

**AFRICAN JOURNAL OF
MEDICINE
and medical sciences**

VOLUME 30, NUMBERS 1 & 2, MARCH AND JUNE 2001



**EDITOR:
B. O. OSOTIMEHIN**

**ASSISTANT EDITOR:
A. O. UWAIFO**

ISSN 1116 — 4077

Pattern of mechanical intestinal obstruction in Ibadan : A ten year review

O. B. Shittu, J.Y. Gana, E. O Alawale and T.O. Ogundiran

Department of Surgery, University College Hospital, Ibadan, Nigeria.

Summary

A retrospective review of 232 patients with (mechanical) intestinal obstruction managed at the University College Hospital, Ibadan over a ten-year period: 1978 to 1987. The leading aetiological factor was obstructed inguinal hernia (45.7%), although its incidence seems to be on the decline. Ileo-colic type intussusception was the most prevalent variety (62.8%) with preponderance of the paediatric age group. There is an observed increase in the proportion of obstruction due to tumours. *Ascaris* infestation is no longer a prominent aetiological factor. One third of the 8.2% mortality rate observed was in neonates.

Keywords: *Intestinal obstruction, aetiological, Ibadan.*

Résumé

Une revue retrospective de 232 patients souffrant de l'obstruction intestinale (mecanique) et soignés au Centre Hospitalier Universitaire (UCH) d'Ibadan pendant une periode de dix ans de 1978 a' 1987. Le facteur aetologique le plus frequent était les hernies inguinales bouchees (45,7%) bien que son taux d'incidence soit en decroissance. Le type d'intussusception leo-colique était la variete la plus frequente (62,8%) avec une preponderance chez les patients pediatriques.

Une augmentation en proportion d'obstruction due aux tumeurs a été observée.

L'infestation par les *ascaris* n'est plus la cause majeur, le un-tiers (1/3) de 8,2% de taux de mortalite était observe chez les nouveaux nés.

Introduction

Intestinal obstruction is a common cause of acute abdominal emergency, second only to appendicitis in most parts of the world [1,2,3,4]. The progressive nature of the pathology and the attendant fluid and electrolyte derangements as well as sepsis are common to all aetiological factors; and these are the main determinants of morbidity and mortality in intestinal obstruction. Meticulous correction of fluid and electrolyte imbalances and appropriate peri-operative antibiotic therapy are crucial to the management of intestinal obstruction, irrespective of the aetiology.

Such a prominent cause of surgical morbidity should be a subject of regular reviews and research. Two previous reviews

were undertaken in our centre at the University College Hospital, Ibadan that covered the periods 1957-1966 [5] and 1969-1973 [1].

This study attempts to document the pattern in the eighties, as compared with the previous reviews.

Material and methods

The case notes of patients treated for intestinal obstruction at the University College Hospital (UCH), Ibadan between January 1978 and December 1987 were reviewed. A pre-designed data sheet was used to record the age, sex, occupation, signs and symptoms, diagnosis, operative findings, levels of obstruction, investigations, post-operative morbidity and eventual outcome. Suggestive clinical and radiologic or ultrasonographic features, as well as the finding of dilated loops of bowel proximal to site of obstruction and collapsed bowel distal to the obstruction at surgery were used as criteria for the diagnosis of intestinal obstruction. The data sheets were then analysed.

Results

During the period 1978 to 1987, two hundred and thirty two (232) patients with mechanical intestinal obstruction were managed at the UCH, Ibadan. The age distribution showed two peaks; viz the first and fourth decades, with the highest peak in the first decade which represent 42.3%(99) of the patients (Fig 1). The mean age was 24 years with age range 5 days to 90 years. The male to female ratio was 4.1.

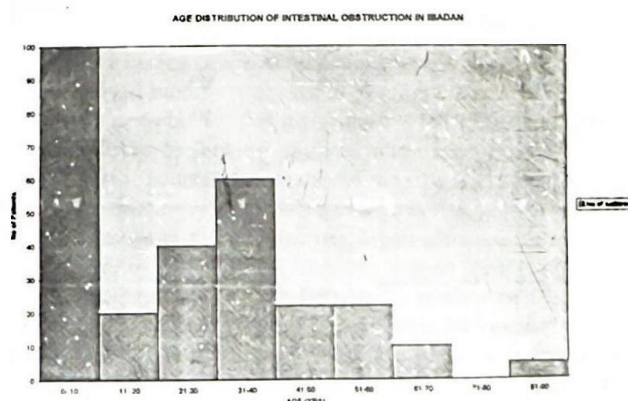
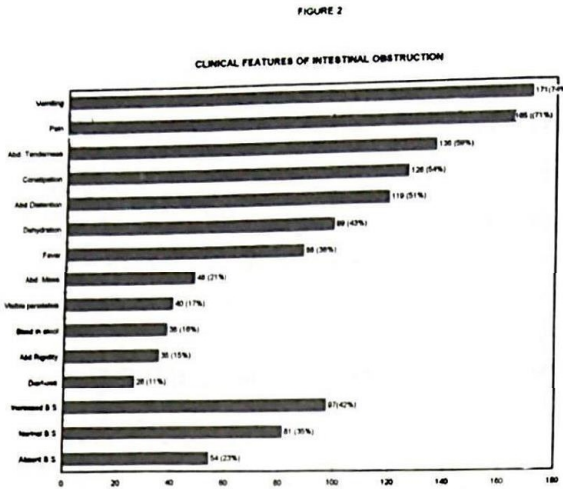


Fig. 1:



The clinical features are as shown in Fig. 2. Vomiting, abdominal pain, constipation, abdominal distention and abdominal tenderness were the leading features. Bowel sound was increased in 42% of patients.

Table 1: Aetiology of intestinal obstruction in Ibadan

| Aetiological factors | No. of Pts. | % |
|-------------------------|-------------|------|
| Obstructed Hernia | 106 | 45.7 |
| Intussusception | 43 | 18.5 |
| Bands/Adhesions | 30 | 12.3 |
| Volvulus | 14 | 6 |
| Tumours | 12 | 5.2 |
| Anorectal Malformations | 12 | 5.2 |
| Ascariasis | 5 | 2.2 |
| Hirschsprung's disease | 4 | 1.7 |
| Others | 6 | 2.6 |
| Total | 232 | 100 |

Table 2: Comparison of the aetiology of intestinal obstruction in Ibadan as documented in 3 successive studies

| Aetiological factors | Present review | | |
|-------------------------|----------------|----|------|
| | (1977) | | |
| Obstructed Hernia | 35 | 52 | 45.7 |
| Intussusception | 27 | 22 | 18.5 |
| Bands/Adhesions | 12 | 7 | 12.3 |
| Volvulus | 5 | 7 | 6 |
| Tumours | 1.6 | NA | 5.2 |
| Anorectal malformations | 7 | 10 | 5.2 |
| Ascariasis | 6 | 2 | 2.2 |
| Hirschsprung's disease | 1 | NA | 1.7 |

All figures are percentages

NA % Not available

The leading aetiological factor was obstructed hernia, which occurred in 106 or 45.7% of the cases (Table 1). Other aetiological factors seen are intussusception (18.5%), bands and adhesions (12.3%), volvulus (6%) and tumours (5.2%). Anorectal malformations were seen in 5.2% of cases while ascariasis obstruction and Hirschsprung's disease accounted for 2.2% and 1.7% of cases respectively. Miscellaneous causes such as intestinal atresias or stenosis accounted for 2.6% of

cases while a 25 year old woman presented with an ileal stricture of unknown aetiology.

Occupations of printers are depicted in Table 3

Table 3: Occupation of patients with intestinal obstruction

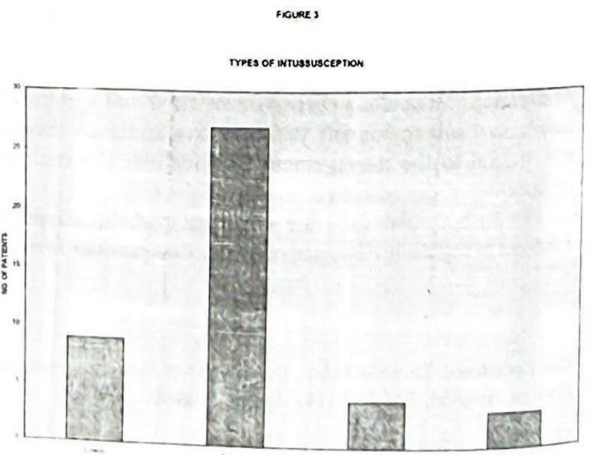
| Occupation | No. of Pts | % |
|------------------|------------|------|
| Professional | 6 | 2.6 |
| Non-professional | 58 | 25 |
| Farmer | 25 | 10.8 |
| Petty Trader | 23 | 9.9 |
| House wife | 8 | 3.4 |
| Student | 9 | 3.9 |
| Unemployed | 103 | 44.4 |
| Total | 232 | 100 |

Table 4: Proportion of obstructed hernias

| Types of Hernia | No. of Pts. | % |
|-----------------------|-------------|------|
| Right Inguinal Hernia | 56 | 52.8 |
| Left Inguinal Hernia | 33 | 31.1 |
| Umbilical Hernia | 4 | 3.8 |
| Femoral Hernia | 6 | 5.7 |
| Internal Hernia | 3 | 2.8 |
| Others | 4 | 3.8 |
| Total | 106 | 100 |

Inguinal hernia was responsible for 83.9% of obstructed hernias (Table 4). Virtually all the patients with obstructed inguinal hernias were male with only 1 of the 189 patients with obstructed inguinal hernia being female. Other types of hernia that caused intestinal obstruction in this series are femoral, umbilical, internal, epigastric and incisional hernias. Intestinal resection was performed in patients whose ages ranged between 5 days and 70 years with a mean of 32.2yrs. The resection (strangulation) rate was 33%.

Forty-three (43) patients had intussusception and 58% of them were 2 years and below, with only 9 or 21% being above 1yars. The male to female ratio was 4:1. The commonest variety of intussusception was ileo-colic, representing 62.8% (Fig 3).



There were 30 patients whose intestinal obstruction was due to bands and adhesions and ten of these patients were in the first year of life (Table 5). Six of these infants had congenital bands while one of them had associated malrotation of the intestine.

Table 5: Age distribution of bands and adhesions

| Age (Years) | No. of Pts. | % |
|-------------|-------------|------|
| 0 - 1 | 10 | 33.3 |
| 2 - 10 | 9 | 30 |
| 11 - 20 | 1 | 3.3 |
| 21 - 30 | 3 | 10 |
| 31 - 40 | 2 | 6.7 |
| 41 - 50 | 2 | 6.7 |
| 51 - 60 | 2 | 6.7 |
| 81 - 90 | 1 | 3.3 |
| Total | 30 | 100% |

Two predominant types of volvulus were seen in this series viz: sigmoid volvulus and small intestinal volvulus. Volvulus occurred in a total of 14 patients, 10 of whom had sigmoid volvulus. Eight or 57% of the 14 volvulus occurred between the ages of 21 and 40 years with an age mean 25.9 yrs.

Ten of the twelve patients with obstructive tumour had colorectal carcinoma, while the other two had small intestinal polyp and leiomyoma of jejunum causing bowel obstruction. These tumours were found in patients whose ages ranged between 23 - 70 years with a mean of 45 yrs.

Post-operative complications seen are as depicted in Table 6. Wound infection was the commonest complication and was seen in 94 or 40.5% of the patients. Other complications include chest infections, post-operative pyrexia, faecal fistula, burst abdomen, septicaemia, scrotal haematoma and scrotal abscess. The mortality rate in this series was 8.2%. Seven of the nineteen patient who died were neonates with age specific percentage mortality of 29.2% and more than half of the mortality was in children under 1 year (Table 7).

Table 6: Post-operative complications

| | No. of Pts. |
|-------------------|-------------|
| Wound Infection | 94 |
| Pyrexia | 25 |
| Chest Infection | 12 |
| Faecal fistula | 12 |
| Burst Abdomen | 7 |
| Septicaemia | 7 |
| Scrotal Abscess | 8 |
| Scrotal haematoma | 6 |
| Others | 13 |
| None | 104 |
| Death | 19 (8.2%) |

Table 7: Age distribution of mortality

| Age (yrs) | No | Age specific percentage mortality |
|--------------|----|-----------------------------------|
| 0 - 1 month | 7 | 29.2 |
| 2 months - 1 | 3 | 8.8 |
| 2 - 10 | 2 | 5 |
| 11 - 40 | 3 | 3.5 |
| 41 - 70 | 4 | 8.3 |
| Total | | 19 |

Discussion

Intestinal obstruction occurs in all ages as depicted in this study in which the age ranged between 5 days and 90 years. Two peaks of age incidence were observed in this study which is in keeping with the findings of a previous study in this environment [1]. The first peak is due to the fact that certain aetiological factors of intestinal obstruction such as congenital anomalies are seen almost exclusively in infants, while others like idiopathic childhood intussusception have high incidence in childhood. Eighty-nine percent (89%) of patients who had intussusception in this study were 10 years or younger. The second peak is accounted for by the high incidence of inguinal hernia in the 3rd and 4th decades [1,5,6].

The clinical features of intestinal obstruction in this study are not different from those documented in previous series [1,5]. The predominant clinical features depend on the level of the obstruction, as vomiting and dehydration were more prominent in upper intestinal obstruction, while constipation and abdominal distention characterised lower intestinal obstruction. The progression of the disease and attendant biochemical derangements are also more severe in upper intestinal obstruction. Usually, there is alteration of contractile activity proximal to the site of intestinal obstruction, with initial increase in peristaltic activity in an attempt to push luminal contents beyond the obstruction. However, with prolonged obstruction (which is common in our environment due to late presentation), there is a subsequent ablation of peristaltic activity and this explains the finding of normal and absent bowel sounds in some of the patients. Strangulation or perforation as may occur in a closed loop obstruction with the attendant peritonitis would usually also lead to ileus.

Simple and strangulated obstructed hernias were still the leading causes of intestinal obstruction in this environment in the period under review as in previous series [1,5,6,7,8]. Factors responsible for this high incidence of obstructed hernia include delay in seeking medical attention, preference for traditional medicine and ignorance of the attendant complications of a long-standing hernia. The age range of 5 days to 70 years in patients presenting with obstructed hernias was documented by Solanke in Ibadan [5]. There was a male preponderance in obstructed inguinal hernia which closely mirrors the 4:1 male to female ratio of inguinal hernias previously reported in this environment [1]. A proportion of 45.7% is however, lower than the 52% recorded by Adekunle [1] (Table 2).

There appears to be a decline in the incidence of

obstruction due to obstructed hernia in this environment although this view will require further study to statistically substantiate. This should be expected with increasing level of literacy, urbanization and availability of medical services. If the current level of awareness is maintained, we should expect further decline in the incidence of obstructed hernia and a change in the aetiological pattern of intestinal obstruction, to that approximating those documented for the developed world [3,7]. The strangulation rate of 33% for obstructed hernias is comparable to that recorded for some developed parts of the world [3,8,9].

The proportion of intestinal obstruction due to intussusception seemed to be on the decline in our environment. In the series by Solanke [5], it was responsible for 27% of mechanical bowel obstruction, while it was responsible for 22% in the series by Adekunle [1]. However, in the present series, intussusception was responsible for only 18.5% of intestinal obstruction (Table 2). This declining pattern in the role of intussusception has also been observed in some other parts of the world [3]. A significant change has also been noticed in the type as well as the age incidence of intussusception. Ileo-colic type intussusception was found in 62.8% in this series compared to the series by Elebute and Adesola [10] in which caeco-colic type intussusception was responsible for 71.6% of intestinal obstruction due to intussusception.

There is a high preponderance of the paediatric age group in patients who presented with intussusception in this series as only 21% of the patient were above 10yrs as compared to the series by Elebute and Adesola [10] in which 42% of their patient were above 15yrs. Most of the children in this study who had intussusception were below 2-years. This may partly explain the reduction in the caeco-colic variety, since the studies that reported a high incidence of caeco-colic variety had a preponderance of adult patients.

Pre-existing lesions, such as polyps, lipoma, peutz-jeghers syndrome, amoeboma, Meckel's diverticulum, etc., which act as lead lesions have been identified in some cases of intussusception especially in adults [8,9,10]. No pre-existing lesion was observed in this series. This may be due to the predominance of patient in the paediatric age group as pre-existing lesions as lead points are rare in children [6].

As previously documented volvulus is a prominent cause of large bowel obstruction in adults, though it is not as prevalent in Nigeria as it is in countries like Uganda, Zimbabwe and Ghana [5,16].

Congenital causes of intestinal obstruction like anorectal malformation, Hirschsprung's disease and small intestinal atresias were also observed in a proportion similar to that documented in previous series [1,5].

Ascaris infestation is no longer a prominent aetiological factor in intestinal obstruction in this environment as shown in this study, it was responsible for only 2.2% of the cases. The proportion of obstruction caused by tumours is higher than that documented in the series by Solanke [5]. There was no record of the incidence of obstruction due to tumours in the series reported by Adekunle *et al.* [1]. Small intestinal tumours are a rare cause of obstruction, and in only 2 patients was the intestinal obstruction caused by small bowel tumours in this series.

Bands and adhesions were seen mainly in children as causes of intestinal obstruction and most of these were congenital

also in the series by Solanke [5]. There is a high proportion of infants with congenital bands in this series and this compares favourably with other series from Africa [5,6].

The commonest post-operative complication observed in this study was wound infection, which occurred in 40.5% of the cases. This was probably due to late presentation and associated peritonitis in these patients.

The mortality rate of 8.2% is comparable to figures from some other parts of the world [4,17,18,19]. The highest age specific mortality rate was in children less than one month old, who accounted for one-third of the deaths recorded (Table 7). Continued improvement in the pre- and post-operative management of neonates with intestinal obstruction should lead to a decline in mortality. Three of the 106 patients with obstructed hernias died. The 3 of them had bowel strangulation. The onset of strangulation leads to a substantial increase in mortality, because of the associated fluid and electrolytes derangement as well as sepsis.

Conclusion

Obstructed hernia was still the leading cause of intestinal obstruction in this environment in the period under review, although its incidence seems to be on the decline. This view will require further study to statistically substantiate. A definite change is observed in the pattern of intussusception, with the predominance of patients in the paediatric age group, and ileo-colic type intussusception occurring, more than caeco-colic variety. An increase in the proportion of obstruction due to tumours was observed. Further studies are required to document the current trend of intestinal obstruction in Ibadan. Sustained socio-economic growth and increase in public awareness should decrease morbidity and improve outcome.

References

1. Adekunle O.O. Acute Intestinal Obstruction: A review of 300 cases treated at University College Hospital, Ibadan. *Nig. Med. J.* 1977; 7: 37 - 40.
2. Jordan G.L. Jr. The Acute Abdomen. In: *Advances in Surgery* 1980; 14:259-315.
3. Ajao O.G. Abdominal Emergencies in Tropical Africa. *Brit. J. Surg.* 1981; 68: 345 - 347.
4. Welch J.P. (Ed): *Bowel Obstruction: differential diagnosis and clinical management.* W.B. Saunders Company 1990; 62, 74,75,229.
5. Solanke T.F. Intestinal Obstruction in Ibadan. *West Afri. Med. J.* 1968; 17: 191 - 193.
6. Badoe E.A. Pattern of Acute Intestinal Obstruction in Accra. *West Afri. Med. J.* 1968; 17: 194 - 195.
7. Ellis N. The Clinical significance of adhesions: focus on Intestinal obstruction. *Euro. J. Surg. Suppl.* 1997; 577: 5-9
8. Sourkati E.O.M; Fhal A.H; Suliman S.H; El-Rasig S.A. Arabi Y.E. Intestinal obstruction in Khartoum. *E. Afr. Med. J.* 1996; 73(5): 316 - 319.
9. Grant H.W; Buccimazza I; Hadley G.P. A comparison of Colo-Colic and Ileo-colic intussusception. *J. Paed. Surg.* 1996; 31(12): 1607 - 1610.
10. Elebute E.A. and Adesola A.O. Intussusception in Nigeria. *Brit. J. Surg.* 1964; 51: 440-444.

11. Eshel G; Barr J; Heyman E; Tauber T; Klin B; Vinograd I; Starrinsky R; Lahat E. Intussusception: A 9 year survey (1986 – 1995) *J. Paed. Gastroent. & Nutr.* 1997; 24(3):253-256.
12. Adejuyigbe O; Jeje E.A; Owa J.A. Childhood intussusception in Ile-Ife, Nigeria. *Ann. Trop. Paed* 1991; 11: 123-127.
13. Puri P. and Guiney E.J. Small bowel tumors causing intussusception in childhood. *Brit. J. Surg.* 1985; 72: 493-494.
14. Coran A.G. Intussusception in adult. *Amer. J. Surg.* 1969; 117: 735 – 738.
15. Agha F. Intussusception in adults. *AJR* 1986; 146: 527-531.
16. Ajao O.G. Sigmoid Volvulus. *Tropical Doctor* 1980; 10(1): 15-17.
17. Brolin R.E; Krasma M.J; Mast B.A. Use of tubes and radiographs in the management of small bowel obstruction. *Ann. Surg.* 1987; 206: 126-133.
18. Mucha P. Jr. Small Intestinal Obstruction. *Surg. Clin, North Amer.* 1987; 67: 597-620.
19. Bizer L.S; Liebling R.W. Delany H.M; et al. Small bowel obstruction. The role of non-operative treatment in simple intestinal obstruction and predictive criteria for strangulation obstruction. *Surgery* 1981; 89: 407-413.