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A Clinical Study on Surgical Management of Acute Intestinal Obstruction

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Abstract

***Background**: Management of acute intestinal obstruction is important because early recognition and intervention can prevent irreversible ischemia and decrease mortality and long-term mobility. Successful treatment depends on adequate recognition and skillful management. **Methods:** A total of n=50 cases of patients belonging to both sex groups were included in the study. All patients were evaluated thoroughly from their history and clinical examination. The routine examination includes hemoglobin percentage, blood grouping and typing, WBC count and differential count, ESR and blood urea, serum creatinine, serum electrolytes. **Results**: Patients were evaluated for the various presenting features the pattern of clinical signs among these patients was variable with only 44% of patients presenting with rebound tenderness and 36% of patients had exaggerated bowel sounds. Postoperative Adhesions are the most common cause of intestinal obstruction accounting for 36% of the cases, with the obstructed hernia being the next common cause accounting for 30% of patients. Out of n=14 cases of obstructed hernia, n=8 cases were due to inguinal hernia, n=1 in the femoral region, n=1 umbilical hernia, and the rest due to the incisional hernia. N=7 patients had presented with sigmoid volvulus. **Conclusion**: acute intestinal obstruction is adhesions followed by hernia. Clinical radiological and operative findings put together can bring about the best and accurate diagnosis of intestinal obstruction. Mechanical obstruction is not associated with any specific biochemical marker, which can help the surgeon differentiate simple obstructions from ischemia or a closed-loop obstruction with impending bowel infarction.*

Keywords: *Acute Intestinal Obstruction, Surgical Management, Postoperative Adhesions*

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Introduction

Acute Intestinal obstruction is a common surgical emergency all over the world. It is defined as an obstruction in forwarding propulsion of the contents due to mechanical or neurological causes. [1] It is predisposed by varied underlying anomalies and diseases, which are difficult to define preoperatively. Though intestinal obstruction can be diagnosed easily, the underlying cause except for postoperative adhesions and external hernias are difficult to diagnose clinically preoperatively as the spectrum of intestinal obstruction is changing. [2] Although the mortality due to acute intestinal obstruction is decreasing with a better understanding of pathophysiology, improvement in diagnostic techniques, fluid and electrolyte correction, more potent anti-microbials, and knowledge of intensive care, still the mortality ranges from 10-15% and more so in developing countries. Various studies in India report about

6-12% in recent times. [3] Mostly mortality is seen in elderly individuals who seek late treatment and who are having associated pre-existing diseases like, diabetes mellitus, COPD, and cardiac diseases. [4] The most critical factor affecting the outcome is whether obstruction has progressed to the point of strangulation. The accurate and early recognition of intestinal ischemia and emergency surgical intervention is essential in patients with mechanical small bowel obstruction to prevent strangulation and further complications. Early diagnosis of obstruction, skillful operative management, proper technique during surgery, and intensive postoperative treatment carries a grateful result. This study tried to study the modalities of surgical procedures and their outcome about the etiological factors. To study the morbidity and mortality associated with acute intestinal obstruction.

Materials and Methods

This cross-sectional study was conducted at the Department of General Surgery, Prathima Institute of Medical Sciences, Naganoor, Karimnagar. Institutional Ethical committee permission was obtained for the study. Written consent was obtained from all the participants of the study.

Inclusion criteria

1. All patients presenting to the emergency wing of the surgical department with
2. features of intestinal obstruction were taken up for study.

Exclusion criteria

1. Patients with subacute intestinal obstruction treated conservatively are excluded from the study.
2. Those already underwent surgical procedures for acute intestinal obstruction.

A total of n=50 cases of patients belonging to both sex groups were included in the study. All patients were evaluated thoroughly from their history and clinical examination. Supported by radiological investigations which included plain x-ray erect abdomen to detect fluid gas levels, an ultrasound abdomen was done in all cases. CT scan abdomen was done in selected cases of the mass abdomen. The routine examination includes hemoglobin percentage, blood grouping and typing, WBC count and differential count, ESR and blood urea, serum creatinine, serum electrolytes. Other investigations being carried out on one side, these patients were put on nil oral status since admission. Abdominal decompression was carried out with a nasogastric tube on continuous drainage. Resuscitative measures were carried out on all patients vigorously with I.V. fluids for the correction of the dehydration status and electrolyte imbalance.

All patients were assessed on a half-hourly basis for their general condition and signs of progression. Patients were monitored with the following-

1. Pulse rate- for tachycardia
2. Abdomen for signs of tenderness and guarding.
3. Progression of abdominal distension with hourly abdominal girth chart.
4. Hydration status using urine output.

Patients were put on resuscitative measures for a period of 3-4 hours but taken up for surgery even before resuscitation of two hours when required. Patients presenting with post-operative adhesive intestinal obstruction were initially put on nonoperative management with close monitoring. The expectant line of management was carried for not more than 36 hours. Patients presenting with obstructed hernia were not subjected to a manual reduction of the hernial sac, neither were these patients put on the expectant line of management to avoid the risk of strangulation.

Results

A total of n=50 Cases were admitted to Prathima Institute of Medical Sciences, with clinical features of intestinal obstruction are included in the study. The minimum age of the patient in the study was 22.5 years and the maximum age was 65.5 years. The distribution of cases is described in table 1. In the study out of n=50 cases, n=38 (76%) were male and n=12(24%) were female cases.

Table 1: Age Distribution of cases in the study

Age in Years	*Male*	*Female*	*frequency*	*Percentage*
12-20 Years	0	0	0	0
21-30 Years	2	1	3	6
31-40 Years	16	4	20	40
41-50 Years	14	5	19	38
51-60 Years	4	2	6	13
> 60 Years	2	0	2	4
Total	38	12	50	100

All patients in the study group were evaluated for the presence of the cardinal symptoms of intestinal obstruction namely colicky abdominal pain, vomiting, abdomen distension, and constipation. The frequency of occurrence of the symptoms is expressed in table 2. All patients had abdominal pain of varying duration with a patient the mean duration of
7 days. Pain abdomen was either diffuse and crampy or dull aching in the region of the lower abdomen as in the case of patients with obstructed hernia. Some patients had various symptoms like the passing of loose stools or altered bowel habits especially in patients with malignancy.

Table 2: Symptomatology reported by the cases in the study

Symptoms	*No. of Patients*	*Percentage (%)*
Abdominal pain	50	100
Vomiting	43	86
Distension	41	82
Constipation	29	58

Patients have evaluated for the various presenting features the pattern of clinical signs among these patients was variable with only 44% of patients presenting with rebound tenderness and 36% of patients had exaggerated bowel sounds. Visible peristalsis was noted in nine patients. 18% of patients had tachycardia i.e. above 100 beats/min.

Table 3: Etiological distribution of cases

Etiology	*frequency*	*Percentage*
Adhesions	18	36
Obstructed hernia	14	28
Sigmoid volvulus	7	14
Malignancy	5	10
Mesenteric ischemia	2	4
Intestinal tuberculosis	3	6
Meckel's diverticulum	1	2
Total	50	100

Adhesions are the most common cause of intestinal obstruction accounting for 36% of the cases, with the obstructed hernia being the next common cause accounting for 30% of patients. Out of n=14 cases of obstructed hernia, n=8 cases were due to inguinal hernia, n=1 in the femoral region, n=1 umbilical hernia, and the rest due to the incisional hernia. N=7 patients had presented with sigmoid volvulus. Malignancy of the large bowel was found to cause obstructive features with a single case being due to ascending colon growth shown in table 4.

Table 4: Types of surgery operations

Disease	*Procedure*	*Frequency*	*Percentage*
Adhesions	Adhesiolysis / Resection Anastomosis	18	36
Obstructed hernia	Herniorrhaphy	14	28
Sigmoid volvulus	Resection & Anastomosis	6	12
	Hartmann's Procedure	1	2
Malignancy	Resection & Anastomosis	4	8
	Bypass	1	2
Mesenteric ischemia	Resection & Anastomosis	1	2
	Double barrel ileostomy	0	0
	Jejunostomy	1	2
Intestinal tuberculosis	Adhesiolysis/ Resection & Anastomosis	2	4
Meckel's diverticulum	Diverticulectomy with restoration	1	2

N=42 patients who underwent the surgical procedure had no complications. N=5 patients

had wound infection with wound gaping and had to be treated with secondary suturing. one had prolonged ileus, one patient anastomotic leak, and one with a respiratory infection (table 5). The mean duration of hospital stay was 8.5 days of the patients ranged from 1 to 30 days.

Table 5: Complications of cases in the study

Complications	*frequency*	*Percentage*
No Complications	42	84
Wound infection	5	10
Anastomotic leak	1	2
Prolonged ileus	1	2
Respiratory Tract Infection	1	2

Discussion

Acute mechanical bowel obstruction is a frequent cause of admissions to hospital emergency surgical departments. [5, 6] The majority of the present study group presented with acute mechanical small bowel obstruction which correlates with studies indicating that small bowel obstruction accounts for about 80% of all obstruction cases. [7] The clinical manifestations are varied ranging from abdominal pain and distension to a state of hypovolemic shock/ septicaemic shock as both require emergency surgery. The delay in the treatment will lead to high mortality. With the advancement in understanding the anatomy/physiology fluid and electrolyte management along with modern antibiotics and intensive care unit, mortality has been decreasing consistently. The current spectrum of intestinal obstruction in our country specifically related to our regional place was analyzed and results obtained were compared to other studies. Age Incidence through intestinal obstruction was present in all age groups, in this study majority of the cases in the present study belonged to the age groups between 31 – 40 years group and 41-50 age group (table 1). Among these age groups, the common causes for intestinal obstruction are adhesions and obstructed hernia. A Souvik et al; [8] and AM Malik et al; [9] have observed similar results in their studies. Comparing the gender distribution, the number of cases in males accounted for 76%, while several cases in females accounted for 24%. Gender discrepancy in this study with males outnumbering the females by a huge margin probably attributed to the following reasons. Generally, in groin hernias more males are affected than females, this correlates with the above-mentioned, studies. However, a larger proportion of females present with an obstruction that too with the femoral hernia. Also, women in rural India are mostly housewives, limit their exposure to TB bacilli in contrast to males. Our study correlated with Alexander et al; [10] who found the ratio was 74% males and 26% females. The most common clinical presentation in this study is abdominal pain (100%), followed by vomiting 86%. If distension of mild degree was to be ignored, then only 82% of patients had to be graded as having distension. Patients with obstructed hernia presenting late had distension of moderate degree. Haridimos et al; [11] Given the more acute presentation of the cases pain abdomen was the most consistent finding in the present study strongly supported by the clinical elicitation of tenderness. Adhesions are the most common cause of intestinal obstruction accounting for 36% of the cases, with the obstructed hernia being the next common cause accounting for 30% of patients. The etiology of intestinal obstruction varies from one country to another and from one part of the country to another part. The variation in the etiological causes may be attributed to the unique nature of the present study's selection criteria of patients. The most frequent complications in adults are obstruction due to the intussusceptions or adhesive band, ulceration, diverticulitis, and perforation. Meckel's Diverticulum a rare cause of Intestinal obstruction. In the present study, Malignancy accounts for 10% of the present study which is close in comparison with other studies. [8, 11] Whereas, other studies like XIN-Zu Chen et al; [12] and Hasanfehmi et al; [13] was high. Wound infection is a common postoperative complication. In the present study, wound infection contributed to 10% of cases. It was 11.98% in Adhikari S et al; [8] 18.5% in Alexander et al; [10] studies. Most of the wound infections occurred in cases of sigmoid volvulus where ischemia occurred, and the other causes are mesenteric ischemia, Intestinal TB, and malignancy.

Conclusion

Within the limitations of the current study, we found acute intestinal obstruction are adhesions followed by hernia. Clinical radiological and operative findings put together can bring about the best and accurate diagnosis of intestinal obstruction. Mechanical obstruction is not associated with any specific biochemical marker, which can help the surgeon differentiating simple obstructions from ischemia or a closed-loop obstruction with impending bowel infarction. The mortality and morbidity increased by the presence of strangulated bowel.

Conflict of Interest: *None declared*
Source of Support: *Nil*
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