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Window Colostomy as a Preliminary Diversion Procedure in Cases of Congenital Short Colon-Lessons Learnt in 10 Years

Tanvir Roshan Khan*, Ashish Wakhlu*, Kumar Abdul Rashid*, Madhukar Maletha**, J. D. Rawat***, S. N. Kureel*****

*Assitant Professor, **Associate Professor, ***Professor, Department of Pediatric surgery, King George's Medical University (KGMU), Lucknow, Uttar Pradesh 226003, India.

Abstract

Purpose: Congenital short colon (CSC) is an unusual abnormality in which a pouch like dilatation of a shortened colon is associated with ano-rectal malformation (ARM). The clinical features and anatomical features are very well described in the literature but the management remains difficult and controversial. The present paper aims to study the effectiveness of window colostomy (WC) as preliminary diversion procedure in the management of congenital short colon (CSC). *Methods:* All patients of CSC admitted to our department during a period of 10 years, in whom the WC was performed have formed the basis of this study. Out of total 137 patients admitted with CSC, window colostomy was done in 125 patients. These patients were retrospectively studied and the data sheets were analyzed regarding complications related to WC and the management offered. 5 patients expired before the procedure was undertaken, and transverse colostomy was done in 7 cases of incomplete CSC. *Results:* Eighty six patients were followed-up after WC and underwent all stages of management (WC followed by coloplasty and ileostomy and ileostomy closure in last stage).The procedure was associated with some distressing complications. Stenosis of the window colostomy needing dilatation was seen in 22 patients. 19 patients had minor prolapse of the pouch, while 6 of the patients had significant amount of prolapsed pouch needing revision procedures.18 patients had significant periostomy excoriation. The overall mortality related to the procedure was 11%. *Conclusion:* The formation of an initial window colostomy in the cases of CSC, may lead to incomplete fecal diversion, and the pouch fails to decompress properly. There are also complications associated with the stoma itself. However the procedure is short, easy to perform, and is life-saving and provides adequate time period to allow weight gain and be fit for second stage surgery. It eventually does not affect the final outcome in these patients with congenital short colon.

Keywords: Anorectal Malformations; Congenital Short Colon; Window Colostomy.

Corresponding Author: Tanvir Roshan Khan, Department of Pediatric surgery, King George's Medical University (KGMU), Lucknow, Uttar Pradesh 226003, India.
E-mail: doctrk@gmail.com

Introduction

Congenital short colon (CSC) is an uncommon condition associated with anorectal agenesis in which a pouch like dilatation of a shortened colon is associated with an anorectal malformation. The condition is more common in northern Indian population and neighboring countries, with almost 90% of the cases being reported from India. With growing awareness, there are few reports pouring in from around the globe. The anomaly and its diagnostic features are well described (1, 2, and 3). The surgical treatment however remains challenging. The aim of treatment is to achieve an available length of the colon, for absorption and storage capacity as well as propelling fecal matter onward with adequate continence. At present single stage surgery for patients with CSC is not advocated keeping in view of its high complication and mortality rates. For staged surgery various procedure for the initial diversion are described. These procedures include- end colostomy after division of the fistula and excision of the pouch in incomplete CSC, end colostomy and coloplasty in complete CSC, proximal ileostomy in cases of complete CSC. Window colostomy as an initial diversion procedure was described in early series but was later condemned by many authors owing to high incidence of complications.

A temporizing window colostomy (WC) however, has remained the procedure of choice for initial diversion at our centre. It includes making a small stoma on the anterior surface of the pouch without disconnecting the recto urethral communication. The procedure done in shorter time and with minimal anaesthetic requirement and is lifesaving. The present paper shares our experience with WC as a preliminary diversion procedure in CSC and highlights the advantages and pitfalls of this procedure.

Materials and Methods

All patients admitted to our centre with a diagnosis of CSC in the last ten years (1999-2009); were included and were retrospectively analyzed in the study. Total 137 patients of CSC were admitted in the above period. 6 patients of CSC with colostomy done elsewhere were not included in the study. Window colostomy was performed in 125 patients. Five patients expired before being taken up for procedure, while transverse colostomy was performed in 7 cases of type 3 and 4 of CSC. Out of these, 86 patients underwent definitive procedure and were retrospectively analyzed for efficiency and complications related to WC. All patients were adequately resuscitated in the pre-op period and a nasogastric decompression was done. Broad spectrum antibiotics were also started. The patients underwent investigations including plain erect x-ray of the abdomen which was diagnostic in all cases, except in cases where the short colon was perforated (n=19).Routine investigations including haemogram, blood glucose and serum creatinine was done in all cases. Our protocol for the surgical management has remained three stage since 1997. It includes-(a) Preliminary window colostomy, (b) Coloplasty and proximal ileostomy and, (c) Ileostomy closure.

Technique of Window Colostomy

It entails making a small stoma of the pouch onto the abdomen. The procedure is performed at the left Mc Burney's point, at the junction of the medial two thirds and lateral one third of the left spino-umblical line. After opening the peritoneum the pouch is identified and an opening is made on the anterior surface of the colonic pouch without attempting to ligate the fistulous communication. We try to make the window colostomy as small as possible (Fig 1). The smallness of the window colostomy preempts the prolapse of the pouch subsequently.

Results

Out of the 125 patients who had window colostomy done for CSC, there were 101 male patients and 24 female patients.14 patients expired after the window colostomy because of low general condition secondary to delayed presentation and associated septicemia. Most of them had perforation of the pouch at the time of presentation. The WC was associated with stenosis (figure 2) that needed dilatations in 22 patients. There were 19 patients who had some amount of pouch prolapse, needing additional care and were managed conservatively. The procedure was associated with 6 cases of severe prolapse of the pouch with bleeding from the mucosa and subsequent failure to gain weight (figure 3). These patients were managed by circumferential suturing under sedation. There were 18 patients who had substantial peri-ostomy excoriation (figure 4) and were advised application of zinc oxide powder in coconut oil. However a mild degree of erythema of the surrounding skin was seen in nearly all cases. There were 5 patients who had evidence of enterocolitis, secondary to stasis and infection. These patients were managed by pouch washes and antibiotics. Overall mortality related to the procedure was 11.2%.Complications associated with window colostomy and their subsequent management may be summarized in the following table 1:

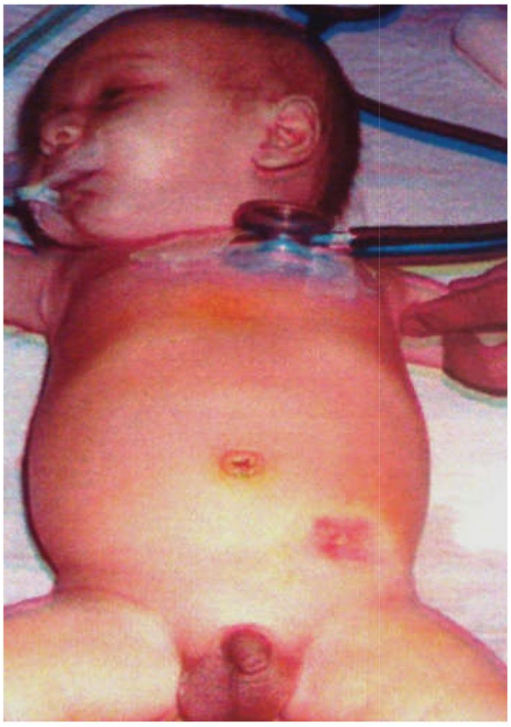


Fig. 1:

Table 1: Complications related to window colostomy

Complication	No. of cases	%	Management
Stenosis	22	25.5	Dilatation
Prolapse	19	22.0	Conservative
Massive Prolapse	6	6.9	Reduction and circumferential suturing
Significant excoriation	18	20.9	Application of zinc oxide with coconut oil
Mortality	14	11.2	-

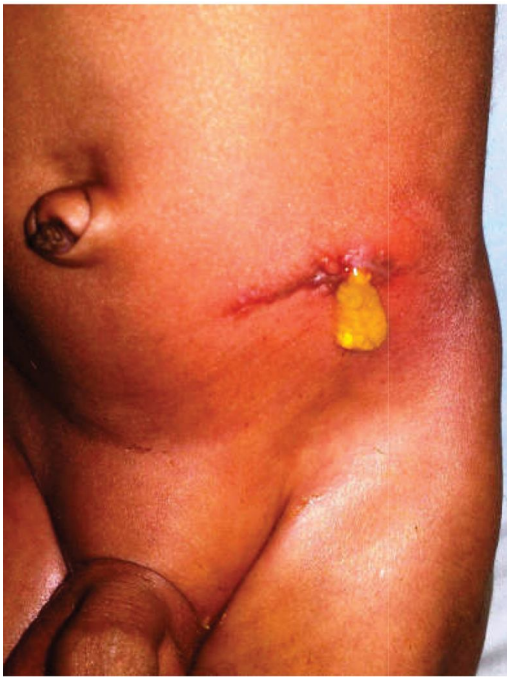


Fig. 3:

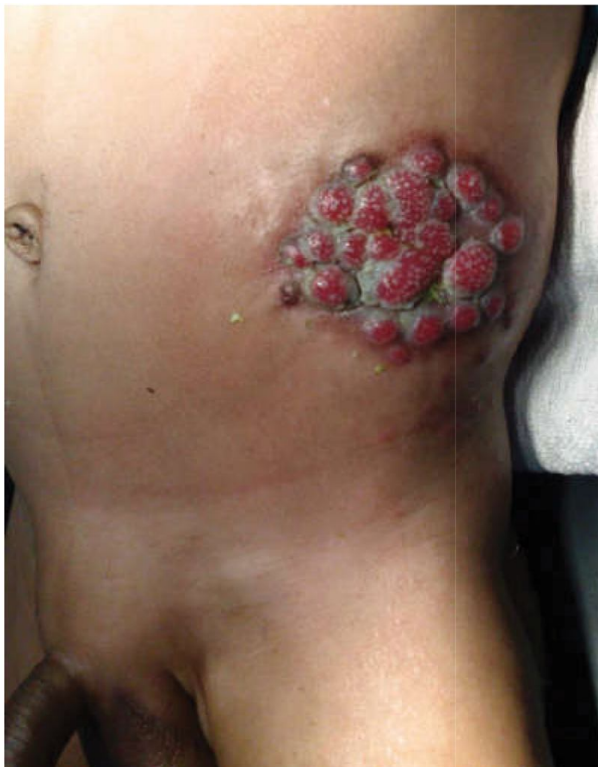
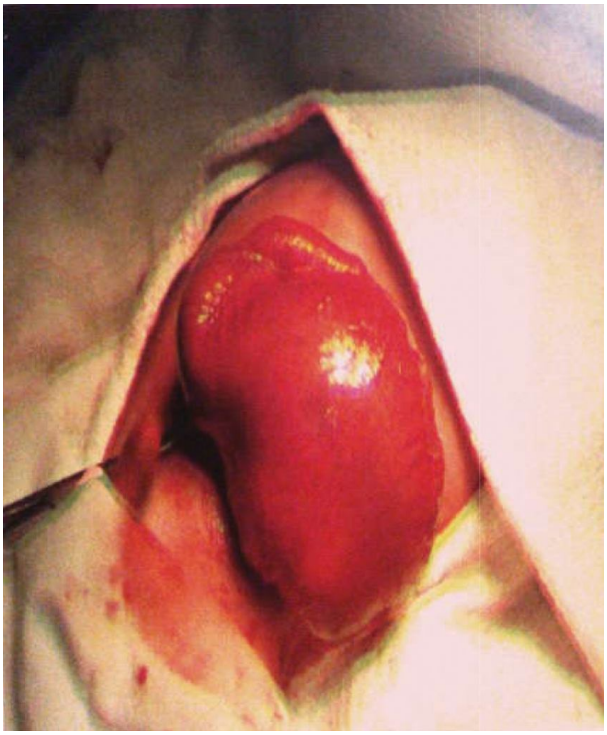


Fig. 5:



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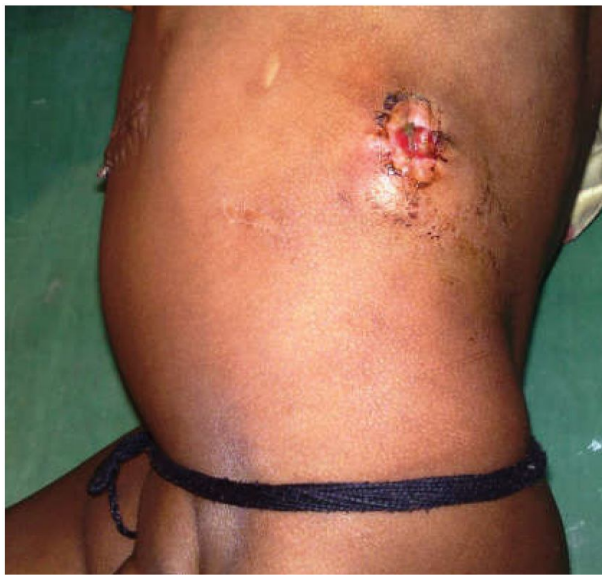

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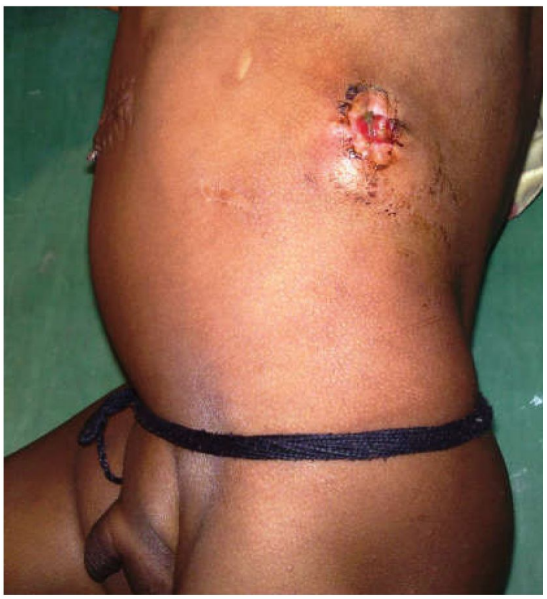

Fig. 7:

Discussion

Congenital short colon (CSC) is a malformation, where whole or part of the colon is replaced by a dilated pouch associated with an anorectal malformations (ARM).This is a variant of ARM and comprises from 6.3% to 26.8% of all cases of ARM in some series from India [3,4]. Till now in the literature majority of cases have been reported from India, but now being reported from other parts of the world. The etiology for this sharp geographical variation is not known [4].

The majority of patients present in the early neonatal period life within 7 days of life. Occasionally if the fistula is large especially in female child with colo cloacal anomaly, the presentation may be late as the child remains decompressed. The association of bilious vomiting with early gross distension of abdomen in a case of ARM strongly suggests a CSC. The management of CSC depends on the type of anomaly and the general condition of the child. Rao et al [5] have classified the anomaly into four types1-4, depending upon the length of the normal colon (type 1, no normal colon and type 4, normal colon till sigmoid).Wakhlu et al [6] describe only two types, complete and incomplete types of CSC.

In a stable child with a diagnosis of CSC the first priority is to disconnect the colo-urinary fistula and provide bowel decompression and diversion with various methods already described. End colostomy with ligation and division of the fistula with colorraphy is preferred by many workers [7], because it disconnects the urinary tract from the fecal stream and diminishes the risk of prolapse and urinary tract infections. This is an acceptable procedure for a healthy neonate who is seen by an experienced surgeon, but the procedure entails a larger incision and more dissection than a window colostomy, making subsequent pull through more difficult. Moreover the end colostomy is prone to stenosis. However a great majority of patients present late, with gross abdominal distension and features of septicemia especially in developing countries like ours. These patients are at times treated by persons not expert in handling these pathologies, before being referred to our centre. Sometimes a child presents with a colostomy done by person not aware of this condition (Figure 5). Usually in these cases the presentation is with complications of colostomy like stenosis or prolapse. The diagnosis may be apparent in a child with prolapse but in a stenosed colostomy the diagnosis can be made only on doing the contrast radiography (Figure 6). Window colostomy is being described by many as a procedure of past, associated with grave complications and to be avoided at all costs. However we have stood with this simple and safe procedure for a long time, which has served the purpose of initial diversion very well in all cases of CSC.

We perform window colostomy as a diversion procedure in all cases of CSC, including those having type 3 or type 4 defects. It is a short procedure, can be easily performed even under local anaesthesia, and does not involve pelvic dissection. The procedure is life saving for most of the neonates. There is a significant (25%) incidence of stenosis and prolapse (22%) associated with window colostomy in our hands (table 1); however, they do not affect the final outcome of our patients. We have not had any major problem (e g, absorptive hyperchloremic acidosis and urinary tract infections) such as those reported by other investigators [4, 5 and 8]. This is because, although the external diameter of the colo-urinary fistula can be up to 2 cm, the size of the mucosal communication is very small [9]. Our mortality rate after window colostomy is 11.2%.The babies who died were in poor general condition because of late presentation, most of them had perforation of the colonic pouch and were septicemic. The mortality after WC has decreased considerably, as described in the previous literatures [6].This may be attributed to the better knowledge gained about the anomaly and improvements in the neonatal care facilities.

Conclusion

Although associated with significant morbidity and mortality, the window colostomy is quick and

easy to perform. It has been life saving for most of the neonates. Our method has lead to more incidence of stenosis, which is not a major problem because this can be managed at home by simple dilatations. We found patients growing well with such colostomy and the procedure did not affect the final outcome.

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