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Original Research Article

Adult intestinal obstruction: Risk factors and management

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Abstract

Intestinal obstruction is among the common surgical emergencies presenting to the accident and emergency unit of hospitals worldwide. Etiologic factors vary widely among different regions depending on the part of bowel involved. Management also depends largely on the etiology and bowel segment involved. Not much work has been done to elucidate the risk factors for intestinal obstruction in our environment even though the condition presents commonly to our emergency department. In this study we looked at the risk factors for intestinal obstruction among adults and its management in patients presenting to a tertiary hospital in Sokoto, Nigeria. A 3 year retrospective study in which the case note of all patients that presented with intestinal obstruction to the Accident and Emergency department between 2012 and 2014 were retrieved and reviewed. A total of 48 patients were seen. Out of this, 70.83% (34) were males and 29.17% (14) were females, giving a male: female ratio of 2.4:1. The Mean age was 40.75 years while the Median age was 35 years. The peak age group of at risk was 30 – 39 years. Obstructed hernia was the leading cause of intestinal obstruction at 47.92% (23) followed by post- operative adhesions at 14.58% (7). Colo-rectal cancer was the third commonest cause of intestinal obstruction and the leading cause of large bowel obstruction at 10.42% (5) followed by typhoid ileal perforation and faecal impaction at 6.25% (3) each. Intussusception and metastatic ileal obstruction followed at 4.17% (2) each. Sigmoid volvulus and gunshot peritonitis were at 2.08% (1) each. Herniorrhaphy was the most frequently performed surgery at 47.91% (23) followed by exploratory laparotomy and conservative management at 20.84%(10) each; colostomy was performed in 10.41%(5) of patients. Wound infection was the commonest post -operative complication at 28.95%(11), followed by enterocutaneous fistula, 7.89%(3), wound dehiscence, 5.26%(2) and recurrent inguinal hernia, 2.63%(1). The overall mortality was 12.5%(6). Obstructed hernia remains the leading cause of small bowel obstruction followed by post–operative adhesions while colorectal cancer was the commonest cause of large bowel obstruction followed by faecal impaction.

Key words: Hernia, Intestinal obstruction, Large bowel, Small bowel

INTRODUCTION

Intestinal obstruction is a common surgical pathology affecting the gastro-intestinal tract worldwide (Ohene-Yeboah et al., 2006). Most reports from across Nigeria and Africa shows that it isa commonly occurring surgical emergency (Agbo et al., 2012; Agboola et al., 2014; Hagos, 2015). Works by Agboola et al, in Ilorin, Nigeria and Hagos in Mekelle, Ethiopia revealed that intestinal obstruction was the second most common surgical

Table 1. Percentage age and sex distribution of patients with intestinal obstruction

Age Group	Frequency		Percentage
	Males	Females	
< 30	6	3	18.75
30 - 39	12	5	35.42
40 - 49	6	3	18.75
50 - 59	3	2	10.42
60 - 69	6	0	12.5
70 and Above	1	1	4.16
	34 (70.83)	14 (29.17)	
Total		48	100

Table 2. Etiology of bowel obstruction

Etiology	Frequency	Percentage (%)
SMALL BOWEL		
Obstructed hernia	23	47.92
Post-operative adhesions	7	14.58
Typhoid ileal perforation	3	6.25
Intussusception	2	4.17
Metastatic ileal obstruction	2	4.17
Abdominal tuberculosis	1	2.08
Gunshot wound + peritonitis	1	2.08
LARGE BOWEL		
Colo-rectal carcinoma	5	10.42
Faecal impaction	3	6.25
Sigmoid volvulus	1	2.08
Total	48	100.00

abdominal emergency presenting to hospital accident and emergency departments with hernia being the leading cause followed by post-operative adhesions (Agboola et al., 2014; Hagos, 2015). Risk factors for intestinal obstruction depends on the segment of bowel involved, the environment, diet, socio-cultural practice and patient's anatomic variations (Akigun et al., 2002). Previous studies from across Nigeria shows external hernia to be the leading cause of intestinal obstruction followed by post-operative adhesions (Otu, 1991; Adekunle, 1977). However, some recent reports are showing a rising frequency of adhesive bowel obstruction due to increasing open surgical procedures (Ihedioha et al., 2006; Naaeder and Archampong, 1993; Adesunkanmi and Agbakwuru, 1996). In Europe and America, post-operative adhesion remains the leading cause of acute bowel obstruction though the incidence appears to be reducing due to the predominance of minimally invasive procedures (Ihedioha et al., 2006; Stewardson et al., 1978). Intestinal obstruction constitutes a major problem in developing economies where poverty, ignorance and delayed presentation predominates with resultant poor outcome (Chalya et al., 2014). Delayed interventions due to poor and inadequate diagnostic facilities also constitute major constraints to improved outcome (Chalya et al., 2014).

METHOD

A 3 year retrospective study in which the case note of all patients that presented with intestinal obstruction to the Accident and Emergency department of a tertiary hospital in Sokoto, Nigeria between 2012 and 2014 were retrieved and reviewed. Parameters studied included demography, diagnosis, risk factors and management outcome. Frequencies were presented as absolute values and percentages. Results were analyzed using windows SPSS 17.0

Inclusion/Exclusion criteria

All patients from age 18 years and above with clinical and radiological diagnosis of intestinal obstruction were included while patients below 18 years with confirmed diagnosis of intestinal obstruction were excluded.

RESULTS

A total of 48 patients were seen. Out of this, 34(70.83%) were males and 14(29.17%) were females, giving a male: female ratio of 2.4:1 (Table 1). The Mean age was 40.75

Table 3. Treatment options in patients with intestinal obstruction

Treatment	Frequency	Percentage (%)
SMALL BOWEL		
Bassini repair	13	27.08
Exploratory laparotomy	8	16.67
Non operative	7	14.58
Mass closure	4	8.33
Mesh repair	3	6.25
Nylon darn	3	6.25
Colostomy + EBRT	1	2.08
LARGE BOWEL		
Colostomy	4	8.33
Non operative	3	6.25
Exploratory laparotomy	2	4.17
Total	**48**	**100.00**

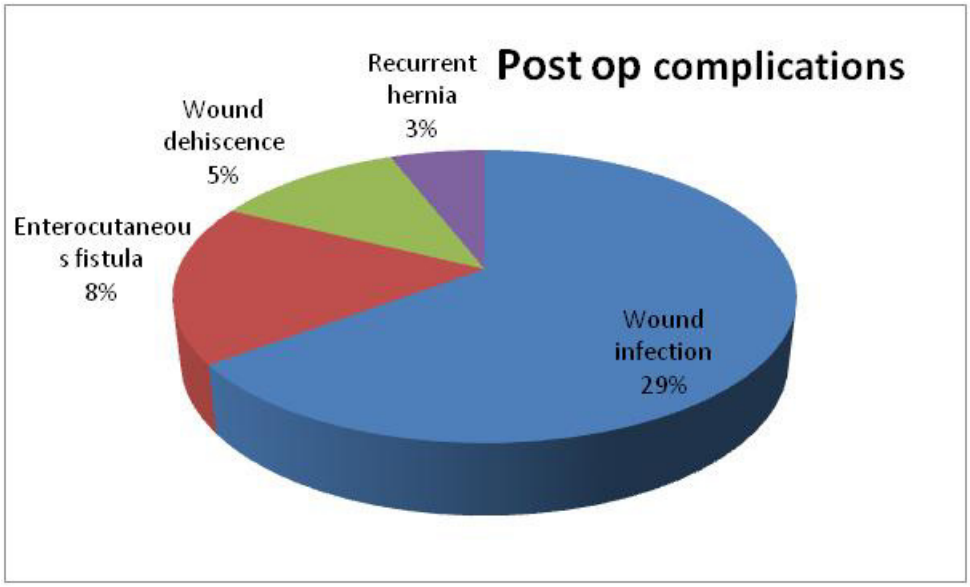

Figure 1. Post -operative complications

± 15.30 years while the Median age was 35 years. The peak age group at risk was 30 – 39 years (Table 1). Obstructed hernia was the leading cause of intestinal obstruction at47.92% (23), with inguinal hernia accounting for 82.61% (19) and umbilical hernia 13.04%(3). This was followed by post- operative adhesions at 14.58% (7) and colo-rectal cancer in third place at 10.42% (5). Typhoid ileal perforation and faecal impaction followed at 6.25% (3) each. Intussusception and metastatic ileal obstruction followed at, 4.17% (2) each. Sigmoid volvulus and gunshot peritonitis were 2.08% (1) each (Table 2). Herniorrhaphy constituted the major operative procedure performed at 47.91% (23). Of this, Bassini repair accounted for 27.08%(13), mass closure, 8.33% (4), mesh repair 6.25%(3) and nylon darning, 6.25% (3). Exploratory laparotomy for adhesiolysis and bowel resection was performed in 20.84%(10) of patients. 20.84%(10) of patients were also managed conservatively (Non-operatively). Colostomy was performed for 10.41%(5) of patients (Table 3). Two patients with small bowel gangrene from strangulated inguinal hernia had resection and end to end anastomosis via the herniorrhaphy incision. Wound infection was the most common post -operative complication at 28.95%(11), followed by enterocutaneous fistula, 7.89%(3), wound dehiscence, 5.26%(2) and recurrent inguinal hernia, 2.63%(1) (Figure 1). The overall mortality was 12.5%(6).

DISCUSSION

Majority of our patients at risk of intestinal obstruction were males with a mean age of 40.75 years in agreement with figures from Jos and Owo, Nigeria where Ojo et al reported a mean age of 41.8 years and Oladele et al 39

years respectively (Ojo et al., 2014; Oladele et al., 2008). Lawal et al in Ife, Nigeria also reported a mean age of 45 years (Oladejo et al., 2005). This age group unfortunately represents the most economically active segment of the population.

Obstructed hernia constituted the leading cause of intestinal obstruction in this study at 47.9%(23) followed by post- operative adhesions at 14.6%(7). This finding agrees with most figures from across Nigeria and Africa where obstructed hernia remains the leading cause of intestinal obstruction followed by adhesions (Ohene-Yeboah et al., 2006; Agboola et al., 2014; Otu, 1991; Adekunle, 1977; Madziga and Nuhu, 2008). AA Otu in Calabar, Nigeria reported that external hernias were the commonest cause of intestinal obstruction at 75%, while Ohene-Yeboah in Kumasi, Ghana reported that hernias accounted for 63.2%(412) of intestinal obstruction followed by post-operative adhesions at 27.2%(176) (Otu, 1991; Ohene-Yeboah et al., 2006). However, recent works by some authors reveal a shift from this trend with adhesions assuming the number one spot as a risk factor for intestinal obstruction, clearly showing the etiologic variability of this disease (Ihedioha et al., 2006; Adesunkanmi and Agbakwuru, 1996; Ojo et al., 2014; Oladejo et al., 2005). Reports by Ihedioha et al, shows that post-operative adhesions constituted the commonest cause of intestinal obstruction at 60.2%(97), followed by external hernias at 24%(18). Ojo et al in Jos, Nigeria also reported that post-operative adhesions accounted for 51.6%(112) of intestinal obstruction and hernia 12.9%(28), with appendicectomy been responsible for most of the adhesions. Adesunkanmi et al and Lawal et al all in Ife, Nigeria reported a preponderance of post-operative adhesions as a major cause of intestinal obstruction (Adesunkanmi and Agbakwuru, 1996; Oladejo et al., 2005). Open surgeries are still performed commonly in Nigeria due to failure of establishment of laparoscopic procedures in most centers. This may partially explain this changing trend. The preponderance of hernia as a leading cause of intestinal obstruction in our study may indicate that most of our patients do not present for elective herniorrhaphy due to poverty and ignorance. They commonly present to hospital with complications. Therefore, some form of awareness campaign is necessary to encourage patients to present for elective herniorrhaphy rather than wait until complication sets in.

It is important to note in this study that colo-rectal cancer constituted the commonest cause of large bowel obstruction (10.4%) followed by faecal impaction (6.3%) and sigmoid volvulus (2.1%) in contrast to earlier report by Sule and Ajibade in Jos, Central Nigeria where sigmoid volvulus was the leading cause of large bowel obstruction at 72% followed by colo-rectal cancer at 24% (Sule and Ajibade, 2011). The authors reported that high fibre diet with long and narrow sigmoid mesentery were responsible for the high incidence of sigmoid volvulus in their study as opposed to the predominantly low fibre diet consumed in our own setting here in Sokoto, North-Western Nigeria (Sule and Ajibade, 2011). However, a recent report by Ojo et al from Jos, Nigeria showed that neoplasms were the leading cause of large bowel obstruction contrary to previous finding where colonic volvulus predominated (Ojo et al., 2014). This transition may be attributed to changes in lifestyle and dietary pattern (Ojo et al., 2014).

Herniorrhaphy was the most frequently performed procedure in this study at 47.91%(23) with Bassini repair accounting for 27.08%(13). This was followed by exploratory laparotomy for adhesiolysis and bowel resection at 20.84%(10). Our study is in agreement with report by Chalya et al. in Mwanza, Tanzania where herniorrhaphy was the most frequently performed operative procedure at 32.7%(112) followed by release of bands and adhesions at 18.7%(64) (Chalya et al., 2014). In their series, colostomy was 7.6%(26) as against 10,41%(5) in our study (Chalya et al., 2014). Ojo et al in Jos, Nigeria reported that exploratory laparotomy for adhesiolysis was the most frequently performed procedure at 77.9%(169) while herniorraphy without bowel resection was done in 8.9% (15) (Ojo et al., 2014). It is therefore clear that the type of operative procedure performed for intestinal obstruction depend to a large extent on the cause of the obstruction.

Post-operative wound infection was 28.95%(11) and mortality 12.5% (6) in our study. Chalya et al in Mwanza, Tanzania, reported a surgical site infection rate of 38.8% (38) associated with high HIV positivity and a mortality rate of 14.3% (Chalya et al., 2014). Madziga and Nuhu in Maiduguri, North-Eastern Nigeria reported a post - operative wound infection of 15.3% (57) and mortality of 9.14% (34) (Madziga and Nuhu, 2008). On the other hand Malik et al in Saudi Arabia reported a wound infection rate of 7.8%(15) and overall mortality of 3.49% (7) (Ojo et al., 2014; Arshad et al., 2010). We do not screen our patients for retro-viral disease routinely before surgery. However, other variables like theatre design and condition, scrubbing, shaving, wound management and type of surgical procedure which are topics for further studies may be responsible for the high wound infection rate in our study.

CONCLUSION

Obstructed hernia was the leading cause of small bowel obstruction in Sokoto, Nigeria, followed by post–operative adhesions while colorectal cancer was the commonest cause of large bowel obstruction followed by faecal impaction. Herniorrhaphy and exploratory laparotomy for adhesiolysis and bowel resection were the predominant surgical procedures carried out.

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