Continent appendicostomy in the treatment of fecal incontinence

M. Lukac, Z. Krstic, S. Sindjic, S. Perovic
University Children's Hospital, Belgrade

Background: Fecal incontinence is common in children with anorectal anomalies or spina bifida. If it is possible to achieve fecal control, patients are given a large volume of enema once a day. Retrograde enemas are often unpleasant in children, particularly in adolescents. Malone procedure of antegrade appendicostomy achieves antegrade colonic irrigation. Material and Methods: From 1996 to 2003 Malone antegrade appendicostomy was performed in 10 patients with fecal incontinence. The patients were aged from 5 to 24 years. In 4 patients fecal incontinence was due to an anorectal anomaly, and in 6 patients spina bifida. Preoperatively, all patients were given a clysis to control fecal incontinence. The patients, who remained clean with regular usage of the clysis for 24 hours or longer, fulfilled the criterion for the formation of continent appendicostomy. In 9 patients the cecal appendix was used to create a stoma, while in another one a lateral tubularized cecal flap was applied. In 3 patients a continent conduit was also done due to urinary incontinence. The follow-up period was from 1 to 8 years. A patient was reoperated due to stenosis of the stomal aperture, while another one has not been using the stoma because of social reasons. Conclusion: Continent appendicostomy is a simple surgery, which is effective in the control of fecal incontinence in most children. It is indicated only in patients in whom the reoperative clysis successfully cleans the colon and if patient and parents are motivated to use it. Possible complications, among which stenosis is the most frequent, can be solved with a reoperation.

Key words: fecal incontinence, continent appendicostomy

INTRODUCTION

Fecal incontinence is present in patients who have undergone surgery for anorectal anomalies, spina bifida and congenital megacolon. Anorectal anomalies occur in 1:5000 newborns, and at least 30% of these children have fecal incontinence. Almost half of patients with spina bifida remain with fecal incontinence. As one of the solutions for fecal incontinence in such patients a daily program of colonic irrigation is offered, which ensures a 24 to 48 hour non-soiling of underwear. To our experience, such a program has proved to be highly successful and enables a normal social life to the patient. However, a daily large volume rectal clysis are not accepted well by children, especially in the pubertal period, because this limits their independence, as the child is thus over relied on another person.

In 1990 Malone et al. published the usage of cecal appendix as a conduit for antegrade continent colonic irrigation. This surgery involves the cecal appendix or a cecal flap to form the continent valvular conduit, which allows fluid to flow in one direction and enables the antegrade irrigation of the complete colon, which concurrently prevents stool leakage. The procedure is now a standard operation, which is widely applied in children and adults undergoing treatment for incontinence and obstipation.

Continent appendicostomy does not treat fecal incontinence; it presents a more pleasant and efficient mode to clean the colon within the program of colonic irrigation, which also includes certain hygienic and diet measures, and sometimes medical treatment as well, thus ensuring patient’s independence and self-sufficiency in its application.

MATERIAL AND METHODS

From 1996 to 2004, we treated 10 patients with fecal incontinence using surgical formation of continent appendicostomy (Malone’s procedure). The patients were aged from 5 to 24 years. In 4 patients the cause of fecal inconti-
nence was anorectal anomaly, and in 6 spina bifida. Pre-
operatively, all patients were given a clyasma to control fe-
cal incontinence. The patients, who remained clean with
regular usage of the clyasma for 24 hours or longer, ful-
filled the criterion for the formation of continent appendi-
costomy. In 9 patients the cecal appendix was used to cre-
ate a stoma, while in another one a lateral tubularized ce-
cal flap was applied. In 2 patients a stoma was positioned
in the region of the right hip depression, and in the re-
mainning patients in the naval region.

In the 3 patients with spina bifida we concurrently did a
continent conduit for bladder catheterization due to uri-
inary incontinence. As the cecal appendix was used to
form the conic conduit, the preputial, ileal and bladder
conduit conduits were created for the tunnel between the
skin and the bladder.

The follow-up period was from 1 to 8 years. A patient
was reoperated due to the stenosis of the stoma's aperture,
while another one failed to use the stoma.

RESULTS

The success of continent appendicostomy was judged
based on the following criteria: a completely clean patient
or a minimal occasional soiling of underwear during 24
hours; a partially clean patient with considerable soiling
of the stoma; a considerable soiling of underwear or obsti-
pation, without improvement in relation to previous con-
tion. All our patients, except for one who left the pro-
gram, were completely clean, and considered their quality
of life to have been improved in many ways. The patient
who left the program was a social problem. One patient
developed a complication, stenosis of the stoma, 7 years
after the successful usage of the program. As both the
child and parents were exceptionally satisfied with the us-
age of continent appendicostomy, we did a revision of the
stoma, and 10 months after the intervention they regularly
have been applying colonic treatment.

After surgery and antegrade application of a clyasma
with intermittent catheterization, the patients with spina
bifida and associated fecal and urinary incontinence re-
mained completely clean and dry.

DISCUSSION

The major indication for the application of Malone's
continence appendicostomy in children with congenital
anomaly of the anus and neuropathic alterations of the
anal sphincter resulting in fecal incontinence. Such pa-
ents have a relatively normal function of the colon, with
a disorder involving the distal parts of the colon, rectum
and anus that can be replaced by regular cleaning. Con-
trarily, patients with dysfunction of the colon show poor
results after such a treatment. According to a study of
Curry et al., almost 40% of children who underwent sur-
gery due to obstruction have poor results. Also, motiva-
tion of parents and children is a very significant factor for
the success of the method, so that continent appendicosti-
tomy is not suggested in small children. It is highly im-
portant to offer this possibility to parents, with a clear ex-
planantion that this is not a new mode, but a more comfort-
able way of treatment, so that the parents' expectation
would not be higher from the possibility offered by contin-
ent appendicostomy.

The main complication is stenosis of the stoma, which
occurs in 25-30% of operated patients. This problem can
be decreased by more frequent catheterizations.

Positioning of the stoma in the naval region gives better
esthetic results, because the aperture of the stoma is invis-
able, which is very significant in adolescent period.

CONCLUSION

The method of formation of continent appendicostomy
for antegrade usage of a clyasma in the process of keeping
the colon clean is not the method for the treatment of fecal
incontinence, but a way to make the life of such patients
independent and happier. Surgeons should change their
attitude toward incidental appendectomies whenever pos-
sible, and particularly in patients with congenital anom-
aliies of the colon and urinary tract. If there is also associ-
ated urinary incontinence, it should be resolved concur-
rently with the fecal incontinence.

BIBLIOGRAPHY

1. Pena A.: Treatment of anorectal malformations, in
Colorectal Physiology: Fecal Incontinence. Boca Raton,
2. Malone PS, Wheeler RA, Williams JE: Continence in
spina bifida patients: Long term results. Arch Dis Child
3. Malone PS, Ransley PG, Kiely EM: Preliminary re-
port: The antegrade continence enema. Lancet
4. Curry JI, Osborne A, Malone PSJ: The MACE Proce-
5. Curry JI, Osborne A, Malone PSJ: Why do A.C.E.'s fail?
Presentation at the 8. Annual meeting of the Euro-
results following the antegrade continence enema proce-