Pattern and outcome of childhood intestinal obstruction at a Tertiary Hospital in Nigeria

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Abstract

Background: Intestinal obstruction is a common cause of pediatric surgical emergency with a high morbidity and mortality in Africa.

Methods: A retrospective review of cases managed from January 1996 to December 2005 at a teaching hospital in Southwestern, Nigeria was done to examine the pattern of causes of intestinal obstruction in children and the management outcome.

Results: One hundred and thirty cases were seen over the study period with an age range of 2 hours to 14 years. Majority (61.24%) were infants, while 18.46% were neonates.

Fifty-five cases (42.31%) were due to congenital causes while the rest were of acquired causes. The major causes of intestinal obstruction in the study were intussusception (29.23%), anorectal malformations (22.31%), obstructed inguinoscrotal hernia (16.92%) and Hirschsprung's disease (13.85%). Surgical site infection and sepsis were the commonest complications observed with an overall complication rate of 60.78%. The mortality rate was 3.08% and most (75%) occurred in neonates.

Conclusion: While mortality as an outcome of management is low, the morbidity was very high in this study.

Key words: Childhood intestinal obstruction, Pattern, Management outcome.

Running title: Pattern and management of childhood intestinal obstruction

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Introduction

Intestinal obstruction is a common cause of pediatric surgical emergency in Africa[1-3]. The pattern and causes of intestinal obstruction among different age groups in children in this country is different from what is seen in Europe and North America[1,3-5].

The clinical presentation is still similar to previous reports from this country but the attendant morbidity and mortality is still very high in this environment[2]. The aim of this study was to examine the pattern of the various causes of intestinal obstruction in children and the management outcome.

Patients and Methods

This was a 10-year retrospective review of all children aged 15 years and below, managed for intestinal obstruction between January, 1996 and December, 2005 at the Pediatric Surgical Division of University College Hospital, Ibadan, Nigeria.

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Data extracted from their case notes and analyzed included the patient's age, sex, causes of intestinal obstruction, symptoms and signs, management outcome and post operative complications. The cases of paralytic ileus were excluded from this study.

Results

A total of 213 children were managed in our center for intestinal obstruction. Out of these, 130 case notes were available for review from the hospital records department. The ages of these patients ranged from 2 hours (after birth) to 14 years with a mean of 1.96 years. Eighty patients (61.54%) were under the age of one year. Twenty – four (18.46%) of the patients were neonates as indicated in Table I. There were 85 boys (65.39%) and 45 girls (34.62%); M: F = 1.9:1.

Table I: Age range

Age Range	Number of Patients	%
0-1 month	24	18.46
2-12 months	56	43.08
1-5 years	30	23.08
6-10 years	10	7.69
11-15 years	10	7.69

Congenital causes accounted for 55 cases (42.31%) while 75 cases (57.69%) were due to acquired causes as shown in Tables IIa and IIb. Of the congenital causes, anorectal malformations and Hirschsprung's disease were the most common causes accounting for 22.31% and 13.85% respectively. Intussusception and obstructed inguinoscrotal hernia were responsible in 38 patients (29.23%) and 22 patients (16.92%) respectively in the acquired group. Of the 38 patients with intussusceptions, 64.7% of them presented between the ages of four and six months and majority were ileo – colic. Other causes were adhesive intestinal obstruction 11 patients (8.46%), external umbilical hernia 2 patients (1.54%), worm impaction and hypertrophic pyloric stenosis 1 patient (0.77%).

Table IIa: Causes of Intestinal Obstruction (Congenital)

Causes	Number of Patients	%
Duodenal atresia	2	1.54
Jejunoileal atresia	2	1.54
Malrotation	4	3.08
Hirschsprung's disease	18	13.85
Imperforate anus	29	22.31

Table IIb: Causes of Intestinal Obstruction (Acquired)

Causes	Number of Patients	%
Inguinoscrotal hernia	22	16.92
Hypertrophic pyloric stenosis	1	0.77
Intussusception	38	29.23
Adhesive bowel obstruction	11	8.46
Worm Impaction	1	0.77
Umbilical Hernia	2	1.54

Table III shows the clinical presentation of children with intestinal obstruction. The classical presentation of vomiting, abdominal pain (excessive cry), constipation constipation and abdominal distension were observed in 81 patients (62.79%).

Table III: Clinical Features

Clinical Features	Number of Patients	%
Abdominal Pain	45	34.88
Vomiting	81	62.79
Constipation	45	34.88
Abdominal distension	56	43.41
Fever	40	31.01
Passage of mucoid bloody stool	31	24.03
Abdominal mass	24	18.61
Diarrhea	8	6.20

Other presentations observed were fever in 40 patients (30.77%), passage of bloody mucoid stool in 31 patients (23.85%), diarrhoea and abdominal mass in 8 patients (6.15%), and 24 patients (18.61%) respectively. Operative findings were consistent with the various causes of intestinal obstruction as shown in Table IV.

Table IV: Operative Findings

Findings	Number of Patients	%
Atretic Bowel	4	3.08
Malrotation with congenital bands	3	2.31
Volvulus with congenital bands	1	0.77
Pyloric mass	1	0.77
Dilated bowel loops	24	18.46
Gangrenous bowel loops	26	20.01
Impacted worms	1	0.77
Imperforate anus with or without Fistula Intussusception	29	22.31
Ileo colic	31	23.85
Ileo ileal	5	3.85
Colo colic	2	1.54

Of note were the findings of dilated loops of bowel in 24 patients (18.6%) and gangrene of the bowel in 26 patients (20.01%). Other findings included ileo – colic, ileo – ileal and colo – colic intussusceptions in 31 patients (23.85%), 5 patients (3.85%) and 2 patients (1.54%) respectively, Imperforate anus with or without fistula in 29 patients (22.31%), atretic small bowel in 4 patients (3.08%), pyloric mass 1 patient (0.77%) and 1 patient (0.77%) with impacted worms – one hundred and eighty – seven in number. Of the 26 patients (20.01%) with gangrene of the bowel, intussusception was responsible in 16 patients (12.31%), inguinoscrotal hernia in 7 patients (5.39%), post-operative bowel adhesion in 2 patients (1.54%) and mid gut volvulus in 1 patient (0.77%). A total of 38 patients (29.23%) had an initial colostomy to relieve the obstruction, bowel resection and anastomosis was carried out in 26 patients (20.01%), herniotomy and reduction of intussusception was carried out in 22 patients (16.92%) each. Other procedures included posterior sagittal anorectoplasty in 13 patients (10.00%), pull –through operation in 11 patients (8.46%), Anoplasty in 9 patients (6.92%) and Ladd's Operation in 4 patients (3.08%) among others, as indicated in Table V.

Table V: Operation Performed

Procedure	Number of Patients	%
Colostomy	38	29.23
Duodeno – duodenostomy	2	1.54
Entero – enterostomy	2	1.54
Pyloromyotomy	1	0.77
Herniotomy	22	16.92
Umbilical herniorrhaphy	2	1.54
Anoplasty	9	6.92
Bowel resection and anastomosis	26	20.01
Reduction of Intussusception	22	16.92
Enterotomy with removal of worms	1	0.77
Ladd's Operation	4	3.08
Pull –through operation	11	8.46
Posterior Sagittal Anorectoplasty	13	10.00

Surgical site infection and wound dehiscence were seen in 27 patients (20.77%) and 12 patients (9.23%) respectively. Sixteen patients (12.31%) had post operative pyrexia while adhesive bowel obstruction and faecal fistula were observed in 2 patients (1.54%) and 3 patients (2.31%) respectively see Table VI. Four patients (3.08%) died and these included 3 neonates (2.31%). Fourteen patients (10.77%) with colostomy had surgical site infection and of the 26 patients (20.01%) with gangrene of the bowel, 9 patients (6.92%) developed surgical site infection while 4 patients (3.08%) died post operatively.

Table VI: Post operative Complications

Complications	Number of Patients	%
Surgical site infection	27	20.77
Wound dehiscence	12	9.23
Pelvic abscess	2	1.54
Septicemia	10	7.69
Post operative fever	16	12.31
Adhesive bowel obstruction	2	1.54
Prolapsed Colostomy	5	3.85
Colo – anal stenosis	2	1.54
Fecal fistula	3	2.31

Discussion

Intestinal obstruction is a common paediatric surgical problem and cuts across the different age groups in children. Its occurrence in children may be acute or chronic. Presentation in the neonate is usually acute and is the most common emergency surgical condition seen in them[6–8]. Published peak incidence of intestinal obstruction has usually been under the age of 1 year[2]; our series show that it is mostly seen in children less than 5 years with the peak in infancy which agrees with similar reports elsewhere in the country[5,9]. All but one neonate had congenital causes of intestinal obstruction in the present series with the only acquired condition being intussusception. Perinatal intussusception is a rare and an unusual cause of intestinal obstruction in infants[10, 11]. It gives a confusing clinical picture that often delays its diagnosis and treatment thus causing a high mortality[10–15]. The pattern of the etiology of intestinal obstruction in this study agrees with the previously reported patterns with intussusception as the most common[1–3,5,15–19], although our findings also showed a slight variation in the incidence of other causes of intestinal obstruction in this series compared to these previous reports[1,4].

The obstructed external hernias were more of inguinoscrotal hernias; only 2 patients (1.54%) had obstructed umbilical hernia. This is contrary to a report by Archibong et al[4] in which more of obstructed umbilical hernias than groin hernias were reported.

Surgical complications related to Ascaris infestation do not occur frequently nowadays because of the common use of antihelminthic agents and the success of medical treatment[20]. Previous reports showed that an increase in the worm load in a child could increase the risk of intestinal obstruction from worm impaction and suggested that the risk can be reduced through repeated massive treatment, improved sanitation and increased health education[21,22]. These may probably explain the relatively low incidence of worm impaction causing intestinal obstruction in this report compared with previous reports[1, 4].

We observed that upper gastro intestinal obstruction is still more common than lower gastro intestinal obstruction as suggested by previous studies[1-5]. The relatively high incidence of adhesive bowel obstruction was found to be due to previous peritonitis from perforated typhoid ileitis. Although, 8 out of the 11 patients with peritoneal adhesions had previous surgery, it is possible that the remaining could have had previous intra abdominal infections. The classical features of intestinal obstruction, namely, vomiting, excessive crying/abdominal pain, constipation and abdominal distension were observed in over 34% of our patients and this is consistent with reports from other parts of the country[1–2].

Postoperative complications related to sepsis occurred more commonly in this study. Surgical site infection was the most common while septicemia

and post operative pyrexia were the other common occurrences. We believe that these complications resulted from the operative findings of bowel gangrene with intestinal perforation and peritonitis which prolonged their duration of hospital stay. Our overall mortality is low compared with other reports in this country[1 – 4].

Conclusion

In conclusion, acquired causes of intestinal obstruction are still more common than the congenital causes and are mostly upper gastrointestinal in origin. The aetiological pattern and clinical presentation of intestinal obstruction is still similar to previous reports from the other parts of the country[2,4 – 5]. Though the mortality is low, the management of the patients is still associated with high morbidity (60.78%) in our environment.

References

1. Adejuyigbe O, Fashakin EO. Acute Intestinal Obstruction in Nigerian Children. *Trop Gastroent* 1989; 10: 33 – 40.
2. Uba AF, Edino ST, Yakubu AA, Sheshe AA. Childhood intestinal obstruction in Northwestern Nigeria. *West Afr J Med* 2004; 23: 314 – 318.
3. Olumide F, Adedeji A, Adesika AO. Intestinal Obstruction in Nigerian Children. *J Pediatr Surg* 1976; 11: 195 – 204.
4. Archibong AE, Ndoma – Egba R, Asindi AA. Intestinal Obstruction in Southeastern Nigerian Children. East Afr Med J 1994; 71: 286 – 289.
5. Akamaguna AI, Odita JC. Intestinal Obstruction in Infancy and Childhood in Benin City, Nigeria. *Trop Geogr Med* 1985; 37: 160 – 164.
6. Nasir GA, Rahma S, Kadim AH. Neonatal Intestinal Obstruction. *Eastern Mediterranean Health J* 2000; 6: 187 – 193.
7. Hajivassiliou CA. Intestinal obstruction in neonatal/pediatric surgery. *Semin Pediatr Surg* 2003; 12: 241 – 253.
8. Ameh EA, Dogo PM, Nmadu PT. Emergency neonatal surgery in a developing country. *Pediatr Surg Int.* 2000; 17: 448 – 451.
9. Ameh EA, Chirdan LB. Neonatal intestinal obstruction in Zaria, Nigeria. *East Afr Med J.* 2000; 77: 510 – 513.
10. Biarge MM, Garcia – Alix A, Luisa del Hoyo M, Alarcon A, Saenz de Pipaon M, Hernandez F, Perez J, Quero J. Intussusception in a preterm neonate; a very rare, major intestinal problem – systematic review of cases. *J Perinatal Medicine* 2004; 32: 190 – 194.
11. Ogundoyin OO, Ogunlana DI, Onasanya OM. Intestinal Stenosis Caused by Perinatal Intussusception in a Full – Term Neonate. *Am J Perinatol* 2007; 24: 23 – 25.
12. Pavri DR, Marshall DG, Armstrong RF, Gorodzinsky FP. Intrauterine intussusception: case report and literature review. *Can J Surg* 1983; 26: 376 – 378.
13. Mooney DP, Steinthorsson G, Shorter NA. Perinatal intussusception in premature infants. *J Pediatr Surg* 1996; 31: 695 – 697.
14. Wang NL, Yeh ML, Chang PY, Sheu JC, Chen CC, Lee HC, Hung HY, Hsu CH. Prenatal and neonatal intussusception. *Pediatr Surg Int* 1998; 13: 232 – 236.
15. Avansino JR, Bjerke S, Hendrickson M, Stelzner M, Sawin R. Clinical features and treatment outcome of intussusception in premature neonates. J Pediatr Surg 2003; 38: 1818 – 1821.
16 Adejuyigbe O, Jeje EA, Owa JA. Childhood Intussusception in Ile – Ife, Nigeria. *Annals of Trop. Pediatr* 1991; 11: 123 – 127.
17. Carneiro PM, Kisusi DM. Intussusception in Children seen at Muhimbili National Hospital Dar es Salaam. *East Afr Med J* 2004; 81: 439 – 442.
18. Ugwu BT, Legbo JN, Dakum NK, et al. Childhood Intussusception: A 9 year review. *Ann Trop Pediatr* 2000; 20: 131 – 135.
19. Al – Bassam AA, Nouri Orfale. Intussusception in Infants and Children: A review of 60 cases. *Annals of Saudi Med* 1995; 15: 205 – 208.
20. Grosfeld JL Intussusception Then and Now: A Historical Vignette. *J Am Coll Surg* 2005; 201: 830 – 833.
21. Villamizar E, Mendez M, Bonilla E, Varon H, Susana de Onatra. *Ascaris lumbricoides* Infestation as a Cause of Intestinal Obstruction in Children: Experience with 87 Cases. J *Pediatr Surg* 1996; 31: 201 – 205.
22. Adesunkanmi ARK, Agbakwuru EA. Changing pattern of acute intestinal obstruction in Tropical African Population. *East Afr Med J* 1996; 73: 727 – 734.
23. Agbakwuru EA, Akinola O, Adejuyigbe O, Komolafe EO. Intestinal Obstruction in a Child with an exceptional Ascaris burden – A Case Report. *Nig Qt J Hosp Med* 1998; 8: 270 – 271.