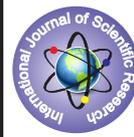


Acute mechanical bowel obstruction: Etiology, Clinical presentation, Treatment and Outcome.



General Surgery

KEYWORDS:

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ABSTRACT

Aim- To identify and analyse etiology, clinical presentation, treatment and outcome in patients with acute mechanical bowel obstruction with incidence of ischemia, gangrene and perforation.

Method- This is a prospective observational study of 120 patients of acute mechanical bowel obstruction admitted from 2014 to 2016.

Result- In consecutive 120 patients, adhesion 64 (53.3%), tuberculosis 22 (18.3%), appendicitis 9 (7.5%) and stricture 5 (4.17%) were most common etiology, absence of passage of flatus and motion 111 (92.5%), pain in abdomen 99 (82.5%), and abdominal distention 89 (74.1%) were most common clinical presentation, treatment modality used conservatively for 55 (45.8%) and operatively for 65 (54.2%). Incidence of ischemia 26 (21.6%), gangrene 05 (4.1%), and perforation 01 (0.83%).

Conclusion- Absence of passage of flatus and/or feces, abdominal pain and abdominal distension are the most common symptoms and physical finding of patients with acute mechanical bowel obstruction, respectively. Adhesions, tuberculosis, appendicitis and stricture are the most common causes of obstruction, as well as of bowel ischemia, necrosis, and perforation. Although an important proportion of these patients require immediate operation, a substantial portion can be non-operatively treated. Great caution should be taken for the treatment of these patients since the incidence of bowel ischemia, necrosis, and perforation is significantly high.

Introduction - Acute mechanical bowel obstruction continues to be one of the most common intra-abdominal conditions encountered by general surgeons in their practice. It remains a major cause of morbidity and mortality, accounting for 15% of hospital admissions for acute abdomen and upto 30% of these need operative intervention [1,2]. Patients may present acutely or as a chronic and relapsing problem with symptoms ranging from modest discomfort to extreme illness and shock. About 80 – 90 % of bowel obstructions occur in the small intestine; the other 10-20% occur in the colon.

Surgeons are concerned about bowel obstruction cases because strangulation may cause bowel ischemia, necrosis and perforation, and it is often difficult to distinguish simple obstruction from strangulation. Accurate early recognition of intestinal strangulation in mechanical bowel obstruction patients is important to decide on emergency surgery or to allow safe nonoperative management of patients [3-6]. Although careful clinical evaluation, in conjunction with laboratory and radiologic studies, is essential for the decision of proper management of patients with acute mechanical bowel obstruction [3], a preoperative diagnosis of bowel strangulation cannot be made or excluded reliably by any known parameter, combinations of parameters [5-7].

Material and methodology- It was a hospital based descriptive prospective study and conducted in the Department of General Surgery, Sawai Man Singh Medical College, Jaipur . One hundred twenty consecutive patients were admitted from July 2014 to June 2016 with diagnosis of acute mechanical bowel obstruction. The attending surgeons and the patient had total decision-making ability on the course of treatment. Clinical data were recorded, including age, sex, and past history of BO, abdominal operations, herniae, tuberculosis, malignancy, distension, pain, vomiting, peritonitis, fever, tachycardia (heart rate >100 beats/minute), leukocytosis,

history of obstipation (defined as the lack of flatus and motion for 24 or more hours.) The appropriateness of operative or nonoperative approach to management was determined by consensus of attending surgeons based on findings at exploration and the ultimate clinical course of each patient.

Result- During two years of study period, 120 consecutive adult patients with acute mechanical bowel obstruction were admitted and composed our study group. The etiology of obstruction is shown in Table 1. Regarding patients with bowel obstruction, adhesions, Tuberculosis, appendicitis, and stricture were the most frequent causes of obstruction (53.33%, 18.33%, 7.5%, and 4.17%, respectively).

Table 1-Distribution of etiology among patients presenting with bowel obstruction

Pathology Distribution	Number	Percentage (%)
Adhesions	64	53.33
Tuberculosis	22	18.33
Appendicular	9	7.5
Small bowel tumor	3	2.5
Hernia	1	0.83
Meckels diverticulum	1	0.83
Ileoileal Knotting	1	0.83
Intussusception	4	3.33
SMA Syndrome	1	0.83
Large bowel tumor	2	1.67
Crohn's disease	1	1.3
Idiopathic	5	4.17
Stricture	5	4.17
Volvolus	2	1.67

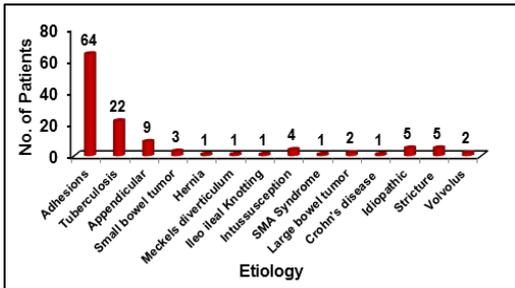


Figure 1: Distribution of etiology among patients presenting with bowel obstruction

Regarding clinical presentation of the patients, absence of passage of flatus and/or feces (92.5%) and pain in abdomen (82.5) were the most common presenting symptoms and abdominal distension (74.17%) was the most frequent physical finding on clinical examination.

Table 2-Distribution of Clinical features

Clinical Features	Number		Percentage (%)	
	Yes	No	Yes	No
Pain abdomen	99	21	82.5	17.5
Obstipation	111	9	92.5	7.5
Distension Abdomen	89	31	74.17	25.83
Sign of Shock	10	110	8.33	91.66
Nausea & vomiting	102	18	85	15

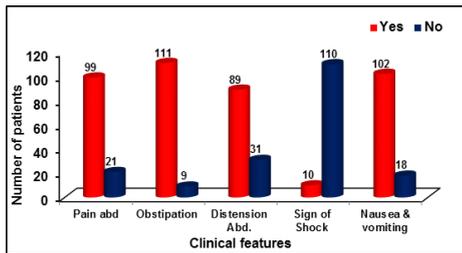
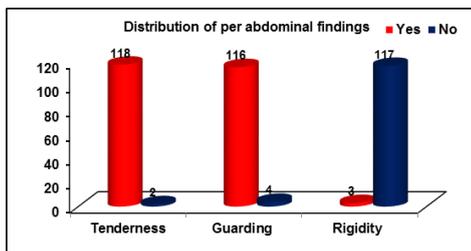


Figure 2: Distribution of clinical features in patients of acute mechanical bowel obstruction

Results of per abdominal finding were more consistent with abdominal tenderness and guarding (respectively 98.33%, 96.67%).

Table 3-Distribution of per abdominal findings

Per Abdominal Findings	Yes	No	Yes (%)	No (%)
Tenderness	118	2	98.33	1.67
Guarding	116	4	96.67	3.33
Rigidity	3	117	2.5	97.5

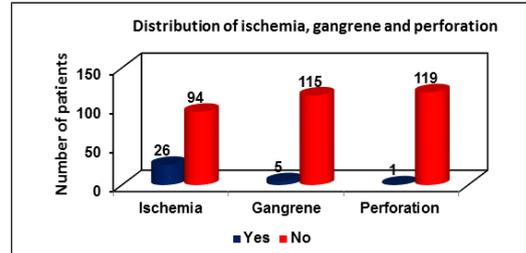


Distribution of bowel ischemia, necrosis, and perforation in the bowel obstruction is shown in table-4. Incarcerated hernias were the cause in the vast majority of the small bowel obstruction group, that presented ischemia, necrosis, and perforation, while adhesions were the second most frequent cause. Regarding the large bowel obstruction group, large bowel cancer, adhesions, and hernias constituted the most common causes. Finally, in the total group, hernias, large bowel cancer, and adhesions were the most frequent

causes of bowel ischemia, necrosis, and perforation. It was notable that bowel ischemia was reversible in half of the cases with obstruction due to incarcerated hernias justifying, thus, immediate operative intervention in these patients.

Table 4-Distribution of ischemia, gangrene and perforation

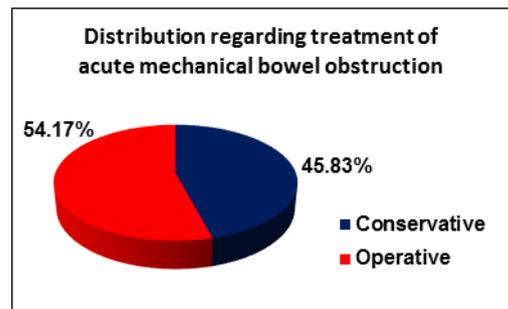
	Yes	No	Yes (%)	No (%)
Ischemia	26	94	21.67	78.33
Gangrene	5	115	4.17	95.83
Perforation	1	119	0.83	99.17



Treatment distribution for bowel obstruction was conservatively for 45.83% and operative for 54.17% as shown in Table-5.

Table 5-Distribution regarding treatment of acute mechanical bowel obstruction

	Number	Percentage
Conservative	55	45.83
Operative	65	54.17
Total	120	100



Discussion- Acute mechanical bowel obstruction remains a commonly encountered problem in surgical emergency [3,4], which is a frequent cause of admissions to hospital emergency surgical departments[4,8]. Regarding clinical presentation of our patients, absence of passage of flatus and/or feces and pain in abdomen were the most frequent presenting symptoms and abdominal distension was the most common physical finding on clinical examination. Additionally, vomiting, nausea, and abdominal discomfort were frequent symptoms on arrival. Our results, even though some differences are noticed, are in accordance with the literature [9,10,12]. Particularly, Cheddar et al [6] reported abdominal pain (92%), vomiting (82%), abdominal tenderness (64%), and distention (59%) as the most frequent sign and symptoms, whereas abdominal distension, vomiting, absolute constipation and abdominal pain were the main symptoms and sign in another series [10]. Perea et al [12] prospectively studied 100 patients with adhesive small bowel obstruction and found that the presenting symptoms were vomiting (77%), colicky abdominal pain (68%), absence of passage of flatus and/or feces (52%), and constant pain (12%), whereas abdominal distension constituted the most common clinical sign with a prevalence of 56%.

Adhesions, tuberculosis, incarcerated hernias, and large bowel cancer constitute the most frequent causes of obstruction [7,8]. Many studies postulate that adhesions are responsible for 32% to 74% of bowel obstruction and are the leading cause of small intestinal

obstruction representing 45%-80% of it [3-5,7,8]. The majority (65%-90%) of the patients with adhesive obstruction have undergone previous abdominal surgeries [9,11,12].

In less developed countries, tuberculosis, obstructed hernias, volvuli and intussusception are the predominant causes [13,14].

Much attention should be paid to the treatment of these patients since the incidence of bowel ischemia, necrosis, and perforation is significantly high. Strangulation rate ranges from 7% to 42% [6,8,10]. In addition, Kossi et al [11] study reported an incidence of ischemia of 20%, of necrosis of 8%, and of perforation of 2%. In regard to the risk of strangulation in the present study, a significantly much higher risk was noticed in incarcerated hernias in comparison to other obstruction causes. Moreover, the incidence of bowel ischemia, necrosis, and perforation in adhesive obstruction was low. These results have been also described in other studies [3,8].

An important share of our patients was successfully nonoperatively (45%) treated. This was more prevalent regarding adhesive small bowel obstruction. Similar to other studies [10], of those patients that were operated, a substantial proportion required immediate operation.

In conclusion, absence of passage of flatus and/or feces, pain in abdomen and abdominal distension are the most common symptoms and physical finding of patients with acute mechanical bowel obstruction, respectively. Adhesions, tuberculosis, appendicular perforation, stricture, hernias, and large bowel cancer are the most common causes of obstruction as well as of bowel ischemia, necrosis, and perforation. Although an important share of these patients can be safely and effectively nonoperatively treated, particularly those with adhesive obstruction, a substantial portion requires immediate operation. Moreover, the risk of strangulation is significantly higher in incarcerated hernias than other obstruction causes. Great caution should be taken for the treatment of patients with acute mechanical bowel obstruction since the incidence of bowel ischemia, necrosis, and perforation is significantly high. Further studies are necessary in order to determine appropriate management for treatment of these patients as well as to identify accurate early predictors of success of conservative or operative treatment and, particularly, of intestinal strangulation giving the greatest attention to reversible ischemia.

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