2016 until April 2018. Data collection included: prenatal intervention, gender, age, characteristics of contrast enema, success rateand challenges faced.

Results Twenty-two patients met inclusion criteria 13 of which were females. Three patients had their myelomeningocele repaired prenatally, the remaining were repaired postnatally. Patient ages ranged from 2 to 24 years. Only nine patients were referred to BMP at proper toilet training age. Three patients came to BMP status post an antegrade enema procedure with reported "accidents" on their current regimen. The colon in the contrast enema was non-dilated in all patients and two behaved as hypermotile requiring loperamide. Seventeen patients (77%) were clean of stool and considered successful. Solution leakage during enema administration was the most common challenge and was corrected by increasing the Foley balloon fill volume.

Conclusions Our bowel management program with enemas is effective for patients with a history of spina bifida. The data support specific considerations for this population including frequent adjustments, close follow-up and specific administration techniques.

Keywords Spina bifida · Bowel management · Enema · Fecal incontinence · Neurogenic bowel · Myelomeningocele · Constipation

Introduction

Spina bifida occurs when the brain, spinal cord and sometimes meninges are underdeveloped [1]. In the United States, the incidence rate is 1 and 1500 births [2]. Sequelae of spina bifida often include neurogenic bladder and bowel as neurological function is impacted below the level of defect in the spinal cord. Neurogenic bowel results in constipation and/or fecal incontinence. Multiple modalities exist for managing neurogenic bowel including oral medications and rectal enema administration, with different results reported in the literature. When patients with spina bifida suffer from fecal incontinence, an individualized approach to bowel management allows for improved quality of life through the absence of fecal accidents.

In our experience, daily enemas that clean the entire rectum and descending colon are the most effective way to manage fecal incontinence. Enemas are administered using a silicone Foley catheter with a large-volume balloon attached to a -L gravity feed bag. The catheter tip is lubricated, inserted into the patient's rectum and the balloon inflated with water. When the catheter is pulled back, a seal is created inside the rectum with the balloon. A tight seal allows the enema solution to be administered without any leaking.

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A BMP as previously reported, provides a dedicated time for determining a personalized enema. The program includes a week-long process comprised of a contrast enema, clinic visits, daily abdominal radiographs and communication with staff to provide individualized adjustments and timely interventions for patient reported challenges. After review of patient reports and updated radiographs, new recommendations are provided daily [3].

An analogous program has been previously reported; however, the results are not widespread [4]. One study evaluating adults with myelomeningocele found that none of the participants in the study had ongoing support from a medical provider from a bowel regimen perspective [5]. Another study demonstrated a 53% success rate for managing fecal incontinence with antegrade enema administration [6]. Transanal irrigation system has been successfully used to manage fecal incontinence associated with myelomeningocele but this was limited by patient compliance [7]. The implementation of a formal BMP and intricacies of treating neurogenic bowel for the spina bifida population is poorly represented within the literature prompting further investigation.

Methods

This study utilizes retrospective chart review to collect data regarding patients who have participated in the BMP and have an underlying history of spina bifida. All the patients in the BMP were treated at The International Center for Colorectal and Urogenital Care at Children's Hospital Colorado. We specifically evaluated gender, associated malformations, surgical procedures pertaining to spina bifida, characteristics of contrast enema, age during BMP, enema solution, challenges with BMP, follow-up frequency and history of Malone procedure. We define successful bowel management as being clean of stool between daily enema administration.

Results

Twenty-two patients met inclusion criteria for our retrospective study. Thirteen of the patients were females. Three had a prenatal repair of their myelomeningocele and the rest were repaired postnatally. Age ranged from 2 to 24 years. Only nine of the patients were referred to our BMP at appropriate toilet training age. Three of the patients had previous procedures for antegrade enema administration but were having accidents on their current regimen prompting referral to our center. All the patients had a contrast enema performed in fluoroscopy prior to the start of the BMP. Interestingly, all the patients had a nondilated colon yet presented with characteristics of constipation except for two patients who presented with characteristics of hypermotility.

Seventeen patients were clean of stool between enemas and considered successful. Four patients were not considered successful due to the need for ongoing enema adjustments. One patient was lost to follow-up. All patients had an enema comprised of normal saline and an irritant such as glycerin, castile soap, or bisacodyl except for two patients who used a solution without irritants. The patients who demonstrated hypermotility required an enema in combination with loperamide to slow the motility of the colon between enema administrations.

The most common challenge with enema administration identified by seven patients was leaking of the solution during infusion and dwell time. Inflating the Foley balloon with a greater volume corrected the problem of leaking during the infusion for all seven patients. Six patients reported leaking of the solution within one hour of completing enema administration. This was successfully treated by re-inserting the catheter into the rectum to drain residual fluid after evacuation. Three patients experienced discomfort described as abdominal cramping or emesis during enema administration. Slowing the infusion time and warming the fluids alleviated these symptoms.

Eight patients were successful at the completion of the BMP and only required routine yearly follow-up. Nine patients required close follow-up and enema adjustments as indicated after completion of the BMP but were considered successful.

Five patients elected for a Malone procedure, which is a continent appendicostomy for antegrade enema administration, following successful completion of the BMP.

Discussion

A multitude of options are available for the management of neurogenic bowel associated with spina bifida with variable results. A BMP allows fine-tuning a precise enema that will prevent accidents of stool for a 24-h period. Our center has identified this population of patients requires some nuance when applying the principles of bowel management. We have identified one common challenge for spina bifida patients receiving rectal enemas: leaking during administration. We postulate the hypotonia associated with this underlying diagnosis requires a greater volume in the Foley balloon to prevent leaking through an improved seal. This intervention was successful for every patient that experienced leaking. Another common challenge reported was leaking of fluid within 1–2 h following enema administration. The most important characteristic to capture is if the leaking fluid appears to be stool versus enema solution. Leakage of stool following the enema process would indicate

a need to make an adjustment to the enema solution itself, such as increasing the concentration. Leakage of solution indicates incomplete evacuation. To prevent this, we recommended reinserting the catheter into the rectum to drain residual solution. This intervention successfully prevented leaking following administration. Three patients reported discomfort with enema administration. These patients were advised to slow administration rate of the enema solution and warm normal saline prior to infusion. Their symptoms resolved with these interventions.

When reviewing age of participants, only nine patients were referred for bowel management at proper toilet training age. This offers an opportunity to educate clinicians about the bowel component of spina bifida to assure this population receives care or referral at appropriate age, approximately 3–4 years old. This is important to prevent social consequences of fecal soiling in the presence of peers.

Many of the patients elected for an antegrade enema procedure following the determination of a successful bowel management. This is an excellent permanent option of antegrade enema administration for patients who will suffer from lifelong neurogenic bowel. Our center endorses the importance of determining a successful rectal enema regimen prior to antegrade continence enema procedures. Three patients in this series had the antegrade enema procedure prior to presentation but continued to suffer from fecal accidents prompting referral to a BMP.

The success rate for the spina bifida population in our retrospective review was 77%. Our results indicate this population of patients requires close follow-up and ongoing management to be successful. Follow-up management consisted of patient reports of stool accidents between enemas which indicated the need for abdominal radiograph and enema solution adjustment. Consistent monitoring and timely intervention increases the success rate of implementing a BMP for this population. Quality of life may improve dramatically with a tailored enema to prevent fecal soiling.

Conclusion

Our bowel management program with enemas is effective for patients with a history of spina bifida suffering from fecal incontinence. The data support specific considerations for this population including frequent adjustments, close follow-up and specific administration techniques.

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