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Original Research Article

Colostomies in infancy and childhood, in Sudan

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Abstract: Colostomy is a common procedure in children and may be attended by many complications. The aim of this study was to review the complications of colostomy formation in a consecutive series of infants and children with a disorder necessitate formation of colostomy. A prospective study of complication associated with the formation of colostomy in children between May 2011 and April 2013, at the Khartoum Teaching Hospital, Khartoum, Sudan. There were 88 children, their mean age was 9.96 months (Range: 1 day to 7.8 years). The male to female ratio was 3.6:1. The indications for colostomy were Hirschsprung's disease in 46 (52.3%), anorectal malformation in 37 (42%) and severe perineal trauma in 1 (1.1%). Complications after colostomy formation were encountered in 28 (31.8%) patients and the commonest complication was stenosis 10 (11.4%), followed by skin excoriation 4 (4.5%) and obstruction 4 (4.5%). A significant number of colostomies in children is constructed largely due to Hirschsprung's disease. In spite the improvement in surgical practice in our environment, the incidence of complication following colostomy in pediatric still high.

Keywords: Indication; Hirschsprungs disease; Anorectal malformations; Type of colostomy; Complication; Sudan

INTRODUCTION

Colostomy is exteriorization of part of the colon to the anterior abdominal wall. It is one of the most common procedures done worldwide and often performed as emergency life-saving procedure in neonatal life and early infancy [1, 2].

In many hospitals in Africa, the facilities and manpower required for extensive neonatal surgery, and placing clinically unstable children under general anesthesia for long hours are not available, hence colostomy which is fast to create is commonly used [3].

Childhood colostomy is frequently employed in the management of congenital/acquired conditions of the colon or the ano-rectum [4, 5].

Indications for childhood colostomies differ from those in older persons. It may be done for emergency or elective surgical conditions for the management of wide ranges of congenital and acquired benign or malignant gastrointestinal conditions for two main purposes: diversion or decompression of the colon [2].

The incidence of complications in children's colostomy depends on many factors, primarily on its type and varies widely from 25.2 to 74% [6-11].

Herein, we aimed to study the indication and the complications of colostomy in children in our environment

PATIENTS AND METHOD

All pediatric patients who underwent colostomy procedure between May 2011 and April 2013 were enrolled in this Cohort study prospectively after acceptance of the pre-given informed consent by their parents. The approval was obtained from Alzaeim Alazhari University Ethics Committee. The patients were analyzed for their ages, gender, colostomy indications, colostomy types, complications and mortality. The data were analyzed using SPSS program and Chi square test.

RESULTS

A total 88 pediatric patients were included in the study, their mean age was 9.96 months (Sixty-nine (78.4%) male, and 19 (21.6%) female). Male to female ratio was 3.6:1. Neonates were constituted the majority of patients (43.2%) as shown in table 1. Eight patients (9.1%) were under weight.

Table 1: Age group of study patients (n=88)

Age group	*Frequency*	*Percent*
< 1/12	38	43.2
1/12-1 year	24	27.3
> 1 - 5 years	19	21.6
> 5 years	7	8.0
Total	**88**	**100.0**

Congenital anomalies were a major indication for colostomy as carried out in patients with Hirschsprung's disease, and anorectal malformation in 52.3%, and 42% respectively, table 2. Nine patients (10.2%) had co-morbid conditions (Urogenital malformation, congenital heart disease, hypospadias, Down's syndrome, Cleft lip & palate, etc.)

Table 2: Indications of colostomy

Indications of colostomy	*Frequency*	*Percent*
Hirschsprung's disease	46	52.3
Anorectal malformation	37	42.0
Bowel ischemia	2	2.2
Severe perineal trauma	1	1.1
Rectal inflammation	1	1.1
Descending colon tumour	1	1.1
Total	**88**	**100.0**

All colostomies were temporally fashioned at sigmoid and transverse colon in 90.9% and 9.1% respectively. Loop colostomy was performed in 55.7% (Figure 1). It was properly fashioned in 85 patients (96.6%), while it was improper in site and in size in 2 (2.2%), and 1 (1.1%) of cases respectively.

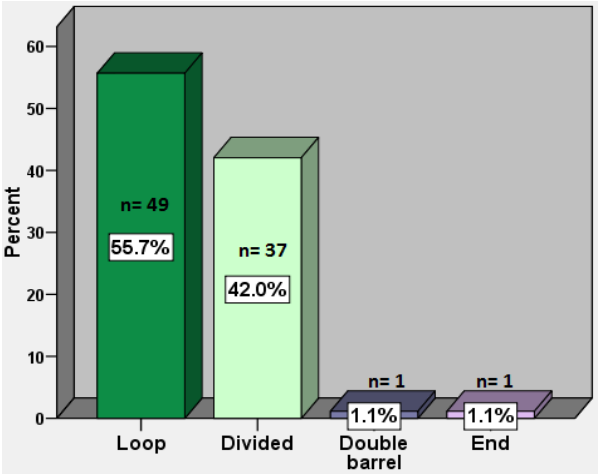

Fig-1: Type of colostomy

Study showed that 79.5% were discharged from hospital in less than 1 week, mean hospital stay was 5.6 ± 3.8 days. Surgical complication was encountered in 28 (31.8%) in form of stenosis, obstruction, prolapse and parastomal hernia in 10 (11.4%), 4 (4.5%), 2 (2.3%) and 2 (2.3%) respectively (Table 3). The incidence of complications was neither related to the age nor to the primary indication for the colostomy p=0.3 and p=0.7 respectively.

Mean postoperative time of development of these complications was 20.8 ± 59.1 days (Range, 1 to 330 rays), and most of them (14.8%) had occurred in the first week postoperatively. These complications were dealt with surgically in 19 (21.6%), whereas the remainder 9 (10.2%) cases were treated by conservative means. Mortality was seen in 7 (8%) of patients, three of them in neonatal period, two cases were 1.5 years old and the remainder two were in their 4th and 5th year of age. Mortalities were mostly related to additional congenital abnormalities, the difference was statistically significant p=0.03. Causes of death were shown in figure 2.

Table-3: Surgical complication (n=88)

Surgical complications	*Frequency*	*Percent*
Stenosis	10	11.4
Skin excoriation	4	4.5
Obstruction	4	4.5
Ischemia	2	2.3
Parastomal hernia	2	2.3
Prolapse	2	2.3
Abscess	2	2.3
Other	2	2.3
Total	**28**	**31.8**

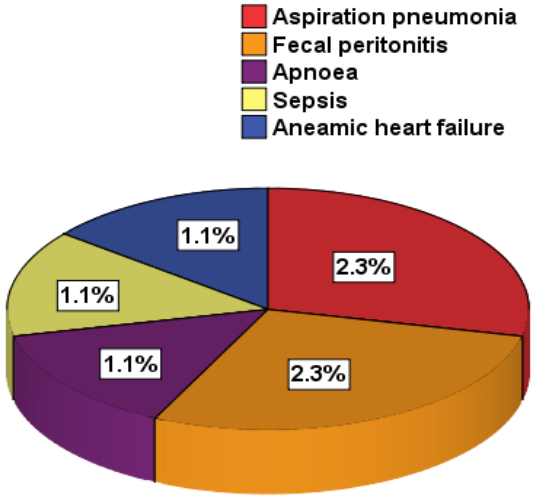

Fig-2: Cause of death among study group (n=88)

DISCUSSION

The construction of intestinal stoma either temporary or permanent is an established procedure in surgery [12]. As the indications for colostomy in this study were correctable conditions, all were temporary colostomy. Male preponderance recorded in this study is in concordance with earlier reports [4,13].

Congenital anomalies were a major indication for colostomy in children compared with acquired pathology and this is in conformity with that reported in the literatures [4,8,11,12,13].

Hirschsprung's disease accounted for more indications for colostomy in this study. This is in agreement with earlier reports [4, 14,15]. In contrary it was in contradicting with Osifo *et al*. [13] that reported anorectal anomaly as a more common indication for colostomy in pediatrics.

Only 60 of the 88 had no complications at all, and of these 4 died after the formation of the colostomy from a variety of causes not related to colostomy formation.

Stenosis was undoubtedly the major cause of morbidity in this study, with an incidence of 11.4%, this was almost similar to the earlier local report by Mohammad *et al*. [15]. But it is in contradicting others [2,4,6,10,16]. Skin excoriation of some degree is probably universal and it is, however, rarely serious [16], though here only found as occurring in 4 patients.

In this study, death occurred in 8% of the patients. In the literature the mortality rate has been reported between 2.7-9.5 % [8-10, 17,18]. In the current study colostomy was not the primary reason of death in any of these patients. Most of patients were in the neonatal period who underwent colostomy procedure due to anorectal malformation and Hirschsprung's disease. Mortalities were related to additional congenital abnormalities.

CONCLUSION

Thus analysis of the causes and complications of colostomy in pediatric set showed that the commonest indication for colostomy was Hirschsprung's disease and the commonest complication of the colostomy was stenosis. Still colostomy in pediatrics is associated with significant morbidity and mortality in our environment. Post-colostomy close follow-up should be given great emphasis for earlier detection of correctable complications.

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Appendix

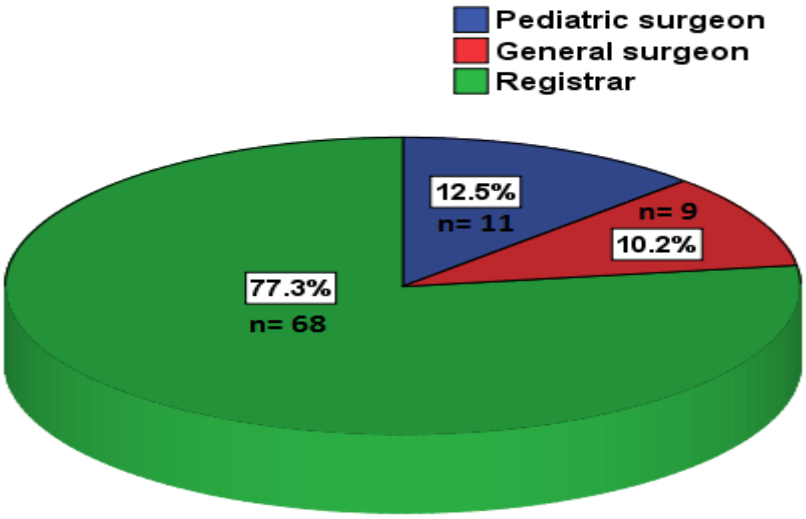

Fig-1: Operators of study group

Operator * Site Cross tabulation

Count

Operator	**Site**				**Total**
	Proper	***Improper site***	***Improper type***	***Improper both site & type***	
Pediatric surgeon	11	0	0	0	11
General surgeon	8	0	0	1	9
Registrar	66	1	1	0	68
Total	**85**	**1**	**1**	**1**	**88**

P= 0.15

Surgical complications * Operator Crosstabulation

Surgical complication	**Operator**			**Total**
	Pediatric surgeon	***General surgeon***	***Registrar***	
No	8	4	48	60
Ischemia	—	—	2	2
Skin irritation	1	1	2	4
Abscess	—	—	2	2
Obstruction	—	—	4	4
Stenosis	1	3	6	10
Parastomal hernia	—	—	2	2
Prolapse	—	1	1	2
Other	1	—	1	2
Total	11	9	68	88

P= 0.46