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Original Research Article

A study of surgical management of intestinal obstruction

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ABSTRACT

Background: Intestinal obstruction is one of the more challenging emergency that a general surgeon can come across. However, mortality ranges from 3% with simple obstruction to as much as 30% when there is vascular compromise/perforation of the obstructed intestine, despite improvements in diagnostic tools, fluid and electrolyte correction immediately, effective antimicrobials, and surgical therapy.
Methods: There were 50 cases of intestinal obstruction studied from October 2020 to October 2022 at MVJMC&RH (Rural Bangalore) and relevant investigations were sent and operative procedures were performed and data was collected.
Results: In this study, intestinal obstruction is more common in the age group of 30-60 year. Male and female are nearly in equal ratio. Small bowel obstruction is more common. Pain abdomen and abdominal distension was the most common presentation. Most common etiological factor is postoperative adhesions. Malignant obstruction is more common in large bowel. Most common operation performed was resection-anastomosis. The mortality in intestinal obstruction is high in individuals who developed strangulated/perforated bowel, those present beyond 72 hours and in those are having pre-existing associated diseases and elderly people.
Conclusions: Intestinal obstruction remains still a common and important surgical emergency. Obstruction due to adhesions increasing in incidence due to increased abdominal & pelvic surgeries. The obstruction due to external hernias decreasing due to early elective surgeries. The morbidity and mortality depends on the age of the patient, etiology of obstruction, site of obstruction, state of hydration, viability of the bowel, delay in diagnosis and surgical intervention and associated medical illness.

Keywords: Intestinal obstruction; Resection and anastomosis

INTRODUCTION

Intestinal obstruction is one of the most common surgical emergencies encountered all over the world. It is defined as obstruction in forward propulsion of the contents of the intestine either due to dynamic, a-dynamic or pseudo-obstruction. It is predisposed by varying underlying anomalies and diseases, which are difficult to define preoperatively. The various etiologies for acute intestinal obstruction range from more common causes like adhesion, hernia, malignancy to uncommon conditions like intussusception.[1]

Manifestations of acute intestinal obstruction can range from a fairly good appearance with only slight abdominal discomfort and distension to a state of hypovolemic or septic shock (or both) requiring an emergency operation.[2-9] Though intestinal obstruction can be diagnosed easily, the underlying cause except postoperative adhesions and external hernias are difficult to be diagnosed preoperatively.

The cardinal features of intestinal obstruction are abdominal pain, vomiting, abdominal distension, constipation and dehydration.[10] Early diagnosis of obstruction, adequate preoperative resuscitation, skilful operative management, proper technique during surgery and intensive postoperative treatment carries a grateful result. The diagnosis and management of the patient with intestinal obstruction is one of the most challenging emergencies that a general surgeon can encounter in his practice.

The non-operative management of intestinal obstruction, which includes fluid and electrolyte replacement with crystalloids and gastrointestinal drainage with nasogastric or nasointestinal tube, has proved to be successful in about 62-85% of patients, depending on the etiology and the type of obstruction.[14-17] Although the mortality due to acute intestinal obstruction is decreasing with better understanding of pathophysiology, improvement in diagnostic techniques, appropriate fluid and electrolyte resuscitation, much potent anti-microbials and surgical management, but still mortality ranges from 3% for simple obstruction to as much as 30% when there is vascular compromise or perforation of the obstructed bowel.[11,12] This is further influenced by the clinical setting and related co-morbidities.[13] Most of the mortalities occurs in elderly individuals who seek treatment late and who are have associating pre-existing diseases like, diabetes mellitus, COPD and cardiac diseases.

The objectives of the trial were to study the various causes of intestinal obstruction and to study the various clinical features of intestinal obstruction. Also, to study modalities of treatment required and to study the various surgical procedures and its outcome in relation to etiological factors in intestinal obstruction patients.

METHODS

In this prospective study, 50 cases of intestinal obstruction were studied in rural setup (MVJMC&RH Hoskote). Selection of cases was done in the criteria of history, clinical examination and radiological examination. All the cases studied were subjected to surgery and the diagnosis was established. Following the admission of the patient, clinical data were recorded as per the pre-approved pro-forma. The diagnosis was mainly established based upon clinical examination and was often supported by radiological findings. Statistical analysis was done in SPSS software. This study was conducted from October 2020 to October 2022.

Inclusion criteria

Inclusion criteria of the study was age groups ranging from 11 years to 70 years.

Exclusion criteria

Exclusion criteria were patients belonging to the paediatric age group and patients who had sub-acute intestinal obstruction treated conservatively.

RESULTS

In the present study, Intestinal obstruction is more common in the age group of 30-60 in which large bowel obstruction is more common in patients above 40 years of age. Out of 50 cases of intestinal obstruction, 27 patients were male and 23 patients were female; males and females are nearly in equal ratio.

Table 1: Demography.

Age group (in years)	Male	Female	Total	Percentage
11-20	2	4	6	12
21-30	5	2	7	14
31-40	5	4	9	18
41-50	6	4	10	20
51-60	4	6	10	20
61-70	5	3	8	16
Total	27	23	50	100

Table 2: Presenting symptoms and sign.

Clinical presentation	Percentage
Pain abdomen	100
Vomitting	86
Distension of abdomen	100
Constipation	60
Dehydration	60
Fever	20
Abdominal tenderness	80
Guarding	40
Palpable mass	26
Increased bowel sounds	88
Absent bowel sounds	12

The analysis of the signs and symptoms showed that pain abdomen (100%) and distension of abdomen (100%) was the major symptoms seen in the patients followed by increased bowel sounds (88%) and vomiting (86%). Other symptoms and signs analyzed in patients are tenderness over the abdomen (80%), constipation (60%), dehydration (60%), guarding (40%), palpable mass (26%), fever (20%) and absent bowel sounds (12%) (Table 2).

The most common cause of intestinal obstruction encountered in our study was postoperative adhesions (42%) followed by hernia (20%), malignancy (16%), tuberculosis-stricture (14%) and volvulus (08%) in descending order of frequency (Table 3).

The management of intestinal obstruction was done as follow; resection and anastomosis was done in 18 cases, which included cases of adhesion, stricture, ileo-caecal growth ,volvulus of small intestine and multiple strictures of the jejunum due to carcinoid tumor. Adhesiolysis was done in 15 cases which included postoperative adhesions, inflammatory adhesions and constricting bands. Anatomical hernia repair was done in 10 cases of which 7 were inguinal hernia (Bassini repair) and 3 incisional hernia. Untwisting of sigmoid volvulus was done in 2 cases & hemicolectomy was done in 4 cases. Tube caecostomy was done in 1 case of carcinoma stomach infiltrating transverse colon (Table 4).

Table 3: Etiology of intestinal obstruction.

Etiology	Percentage
Adhesion and bands	42
Hernia	20
Malignancy	16
Tuberculosis	14
Volvulus	8

Table 4: Type of surgery.

Types of surgery	Percentage
Resection-Anastomosis omosis	36
Release of adhesion	30
Herniorraphy	20
Hemicolectomy	8
Untwisting of volvulus	4
Tube caecostomy	2

Table 5: Postoperative complications.

Postoperative complications	Number of patients	Percentage
Wound infection	5	10
Respiratory infection	4	8
Entero cutaneous fistula	2	4
Prolonged ileus	3	6
Death (septicaemia)	5	10

Table 6: Association of etiology with postoperative complications.

Etiology of intestinal obstruction	No of patients developed complications
Adhesions and band	6
Hernia	4
Malignancy	4
Tuberculosis	4
Volvulus	1

In our study, 19 patients developed postoperative complications (38%). Among those, five patients was died due to following causes; ARDS secondary to respiratory infection (2 patients-40%), septicemia due to peritonitis (2 patients-40%) and multi-organ failure (1 patient-10%). Postoperative complications encountered in this study as follows; Wound infection (10%) in five patients, respiratory infection (8%) in four patients, entero-cutaneous fistula (4%) in two patients and paralytic ileus (6%) in three patients. (Table 5). Association of etiology with postoperative complications are represented in Table 6. In present study, 5 patients died during postoperative period. Analysis of cause of death were done and two patients died due to ARDS, two patients died due to septicemia and other one died due to multiorgan failure.

DISCUSSION

Intestinal obstruction continues to be the most frequent emergency, which a General surgeon has to face (1-4% of emergency operations). Majority of cases (20%) presented in age group of 41-60 years. In present study, there are 27 male and 23 females. Male and female are nearly in equal ratio. However other studies shows incidence of intestinal obstruction more common in males and represented in Table 7.

The most common etiological factor in the present study is adhesion (42%) which included postoperative, inflammatory and congenital bands. All the cases of our study were subjected to surgery. Other few studies showed similar results such as Vanathi et al (40%), Playforth et al (54%) and Deolekar et al (37.5%).[21,20,10]

Most common operation performed was resection-anastomosis (36%) followed by release of adhesions and bands (30%). Study by Deolekar et al showed similar results as commonly performed surgery in cases of intestinal obstruction was resection-anastomosis (44%).[10] Various other studies showed both resection-anastomosis and release of adhesions were performed equally and represented in Table 7.

In a total of 50 patients in our study, mortality occurred in 5 patients resulting in crude mortality rate of 10%. Among the patients who died are due to following causes 1.ARDS due to respiratory infections 2. Septicemia due to peritonitis 3. Multiple organ failure due to septicemia. The mortality in intestinal obstruction is high in individuals who develop strangulation and gangrene of the bowel, those present beyond 72 hours and in those are having pre-existing associated diseases and elderly people, though early treatment can reduce the mortality, advanced age and associated metabolic, cardiopulmonary diseases, still leads to high rate of mortality.

The small size is the limitation of this study.

Table 7: Various other studies compared with our study.

Characteristics	Present study	Adhikari et al[19]	Vanathi et al[21]	Playforth et al[20]	Deolekar et al[10]	Gadhavi et al[18]
Sex incidence	Nearly equal in ratio		Male (72%)		Male	Male (80%)
Clinical presentation	Pain abdomen (100%) Abdominal distension (100%)	Distension of abdomen (93%)		Pain abdomen (88%)	Pain abdomen (85%)	Abdominal tenderness
Common cause	Adhesion (42%)	Hernia	Adhesion (40%)	Adhesion (54%)	Adhesions (37.5%)	
Common surgery performed	Resection and anastomosis			Resection-anastomosis (22%) and release of adhesion (22%)	Resection-anastomosis (44%)	Release of adhesion (40%)
Common complication				Septicaemia	Septicaemia	
Mortality rate	10%	7.35%	7%		14%	
Common cause of mortality	Septicaemia and ARDS				Septicaemia	

CONCLUSION

Intestinal obstruction continues to remains an important surgical emergency till date. Late presentation of the patient with complications possess a challenging problem to the surgeons for management. Patients with a clinical picture of obstruction of the bowel demand vigorous resuscitation and electrolyte imbalance correction, which can be severe, and life threatening. Postoperative adhesions are the commonest cause to produce intestinal obstruction as abdominal and pelvic surgeries are on the rise. Diagnosis of Intestinal obstruction can be made more accurate with Multi-disciplinary approach of Clinical, Radiological and operative findings. Mechanical obstruction is not associated with any specific biochemical marker, which can help the surgeon to differentiate between simple obstructions from ischemia or a closed loop obstruction with impending bowel infarction. Diagnosis of strangulation is still a challenge. Majority of the patients with intestinal obstruction needs surgical intervention to relive the obstruction. Early intervention is mandatory to avoid the development of peritonitis and systemic sepsis associated with multi-system organ failure.

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