



# The Colostomy Complications in Anorectal Malformation: A Retrospective Study

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J Coloproctol 2021;41(3):286–288.

## Abstract

**Background** A colostomy is a surgical approach that creates an opening for the colon, or/and large intestine through the abdomen. Anorectal malformations are a group of abnormalities of the rectum and anus that are present at birth.

**Objective** To analyze the common complications of colostomy in anorectal formations.

**Methods** This was a retrospective study conducted on 50 temporary colostomies performed in children at the Surgical Department of the Abu Ghraib General Hospital in the period from January 2018 to January 2020. Information was collected regarding the patients' age, sex, body weight, associated anomalies, colostomy types and sites, and the indications and complications of colostomies.

**Results** A total of 44 (88%) cases were reported in the children's 1<sup>st</sup> month of life. The ratio of male to female was 1:1. Pelvic colostomy was performed in 48 (96%) patients, as 40 (80%) children underwent a loop-type, and 8 (16%) patients underwent double-barrel colostomy. Transverse colostomy was performed on two patients. Prolapse occurred in 50% of the patients, and skin excoriations occurred in 22%.

A total of 10% of the children developed sepsis. Bleeding was seen in 4% of the children after colostomy performance. Stenosis presented in 6% of the children, and this was corrected by repeated dilatation and re-fashioning. Obstruction of intestines was observed in one patient. The retraction developed in 6% of patients.

**Conclusions** Imperforate anus was the most common indication for stoma formation in the pediatric age group. Loop colostomy was the most common type used, and it had the highest rate of complications. Prolapses and skin excoriation were the most common complications found.

## Keywords

- ▶ colostomy
- ▶ ano-rectal prolapse
- ▶ imperforate anus
- ▶ stoma

## Introduction

A colostomy is a surgical procedure made in the large bowel to divert feces and flatus outside.<sup>1</sup> There are different complications following the construction of colostomies, and the

overall morbidity has been as high as 42 to 75%.<sup>2,3</sup> Complications may occur immediately after surgery, including: wound infection, abscess, peristomal fistula, stomal dysfunction, stomal retraction, bleeding, and small bowel obstruction, or there may be late complications, including:

received  
August 31, 2020  
accepted after revision  
January 15, 2021  
published online  
July 19, 2021

DOI <https://doi.org/10.1055/s-0041-1730259>.  
ISSN 2237-9363.

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Thieme Revinter Publicações Ltda., Rua do Matoso 170, Rio de Janeiro, RJ, CEP 20270-135, Brazil

parastomal hernia, prolapse, stricture or stenosis, and poor shape and location of the stoma (skin excoriation).<sup>4-7</sup>

## Methods

### Study Setting and Design

A retrospective study was performed on 50 consecutive neonates, infants, and children who underwent surgery at the Surgical Department of the Abu Ghraib General Hospital in the period from January 2018 to January 2020.

### Participants

The present study included 50 children with anorectal malformations. The data collected from the files of patients included: age, sex, weight, indications for colostomy, sites and types of colostomy, types of complications, and management. The stoma site and type were decided on according to the personal preference of the consultant surgeons.

### Surgical Interventions

The operation was performed by both junior and consultant surgeons. Most of the colostomies performed for anorectal malformations were pelvic, and the preferred type was loop colostomy. From the 50 colostomies performed, 42 were emergency procedures, and only 8 were elective. Investigations were done for those patients, including complete blood count, plain X-ray for abdomen, invertogram, and ultrasound.

### Statistical Analysis

All statistical procedures, analyses, and tests were applied using the IBM SPSS Statistics for Windows, Version 24.0 (IBM Corp. Armonk, NY, USA). The descriptive statistics were presented as mean, standard deviation, median, interquartile range (IQR), frequencies, and percentages. Continuous variables were tested for normal distribution. The Pearson correlation test, sample independent *t*-test, and Fisher exact test were used to compare two means of the normally distributed variable. The level of significance was set at 0.05, below which the difference or correlation was considered to be significant.

**Table 1** Stoma formation conditions and study variables

		Anorectal malformations (%)
Age (weeks) 4.65 ± 2.38	0-4	44 (88)
	5-52	5 (10)
	> 52	1 (2)
Sex (M:F 1:1)	Male	25 (50)
	Female	25 (50)
Pelvic colostomy	Loop	40 (80)
	Double barrel	8 (16)
Transverse colostomy	Loop	1 (2)
	Double barrel	1 (2)

## Results

A total of 44 (88%) cases were observed in the children's 1<sup>st</sup> month of life. A total of 10% of the children presented the condition in their 1<sup>st</sup> year. And only 2% beyond the 1<sup>st</sup> year of life. The ratio of male to female was 1:1.

Pelvic colostomy was performed in 48 (96%) of patients, as 40 (80%) children underwent the loop-type, and 8 (16%) patients underwent the double-barrel colostomy. Transverse colostomy was performed on two patients, one with loop colostomy and the other with double barrel. Left gridiron incisions were used in all cases of pelvic colostomies to treat anorectal malformations.

Among the colostomy complications, prolapse occurred in 50%, and skin excoriations occurred in 22% of the children.

A total of 10% of the children developed sepsis. Abscesses were reported in one patient who underwent pelvic double-barrel colostomy. Bleeding was observed in 4% of the patients after colostomy performance. Stenosis presented in 6% of the children, and it was corrected by repeated dilatation and re-fashioning. Obstruction of the intestines was observed in one patient. The retraction developed in 6% of patients. (► **Tables 1 and 2**)

**Table 2** Complications of colostomy

Colostomy		Prolapse	Skin excoriation	Wound sepsis	Bleeding	Stenosis	Retraction	Intestinal obstruction	P-value
		No (%)							
Pelvic	Loop	24 (48)	8 (16)	2 (4)	2 (4)	2 (4)	2 (4)	0	0.05
	Double barrel	0	3 (6)	3 (6)	0	0	1 (2)	1 (2)	
Transverse	Loop	1 (2)	0	0	0	0	0	0	0.2
	Double barrel	0	0	0	0	1 (2)	0	0	
Total		25 (50)	11 (22)	5 (10)	2 (4)	3 (6)	3 (6)	1 (2)	50

## Discussion

Temporary colostomies are an important surgical step in the primary management of a variety of diseases in children. Most stoma formation was performed in the neonatal period because the patients with imperforate anus presented as an emergency, with intestinal obstruction immediately after birth.<sup>5,7,8</sup>

In our hospital, most surgeons prefer to do pelvic colostomies, as the loop-type is used in 80% of the cases and the double barrel in 16%, because most cases do not required laparotomy. There are lower rates of complications, and it is easy to do distal colostogram to delineate the level of rectum end.<sup>6,9</sup>

The most common complication observed was colostomy prolapse, and it occurred most frequently in right loop pelvic colostomy. The second most common complication was skin excoriation, and this high incidence was due to poor compliance of patients with colostomy equipment, especially patients from rural areas, where there is shortage in the supply of colostomy equipment in hospitals and equipment is expensive outside the hospital. Wound sepsis includes local wound infection, peristomal abscess, and fistula and this complication most likely occurred due to imperfect nursing care only. The reasons for stenosis was due to a small opening that was creating for colostomy and ischemia of margins of stoma.<sup>10</sup> Patients treated by dilatation under general anesthesia and some patients required revision.

In general, all children developed different complications directly related to stoma formation that was high in comparison to other studies.<sup>9-12</sup> The causes for this high rate of complications are probably related to poor and bad care for a colostomy.

## Conclusions

Anorectal malformation was the most common indications for temporary colostomy in children. Right loop colostomy had the highest rate of complications, whereas the double-barrel type carried fewer complications. We recommend the creation of colostomy by well-trained surgeons. A double-barrel colostomy is the approach of choice for imperforate anus because of its complete fecal diversion and low inci-

dence of complications. Anal surgical intervention should be done as early as possible to reduce the length of time that patient needs to have a stoma.

### Conflict of Interests

The authors declare that there is no conflict of interests.

### Acknowledgment

All authors thank Dr. Mohammad FAI-Dahan from Creffiel Medical Centre (London, UK), for his helping.

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