

## ORIGINAL ARTICLE

## Complications of Colostomy in Childhood and Their Management : A Multi-centre Study

S K Majumdar<sup>1</sup>, Samidur Rahman<sup>2</sup>, Mujibul Haque<sup>3</sup>, Manisha Banerjee<sup>4</sup>, A R Khan<sup>5</sup>

### Abstract:

*The purpose of the study was to see the complications of different types of colostomy. This was a prospective study carried out on 171 patients in the Department of Pediatric Surgery of Dhaka Shishu Hospital from October 1997 to May 1999, Sylhet MAG Osmani Medical College Hospital from April 2000 to October 2000 and in Mymensingh Medical College Hospital from January 2001 to March 2001. Out of 171 patients, 99 patients underwent right transverse loop colostomy, among them 48 patients developed complications. Sixty three patients underwent sigmoid colostomy, out of them 12 patients developed complications. Rest nine patients underwent left transverse loop colostomy and three developed complications. Skin excoriation (23.97%) was the most common complication and next was prolapse (19.88%). Right transverse loop colostomy caused more complications in relation to other types. Proper meticulous surgical technique and adequate follow up care may decrease the incidence of complications related to colostomy.*

### Introduction :

Colostomy is an artificial opening made into the large bowel in order to divert faeces and flatus to the exterior where they may be collected in an external appliance<sup>1</sup>. It is a life saving procedure in many paediatric patients. Still colostomy in our society, as it is elsewhere, is an unpleasant experience for the patient as well as for the care givers.

In child age group, the major indications for colostomy, as shown in different literature, are Hirschsprung's disease and high or intermediate variety of anorectal malformations (78%)<sup>2</sup>.

The incidence and the nature of complications vary with type of colostomy performed and the cause for which colostomy was constructed. Significant improvement has been made over the last few decades in different centres all over the world regarding construction and management of colostomy.

The present series is a report of 171 patients with colostomy done in different centres in this country, their common complications and the management.

### Materials and method :

The study was carried out in the Department of Paediatric Surgery, Dhaka Shishu Hospital

1. Assistant Professor of Paediatric Surgery, Mymensingh Medical College, Mymensingh.
2. Assistant Professor of Paediatric Surgery, Mymensingh Medical College, Mymensingh.
3. Assistant Professor of Anesthesiology, Holy Family Red Crescent Medical College and Hospital, Dhaka.
4. Student of MD (Neonatology), Department of Paediatrics, Bangabandhu Sheikh Mujib Medical University, Dhaka.
5. Professor of Paediatric Surgery, Dhaka Shishu Hospital, Dhaka.

for a period of 20 months from October 1997 to May 1999, in the Department of Pediatric Surgery, Sylhet MAG Osmani Medical College Hospital Sylhet for a period of seven months from April 2000 to October 2000 and in Mymensingh Medical College Hospital, Mymensingh for a period of three months from January 2001 to March 2001. A total of 171 patients were included in this study. The patients got admitted into the hospital and had colostomy done previously or done during the study period in respective centres. Patients in whom follow-up was not possible due to various reasons were excluded from the study.

After admission, resuscitation of the patient was done with I. V. fluid, nasogastric suction and I. V. antibiotic; then colostomy was constructed after confirming the diagnosis. A loop right transverse colostomy, loop sigmoid colostomy and loop left transverse colostomy was done where it was indicated.

Immediate post-operative complications, relating to colostomy, like bleeding from the stoma margin, and any color change that was suggestive of vascular compromise was looked for. Any problem with the size of the colostomy bag was also taken into account.

Patients were followed up at fourteenth postoperative day and in most cases one month thereafter. Their parents were asked to report immediately if any complication or abnormality they noticed. Most of them came for follow up and it was noted whether there was weight gain, peristomal skin excoriation, prolapse or any other complication related to colostomy.

### Results:

During the study period, a total of 171 patients underwent colostomy. They constituted 8%

of the total surgical admission during the study period (Table-I).

**Table- I :** Distribution of colostomy patients out of total surgical admission

Total surgical admission	Total admission of colostomy patients	Individual colostomy patients	Percentage
8012	642	171	8%

Among the 171 patients in whom colostomy were performed, 99 underwent right transverse loop colostomy, 63 sigmoid loop colostomy and nine left transverse loop colostomy (Table-II).

**Table- II :** Types of colostomy (N-171)

Type	Number of patient	Percentage
Right transverse loop colostomy	99	57.89%
Sigmoid loop colostomy	63	36.85%
Left transverse loop colostomy	09	5.26%

Out of 171 colostomy patients, 108 patients (63.16%) had no complications and 63 patients (36.85%) developed one or more complications. Out of the 99 patients who underwent right transverse loop colostomy 48 (48.48%) developed one or more complications, 12 patients (19.05%) out of 63 sigmoid colostomy patients developed complications and of the nine patients of left transverse loop colostomy three patients (33.33%) developed complications.

Among the 99 patients with complications after right transverse loop colostomy, 15 (15.15%) showed early complications. Of

them bleeding from the colostomy site was noted in four patients (4.04%) and wound infection in 14 patients (14.14%). Out of 12 patients with sigmoid loop colostomy, early complications developed in four patients (6.35%), two patients (3.17%) developed bleeding from stomal site and three patients (4.78%) wound infection. Out of nine patients with left transverse colostomy, one patient (11.11%) presented with early complication and it was wound infection (Table-III).

**Table- III :** Distribution of early complications of colostomy patients

Complica-tion	Right transverse N=99		Left transverse N= 9		Sigmoid N = 63	
	No.	%	No.	%	No.	%
Wound infection	14	14.14	01	11.11	03	4.76
Bleeding	04	4.04	00		02	3.17

Delayed complications were reported in 43 patients (43.43%) of right transverse colostomy. Colostomy prolapse was reported in 29 patients (29.29%), peristomal skin excoriation occurred in 34 (34.34%), stomal stenosis in three patients (3.03%), parastomal herniation in two patients (2.02%) and diarrhoea in eight patients (8.08%). Of the patients with sigmoid colostomy late complications occurred in nine patients (14.28%). Skin excoriation developed in six patients (9.52%), prolapse in three patients (4.76%) and stomal retraction in one patient (1.58%). Three patients with left transverse loop colostomy had late complications (33.33%). Skin excoriation in one patient (11.11%) and prolapse in two patients (22.22%) were noted (Table-IV).

**Table – IV:** Distribution of late complications among the colostomy patient

Complica-tion	Right transverse loop N = 99		Loop sigmoid N = 63		Left transverse Loop N=9		Total N = 171	
	No.	%	No.	%	No.	%	No.	%
Skin excoriation	34	34.34	6	9.52	01	11.11	41	23.97
Prolapse	29	29.29	3	4.76	02	22.22	34	19.88
Diarrhoea	08	8.08	00		00		08	4.67
Para colostomy hernia	02	2.02	00		00		02	1.16
Stenosis	03	3.03	00		00		03	1.75
Retraction	00		01	1.58	00		01	0.58

All the patients in this study were advised during discharge to come for follow up after 14 days and then after a month and there after if there was any complication. During each visit, the patients were fully examined and the complications were noted. Advice for further management of complication was given if any of those was detected.

### Discussion :

Patients with colostomy who were admitted and treated in Dhaka Shishu Hospital (DSH), Sylhet MAG Osmany Medical College hospital and Mymensingh Medical College Hospital during the study period were analyzed in this study. During the study period a total of 171 patients with colostomy were treated in these centres, which constituted 8% of a total of 8021 surgical admission. In a study in James white Comb Riley Hospital for Children, Indianapolis, between 1972 and 1978, incidence of colostomy performed were 8.3% which is similar to this study<sup>3</sup>.

In this study, among the 171 patients with colostomy 99 patients underwent right transverse loop colostomy, 63 patients had sigmoid loop colostomy and nine had left transverse colostomy. Mollitt et al stated that

colostomy in the paediatric age group is often necessary on an emergent or urgent basis<sup>3</sup>. In contrast to the adult, colostomy in children is usually done for the treatment of a non-malignant condition and is temporary in nature. As there was no facilities of emergency frozen section in the hospitals where the study was done, transverse colostomy was done for all Hirschsprung's disease patients and some of high anorectal anomaly patients. In a study in Labey clinic, out of 276 patients with colostomy 43.5% underwent right transverse colostomy and 37.7% sigmoid colostomy. Percentage of sigmoid colostomy corresponds with the study and the higher rate of transverse colostomy in this study was probably due to lack of facilities of frozen section biopsy for which leveling colostomy could not be performed.

In this study, 63.16% were treated without any complications and 36.84% developed one or more complications. In one study it was shown that the overall (early and late) complication rate associated with colostomy was 68%<sup>3</sup>. This was higher than what was found in this study. Use of meticulous surgical technique during operation and close post-operative care with antibiotic and stoma care probably was the cause of better result in this series.

In this study, patients with right transverse loop colostomy developed one or more complications. Early complications were bleeding from the colostomy site and wound infection. In patients with sigmoid loop colostomy who developed complications, there were also bleeding from the stoma site and wound infection. In patients with left transverse loop colostomy early complication occurred was only wound infection. In one study the rate of bleeding from the colostomy

site was found to be 3.3% which is almost similar to those of this study<sup>4</sup>. Reported wound infection in that study was 17% which was somewhat higher than this finding. Probably an adequate antibiotic coverage lowered the rate of wound infection.

Patients with right transverse loop colostomy developed delayed complications in 43.4% cases, which is almost similar to the findings of Mollitt et al<sup>3</sup>. In this study, among the delayed complications, peristomal skin excoriation occurred in about 34.34% cases. In a study Namadu<sup>6</sup> reported 24.8% peristomal skin excoriation which is almost similar to this study. As most of the patients are of middle class and lower income group and almost all of them did not use colostomy bag while they were in their home with colostomy exposing peristomal skin to faeces and corrosive intestinal secretion. Moreover, this moist peristomal skin sometimes invites fungal infection. Probably all these factors played important part in developing peristomal skin excoriation. Fortunately, almost all of the excoriation were mild to moderate in severity. They were managed by keeping the area dry with soft cloth and painting the area with zinc oxide paste. Some of the patients needed systemic as well as topical antifungal drugs.

In this study, the overall prolapse rate was 19.88%. In most of the cases prolapse involved the distal loop. Therefore, in some cases both the loops were involved. Namadu in his study reported prolapse in 9.2% of cases<sup>6</sup>. The finding was higher in the current study as a good number of these patients were suffering from mild to moderate degree of malnutrition which facilitates prolapse<sup>5</sup>. Moreover, as respiratory tract infection (RTI) is more prevalent in this country, increased

intra-abdominal pressure may precipitate prolapse. Only four out of 34 prolapse patients required operative correction. As the prolapsed colon showed signs of impaired vascular supply, the prolapsed colon was repositioned and a purse-string suture around the colostomy opening was given to keep the colon remain inside. All the remaining cases were treated conservatively by giving support to the prolapsed loop with a piece of cloth tied round the body that held the loop in place. Patient's parents were asked to treat their children quickly when cough and cold occurred.

Other complications were diarrhoea, paracolostomy hernia and stenosis of the colostomy stoma and all with right transverse colostomy. Colostomy retraction occurred with sigmoid colostomy. Stenosis, parastomal hernia and stomal retraction was due to poor surgical technique and revision surgery was done to correct this. Though stool routine and culture examination failed to detect any organism in patients with diarrhoea it responded to oral metronidazol and ORS therapy.

Colostomy is a common surgical procedure that is done in paediatric practice and it may lead to a number of complications. It may be concluded that neither the temporary nature of the colostomy nor its benign indication in children preclude the fact that serious complications may result from improper operative technique and inadequate follow up

care. So, properly made stoma in respect to its size, three layers fixation of colon with the abdominal wall with delayed absorbable suture and its meticulous management are some key points for the prevention of complications related to colostomy.

#### References:

1. Nei J, Mc Mortensen C. The small and large intestine. In: Russell RCG, Williams NS, Bulstrode CJK (editors). *Bailey and Love's Short Practice of Surgery*, Twenty third edition. New York: Oxford University Press, 2000. pp- 1026-57.
2. Cain WS, Kiesewetter WB. Infant colostomy. *Arch Surg* 1965; 91:314-20.
3. Mollitt DC, Malangoni, Ballantine TVN, *et al.* Colostomy Complications in children: an analysis of 146 cases. *Arch Surg* 1980; 115 : 499-58.
4. Lister J, Webster PJ, Mirza S. Colostomy complications in children. *Arch Surg* 1983; 227: 229-37
5. Sigmund H. The paediatric ostomy. In: Walker WA, Duric PR, Hamilton JR, Walker-Smith JA, Watkins JB (editors). *Pediatric Gastrointestinal Disease*, Vol-2. Fourth edition. Philadelphia : BC Deeken Inc. 1991. pp-1767-78.
6. Namadu PT. Colostomy: Indications, complications and management : the Zaira experience. *Trop Doctor* 1992; 22: 128-29.