Bowel Management for Fecal Incontinence in Patients With Anorectal Malformations

By A. Peña, K. Guardino, J.M. Tovilla, M.A. Levitt, G. Rodriguez, and R. Torres
New Hyde Park, New York and Bronx, New York

Background/Purpose: Fecal incontinence is common in patients operated on for anorectal malformations. Treatment with enemas, laxatives, and medications are often given by clinicians in an indiscriminate manner and without a demonstrated benefit. A systematic diagnostic approach and bowel management program was developed for patients suffering from fecal incontinence, and a retrospective analysis of the results is presented.

Methods: Three hundred forty-eight patients were seen in consultation for fecal incontinence after repair of imperforate anus at other institutions. Clinical and radiological evaluation helped determine different types of patients. Group I consisted of 147 patients who were considered candidates for reoperation and forms the basis of a future report. Group II included 172 patients who had no potential for bowel control and were therefore candidates for bowel management. These patients fell into two categories; group IIA included 44 patients with incontinence and constipation. The bowel management involved the use of daily large enemas only. Group IIB included 128 patients with incontinence and a tendency to diarrhea. Group III consisted of 29 patients who had pseudoincontinence. They had an original defect with good prognosis, good sphincters, good sacrum, and a well-located rectum. They suffered from severe constipation, megasigmoid, chronic fecal impaction, and overflow pseudoincontinence and were treated with laxatives or sigmoid resection.

Results: Bowel management was successful in 93% of patients in the constipation group (IIA) and 88% in the diarrhea group (IIB). Ninety-seven percent of patients in group III became fecally continent.

Conclusion: Bowel management consisting of enemas, laxatives, and medications is successful when administered in an organized manner. It is vital to determine the type of fecal incontinence from which the patients suffer and to target their treatment accordingly.

INDEX WORDS: Bowel management, incontinence, anorectal malformation, imperforate anus.

FECAL INCONTINENCE is a serious problem that provokes social segregation and psychological sequelae. Patients with anorectal malformations frequently suffer fecal incontinence despite the efforts of pediatric surgeons. Based on the estimated incidence of anorectal defects in newborns[1] and the population's vital statistics,[2] approximately 780 children with imperforate anus are born in the United States every year. At least 25% to 30% of them will suffer from fecal incontinence.[3] In addition, another 30% will suffer from other functional defecation disorders such as constipation, occasional soiling, and fecal incontinence during periods of diarrhea.[3-5]

Medical management with enemas, laxatives, and medications has been attempted in the past with varying success.[4-9] These treatments are often given without a specific rationale and in an indiscriminate manner. There are patients who were referred to a psychiatrist when the surgeon felt the treatment had been technically correct and that the incontinence must, therefore, have a psychological basis.[10]

Our institution is a referral center for the treatment of patients with anorectal malformations. Over the last 11 years we have seen 348 patients for the treatment of fecal incontinence. These patients were all born with an anorectal malformation and were operated on at another institution. From this experience we have learned that there are different types of fecal incontinence that depend on the original malformation and the original operation. We have also learned how to evaluate these patients, to recognize the specific type of fecal incontinence from which they suffer, and to implement the best modality of treatment. Laxatives, medications to modify colonic motility, enemas, and colonic irrigations were found to play a role in the management of these patients, provided they are used with a specific rationale, which depends on the specific type of fecal incontinence. The impact on a patient's quality of life with bowel management is perhaps more significant than that of surgery itself.

From the Division of Pediatric Surgery, Department of Surgery, Long Island Jewish Medical Center, New Hyde Park, NY, and The Clinical Campus of the Albert Einstein College of Medicine, Bronx, NY.

Presented at the 44th Annual International Congress of the British Association of Paediatric Surgeons, Istanbul, Turkey, July 22-25, 1997.

Address reprint requests to Alberto Peña, MD, Chief, Division of Pediatric Surgery, Schneider Children's Hospital, 269-01 76th Ave, Long Island Jewish Medical Center, The Long Island Campus for the Albert Einstein College of Medicine, New Hyde Park, NY 11040.

0022-3468/98/3301-0032$03.00/0

MATERIALS AND METHODS

Between 1985 and 1996, 348 patients operated on at other institutions for imperforate anus were referred to our center with the diagnosis of fecal incontinence. They formed the basis of a retrospective review. All patients were evaluated with history, physical examination, spinal and sacral radiographs, contrast enema, and magnetic resonance imaging of the pelvis. On the basis of this evaluation we learned to distinguish three different groups of fecally incontinent patients.

Group I included 147 patients who were considered candidates for a reoperation and will be the subject of a future report.

Group II, which included 172 patients, were those without potential for bowel control and, therefore, candidates for our bowel management program. This group represents the essential part of this study. The characteristics of these children include a poor sacrum, poor sphincters, and evidence of a defect that has a poor functional prognosis[3] (ie, rectobladder neck fistula or a long common channel cloaca). These patients may have the rectum well located (within the limits of the sphincter mechanism) or mislocated, but they were not considered candidates for reoperation because they had no potential for voluntary bowel control based on their history and their anatomy. This group included two distinct types of fecally incontinent patients: (1) those with a tendency to constipation and (2) those with a tendency to diarrhea. Each subgroup required a different type of bowel management.

There were 44 patients with a tendency toward constipation (group IIA). They suffered from different degrees of megasigmoid as shown by contrast enema (Fig 1). The operation these patients underwent at another institution to repair their original malformation included the preservation of their rectum (ie, anoplasty, sacroperineal approach, or posterior sagittal anorectoplasty). The bowel management involved the use of large enemas or colonic irrigations, every 24 hours, to clean a large, floppy megacolon. They did not receive a special diet or medication. It was expected that they would remain completely clean in between enemas because of their problem of constipation, which was a manifestation of a hypomotility disorder of the rectosigmoid.

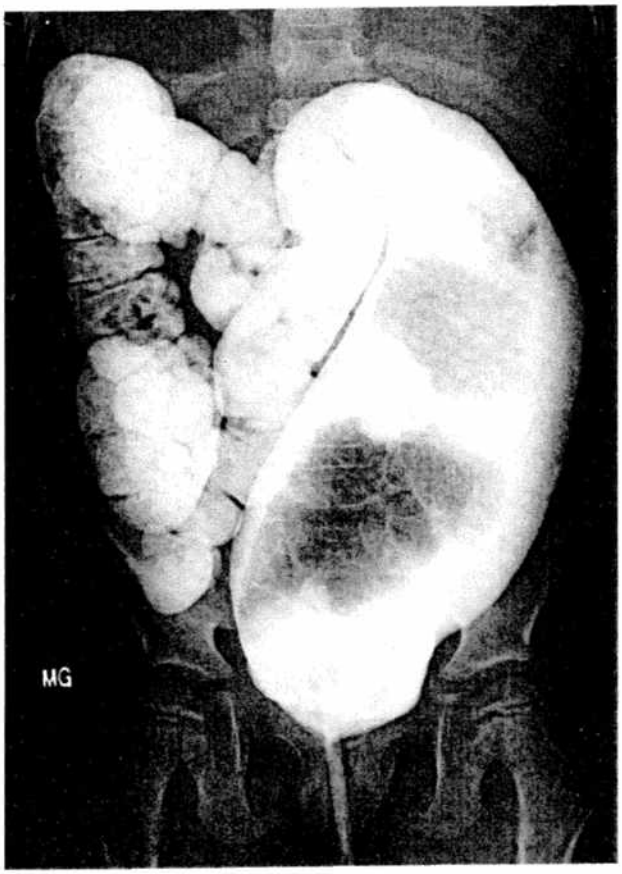

Fig 1. Contrast enema of a patient with megasigmoid.

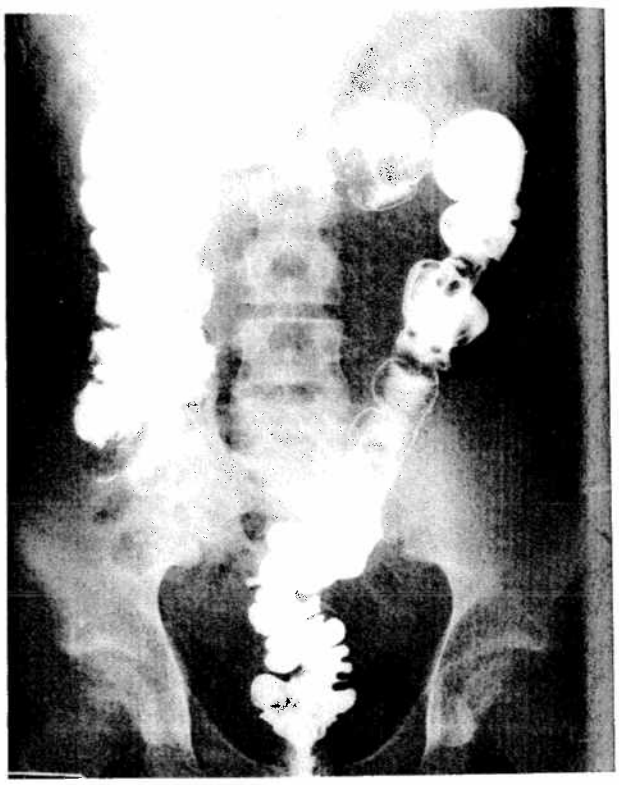

Fig 2. Contrast enema of a patient with absent rectosigmoid. Note the straight trajectory of a nondilatated colon from the splenic flexure to the perineum.

There were 128 patients with a tendency to have diarrhea (group IIB). They had all been operated on previously with a surgical technique that included the resection of their rectum and at least part of their sigmoid colon (ie, endorectal resections). Their contrast enema shows a characteristic image of absence of the sigmoid: a nondilatated colon running straight from the splenic flexure down to the anus. One can frequently see normal colonic haustra down near the anus (Fig 2). The bowel management in these cases involved the use of daily small enemas to clean the colon. The main challenge in this group was to decrease the motility of the colon to avoid passing of stool between enemas. For this we used a strict constipating diet and/or administration of drugs to slow colonic motility. The agents we used include loperamide hydrochloride (1 to 2 mg orally three times per day) or diphenoxylate hydrochloride with atropine sulfate (0.3 to 0.4 mg/kg orally per day in four divided doses).

The bowel management program in both groups of patients was implemented by trial and error over several days. There is no way to predict in a specific patient the exact type and volume of enema that will succeed in cleaning the colon.

The medical records and available films of the patients were sent well in advance to be reviewed by the senior author. A diagnostic plan was developed, the patient was interviewed and examined on the first day, and the necessary diagnostic tests were performed. The patient was classified through use of the above-mentioned criteria (Fig 3). It was expected that a large megacolon would require a large enema, usually with a combination of phosphate plus saline solution. Modifications were made in the subsequent days depending on the patient's response.

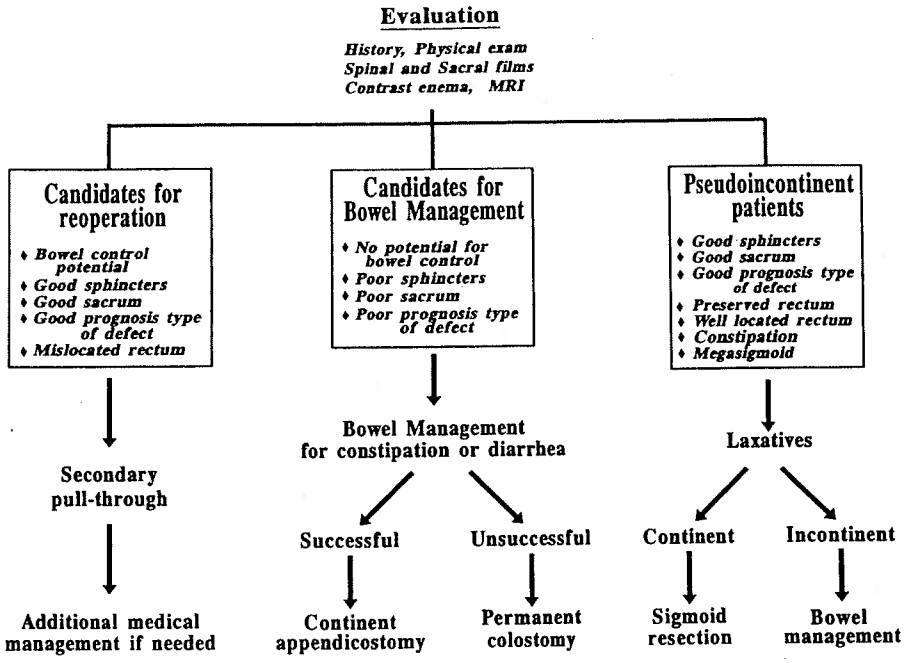

Fig 3. Decision-making algorithm followed for patients suffering from fecal incontinence who have anorectal malformations.

A nurse clinician was responsible for instructing the parents how to administer the enemas.

The patient was seen every day by the surgeon and the nurse, and the parents reported the results of the management.

Episodes of soiling or large unexpected bowel movements were called "accidents." The presence of accidents in between enemas was interpreted depending on whether the patient belonged to the constipation group (A) or to the diarrhea group (B). In the constipation group, an accident represented a failure to clean a very large colon. The treatment was modified to administer a larger enema or to increase the concentration of salt. If leakage occurred, the patient or the parents were instructed to use a large Foley catheter to avoid the leakage of the enema fluid during the administration, a procedure similar to the one described by Shandling in cases of spina bifida.[6] The enema was given while traction was applied on the catheter with the balloon inflated (Fig 4).

The presence of accidents in the patients suffering from diarrhea was interpreted as failure to slow down the motility of the colon between enemas. In that case, the diet was made more strict, and the medication doses were increased.

If it was unclear why the patient was suffering from accidents, a plain radiograph of the abdomen was taken, which allowed us to determine whether the colon was clean of stool. When we found a colon that was not clean, we administered a larger enema. If the patient did not tolerate more volume, we doubled the concentration of sodium chloride in the water or added soap or bisacodyl (dulcolax). If the plain radiograph showed a clean colon, the accidents had to be caused by increased motility, which was treated as described previously.

When the patients continued having accidents in spite of our efforts over 7 to 10 days of trial and error, we considered that the program had failed, and we offered the patient a permanent colostomy.

When the patients remained completely clean for 3 consecutive days, we considered the program successful. The family was then informed about another therapeutic alternative, the creation of a continent appendicostomy (Malone procedure).[11-13]

Group III included 29 patients who were found serendipitously. These patients all were born with a benign defect, for which one would expect a good result in terms of bowel control. They also had a normal or near-normal sacrum, good sphincters, and a technically correct operation as demonstrated on magnetic resonance imaging (MRI) by the presence of the rectum located within the limits of the sphincter mechanism. Despite this, the patients presented complaining of fecal incontinence. They also suffered from severe constipation, and the contrast enema showed a severe megasigmoid.

The first of these 29 patients was seen in the emergency room

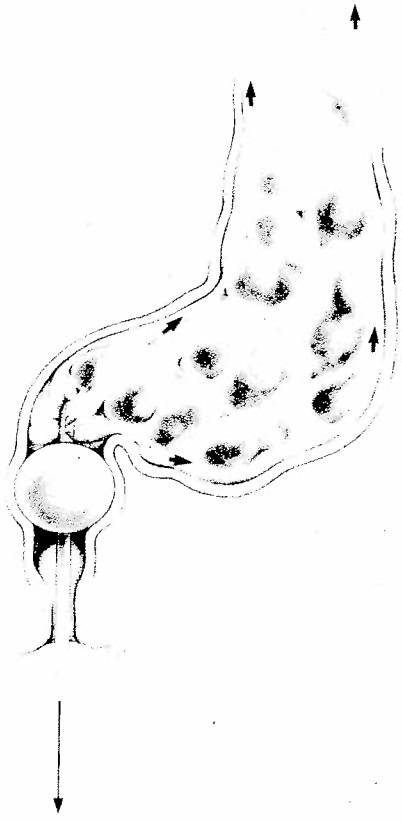

Fig 4. Foley catheter technique with inflated balloon and traction used to avoid leakage.

frequently for fecal impaction in spite of aggressive treatment that included high doses of laxatives and enemas. In desperation, we offered the family a sigmoid resection with preservation of the rectum,[14] if not to cure his constipation, at least to facilitate his treatment. The operation was performed, and the patient not only had no further symptoms of constipation, but also became fecally continent. In retrospect, we can say that the patient was not suffering from real fecal incontinence, but rather from overflow pseudoincontinence.

After that case, 28 subsequent patients were detected with similar characteristics. Before offering these patients a sigmoid resection, it was mandatory to confirm that they were suffering from overflow pseudoincontinence rather than real fecal incontinence with constipation. Failure to make this differentiation may lead to an unnecessary operation; a fecally incontinent constipated patient would be changed to one with diarrhea, who is much more difficult to treat.

The differentiation is carried out by disimpacting the patient first with enemas. During the following days, we prescribe increasing doses of laxatives to determine the amount of medication necessary to provoke a bowel movement without an enema or a suppository. Once we reach that dosage, we observe the patient's bowel control. If continent, then it is obvious that the patient was suffering from overflow pseudoincontinence and will benefit from the sigmoid resection. If the patient has no bowel control while on laxatives, it means that the patient suffers from real fecal incontinence. In this case, the sigmoid resection is contraindicated. The patient must be treated as an incontinent patient with constipation (large enemas, no diet, and no medication).

RESULTS

Group I (n = 147) was subjected to a reoperation and will be discussed in a separate publication.

Group II (n = 172) was subjected to our bowel management program. Of 44 patients with a tendency toward constipation (group IIA), the management was successful in 41 (93%), and it took an average of 4.4 days (range, 2 to 15 days) to achieve success. Of 128 patients with a tendency to suffer diarrhea (group IIB), the management was successful in 112 (88%) and it took an average of 3.6 days (range, 1-15 days) to achieve success.

Group III (n = 29) was considered to have pseudoincontinence. Of these, 28 patients (97%) had voluntary bowel movements with varying doses of laxatives. Nineteen patients began having voluntary bowel movements with appropriate doses of laxatives alone. Nine patients underwent sigmoid resection,[14] which led to voluntary bowel movements and a substantial reduction of their laxative requirement. Overall success was achieved in 181 patients (90%).

Of the three patients who suffered incontinence and constipation and in whom bowel management was unsuccessful, two were noncompliant with the bowel management regimen, and one patient (0.2%) underwent a permanent colostomy.

Of 16 patients who suffered from diarrhea and incontinence and had unsuccessful bowel management, failure was attributed to noncompliance in six, an extremely short colon in one, and failure to control the severe diarrhea in two. A cause of failure could not be determined in seven patients. Six of these patients (0.5%) underwent a permanent colostomy.

In 17 patients it took more than 7 days to achieve a successful bowel management. Seven of these patients were fecally impacted at the beginning, and it took several days to disimpact them. Two patients were noncompliant with the regimen, two suffered from diarrhea, and two had the flu during the regimen; we do not have enough information to explain the delay in four patients.

There were seven patients (three from the constipation group, four from the diarrhea group) who underwent a continent appendicostomy for administration of enemas.

Twenty of our patients also complained of urinary incontinence on the first consultation. Subsequently, urinary control was achieved in 19 of them once the bowel management was successful.

DISCUSSION

Most of our patients underwent previous treatment for incontinence, using enemas, laxatives, or medications. The major difference, however, was that these therapeutic measures were frequently given in an indiscriminate manner. Not only did they fail to keep the patient clean, but many times they actually worsened the patient's situation.

The parents of our patients expressed disappointment when they learned that they travelled a long distance with a great expectation of improving their condition, only to find out that our bowel management program was nothing more than enemas, diet, and/or medication, which most of them had tried before without success. It was necessary, therefore, to go through a complete explanation to the parents to convince them that even when we were using the same therapeutic armamentarium, the results should be better because we were following a specific rationale.

It was not uncommon to hear that their local physicians made pejorative remarks when they learned that the patients were travelling far away "just to learn how to give an enema." This also influenced insurance companies, who had problems understanding the basis of this treatment and refused to pay for the amount of time used by our team to improve these patients.

Essentially the entire pseudoincontinence group was represented by patients with an original anorectal defect with good prognosis. It cannot be overemphasized that in these cases the original mismanagement was the failure to prevent constipation and its sequelae. Interestingly, in retrospect, 19 patients who presented complaining of both urinary and fecal incontinence never really had urinary incontinence. When successful bowel management was achieved, and the patients were clean and able to wear normal underwear, they became aware of their capacity to control urine.

REFERENCES

1. Rosenbaum KN: Genetics and dysmorphology, in Welch KJ, Randolph JG, Ravitch MM, et al (eds): Pediatric Surgery (ed 4). London, England Yearbook Medical Publishers, Inc, 1986, p 9

2. Guyer BG, Strobino DM, Ventura SJ, et al: Annual summary of vital statistics—1995. Pediatrics 98:1007-1027, 1996

3. Peña A: Anorectal malformations. Semin Pediatr Surg 4:35-47, 1995

4. Hassink EA, Riev PN, Severijnen RS, et al: Are adults content or continent after repair for high anal atresia? Ann Surg 218:196-200, 1993

5. Hassink EA, Rieu PN, Severijnen RS, et al: Adults born with high anorectal atresia—how do they manage? Dis Colon Rectum 39:695-699, 1996

6. Shandling B, Gilmour RF: The enema continence catheter in spina bifida: Successful bowel management. J Pediatr Surg 22:271-273, 1987

7. Blair GK, Djonlie K, Fraser GC, et al: The bowel management tube: An effective means for controlling fecal incontinence. J Pediatr Surg 27:1269-1272, 1992

8. Nixon HH, Puri P: The results of treatment of anorectal anomalies: A thirteen to twenty year follow-up. J Pediatr Surg 12:27-37, 1977

9. Arnbjornsson E, Breland U, Kullendorff CM, et al: Effect of loperamide on faecal control after rectoplasty for high imperforate anus. Acta Chir Scand 152:215-216, 1986

10. Vandvik IH, Odegaard B: Practical and emotional aspects of soiling in children with anorectal anomalies. Z Kinderchir 33:321-329, 1981

11. Malone PS, Ransley PG, Kiely EM: Preliminary report: The antegrade continence enema. Lancet 336:1217-1218, 1990

12. Griffiths DM, Malone PS: The Malone antegrade continence enema. J Pediatr Surg 30:68-71, 1995

13. Kiely EM, Ade-Ajayi N, Wheeler R: Antegrade continence enemas in the management of intractable faecal incontinence. J R Soc Med 88:103-104, 1995

14. Peña, A, El-Behery M: Megasigmoid—A source of pseudoincontinence in children with repaired anorectal malformations. J Pediatr Surg 28:1-5, 1993