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Morbidity of Colostomy Closure in Children

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Abstract

Background: The care of colostomy remains a burden to the family while complications associated with its construction and closure can be tasking to the surgeon. The aim of this study was to evaluate the outcome of colostomy closure in children in our setting.

Patients and Methods: A prospective review of 31 consecutive children undergoing colostomy closure in a 6 year period.

Result: There were 18 (58.1%) boys and 13 (41.9%) girls, aged 5 months 13 years (median 3 years). The median duration of colostomy was 16 months [range, 5 days -8 years]. Indications for colostomy were anorectal malformations 16(51.6%), Hirschsprung's disease 10(32.3%) and others 5 (16.1%). The site of colostomy was sigmoid colon 21, transverse colon 9 and caecum one. The type of colostomy was divided 18(58.1%) and loop12 (38.7%). Intraperitoneal and extraperitoneal closure was performed in 27(87.1%) and 4(12.9%) patients, respectively. Thirteen (41.9%) patients had 16 postoperative complications; postoperative pyrexia 4 (12.9%), prolonged ileus 4 (12.9%), surgical site infection 2 (6.5%), septicaemia 2 (6.5%). Post operative complication rate was significantly associated with the status of the surgeon ($p < 0.05$) and duration of surgery ($p < 0.05$). The median duration of hospital stay was 8 days [range: 5-35 days]. There was no significant difference in hospital stay in patients with postoperative complication and those without ($p > 0.05$).

Conclusion: Morbidity following colostomy closure can be high, particularly when the procedure is performed by a junior trainee.

Key Words: Colostomy, closure, children, morbidity

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Introduction

Colostomy is a common and a time honoured surgical procedure used to divert the faecal stream, to decompress obstructed bowel under emergency conditions, and to protect the lower colorectum after a reconstructive repair[1,2]. Colostomy construction and its closure may be associated with substantial complications[3-10]. The aim of this study was to evaluate the morbidity associated with colostomy closure in children in our setting.

Patients and Methods

This was a prospective review of 31 consecutive children who had colostomy closure at the Ahmadu Bello University Teaching Hospital, Zaria, Nigeria, from January 1999 - December 2004.

Preoperative preparation for colostomy closure included routine bowel preparation and administration of broad spectrum perioperative antibiotics, which were continued for 5 days postoperatively, or until temperature returned to normal in patients who developed infective complications.

Results

There were 18 (58.1%) boys and 13 (41.9%) girls (M:F=1.4:1); their ages ranged between 5 months 13 years (median age: 3 years). Six (19.4%) children were below one year, 13 (41.9%) were aged 1 4 years, 8 (25.8%) were between 5 and 9 years and 4 (12.9%) were 10 years and above. Colostomy lasted 5 days to 8 years (median 16 months) before closure. The indications for colostomy was anorectal malformation 16 (51.6%), Hirschsprung's disease 10 (32.3%), and

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Table 1: Indications for Colostomy in 31 Children

Indication	Number (%)
Anorectal Malformation	16 (51.6)
Hirschsprung's disease	10 (32.3)
Acquired rectovestibular fistula	1 (3.2)
Anastomotic leak	1 (3.2)
Anorectal Trauma	1 (3.2)
Faecal Incontinence following pullthrough	1 (3.2)
Sigmoid volvulus	1 (3.2)
Total	31 (100)

Table 2: Postoperative complications following colostomy closure in 13 children

Complication	Number (%)
Postoperative Pyrexia	4 (12.9)
Prolonged Ileus	4 (12.9)
Surgical Site Infection	2 (6.5)
Septicaemia	2 (6.5)
Diarrhoea	1 (3.2)
Enterocolitis	1 (3.2)
Perianal Abscess	1 (3.2)
Stitch Abscess	1 (3.2)

Three patients had more than one complication

Table 3: Complications of Colostomy Closure in Children from three reports

Complication	Present report (n = 31) %	Sowande et al[10] (n = 30) %	Chandramouli et al[2] (n = 56) %
Morbidity rate	41.9	33.3	39.3
Prolonged ileus	12.9	0	0
Postoperative pyrexia	12.9	0	0
Surgical Site Infection	6.5	16.7	12.6
Anastomotic leak	0	0	7.1
Small bowel obstruction	0	10	5.2
Stich granuloma/abscess	3.2	0	10.2
Incisional hernia	3.2	3.3	2.6
Enterocolitis	3.2	0	2.6
Mortality rate	0	3.3	1.8

others 5 (16.1%) (Table 1).

The site of colostomy was sigmoid colon in 21 (67.7%) patients, transverse colon in 9 (29.0%) and caecum in 1 (3.2%). The type of colostomy was divided in 18 (58.1%) and loop in 12 (38.7%) patients. One patient had refashioning 4 months after loop colostomy because of colostomy prolapse and gangrene.

Colostomy was closed by a senior registrar in 16 (51.6%) patients, consultant in 11 (35.5%) and registrar (under supervision) in 4 (12.9%). Intraperitoneal and extraperitoneal colostomy closures were done in 27(87.1%) and 4(12.9%) patients, respectively. Intraoperative findings included bowel adhesion in 22 (70%) patients, stoma prolapse 3 (9.7%) and parastomal hernia one (3.2%). Twelve (38.7%) patients required blood transfusion to replace loss; the transfusion rate was 83.3% for closure done by consultants, senior registrar 60% and registrar 33.3% (p = 0.76). Wound was closed primarily in 29(93.5%) patients while the skin was left open in 2 (6.5%).

There were 16 postoperative complications in 13 (41.9%) patients (Table 2). Four (12.9%) patients had postoperative pyrexia; 3 of which were due to malaria (2 of the 3 had blood transfusion intraoperatively). Four (12.9%) patients had ileus; the postoperative ileus was secondary to hypokalemia in one patient who did well after correcting the potassium deficit. Two (6.5%) patients whose wounds were not closed developed surgical site infection; 2 (6.5%) other patients developed septicaemia and one (3.2%) each developed diarrhoea, enterocolitis, stitch abscess and perianal abscess. There were no anastomotic leakages.

Post operative complication rate was significantly associated with the status of surgeon; registrar 75%, senior registrar 43.8% and consultant 27.3% (p= 0.033), and duration of surgery of = 2 hours (p =

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0.015). Indication for colostomy (p = 0.11), type of colostomy (p = 0.27) and type of colostomy closure (p = 0.74) did not significantly influence postoperative complications.

The duration of hospital stay was between 5 and 35 days (median: 8 days); the duration of stay was between 5 and 35 days (median: 11 days) in patients with postoperative complication and, 7 23 days (median: 8 days) in those without postoperative complication (p = 0.28). There was no mortality directly related to colostomy closure.

Discussion

The median duration of colostomy before closure in the present report was 16 month. This is in contrast to 6 months reported by Patwardhan[6]. In this report, the median age at colostomy closure was 36 months. The long duration patients stayed with colostomy in our setting may be due to parents' inability to afford the costs of surgery and long waiting list.

The overall morbidity rate of 41.9% in this study is comparable with those in previous studies[2,10,11], but it is higher than other reports[7,9]. The spectrum of complications after colostomy closure in the present study compares with other reports[2,10]. The high morbidity in this report may be due to the high incidence of post-operative pyrexia and ileus among the patients.

Surgical site infection of 2 (6.5%) in this report is lower than 12.6%, 16.7% and 43% in previous reports[2,10,12]. Surgical site infection occurred in patients whose operation sites were left open[9]. The wounds were dressed with honey and subsequently closed when infection cleared. The morbidity in this report decreased with years of training and experience of the surgeons.

La Morbidité De La Fermeture De La Colostomie Chez Les Enfants

Résumé

Arrière-plan: Le traitement de la colostomie constitue un fardeau pour la famille alors que les complications liées à sa construction et à sa fermeture peuvent être ardues pour le chirurgien. Cette étude a pour objectif d'évaluer le résultat de la fermeture de la colostomie chez les enfants dans notre milieu. ***Malades et méthodes:*** Une étude prospective de 31 enfants consécutifs ayant subi la fermeture de la colostomie pendant une période de 6 ans. ***Résultat:*** Il y avait 18 (58,1%) garçons et 13 (41,9%) filles âgés de 5 mois à 13 ans (3 années médianes). La durée médiane de la colostomie était de 16 mois [variant de 5 jours à 8 ans]. Les indications de la colostomie étaient des malformations anorectales chez 16 enfants (51,6%), la maladie de Hirschsprung chez 10 enfants (32,3%) et d'autres indications chez 5 enfants (16,1%). Chez 21 malades, le siège de la colostomie était le côlon sigmoïde, chez 9 enfants, le côlon transversal et le cæcum chez un autre enfant. Quant au genre de colostomie, elle était divisée chez 18 malades (58,1%) et enroulée chez 12 malades (38,7%). On a effectué la fermeture intrapéritonéale chez 27 malades (87,1%) et la fermeture extrapéritonéale chez 4 malades (12,9%). Treize (41,9%) malades ont eu 16 complications postopératoires : la pyrexie postopératoire chez 4 (12,9%), l'iléon prolongé chez 4 (12,9%) malades, l'infection chirurgicale du siège chez 2 (6,5%) malades, et la septicémie chez deux autres 2 (6,5%). Le taux de la complication postopératoire était lié considérablement au statut du chirurgien (p <0.05) et à la durée de la chirurgie (p <0.05). La durée médiane du séjour à l'hôpital était de 8 jours [variant de : 5 à 35 jours]. Il n'y avait pas de différence considérable entre le séjour hospitalier des malades ayant eu des complications postopératoires et celui des malades sans complications (p> 0.05). ***Conclusion:*** la morbidité occasionnée par la colostomie peut être élevée, en particulier quand l'opération est exécutée par un jeune stagiaire. ***Mots-clés:*** Colostomie, fermeture, enfants, morbidité.

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