

Etiology and Management Outcomes of Bowel Obstruction in Adults at the Delta State University Teaching Hospital, Oghara. Nigeria: a one-year prospective study

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Abstract

Background: Bowel obstruction is a common cause of admission in general surgical practice. Its causes vary regionally according to the country. The management outcomes dependent on several variables which may result in morbidity and mortality. This study focused on identifying the causes and management outcomes of adult bowel obstruction in a tertiary institution in southern Nigeria.

Methods: This prospective descriptive study was carried out from September 2022 to November 2023 at the Delta State University Teaching Hospital in Oghara. All consecutive patients who were 18 years of age and older who presented with features suggestive of bowel obstruction to the accident and emergency department of the institution or were referred to the general surgical unit from other units within the hospital were included. Patients' biodata, resuscitative measures, treatment options and outcomes were documented and entered into a proforma sheet. SPSS version 25 was used to analyze the data.

Results: There were 33 patients with bowel obstruction. Eighteen (54.5%) were females and 15(45.5%) were

males. The female to male ratio was 1.2:1. The presenting symptoms were vomiting 33 (100.0%), abdominal pain 33 (100.0%), abdominal distension 30 (90.9%) and constipation 30 (90.9%). A total number of 24 (72.7%) patients had small bowel obstruction while 9 (27.3%) patients had large bowel obstruction. Operative management was done in 30 (90.9%) cases. All the patients with large bowel obstruction were operated while 21 (70.0%) patients with small bowel obstruction were operated. The major indication for surgery was failed non-operative management for adhesive bowel obstruction in 14 (46.7%) patients.

The mean duration of hospital admission was 10.5 ± 2.5 days versus 5.7 ± 1.2 days among operative and non-operative patients respectively. Surgical site infections (SSI) complicated 20% of patients who underwent surgery. There were no re-operations or mortalities.

Conclusions: Bands and adhesions constitute the major cause of bowel obstruction in our environment followed by hernias. Outcome was good following early surgical intervention.

Keywords: Etiology, Management, Outcomes, Adult intestinal obstruction, Oghara, Nigeria.

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INTRODUCTION

Acute Intestinal obstruction with its morbidity is one of the most common surgical emergencies worldwide. In the US, it accounts for 15% of all admissions and 25% require acute surgical intervention¹.

Its aetiology is broadly grouped into mechanical and non-mechanical bowel obstruction. The former is due to mechanical obstruction of the intestinal canal, and is associated with abdominal pain. The latter, also known as paralytic (or adynamic) ileus is due to paralysis of the intestinal musculature and is characterized by the absence of pain¹.

Diagnosis of acute mechanical intestinal obstruction where peristalsis of the gastrointestinal tract is resisted by mechanical obstruction is based on the classical clinical tetrad of abdominal pain, distension, vomiting and absolute constipation². The obstructing lesion may be located in the lumen of the bowel such as impacted faeces or bezoar, intramural like

malignant or inflammatory strictures or extramural such as adhesions and hernia².

On the other hand, in adynamic obstruction, there is caesation of peristalsis and no true propulsive waves occur as in paralytic ileus or mesenteric vascular occlusion. They present as abdominal distension, vomiting and constipation. No abdominal pain but there may be some tenderness due to the distension and there is absent bowel sound³⁻⁵.

Opinion differs on the leading cause of intestinal obstruction in our environment. Some studies reported that bands and adhesion is the leading cause and approximately two thirds of these patients with adhesions have had previous abdominal operations^{6,7}. However, other studies revealed strangulated hernia followed by either intussusception or adhesions as the leading causes of intestinal obstruction^{8,9}. The leading cause of bowel obstruction in our environment is not delineated. This study therefore looked at finding out the causes

of bowel obstruction in our environment and outcomes of management of patients with bowel obstruction.

Study Setting:

The study was carried out at the Delta State University Teaching Hospital, Oghara. This is a 280-bed tertiary institution providing service to over 5 million people in the state. It also receives patients from states around Delta State.

Inclusion Criteria:

1. All adult patients (18 years of age and older) presenting to the accident and emergency section of the hospital or referred from other units within the hospital with features of acute bowel obstruction.

Exclusion Criteria:

1. Patients below the age of 18 years
2. Patients observed in hospital for less than 6 hours.

METHODS

This is a twelve-month prospective study from September 2022 to November 2023. The approval of the Local Ethics and Research Committee of the Delta State University Teaching Hospital was obtained. All consecutive patients presenting to surgery department with the diagnosis of bowel obstruction were recruited into the study. All patients’ data were entered in a standardised format into a Microsoft Excel file. Analysis

was done using SPSS version 25. The results were presented in percentages.

RESULTS

Thirty-three patients were recruited into the study. There were 18 (54.5%) females and 15(45.5) males giving a female to male ratio of 1.2:1 (Figure 1). The sociodemographic characteristics of study participants are as shown in Table 1. The mean age and

standard deviation were 45.54 ± 9.93 years. Most of the patients (45.5%) were older than ≥50 years The least affected age group was 20 to 29 years accounting for 9.1%.

The highest number of patients with bowel obstruction were of the Urhobo ethnic group followed by Okpe. These accounted for 36.4% and 27.3% respectively (Table 1).

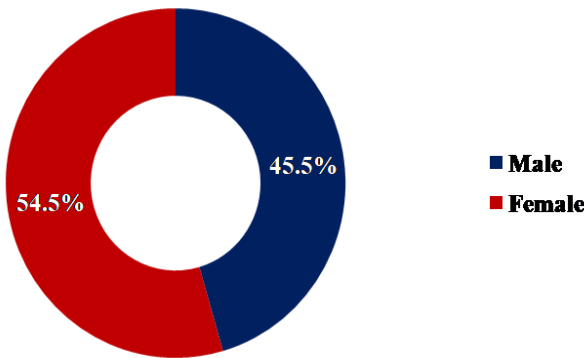


Figure 1: Gender distribution of 33 patients with bowel obstruction

Table I: Socio-Demographic Characteristics of Patients with Bowel Obstruction (N=33)

Variable	Frequency (%)
Age (years)	
20-29	3 (9.1)
30-39	6 (18.2)
40-49	9 (27.3)
50-59	15 (45.5)
Total	33 (100.0)
Ethnicity	
Urhobo	12 (36.4)
Okpe	9 (27.3)
Isoko	3 (9.1)
Ukwuani	3 (9.1)
Itsekiri	3 (9.1)
Edo	3 (9.1)
Total	33 (100.0)

*Mean age ± SD = 45.54 ± 9.93 years

Presenting symptoms of patient are shown in Figure 2. Vomiting occurred in all 33 patients (100%). The rest were abdominal pain 33 (100%), abdominal distension 30(90.9%) and constipation 30 (90.9%) patients.

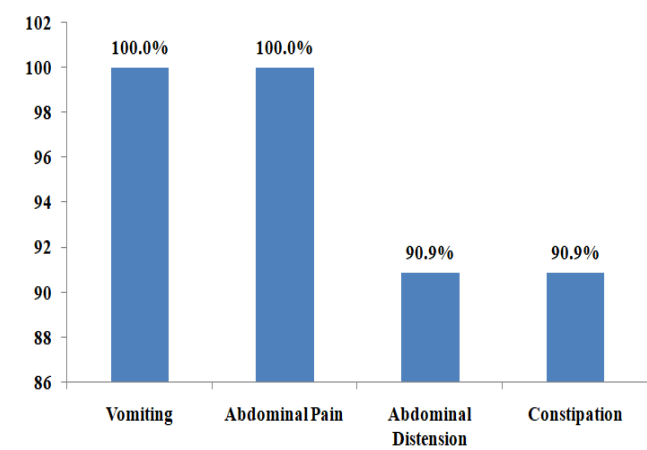


Figure 2: Presenting symptoms of patients with bowel obstruction

The major cause of intestinal obstruction was bands and adhesions in 17 (51.5%) patients resulting in small bowel obstruction. Tumours accounted for most of the large bowel obstruction (See Table II). Intussusceptions and volvulus which occurred in 3(9.1%) patients each were the least causes of intestinal obstruction. (See Table II).

Table II: Causes of bowel obstruction

Indications for surgery	Small bowel obstruction (%)	Large bowel obstruction (%)	Total (%)
Bands and adhesions	17 (51.5)	0 (0.0)	17 (51.5)
Hernia	6 (18.2)	0 (0.0)	6 (18.2)
Tumours	0 (0.0)	4 (12.1)	4 (12.1)
Intussusceptions	1 (3.0)	2 (6.1)	3 (9.1)
Volvulus	0 (0.0)	3 (9.1)	3 (9.1)

The management approach for the patients is shown in Figure 3. Operative management was carried out in 30 (90.9%) patients.

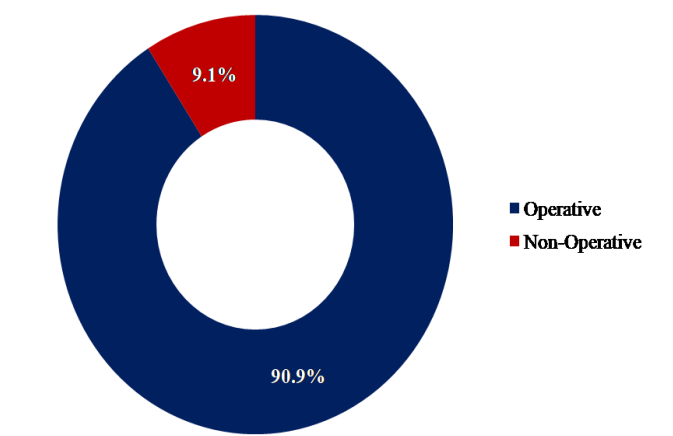


Figure 3: Management approach for patients with bowel obstruction

Table III: Causes Of bowel obstruction requiring surgical intervention (n=30)

Causes of intestinal obstruction	Frequency (%)
Bands and adhesions	14 (46.7)
Hernia	6 (20.0)
Tumours	4 (13.3)
Intussusceptions	3 (10.0)
Volvulus	3 (10.0)

The pre-operative risk assessment of patient is shown in Table IV. Dehydration/hypovolemia was seen in 3 (9.1%), electrolyte derangement in 6

(18.2%), hypertension 3 (9.1%), anaemia in 3 (9.1%), septicaemia in 3 (9.1%), and raised creatinine and urea in 3 (9.1%). None had acute renal failure.

Table IV: Pre- Operative risk assessment of patients with bowel obstruction (N=30)

Variable	Frequency (%)
Poor general condition	0 (0.0)
Dehydration/hypovolemia	3 (9.1)
Electrolyte disturbance	6 (18.2)
Hypertension	3 (9.1)
Heart failure	0 (0.0)
Valvular diseases	0 (0.0)
Anaemia	3 (9.1)
Malnutrition	0 (0.0)
Obesity	0 (0.0)
Septicaemia	3 (9.1)
Diabetes	0 (0.0)
Dementia/confusion	0 (0.0)
Acute respiratory disease	0 (0.0)
Chronic respiratory disease	0 (0.0)
Raised creatinine or urea	3 (9.1)
Acute renal failure	0 (0.0)
Non-sinus ECG	0 (0.0)

The mean duration of in-hospital admission was 10.5 ± 2.5 days versus. 5.7 ± 1.2 days among operative and non-operative cases respectively. In the operative group, 3 (9.1%) patients were admitted and stayed for 5 days, 3 (9.1%) were admitted and stayed for 6 to 9 days, while 24 (72.7%) were admitted and stayed for ≥ 10 days. In the non-operative group, all the 3 (9.1%) were admitted for less than 5 days while none spent 6 to 9 days or more than 10 days on admission (See Table V).

DISCUSSION

Acute bowel obstruction remains one of the most common causes of acute abdomen and major referral to a specialized surgical center with a dynamic aetiology globally, over the past few years.^{8,15}

Table V: Duration of hospital admission

Duration of hospital admission before discharge	Operative care Frequency (%)	Non-operative care Frequency (%)	Total Frequency (%)
5 days	3 (9.1)	3 (9.1)	69 (18.2)
6-9 days	3 (9.1)	0 (0.0)	3 (9.1)
≥ 10 days	24 (72.7)	0 (0.0)	24 (72.7)
Mean $\pm$ SD	10.5 ± 2.4	5.7 ± 1.2	10.06 ± 2.8

Table VI: Post-operative care events among patients with bowel obstruction who underwent surgical intervention (n=30)

Variable	Frequency (%)
Complications	
SSSI	6 (20.0)
Re-Operation	0 (0.0)
Death	0 (0.0)

In the past, obstructed hernia was the most common cause of bowel obstruction but this has gradually been replaced by adhesive bowel obstruction^{15, 16-18}.

This study was carried out with the view of finding out the changes in the pattern and causes of intestinal obstruction in our environment and the findings from our study is similar to those reported in many studies^{15,19-22}

The mean age of 45.5 years in our study is consistent with the age incidence in many similar studies^{9,15}

There is a female preponderance with M:F ratio of 1:1.2 similar to work done by Campbell et al⁹ and this was attributed to incidence of adhesive obstruction from previous gynaecological or abdominal surgery but this differs from work by other authors with a male preponderance due to obstructed or strangulated hernia^{13,14}.

The usual presentation of vomiting, abdominal pain, abdominal distension and constipation were all present in our patients similar to work by Campbell et al¹⁰.

As observed from the study, post operative adhesion was the most common cause of bowel obstruction and reason for surgery followed by hernias. This is similar to reports from other studies^{10,15}. The rise in the number of post-operative adhesion cases may be due to increasing number of open surgeries in our environment because of the high cost of minimal access surgery.^{10,15}

All the patients were initially resuscitated with intravenous fluids, nasogastric tube insertion for decompression and urethral catheterization for urine output monitoring.

Most of the patients had operative treatment but 9.1% of the patients were treated non-operatively. Indications for surgery were failed non-operative management, hernia, tumours, intussusception and volvulus. Non-operative management for small bowel obstruction due to adhesion is recommended and adopted by many other authors^{15, 23,24}. Nevertheless, while patient with adhesive bowel obstruction can be safely managed non-operatively,

vigilant and aggressive monitoring must be observed in order to avoid unnecessary delay that will lead to ischemia and gangrene of the intestine.¹⁰

Good operative techniques during open laparotomies and especially, laparoscopy has been shown to significantly reduce the rate of adhesion formation^{10,11}.

Hernia was the second most common cause of intestinal obstruction in this study. The incidence of hernia is declining as a cause of intestinal obstruction due to various reason such as increase public health awareness of the complications of neglected hernia and the need for elective surgery coupled with easy accessibility and availability of surgical services.^{10,15,18}

The mean duration of in-hospital admission was 10.5 $\pm$ 2.5 days versus. 5.7 $\pm$ 1.2 days among operative and non-operative cases respectively. In the operative group, 3 (9.1%) patients were admitted and stayed for 5 days, 3 (9.1%) were admitted and stayed for 6 to 9 days, while 24 (72.7%) were admitted and stayed for $\geq$ 10 days, based on the types of surgery that was performed. Patient that had intestinal resection and anastomosis stayed longer in the hospital compared to those that had just adhesiolysis. In the non-operative group, all the 3 (9.1%) patients were admitted for less than 5 days while none spent 6 to 9 days or more than 10 days on admission. Six patients (20%) among the operated cases developed surgical site infection (SSI). This complication further prolonged the hospital stay. There were no re-

operations or mortalities among the patients studied.

CONCLUSIONS

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