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Original Research Article

Clinical Profile and Outcomes of Patients with Intestinal Obstruction

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Abstract:

Background: Intestinal obstruction is a common surgical emergency associated with significant morbidity and mortality, particularly when diagnosis and intervention are delayed. Understanding the local clinical profile and outcomes is essential for improving management strategies.

Objectives: To study the clinical presentation, etiology, management modalities, and outcomes of patients presenting with intestinal obstruction at a tertiary care teaching hospital.

Materials and Methods: This hospital-based prospective observational study was conducted in the Department of General Surgery at Government Medical College, Karimnagar, over a period of 12 months. A total of 57 adult patients diagnosed with acute intestinal obstruction were included. Data regarding demographics, clinical features, etiology, investigations, management, intraoperative findings, postoperative complications, and outcomes were collected using a pre-designed proforma. Data were analyzed using SPSS version 25, with results expressed as mean ± SD, frequencies, and percentages.

Results: The mean age of patients was 51.6 ± 14.2 years, with a male predominance (66.7%). Abdominal pain (96.5%) was the most common presenting symptom. Postoperative adhesions (36.8%) were the leading cause of obstruction, followed by obstructed hernias (24.6%). Small bowel obstruction was more common (68.4%) than large bowel obstruction. Surgical intervention was required in 59.6% of patients. Postoperative complications occurred in 19.3%, with surgical site infection being the most frequent. The overall mortality rate was 7%, and the mean hospital stay was 8.6 ± 3.1 days.

Conclusion: Intestinal obstruction predominantly affects middle-aged males, with adhesions being the most common etiology. Early diagnosis and timely management are crucial to reduce complications and mortality.

Keywords: Intestinal Obstruction; Small Bowel Obstruction; Adhesions; Surgical Outcomes; Acute Abdomen.

Introduction

Intestinal obstruction (IO) is one of the most frequently encountered surgical emergencies and is defined as a partial or complete interruption in the normal transit of intestinal contents through the gastrointestinal tract. It may involve the small intestine, large intestine, or both, and constitutes a significant proportion of emergency admissions for acute abdomen worldwide [1]. Despite advances in diagnostic imaging, anesthesia, and perioperative care, intestinal obstruction continues to be associated with considerable morbidity and mortality, particularly when diagnosis or intervention is delayed [2].

Small bowel obstruction (SBO) accounts for the majority of intestinal obstruction cases, while large bowel obstruction (LBO) contributes a smaller but clinically significant share, often associated with malignancy and poorer outcomes [3]. Adhesions following previous abdominal surgery are recognized as the most common cause of SBO in adults, followed by obstructed hernias, malignancies, volvulus, inflammatory strictures, and intussusception [4,5]. In contrast, large bowel obstruction is most frequently caused by colorectal carcinoma, sigmoid volvulus, and diverticular disease [6].

The etiological spectrum of intestinal obstruction varies across regions and healthcare settings. In developing countries, obstructed external hernias and late presentation are still common, resulting in higher rates of bowel ischemia, gangrene, perforation, and postoperative complications [7]. Studies from Indian tertiary care centers have consistently reported adhesions and hernias as

leading causes, with malignancy contributing an increasing proportion, especially in elderly patients [8].

Clinically, patients with intestinal obstruction typically present with abdominal pain, vomiting, abdominal distension, and constipation or obstipation. The severity and predominance of symptoms depend on the level, duration, and completeness of obstruction [2]. Physical findings may range from dehydration and electrolyte imbalance to signs of strangulation and peritonitis in complicated cases. Computed tomography (CT) of the abdomen has emerged as the imaging modality of choice, allowing accurate identification of the site, cause, and severity of obstruction, as well as early detection of complications such as ischemia or perforation [9].

Outcomes of intestinal obstruction are influenced by several factors including age, comorbidities, etiology, presence of strangulation or gangrene, and timing of surgical intervention. Emergency surgery for intestinal obstruction, particularly malignant large bowel obstruction, is associated with higher postoperative morbidity, prolonged hospital stay, and increased mortality compared to elective procedures [6,10]. Adhesive small bowel obstruction, although often managed conservatively initially, carries a significant risk of recurrence and complications if not appropriately treated [5].

Given the wide variability in clinical presentation, etiological factors, and outcomes across different populations and healthcare settings, it is important to study the clinical profile and outcomes of patients with intestinal obstruction in specific institutional contexts. Such data help in identifying local patterns, predicting adverse outcomes, optimizing management strategies, and improving overall patient care.

Materials and Method

This was a hospital-based observational study with a prospective descriptive design, conducted to evaluate the clinical profile, etiology, management, and outcomes of patients presenting with intestinal obstruction.

The study was carried out in the Department of General Surgery at Government Medical College a tertiary care teaching hospital, Karimnagar in India. The institution caters to both urban and rural populations and receives a large number of emergency surgical admissions. The study was conducted over a period of 12 months

All consecutive patients admitted with a clinical and/or radiological diagnosis of intestinal obstruction during the study period were included.

Inclusion Criteria

- Patients aged 18 years and above
- Patients diagnosed with acute intestinal obstruction involving the small or large intestine
- Diagnosis confirmed clinically and/or radiologically (X-ray abdomen, ultrasonography, or CT scan)
- Patients who provided written informed consent

Exclusion Criteria

- Patients with paralytic ileus
- Patients with subacute or chronic intestinal obstruction
- Patients with obstruction due to postoperative ileus without mechanical cause
- Pregnant women
- Patients who refused consent or left against medical advice

Sample Size: The sample size consisted of all eligible patients (n=57) admitted during the study period who satisfied the inclusion and exclusion criteria.

Data Collection: Data were collected using a pre-designed and pre-tested proforma. Information recorded included:

- **Demographic details:** age, sex
- **Clinical presentation:** abdominal pain, vomiting, abdominal distension, constipation/obstipation, duration of symptoms
- **Past history:** previous abdominal surgery, hernia, malignancy, tuberculosis, comorbidities
- **Physical examination findings:** abdominal tenderness, guarding, rigidity, bowel sounds, signs of dehydration and peritonitis
- **Investigations:**
    - Routine laboratory investigations (hemoglobin, total leukocyte count, serum electrolytes)
    - Radiological investigations (X-ray abdomen erect, ultrasonography, and/or contrast-enhanced CT abdomen)

Management Protocol

Patients were managed according to standard institutional protocols. Initial management included:

- Nil per oral (NPO) status
- Nasogastric decompression
- Intravenous fluids and electrolyte correction
- Broad-spectrum antibiotics and analgesics

Patients were categorized into conservative or operative management groups based on clinical response and radiological findings.

Operative Details

For patients requiring surgery, the following details were recorded:

- Indication for surgery
- Intraoperative findings
- Etiology of obstruction
- Type of surgical procedure performed
- Presence of bowel ischemia, gangrene, or perforation
- Requirement of bowel resection and anastomosis or stoma formation

Ethical Consideration: The study was approved by the Institutional Ethics Committee of the hospital. Written informed consent was obtained from all participants prior to inclusion in the study. Confidentiality of patient data was strictly maintained.

Statistical Analysis: The collected data were entered into Microsoft Excel and subsequently analyzed using the Statistical Package for Social Sciences (SPSS) version 25. Continuous variables were summarized and presented as mean ± standard deviation (SD), while categorical variables were expressed as frequencies and percentages. Associations between categorical variables were assessed using the Chi-square test or Fisher's exact test, as appropriate. A p-value of less than 0.05 was considered statistically significant for all analyses.

Observation and Results

Table 1: Age and Gender distribution among study population (n=57)

Variable	Number (n)	Percentage (%)
Age (years)		
≤ 40	16	28.1
41–60	24	42.1
> 60	17	29.8
Mean age (years)	51.6 ± 14.2	
Sex		
Male	38	66.7
Female	19	33.3

Table 1 shows the age and gender distribution of the 57 patients with intestinal obstruction. The mean age of the study population was 51.6 ± 14.2 years, with the majority of patients belonging to the 41–60 years age group (42.1%), indicating a higher prevalence in middle-aged and older adults. There was a clear male predominance, with males constituting 66.7% of cases, suggesting that intestinal obstruction was more commonly observed among male patients in this study population

Table 2: symptoms and duration of symptoms among study population (n=57)

Parameters	Number (n)	Percentage (%)
Symptom		
Abdominal pain	55	96.5
Vomiting	44	77.2
Abdominal distension	42	73.7
Constipation / obstipation	36	63.2
Fever	18	31.6
Dehydration	22	38.6
Duration of Symptoms		
≤ 48 hours	31	54.4
> 48 hours	26	45.6

Table 2 describes the clinical presentation and duration of symptoms. Abdominal pain was the most common symptom, present in 96.5% of patients, followed by vomiting (77.2%) and abdominal distension (73.7%). Constipation or obstipation was observed in nearly two-thirds of patients. Regarding symptom duration, 54.4% of patients presented within 48 hours, while 45.6% presented after 48 hours, highlighting that a significant proportion had delayed presentation, which may influence disease severity and outcomes

Table 3: Etiology among study population (n=57)

Etiology	Number (n)	Percentage (%)
Postoperative adhesions	21	36.8
Obstructed hernia	14	24.6
Malignancy	9	15.8
Volvulus	7	12.3
Strictures / others	6	10.5

Table 3 outlines the etiological distribution of intestinal obstruction. Postoperative adhesions were the most common cause, accounting for 36.8% of cases, followed by obstructed hernias (24.6%). Malignancy-related obstruction was seen in 15.8% of patients, while volvulus and strictures or other causes contributed to a smaller proportion. This distribution reflects the changing etiological trends, with adhesions being a leading cause in modern surgical practice

Table 4: Level of Obstruction and Management modality among study population (n=57)

Parameters	Number (n)	Percentage (%)
Level of obstruction		
Small bowel obstruction	39	68.4
Large bowel obstruction	18	31.6
Management Modality		
Conservative management	23	40.4
Surgical management	34	59.6

Table 4 presents the level of obstruction and management approach. Small bowel obstruction was more common, observed in 68.4% of patients, compared to 31.6% with large bowel obstruction. In terms of management, 59.6% of patients required surgical intervention, while 40.4% were successfully managed conservatively. This indicates that although conservative management is effective in selected cases, a majority still require operative treatment

Table 5: Intraoperative findings and procedure performed among study population (n=57)

Parameters	Number (n)	Percentage (%)
Intraoperative Finding		
Bowel ischemia / gangrene	12	35.3
Bowel perforation	5	14.7
Closed-loop obstruction	9	26.5
Viable bowel	8	23.5
Procedure Performed		
Adhesiolysis only	19	55.9
Bowel resection and anastomosis	11	32.4
Resection with stoma	4	11.7

Table 5 summarizes intraoperative findings and procedures performed among surgically managed patients. Bowel ischemia or gangrene was noted in 35.3% of cases, and bowel perforation in 14.7%, indicating a considerable burden of complicated obstruction. Adhesiolysis alone was the most frequently performed procedure (55.9%), followed by bowel resection and anastomosis (32.4%) and resection with stoma formation (11.7%), reflecting the severity of intraoperative pathology encountered

Table 6: Post-operative complication and outcomes among study population (n=57)

Complication	Number (n)	Percentage (%)
Post-operative Complication		
Surgical site infection	5	8.8
Respiratory complications	3	5.3
Sepsis	2	3.5
Anastomotic leak	1	1.7
Outcomes		
Recovered and discharged	53	93
Death	4	7
Mean hospital stays (days)	8.6 ± 3.1	

Table 6 depicts postoperative complications and final outcomes. Postoperative complications were observed in a minority of patients, with surgical site infection (8.8%) being the most common, followed by respiratory complications and sepsis. The overall outcome was favorable, with 93% of patients recovering and being discharged. However, mortality was noted in 7% of cases. The mean hospital stay was 8.6 ± 3.1 days, indicating a moderate duration of hospitalization for patients with intestinal obstruction

Discussion

Intestinal obstruction remains a significant cause of surgical morbidity and mortality, particularly in emergency settings. The present study evaluated the clinical profile, etiological spectrum, management modalities, and outcomes of patients with intestinal obstruction in a tertiary care hospital and provides insights that are comparable with previously published Indian literature.

In the present study, the mean age of patients was 51.6 ± 14.2 years, with the majority belonging to the 41–60 years age group (42.1%), indicating a higher incidence in middle-aged and elderly individuals. Similar age distributions have been reported in Indian studies by Souvik et al. and Adhikari et al., where the mean age ranged between 45 and 55 years [8,11]. The predominance of intestinal obstruction in this age group may be attributed to a higher likelihood of prior abdominal surgeries, hernias, and malignancies.

A clear male predominance (66.7%) was observed in our study, consistent with findings reported by Souvik et al. (65.9%) and Singh et al. (68–72%) [8,12]. This male preponderance may be explained by greater occupational exposure, higher incidence of hernias, and increased surgical interventions among males in the Indian population.

Abdominal pain was the most common presenting symptom in our study (96.5%), followed by vomiting (77.2%), abdominal distension (73.7%), and constipation or obstipation (63.2%). These findings are in agreement with Indian studies by Adhikari et al. and Shukla et al., who reported abdominal pain in more than 90% of cases and vomiting in approximately 70–80% of patients [11,13]. The classical symptom triad continues to be a reliable indicator for early clinical suspicion of intestinal obstruction.

Delayed presentation remains a major concern, as 45.6% of patients in the present study presented after 48 hours of symptom onset. Similar delays have been documented in Indian studies, particularly from government and rural healthcare settings, where delayed referral and limited access to specialized care contribute to disease severity [12,14].

Postoperative adhesions were the most common cause of intestinal obstruction in the present study (36.8%), followed by obstructed hernias (24.6%). This pattern aligns with the findings of Souvik et al., who reported adhesions in 35–40% of cases, and with studies by Duron et al. and Singh et al., highlighting adhesions as the leading cause in the modern surgical era [8,12,15].

Malignancy accounted for 15.8% of cases, reflecting the rising burden of colorectal and abdominal malignancies in India. Comparable rates have been reported by Adhikari et al. and Bhandari et al., where malignancy contributed to 12–18% of intestinal obstruction cases [11,16]. Volvulus and strictures were less common but remain important causes, especially in elderly patients and those with chronic inflammatory conditions.

Small bowel obstruction was more frequent (68.4%) than large bowel obstruction (31.6%), a finding consistent with most Indian studies reporting SBO in 65–75% of cases [8,13]. The predominance of SBO is largely due to adhesions and hernias, which primarily affect the small intestine.

In terms of management, 59.6% of patients required surgical intervention, while 40.4% were managed conservatively. Similar operative rates have been reported by Singh et al. and Adhikari et al., emphasizing that although conservative management is effective in selected patients, a significant proportion ultimately require surgery due to complications or failure of non-operative treatment [11,12].

A notable finding in the present study was the high proportion of complicated obstruction, with bowel ischemia or gangrene in 35.3% and bowel perforation in 14.7% of surgically managed patients. These findings are comparable to those reported by Shukla et al., who observed bowel gangrene in approximately 30–40% of cases presenting late [13].

Adhesiolysis alone was the most common surgical procedure (55.9%), followed by bowel resection and anastomosis (32.4%). The requirement for bowel resection reflects delayed presentation and severity of disease, a trend consistently observed in Indian emergency surgical studies [8,14].

Postoperative complications were observed in 19.3% of patients, with surgical site infection (8.8%) being the most frequent complication. This rate is comparable with Indian studies reporting SSI rates between 7% and 15% in emergency abdominal surgeries [12,16]. Respiratory complications and sepsis were less frequent but contributed significantly to morbidity.

The overall mortality rate of 7% in the present study is comparable to mortality rates reported in Indian literature, which range from 5% to 10%, particularly

in cases with bowel gangrene, perforation, and malignant obstruction [8,11,13]. The mean hospital stay of 8.6 ± 3.1 days was similar to that reported by Adhikari et al. and Singh et al., reflecting prolonged recovery in surgically managed and complicated cases [11,12].

Conclusion

Intestinal obstruction remains a common surgical emergency with significant morbidity and mortality. In the present study, middle-aged and elderly males were most commonly affected, with postoperative adhesions and obstructed hernias being the leading causes. Abdominal pain was the predominant presenting symptom, and small bowel obstruction was more frequent than large bowel obstruction. Although conservative management was effective in selected patients, a majority required surgical intervention, particularly those presenting late or with complicated obstruction. Postoperative complications and mortality were mainly associated with bowel ischemia, perforation, and delayed presentation. Early diagnosis, timely referral, and prompt management are essential to reduce complications and improve outcomes in patients with intestinal obstruction.

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