Bowel resection in Nigerian children

L. O. Abdur-Rahman, J. O. Adeniran, J. O. Taiwo, A. A. Nasir, T. Odi

ABSTRACT

Background: Although bowel resections are commonly done for congenital malformations in children in developed countries, they usually follow neglected and preventable acquired diseases of the intestine in developing countries. **Objectives**: To determine the indications and outcome of bowel resections in children of a developing country in a university teaching hospital. **Materials and Methods:** Data of the patients operated (from birth to 15 years) was retrospectively collected over eight years (January 1999 to December 2006). The biodata of children included the following: Indications for operation, type of operations, duration of admission, and outcome of treatment including complications. Patients with Hirschsprung's disease were excluded from the study because bowel resection forms part of their definitive surgical management. **Results**: There were 70 patients (38 boys and 32 girls). The age ranged between four hours to 15 years (median, five months). There were 16 (22.9%) neonates, 26 (37.1%) infants, and 28 (40%) grown children. The indications were congenital anomalies in the 16 neonates. Also, 23 (88.5%) infants had intussusception, 2 (7.7%) had midgut vovulusm and 1 (3.8%) had congenital small intestine band. Among the grown children, typhoid ileal perforation (TIP) was seen in 14 (50.0%), intussusception in 5 (17.9%), and other causes in nine patients. Overall, intussusception was the most common indication for bowel resection, followed by TIP. A total of 24 patients developed 33 complications. Complications included wound infection in 47.8% and anastomotic leak in 42.8%. The duration of admission ranged between 4-35 days (median, 15 days). The overall mortality was 17.1% -; which was highest among neonates (56.3%), followed by the infants (26.9% -). **Conclusion**: Bowel resections are mainly done for intussusception and complications of TIP at our centre. Late presentation, preexisting malnutrition, and nonavailability of parenteral nutrition contributed to unacceptable morbidity and mortality.

Key words: Atresia, intestinal resection, intussusception, typhoid

DOI: 10.4103/0189-6725.54769

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INTRODUCTION

The need for bowel resection in children in developed countries is commonly indicated for congenital anomalies of the intestinal tract. The outcome is usually good because of availability of supportive measures even in critically ill children.[1,2] However, in developing countries bowel is usually resected following preventable conditions of the intestinal tract,[3] and these may be accompanied by high morbidity and mortality.[4] These patients often present late with septicaemia, and facilities for intensive supportive therapy such as ventilation, parenteral feeding, and appropriate antibiotics may not be readily available. We review the pattern and outcome of children who had bowel resection at our centre to highlight the challenges faced during their care.

MATERIALS AND METHODS

This study was conducted by a retrospective collection of data over eight years (January 1999-December 2006) using the paediatric surgery unit register and operating theatre records. Children aged from birth to 15 years were included in the study. From the biodata of children following information was extracted: Indications for operations, types of operation, duration of admission, outcome of treatment, and complications. Patients with Hirschsprung's disease were excluded from the study because bowel resection in them was part of the definitive surgical management.

RESULTS

There were 70 children (38 boys and 32 girls), between the age group of four hours to 15 years (median, five months). There were 16 (22.9%) neonates, 26 (37.1%) infants, and 28 (40%) grown children. The indications for resection in neonates were: Intestinal atresia 13 (81.3%); 1(14.3%) case each of mesenteric cyst, midgut vovulus, and enterocutaneous fistula in an omphalocele [Figure 1]. A total of 23 (88.5%) infants had intussusception, 2 (7.7%) had midgut vovulus, and 1 (3.8%) had congenital small intestine band. Among grown - children, typhoid ileal perforation (TIP) was seen in 14 (50%) patients, intussusception

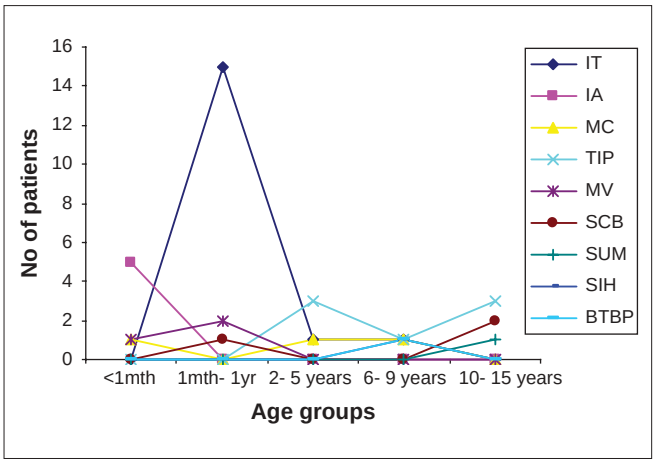


Figure 1: Distribution of indications for bowel resection among children; IT =Intussusception; SCB = congenital band; IA = intestinal atresia; SUM = strangulated umbilical hernia; MC = mesenteric cyst; SIH = strangulated inguinal hernia; TIP = typhoid ileal perforation ; MV = midgut volvulus

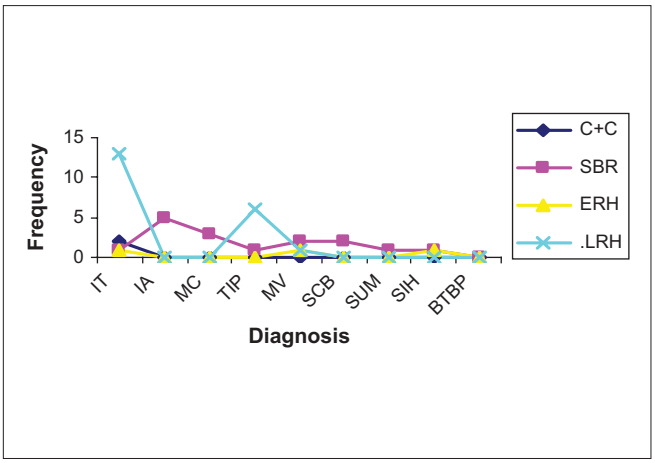


Figure 2: Frequencies of bowel resection types *vs* diagnosis. IT = Intussusception; SCB = congenital band; IA = intestinal atresia; SUM = strangulated umbilical hernia; MC = mesenteric cyst; SIH = strangulated inguinal hernia; TIP = typhoid ileal perforation ; MV = midgut volvulus

in 5 (17.9%), omphalomesenteric band and mesenteric cyst in 2 (12.5%) patients each [Table 1]. Traumatic small bowel perforation, strangulated umbilical, and inguinoscrotal hernia occurred in 1 (3.6%) patient each. Overall, intussusception was the most common indication for bowel resection [28 (40%) patients] followed by TIP [14 (20%)] [Figure 2]. The bowel resection types were right hemicolectomy in 35 (50%) patients, segmental small bowel resection in 27 (38.6%) patients (with length varying between 3 and 74 cm (median = 12 cm). Also, 24 patients developed 33 complications, which occurred mostly among infants. Wound infection occurred in 47.8% and anastomotic leak in 42.8% mainly from peritoneal contamination or frank infection. Four anastomotic leaks (three TIP, one intussusception) had relaparotomy, resection, and anastomosis, while, 2 intussusception anastomotic leaks were managed conservatively. A second leak in two TIPs was managed by ileostomy and both did well. The duration of admission ranged between 4-35 days (median, 15 days). The overall mortality was 17.1%, which was the highest among neonates - (56.3%), followed by infants - (26.9%).

Table 1: Indications for bowel resection in teaching hospital ilorin

Neonates (age 1-29 days)	
Intestinal atresia	13
Mesenteric cyst	1
Enterocutaneous fistula in omphalocele	1
Midgut volvulus	1
Total	16
Infants (age range, 1 month-1 year)	
Intussusception	23
Midgut vovulus	2
Congenital band	1
Total	26
Older children (age range, >1-15 years)	
Typhoid ileal perforation	14
Intussusception	5
Omphalomesenteric band	2
Mesenteric cyst	2
Strangulated hernia	2
Other causes	3
Total	28

DISCUSSION

The most common indication for bowel resection in this series was intussusception, which incidentally accounted for the most common cause of intestinal obstruction in infants at our centre.[5,6] These patients had right hemicolectomy indicated by gangrene, perforation or irreducibility of the involved bowel (usually ileocolic) from late presentation and a few with lead points. The bowel resection rate for intussusception at our centre is approximately 48.9%,[5] which is comparable with reports from other centres in developing countries.[7,8] These patients would need long-term follow-up to ascertain possible derangement of bile metabolism because of the resected terminal ileum segment.

TIP accounted for the second most common cause of bowel resection, most are single perforations managed by trimming of ulcer edges and two-layer closure.[9-11] Most cases in the Zaria series were, however, managed by segmental resection of the bowel,[12,13] with equally satisfactory results. Almost half of these patients had wound infection usually from contamination after peritoneal soilage in typhoid perforation. Anastomotic leakage was due to bowel anatomosis in the presence of infection, bowel edema and malnutrition. Parenteral nutrition, if readily available in our unit is presumed to have aided in wound healing

and prevention of anastomotic leak. We have recently managed these patients with temporary ileostomy to allow early enteral feeding and control the peritoneal sepsis before reanastomosis.[14]

Intestinal atresia was the most common indication for bowel resection in neonates in our study unlike in developed countries[15,16] where- measures have been taken to minimise the morbidity seen in gastroschisis to reduce the need for bowel resection.[17] In Zaria, incarcerated and strangulated inguinal hernias in children also account for a high proportion of bowel resection.[18]

The overall mortality rate in our series is 17.1%. It is relatively lower than what is reported in other series.[3,4] All patients with intussusception had operative intervention, not only because they presented late, but also because there were no facilities for air or barium enema reduction. The mortality in typhoid patients is due to the late presentation, and the fact that typhoid, being a pan-systemic disease, also affects other vital organs especially the heart, lungs, and kidneys. Adequate preoperative resuscitation, stabilisation, and meticulous surgical technique will reduce morbidity in these children. Mortality is high in the neonates because of lack of facilities for intensive neonatal care.

In conclusion bowel resection is done in our unit for bowel atresias in neonates, intussusception in infants, and typhoid ileal perforation in the grown children. Early diagnosis at peripheral hospitals, prompt resuscitation, and good surgical technique and provision of facilities for intensive care are needed to reduce morbidity and mortality.

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Source of Support: Nil, **Conflict of Interest:** None.