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Original Research Article

A clinical study of surgical management of acute intestinal obstruction

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ABSTRACT

Background: Mechanical bowel obstruction remains one of the most common intra-abdominal problems faced by general surgeons in their practice and continues to be a major cause of morbidity and mortality.
Methods: This retrospective study was carried out on data obtained from 50 patients who underwent emergency laparotomy for acute intestinal obstruction in Victoria and Bowring and Lady Curzon Hospital from January 2016 to December 2016.
Results: Adhesions (26%) were found to be the most common cause followed by obstructed hernia (22%). The common age group was 51-60 years. The commonest symptom was abdominal pain followed by vomiting and constipation. The average duration of presentation was 2 days. Strangulation was found in 20% of cases. Mortality rate in the study was 16%.
Conclusions: In conclusion, we have found that adhesions are becoming an ever-increasing underlying cause of bowel obstruction. A trend of elective hernia surgery has reduced the number of patients of hernias presenting with obstruction of bowel.

Keywords: Causes of obstruction, Intestinal obstruction, Strangulation

INTRODUCTION

Bowel obstruction remains one of the most common intra-abdominal problems faced by general surgeons in their practice. Whether caused by hernia, neoplasm, adhesions, or related to biochemical disturbances, intestinal obstruction of either the small or large bowel continues to be a major cause of morbidity and mortality.[1] Its early recognition and aggressive treatment in patients of all ages, including neonates, can prevent irreversible ischemia and trans mural necrosis, thereby decreasing mortality and long-term morbidity. Despite many recent advances in our diagnostic and treatment armamentarium, intestinal obstruction will continue to occur.[2] The aim of this study is to review the aetiologies, pathogenesis, diagnosis, and management in our hospital.

Bowel obstruction occurs when the normal propulsion and passage of intestinal contents does not occur. This obstruction can involve only the small intestine (small bowel obstruction), the large intestine (large bowel obstruction), or via systemic alterations, involving both the small and large intestine (generalized ileus).

The "obstruction" can involve a mechanical obstruction or, in contrast, may be related to ineffective motility without any physical obstruction, so-called functional obstruction, "pseudo-obstruction," or ileus. Intestinal obstruction can also be classified according to etiopathogenesis (mechanical or functional obstruction), time of presentation, and duration of obstruction (acute or chronic obstruction), the extent of obstruction (partial or complete), and the type of obstruction (simple, closed-

loop, or strangulation obstruction). The latter two fall into the category of "complicated" obstruction.

METHODS

This retrospective study was carried out on data obtained from 50 patients who underwent emergency laparotomy for acute intestinal obstruction in Victoria and Bowring and Lady Curzon Hospital. Study was carried out for a period of 1 year from January 2016 to December 2016. Data collection included - a detailed record of the patient`s history, physical examination, and necessary investigations like baseline blood investigations, X-ray abdomen erect and supine in all cases, ultrasound abdomen and CT scan were recorded based on the requirement for each case. Intra-operative findings were recorded, and histopathological reports were collected for the operated cases.

Inclusion criteria

- Diagnosed cases of intestinal obstruction (more than 3 air-fluid levels on plain X-ray abdomen)
- Patients who underwent emergency laparotomy for acute intestinal obstruction
- Age more than 18 years.

Exclusion criteria

- Adynamic intestinal obstruction cases due to peritonitis or paralytic ileus
- Patients undergoing conservative management were excluded from the group.

Objective of the study was to analyse the etiological factors in patients with intestinal obstruction admitted in our centre and also to study the demographic pattern of these patients as well as the mode of intervention in these patients. Random Sampling method was applied. All consecutive patients fulfilling the eligibility criteria and willing to participate in the study were enrolled after getting their consent.

Immediately after the admission, resuscitation with intravenous crystalloid fluids, especially ringer lactate and normal saline infusion was instituted till the hydration and urine output become normal. Naso-gastric decompression was carried out and antibiotic prophylaxis started.

The patients underwent various operative procedures depending on the intraoperative findings: e.g. release of a bands and adhesions, reduction of intussusceptions, resection and anastomosis for gangrenous bowel etc.

Study variables included name, age, gender, history of previous surgeries, intra-operative findings, CECT abdomen findings and histopathological findings. Primary outcome of the study was mostly represented using means and percentages.

Follow up

Post-operative follow up was done in majority of patients up to six months.

RESULTS

During the 1-year study period, 50 patients underwent operative procedure and the rest were excluded as they were treated conservatively.

In the study, 34 patients were males 16 were females with a male to female ratio of 2.1:1. The most common occurrence of intestinal obstruction was in the age group of 51-60 years (26%) and least in 21-30 years of age (3%) as per the present study (Table 1).

Table 1: Age distribution.

Age (in years)	No. of patients	Percentage
<20	5	10
21-30	3	6
31-40	7	14
41-50	8	16
51-60	12	24
61-70	9	18
71-80	3	6
>80	3	6

Adhesions and bands were the most common (26%) cause of intestinal obstruction in the study. Other causes like obstructed hernia (22%), volvulus (8%), intussusceptions (6%), malignancy (10%), stricture (8%), diverticulum (6%), TB abdomen (4%), mesentric ischemia (8%) and miscellaneous (2%) were observed (Table 2).

Table 2: Causes of obstruction.

Cause	No. of patients	Percentage
Adhesions/Band	13	26
Hernia	1	22
Malignancy	5	10
Diverticuli	3	6
Volvulus	4	8
Koch’s Abdomen	2	4
Intussusception	3	6
Stricture	4	8
Mesentric Ischaemia/Thrombosis	4	8
Gist	1	2
Total	20	100

Among the presenting symptoms abdominal pain was the most common complaint followed by vomiting, constipation and abdominal distension (Table 3). Post-operative complications were found in 31 patients with

wound infection being the most common. There was one burst abdomen in the study (Table 4).

Table 3: Symptoms and signs.

Symptoms and signs	No. of patients	Percentage
Pain abdomen	50	100
Vomitting	38	76
Distension	37	74
Constipation	36	72
Previous surgeries	14	28
Tenderness	50	50
Mass	16	32

Table 4: Post-operative complications.

Type of postoperative complication	No. of patients (%)
Wound infection	13(15)
Basal atelectasis	5 (10)
Burst abdomen	1 (2)
Sepsis	5 (10)
Urinary tract infection	7 (14)

Mortality rate in the study was 16%. Duration of symptoms at the time of presentation was important predictor in terms of mortality. All patients died due to septicaemia and hypovolemic shock postoperatively. Common factors in all deaths were late presentation, extremes of age, associated malignancy irreversible shock, septicaemia and associated comorbid conditions.

Table 5: Management.

Procedure	No. of cases	Percentage
Adhesiolysis	12	24
Resection and anastomosis	27	54
Diversion colostomy	4	8
Sigmoidopexy	1	2
Sticturoplasty	1	2
Repair	4	8
Hartmann's procedure	1	2
Total	50	100

Mortality in strangulated intestinal obstruction in our study was high up to 5 cases out of 8 (60%) and in non-strangulated cases it was 3 out of (40%). This indicates the need to differentiate and identification of simple versus complicated intestinal obstruction.

Reasons for this high mortality include a long delay in reaching hospital, and the older age of the patients with fatal complications The patients underwent various operative procedures depending on the intraoperative findings: e.g. release of a bands and adhesions, reduction of intussusceptions, resection and anastomosis for gangrenous bowel etc. (Table 5).

DISCUSSION

Acute intestinal obstruction is a major cause of morbidity and financial expenditure in hospitals around the world. The etiology varies. A total of 50 patients were studied and out of this postoperative adhesions and bands contributed to 26% of the cases with intestinal obstruction. Obstructed hernias formed the next important reason, contributing to 22% of causes. Malignancy was the third reason for intestinal obstruction with 10% of total number of cases.

In our study also, adhesions remain the most common cause of intestinal obstruction. Our study results are comparable with other study groups like Thampi et al and Playforth et al.[3,4] A study conducted by Adhikari S et al in eastern India showed that hernias were the most common cause of intestinal obstruction.[5] Intestinal tuberculosis also appeared to be an important factor in the etiology given the high prevalence of tuberculosis in the Indian subcontinent.

Table 6: Comparison of studies.

Author	Year	Total no. of case	Most common cause
Present study	2016	50	Adhesions and bands
Thampi[3]	2015	150	Adhesions and bands
Arshad M[13]	2010	229	Intestinal TB
Adhakari S[5]	2010	367	Adhesions
Madziga AG[14]	2008	376	Obstructed hernia

According to a study by McEntee et al, adhesions formed the most important cause of intestinal obstruction in western population.[6] According to two studies by Miller et al and Foster et al, hernia caused less than 10% to intestinal obstruction.[7,8] But statistics in this part shows that hernia contributed approximately 22% of cases to intestinal obstruction. As per majority of the available studies, adhesions, incarcerated hernias, and large bowel cancers constitute the most frequent causes for bowel obstruction. Of the 11 obstructed hernia cases, 40% cases were contributed by inguinal hernia. This statistics is significant in the setting that majority of hernia cases are inguinal in nature.[9] Abdominal hernias are found to account for around 8%-25% of all cases of intestinal obstruction.[10] Moreover, they still remain the most common cause for bowel strangulation and ischaemia.[11] Appendectomies, gynaecological operations, cholecystectomies, and large bowel cancer resections are supposed to be the commonest surgeries leading to adhesions.[12]

Comparison of most common cause of intestinal obstruction and presenting symptoms from other studies is shown in Table 7.

The gender discrepancy in our patients with males outnumbering females can be possibly accounted for obstructed inguinal hernia, and in our country, we mostly have males who suffer from this condition. The majority of our study group presented with acute small bowel obstruction. This has also been found in other studies with small bowel obstruction accounting for about 80% of total obstruction cases.

Table 7: Comparison of symptoms with other studies.

Study group	Pain abdomen	Vomiting	Distension	Constipation
Present study	100	76	74	72
Thampi[3]	88	78	66	64
Souvik[5]	72	91	93	82
Khan JS[15]	100	92	97	97

The limitations of the present study included the fact that the study was carried out in a tertiary care centre and does not represent the entire community and requires study on larger representative sample.

CONCLUSION

In conclusion, we have found that adhesions are becoming an ever-increasing underlying cause of bowel obstruction. A trend of elective hernia surgery has reduced the number of patients of hernias presenting with obstruction of bowel. Intestinal tuberculosis is also important in this part of the country as a cause for obstruction. Success in the treatment of acute intestinal obstruction depends largely upon early diagnosis, skilful management.

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