

Childhood colostomy and its complications in Lagos

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Childhood colostomy is often indicated for obstructive congenital lesions of the colon and anorectum as well as a few acquired ones. In a prospective 3-year study of 66 childhood colostomies performed at the Lagos University Teaching Hospital, 33 (50%) were fashioned for Hirschsprung's disease while 28(42.5%) stomas were fashioned for anorectal anomalies. Eighty complications were recorded in 27 (40.9%) of the 66 colostomies. There were 13 (19.7%) early complications comprising of 3 (4.5%) cases each of hemorrhage and septicaemia and 2 (3%) each of colostomy retraction, non-function and stomal necrosis. One patient developed necrotising fasciitis. Skin excoriation was the commonest complication, and was seen in 22 (33.3%) of the patients.

Colostomy diarrhoea occurred in 20 patients and was responsible for almost all the excoriations. Prolapse was seen in 12 (18.2%) colostomies. Failure to thrive accompanying frequent colostomy diarrhoeas was seen in 8 (12%). One case each of parastomal fistula was recorded.

Of the 54 colostomies closed by the end of the study period, 10 (18.5%) developed complications. Wound infection was observed in 4 (7%) and intestinal obstruction was seen in 3 (5.5%). Two of the latter were from stenosis at the closed colostomy site while one resulted from adhesive bowel obstruction.

Faecal fistula developed in 2 (3.7%) other cases while one case of incisional hernia was recorded. Although 4 (6%) of the children died within the study period, only one (1.5%) was attributable to the colostomy.

The presence of a colostomy is associated with significant morbidity in children. To minimize these problems, the paediatric surgeon must pay close attention to the fashioning, management and closure of a colostomy. The dearth of stoma care nurses for home visits and supervision of stoma care remains a big challenge in our setting.

Introduction

A colostomy is a surgically fashioned colo-cutaneous fistula for the diversion of faeces and flatus away from distal pathology or a surgical site, or, at times, as a permanent new anus. Indications for childhood ostomies differ from those in older persons. Although permanent colostomies are rarely indicated in childhood, common congenital colonic and anorectal conditions as well as a few acquired ones often need temporary colostomy as a lifesaving procedure in neonatal life and early infancy¹.

Hirschsprung's disease, high imperforate anus and neonatal necrotising enterocolitis (NNEC) are the commonest reasons for childhood colostomy, constituting 87.7-92% in some studies^{2,3}. Other conditions such as volvulus, trauma and malignancies occasionally require colostomy as part

of their management. Although a colostomy has remained an important option in the care of many childhood conditions, its attendant morbidity and mortality have been the subject of many studies. At the Lagos University Teaching Hospital, we prospectively kept records of all colostomies performed and managed over a 3-year period spanning January 1996 to December 1998, documenting the various complications encountered in the management of these childhood stomas. The result we hoped would be instructive to surgeons and healthcare workers involved in the care of these childhood problems.

Patients and methods

Records of all children undergoing colostomy were prospectively kept on a protocol sheet and mothers were interviewed at every outpatient surgical clinic visit as well as on admission for any major problem. Included on the protocol were patient's bio-data, indications for colostomy, colostomy complications, management and the ranks of surgeons who performed the procedure. Data was analysed using SPSS® statistical software.

Results

A total of 66 colostomies were recorded during the study period. The patients comprised of 54 (81.8%) males and 12(18.2%) females, with a male to female ratio of 4:1. The age at colostomy ranged from 1 day to 10 years, with a mean age of 5.6 + 19.3 months. Forty one (63.1%) of the children presented within the first week of life while 52 (80%) were colostomised in the neonatal period.

Indications for colostomy

High imperforate anus accounted for 33 (50%) of cases seen while Hirschsprung's disease was the surgical indication in 28 (42.5%) others. Trauma to the colorectum necessitated colostomies in 3 (4.5%) patients while neonatal necrotising entero-colitis (NNEC) was recorded in the remaining 2 (3%) children who underwent this procedure. (Figure 1) The duration of colostomy was 1-32 months, with a mean of 15.6+10.7 months.

Colostomy types

Transverse loop colostomy was the most commonly performed procedure as recorded in 55 (83.3%) of these children, followed by the sigmoid loop type done for 5 (7.6%) patients. Transverse double-barrel

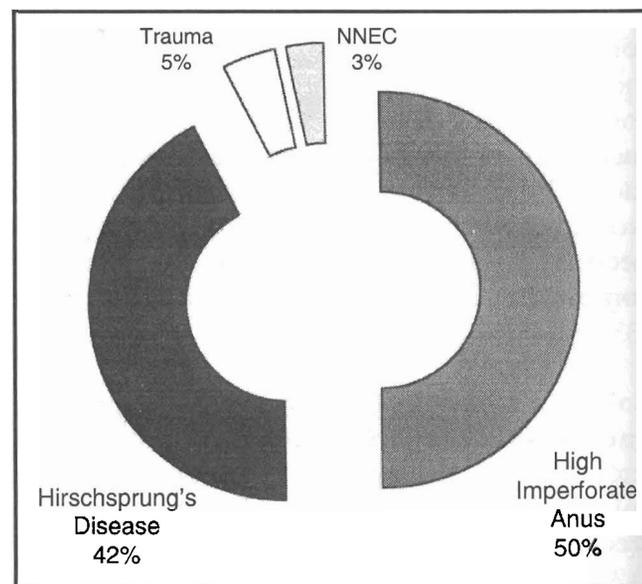
TABLE 1

Complication of colostomy [n=80]

Complications	Frequency	%
Skin excoriation	22	33.3
Colostomy Diarrhea	20	30.3
Prolapse	12	18.2
Failure to thrive	8	12
Intestinal obstruction	3	4.5
Septicaemia	3	4.5
Haemorrhage	3	4.5
Retraction	2	3
Stoma necrosis	2	3
Non-function	2	3
Parastomal hernia	1	1.5
Parastomal fistula	1	1.5
Necrotising fasciitis	1	1.5

Figure 1

Indications for Colostomies [n=66]



colostomy was performed in 4 (6.1%) other cases and caecostomy in the 2(3%) children.

Complications

A total of 80 complications were recorded in 27 (40.9%) of the 66 colostomised children in this study (Table 1). The remaining 39 (59.1%) were free of complications during the study period. There were 13 (19.7%) early complications comprising of 3 (4.5%) cases each of haemorrhage and septicaemia and 2 (3%) each of colostomy retraction, non-

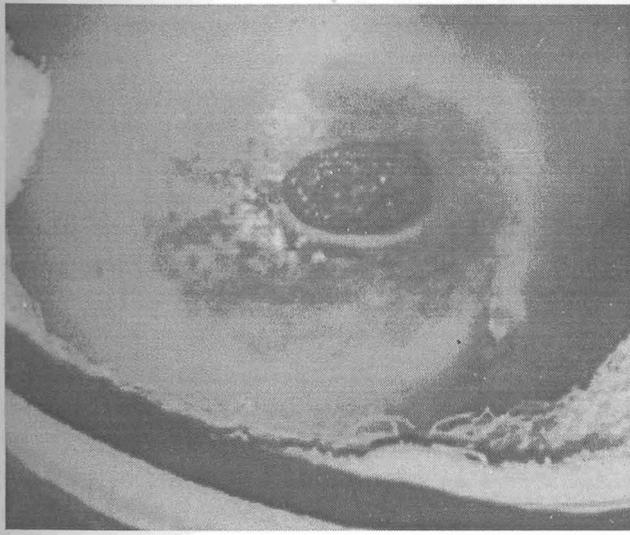


Figure 2
Skin Excoriation around a loop transverse colostomy



Figure 3
Gross colostomy prolapse. This was converted to a double barrel colostomy.

function, stomal necrosis and one necrotising fasciitis. Skin excoriation was the commonest complication, recorded in 22 (33.3%) of the patients (Figure 2). Colostomy diarrhoea occurred in 20 patients and was responsible for almost all the excoriations. Prolapse was seen in 12 (18.2%) colostomies (Figure 3). Failure to thrive from frequent diarrhoea was seen in 8 (12%). One case each of parastomal fistula and necrotising fasciitis was recorded.

Management

The early complications were treated as needed. Thus, pressure dressings arrested the bleeding at the edge of the exteriorized bowel in the three cases and there was no recourse to surgery. The septicaemic patients were treated with broad-spectrum antibiotics while blood cultures were obtained. The two patients with retraction and necrosis had their stomas refashioned and converted to the double-barrel type, with satisfactory results. In the two cases with colostomy non-function, a strangulating stitch was released at the fascia level and function accomplished with gentle probing with a soft catheter. The patient with necrotising fasciitis had an early debridement of all necrotic tissues. He was given broad-spectrum antibiotics and made a good recovery, as the tissue loss was not extensive.

Mild and moderate prolapses were conservatively managed until early definitive surgery could be performed. Two cases of gross colostomy prolapse were also converted to double-barrel colostomy. We also had a standing arrangement whereby any colostomised child could be brought straight to our wards and be given immediate attention in case of any life threatening complications such as diarrhoea-induced dehydration, failure to thrive or acute malaria. Mothers were encouraged to seek immediate medical attention for children in distress without initial recourse to the emergency room. Cases of diarrhoea were treated by suspension of oral feeding, intravenous fluid replacement and appropriate antibiotics when indicated. Attention was paid to the nutritional status of the children as they often lost weight very rapidly from the diarrhoea. All the colostomised children with failure to thrive were admitted for nutritional rehabilitation by supplementary feeding. The duration of admission for this condition depended on the response to therapy. Skin excoriation was treated by exposure and a barrier cream dressing of the surrounding skin with petrolatum jelly.

The single case of parastomal hernia followed colostomy for large bowel trauma in a 6-year old boy. The hernia was repaired along with the colostomy closure eleven weeks later. The parastomal fistula was large and superficial enough to be left till colostomy closure when the fistula was excised. Overall, five children were re-operated

upon following colostomy complications, giving a re-operation rate of 7.5%. These were two cases of gross colostomy prolapse (with significant fluid loss, frequent bruising, bleeding and mucoid discharge), two cases of stomal retraction and one stomal necrosis.

Complications of colostomy closure

Of the 54 colostomies closed by the end of the study, 10 (18.5%) developed complications. Wound infection was observed in 4 (7%) and intestinal obstruction was seen in 3 (5.5%). Two of the latter were from stenosis at the closed colostomy site while one resulted from adhesive bowel obstruction. A faecal fistula developed in 2 (3.7%) other cases while one case of incisional hernia was recorded. All closures were done without drains. The mean hospital period following colostomy closure was 17+ days.

Mortality

Although 4 (6%) of the children died within the study period, only one (1.5%) was attributable to the colostomy. The infant died at 20 months following protracted failure to thrive from diversion colitis. Two others died of Hirschsprung's enterocolitis and sepsis in infancy while the fourth child, a neonate with an anorectal anomaly, died of associated multiple congenital anomalies (oesophageal atresia, tracheo-oesophageal fistula and ventricular septal defect).

Discussion

Although, colostomy complication rates have been estimated to be 20-66%, the prevalence and severity may be truly unknown^{4,5}. This life-saving operation is not a minor surgical procedure and many of its complications are preventable with good surgical technique and qualitative follow-up care^{3,6,7}. The preponderance of congenital indications for colostomies in this series is typical of most busy paediatric surgery units where Hirschsprung's disease and anorectal anomalies constitute the bulk of colostomy workloads. Over 90% of our childhood colostomies were performed for large bowel obstruction from Hirschsprung's disease or anorectal anomalies in keeping with the reports of Millar et al² from South Africa. While 63% of Millar's colostomised patients presented in the neonatal period, 80% of our colostomies were performed

within the same age group. We have routinely used the loop colostomy in our patients as this method has been associated with ease of fashioning and closure⁸. Although not free of problems, the loop colostomy has been acclaimed as ideal for most temporary indications which, luckily, are quite common in childhood^{3,9}. Although an occasional criticism of this technique may still be encountered in the literature, we have found it to be very useful in diverting our neonates with obstructive large bowel disease¹⁰. Many such patients present very late, and emergency colostomy is performed to relieve severe respiratory compromise. We recommend this method for its simplicity and ease of closure. While some colostomy complications are intrinsic to the lesion and are best minimized through meticulous colostomy care, many others occur as a result of faulty surgical techniques often related to the expertise of the operator. Thus 50 (75.3%) of the complications in our study comprised of skin excoriation, colostomy diarrhoea and failure to thrive. These were intrinsic complications that occurred following hospital discharge. Low levels of parental education and lack of social safety nets could have accounted for the high frequency and severity of these problems in our patients. Such children were freely re-admitted onto our services if deemed unmanageable as outpatients and were given compassionate care by medical and nursing staff. Parents were also re-educated on colostomy care, hygiene, dietary advice and tips on skin care. Close surveillance of colostomised patients by stoma care nurses has been shown to minimize stoma care problems¹¹. In Nigeria, community nurses, stomatherapists and social workers are very few and overburdened. In Lagos these cadres presently do not participate in the care of colostomised children because of a grossly underfunded healthcare sector. Future reviews of health planning should consider improving colostomy care through the introduction of home visits by such nurses to supervise the standard of stoma care.

Colostomy diarrhoea has been ascribed to both dietary and infective factors. It can be minimized through hygienic preparation of feeds, avoidance of meals with whole beans and avoidance of dietary indiscretions. Excoriation results from skin exposure to the irritating effects of active digestive enzymes at the stoma site. Barrier creams such as Karaya

paste, zinc oxide paste and Vaseline petrolatum jelly have been advocated for its prevention. We use petrolatum jelly on account of its cheap cost and ready availability.

Prolapse remains an unsolved problem bedeviling loop colostomies and its management is always a challenge to the surgeon^{6,12}. While its exact aetiology remains elusive, it is usually associated with loop colostomies and may present serious problems for patient care and stomal function¹³. Various methods have been proposed for its repair but we have found it useful to repair only the gross types while definitive surgery is expedited on the mild and moderate one^{13,14}. Our re-operation rate of 7.5% was low and within an acceptable range. Andivot et al⁵ estimated re-operation rates as 13-33% in colostomies in adult French colorectal cancer patients followed up for up to 6 years.

The evidently high rate of colostomy morbidity has led to an increasing acceptance of primary repair now advocated for colonic gangrene and injuries in adults^{15,16,17,18}. In childhood colorectal injuries, primary repair is also advised in selected cases¹⁹. Closure of the colostomy is always fraught with possible complications and should be accorded the same amount of attention and care as in fashioning the stoma. Our complication rates following colostomy closure were acceptably low when compared with many quoted figures. One plausible explanation for this is the use of loop colostomy which has been reported as being much easier to close⁹. Samhouri et al²⁰ advocated that colostomy closure should be considered as nothing less than a major colonic resection. Only a senior registrar or consultant performs this procedure in our unit and this arrangement has worked well for us. Although there is some mortality seen in colostomised children, it is usually because of ongoing illness and other associated congenital anomalies and is not attributable to the procedure³. The low mortality rate in this study confirmed the efficacy of colostomy as a lifesaving procedure.

In conclusion, colostomy is associated with significant morbidity in children. To minimize these problems, the paediatric surgeon should pay close attention to the fashioning, management and closure

of a colostomy. The dearth of stoma care nurses for home visits and supervision of stoma care remains a big challenge in our setting.

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