The Malone Antegrade Continence Enema Procedure, An Indian Perspective

Lt Col Bipin Puri^{*}, Lt Col Man Mohan Harjai⁺, Lt Col Ravi Kale[#]

Abstract

Eight patients with bowel incontinence underwent an open Malone Antegrade Continence Enema (MACE) procedure between May 1997 to May 2000. Indications for the procedure included high anorectal malformation in 3, bowel dysmotility in 1, spinal dysraphism in 3 and presacral teratoma in 1. Age at presentation varied between 06 to 12 years. All but one patient claimed excellent results. Complications of the procedure included stomal stenosis in 1, stomal leak in 2 and inadequate emptying of effluent in 1. Patient selection was the key to success. All patients except one, were children who were literate and had access to a western toilet. Whereas, for the vast majority in the Indian rural setting, the procedure may not be beneficial but for a select group of bowel incontinence children, this procedure may bring a dawn of hope.

MJAFI 2002; 58 : 214-216

Key Words : Bowel incontinence; Malone Antegrade Continence Enema.

Introduction

Faecal incontinence can be devastating to the emotional and social development of children. Anorectal malformations affect 1 in 5000 newborns, and at least 30% of these children will be faecally incontinent after corrective surgery [1]. In addition, approximately one half of children who have spina bifida suffer from faecal incontinence [2], as do some children who have Hirschsprung's disease and intractable constipation [3].

Dealing with faecal incontinence defies easy solutions and options are limited. If nothing is done, the children will soil their clothing or diapers and incur social or psychological sequelae. A diverting colostomy is a second option, a scenario wherein the family is burdened by the need for ostomy care, as well as the psychological trauma inflicted on the child who must live with a colostomy. The third option involves implementation of a bowel management programme, whereby through daily use of enemas, manipulation of diet and some medication, children can remain clean, 24 hours a day [4].

The use of rectal enemas on a daily basis is unpleasant to most children and in many cases intolerable, especially as the child grows older. In 1990, Malone et al [5] described the use of the appendix as a conduit for the administration of an Antegrade Continence Enema. They created a one way valve mechanism that allowed for the catheterization of the appendix through the abdominal wall for colonic irrigation and at the same time prevented stool leakage.

In this study we report our experiences of this pro-

cedure in an Indian setting. The continent appendicostomy is not a cure for faecal incontinence; rather it is a more pleasant way for children to engage in a bowel management protocol without the need for rectal enemas.

Material and Methods

Between May 1997 and May 2000, 8 patients underwent the continent appendicostomy procedure. All children had age ranging between 6 to 12 years. The indications of the procedure included high ano-rectal malformation (HARM) in 3, bowel dysmotility in 1, spinal dysraphism in 3 and presacral teratoma in 1. There were 6 boys and 2 girls. The selection criteria were :

(i) uncorrectable cause of faecal incontinence, (ii) soft and supple anus, (iii) access to a western toilet; (iv) dedicated and motivated parents and (v) pre-operative effective bowel management programme.

Surgical Technique

The abdomen was entered by a right iliac fossa incision. The appendix was mobilized on its mesentery after dividing it from the base on the caecum (Fig-1). The appendix was reversed and its distal end excised to create a conduit. The appendix was then buried in a seromuscular tunnel in the anterior taenia of the caecum after an end to side anastomosis of the appendix and caecum respectively (Fig-2). An appendicostomy was then constructed by spatulating the outer end of the appendix and bringing in a V shaped skin flap of the anterior abdominal wall (Fig-3).

An 8F feeding tube was left in situ in the appendicostomy and irrigations were started on the 7th post-operative day. The irrigation fluid used was normal saline; volume varied between 500ml to 1 litre. Complete cleaning of the colon could be achieved between 30 to 45 minutes.

^{*}Classified Specialist (Surgery and Paediatric Surgery), Command Hospital (Southern Command), Pune - 411 040, ⁺Classified Specialist (Surgery and Paediatric Surgery), 166 Military Hospital, C/o 56 APO, [#]Classified Specialist (Surgery and Paediatric Surgery) Command Hospital (Central Command), Lucknow.

Fig. 1 : Operative photograph showing mobilized appendix on its mesentery

Fig. 2 : Operative photograph showing completed reversed appendicocaecostomy

Results

All patients except the bowel dysmotility one reported excellent results. Complications of the procedure included stomal stenosis in one, stomal leak in two, and inadequate emptying of the effluent in one. Patient selection was the key to the results. All patients except one, were children, were literate and had access to a western toilet. The results of this procedure have been very satisfactory. The one patient of bowel dysmotility who did not evacuate the effluent underscores the importance of performing rectal irrigation preoperatively to look for adequate colonic emptying.

Leakage after the procedure was troublesome for a few weeks but settled within four to six weeks to a mild soiling for half an hour after the procedure. The one case of conduit stenosis required refashioning of the external opening of the appendicostomy.

Discussion

We had 8 patients who had 4 complications (50%). Though our series has been small, nevertheless, our complication rate compares well to larger series regis-

Fig. 3 : Post operative photograph showing constructed stoma of reversed appendicocaecostomy in the right iliac fossa for insertion of catheter and irrigation of bowel

tered by Driver et al [6] who had 15 complications in a series of 29 ACE procedures and Gerharz et al [7] who registered 11 complications in a group of 16 patients undergoing the open MACE procedure. Surgeons must be careful to preserve the appendix whenever possible, particularly inpatients who have anorectal malformations, Hirschsprung's disease and spinal dysraphism. The incidental appendicectomy should be discouraged in light of the advances with the Malone procedure [5] and urinary incontinence with the Mitrofanoff conduit [8]. One must realise that this procedure is not a cure for faecal incontinence. Rather it is a way for children to live happier lives. As such children who are successfully managing their faecal incontinence rectally and remain relatively satisfied with this lifestyle should not necessarily undergo this procedure. Nonetheless, many children especially as they grow older and enter adolescence, will become candidates for an appendicostomy.

Recent reports suggest encouraging results with laparoscopic appendicostomy [9]. We feel that the laparoscopic MACE procedure is surely the way forward in the years to come. Today as it stands, we are undergoing the learning curve of the open procedure. Whereas for the vast majority of the patients in the Indian rural setting the procedure may not be very beneficial, in a select group of bowel incontinent patients who have access to a western toilet, children

who can comprehend, and children who have become conscious of their body image-this procedure provides a ray of hope.

The continent appendicostomy procedure was created in 8 children with bowel incontinence to allow for an antegrade colonic enema. Early results in the vast majority have been encouraging and may provide a ray of hope for management of these unfortunate children.

References

1. Pena A. Treatment of anorectal malformations in colorectal physiology: faecal incontinence. Boca Raton, FL, CRC, Press 1994;214-8.
2. Malone PS, Wheeler RA, Williams JE. Continence in spina bifida patients: long term results. Arch Dis Child 1994;70: 107-10.
3. Kiely EM, Ade-Ajayi N, Wheeler R. Antegrade continence enemas in the management of intractable fecal incontinence. JR Soc Med 1995;88:103-4.
4. Pena A. Current management of anorectal malformations. Surg Clin North Am 1992;72:1393-1415.
5. Malone PS, Ransley PG, Kiely EM. The antegrade continence enema: preliminary report. Lancet 1990;336:1217-8.
6. Driver CP, Burrow C, Fishwick J, Gaugh DC, Bianchi A, Dickson AF. The Malone Antegrade Colonic Enema procedure. Outcome of lessons of 6 years experience. Pediatr Surg Int 1998;13:370-2.
7. Gerharz EW, Bik V, Webb G, Heaver R, Shah PJ, Woodhouse CR. The value of MACE procedure in adult patients. J Am Coll Surg 1997;185:544-7.
8. Mitrofanoff P. Cystometric continence transappendiculone dans le traitement des vessies neurologiques. Chir Paediatr 1980;21:297-300.
9. Webb HW, Barraza MA, Crimp JM. Laparoscopic appendicostomy for management of faecal incontinence. J Pediatr Surg 1998;32:457-8.

NOTICE

MJAFI is despatched to all officers of AMC and AD Corps (except the non technical officers) as per the addresses and nominal roll forwarded by the units. If you or any officers known to you are not receiving the Journal regularly, please forward their names and address as per format given below for inclusion in the mailing list,

Personal no.	Rank	Name in full (as per Army list)	Appointment (speciality)	Previous unit	Present address with PIN
-----------------	------	------------------------------------	-----------------------------	---------------	-----------------------------