

**A Clinical Study of Surgical Management of Acute Intestinal Obstruction:  
An Experience in a Tertiary Care Hospital**Venkatram Reddy Sankepalli<sup>1</sup>, Mukka Gopinath<sup>2</sup><sup>1</sup>Assistant Professor, Department of General Surgery, Father Colombo Institute of Medical Sciences, Warangal, Telangana State.<sup>2</sup>Assistant Professor, Department of General Surgery, Father Colombo Institute of Medical Sciences, Warangal, Telangana State.

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**Abstract****Background:** The most frequently encountered intra-abdominal issue for general surgeons in their practice is bowel obstruction. The symptoms can range from mild discomfort and abdominal distension to severe sepsis or hypovolemic shock, necessitating immediate intervention. To study various patterns of presentation, various causes, the significance of early recognition, diagnosis, treatment, and outcomes.**Methods:** Patients exhibiting signs and symptoms of acute obstruction underwent the appropriate surgical procedure after initial resuscitation. During the postoperative period, patients were carefully monitored, and their parameters were recorded hourly or every four hours, depending on their general condition and toxemia. Nasogastric tube aspiration, intravenous fluids, and antibiotics were administered as part of the postoperative care. Any complications that arose were documented and treated accordingly.**Results:** A total of 40 cases were included in the study. Out of which 30 were males and 10 were females. Resection and anastomosis were performed in 10 cases, encompassing instances of adhesion, stricture, ileocaecal growth, volvulus of the small intestine, and multiple strictures of the jejunum due to a carcinoid tumor. Adhesiolysis was conducted in 4 cases, Anatomical hernia repair was undertaken in 9 cases, with 7 being inguinal hernias (Bassini repair) and 2 being incisional hernias. Untwisting of the sigmoid volvulus was performed in 3 cases, while hemicolectomy was carried out in 4 cases.**Conclusion:** Intestinal obstruction remains a significant surgical emergency. Late presentation of patients with complications poses a challenging problem for surgeons in terms of management. Patients presenting with symptoms of bowel obstruction require prompt resuscitation and correction of electrolyte imbalances, as these can be severe and life-threatening. The increasing number of abdominal and pelvic surgeries has led to postoperative adhesions becoming the most common cause of intestinal obstruction.**Keywords:** Acute Intestinal Obstruction, Surgical Management, Resection, and Anastomosis.

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**Introduction**

Intestinal obstruction is a common surgical emergency encountered worldwide. It refers to a blockage that hinders the normal movement of the intestinal contents, which can be caused by dynamic, adynamic, or pseudo-obstruction. Identifying the underlying anomalies and diseases that predispose individuals to this condition before surgery is challenging. The causes of acute intestinal obstruction vary, ranging from common factors, such as adhesions, hernias, and malignancies, to fewer common conditions, such as intussusception.[1] The symptoms of acute intestinal obstruction can range from mild abdominal discomfort and distension to a critical state of hypovolemic or septic shock, necessitating immediate surgical intervention.[2-4] While

diagnosing intestinal obstruction is generally straightforward, determining the specific underlying cause, except in cases of postoperative adhesions and external hernias, poses difficulties before surgery.

Key symptoms of intestinal obstruction include abdominal pain, vomiting, abdominal distension, constipation, and dehydration.[5] Prompt diagnosis, adequate preoperative resuscitation, skilled surgical management, proper surgical techniques, and intensive postoperative care yield positive outcomes in treating this condition. Managing a patient with intestinal obstruction is one of the most challenging emergencies for general surgeons in their practice. Non-operative approaches for intestinal obstruction involve fluid and electrolyte replacement using

crystalloids as well as gastrointestinal drainage through nasogastric or nasointestinal tubes. These methods have shown success rates ranging from 62% to 85% depending on the underlying cause and type of obstruction. [6-8] Although mortality rates due to acute intestinal obstruction have decreased due to an improved understanding of its pathophysiology, advancements in diagnostic techniques, appropriate fluid and electrolyte resuscitation, potent antimicrobial agents, and surgical management, mortality still ranges from 3% in simple cases to as high as 30% in cases of compromised blood flow or bowel perforation. [9, 10]

These rates are also influenced by the clinical context and coexisting medical conditions. Elderly individuals who delay seeking treatment and those with pre-existing diseases such as diabetes mellitus, chronic obstructive pulmonary disease (COPD), and cardiac conditions are particularly vulnerable to higher mortality rates. This trial aimed to examine the different factors that contribute to intestinal obstruction and analyze the diverse clinical features associated with this condition. In addition, we sought to investigate the necessary treatment approaches and assess the outcomes of various surgical procedures in relation to the underlying causes of intestinal obstruction among the patients.

### Material and Methods

This cross-sectional study was conducted in the Department of General Surgery, Pinnamaneni Siddhartha Institute of Medical Sciences & Research Foundation, Gannavaram, Andhra Pradesh. Institutional Ethical permission was obtained for the study as per the requirements for human studies. Written consent was obtained from all the patients of the study after explaining the nature of the study in the vernacular language.

### Inclusion criteria

1. All the cases were diagnosed with acute intestinal obstruction and underwent surgical procedures.
2. Aged 18 and above.
3. Males and females.
4. Willing to participate in the study voluntarily.

### Exclusion criteria

1. Patients who had sub-acute Intestinal obstruction, who were treated conservatively were excluded from the study.
2. Those not as per the inclusion criteria
3. Patients deemed unfit for surgery.

The study involved explaining the procedures to patients and their relatives and obtaining written informed consent. Patients then underwent a series

of examinations including history taking, and physical examination (including systemic, abdominal, and per rectal examination), and the findings were documented. All patients underwent routine laboratory investigations such as complete blood count (CBC), urine examination, liver function tests (LFT), and renal function tests (RFT). Additionally, an erect abdomen X-ray was performed on all patients, while further tests like barium enema, ultrasound examination, or CT scan were conducted selectively in specific cases.

Upon admission, patients received resuscitative measures including intravenous fluids and nasogastric decompression with the insertion of a Ryles tube. Close observation of various bedside parameters such as pulse rate, blood pressure, respiratory rate, urine output, abdominal girth, bowel sounds, tenderness, and guarding was carried out. Patients exhibiting signs and symptoms of acute obstruction underwent the appropriate surgical procedure after initial resuscitation. During the postoperative period, patients were carefully monitored, and their parameters were recorded hourly or every four hours, depending on their general condition and toxemia. Nasogastric tube aspiration, intravenous fluids, and antibiotics were administered as part of the postoperative care. Any complications that arose were documented and treated accordingly.

After discharge, patients were followed up for a period of three months. Data was collected and compiled using Microsoft Excel, and statistical analysis was performed using the SPSS 23.0 version. Descriptive statistics were employed for the analysis.

### Results

A total of 40 cases were included in the study. Out of which 30 were males and 10 were females. The male-to-female ratio was 3:1. The age range of the patients in the study was 19 years to 72 years. The common age group involved was 41 – 50 years with 30% of cases followed by 31 – 40 with 20% of cases and the mean age of the cohort was  $43.5 \pm 8.5$  years. The demographic profile of cases in the study is depicted in Table 1.

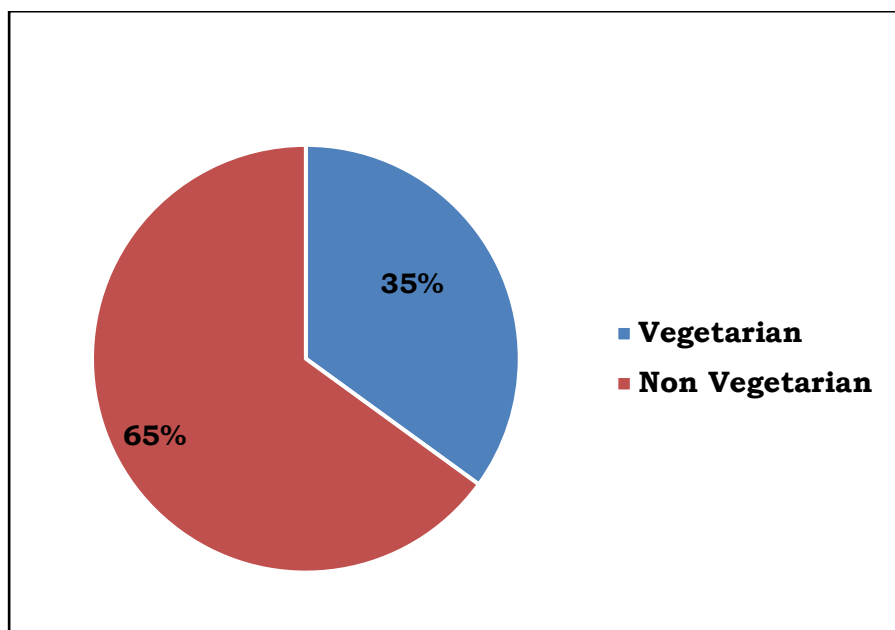
The examination of the signs and symptoms in the patients revealed that abdominal pain in (100%) of cases and abdominal distension (100%) of cases were the primary symptoms observed in the patients, followed by vomiting in (90%) of cases and abdominal tenderness in 85% of cases, heightened bowel sounds (75%) of cases. Additional symptoms and signs assessed in the patients include abdominal tenderness, constipation, dehydration, guarding, palpable mass, fever, and absence of bowel sounds (Table 2).

**Table 1: Showing the distribution of cases based on the age groups.**

Age group	Male	Female	Total (%)
18 – 20	3	1	4 (10)
21 – 30	4	1	5 (12.5)
31 – 40	6	2	8 (20)
41 – 50	9	3	12 (30)
51 – 60	4	2	6 (15)
61 – 70	3	1	4 (10)
> 70	1	0	1 (2.5)
Total	30	10	10 (100)

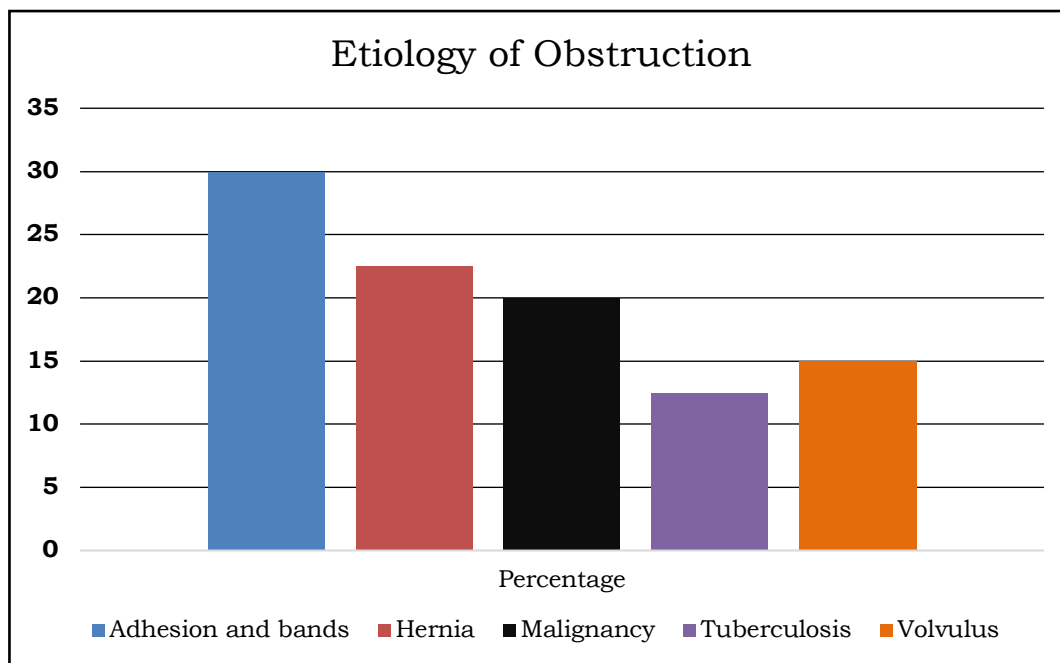
**Table 2: Presenting symptoms and sign in the cases of the study**

Sign/Symptoms	Frequency	Percentage
Pain Abdomen	40	100
Vomiting	36	90
Distension of Abdomen	40	100
Constipation	24	60
Dehydration	25	62.5
Fever	16	40
Abdominal Tenderness	34	85
Guarding	28	70
Palpable mass	20	50
Increased bowel sounds	30	75
Absent bowel sounds	10	25

**Figure 1: Showing the type of diet in the cases of the study.**

In this particular clinical study, approximately 65% of the patients belonged to the poor socio-economic class, while the remaining 35% were from the middle class, which did not demonstrate significant statistical significance. However, since our hospital primarily caters to individuals from a lower socio-economic background,

the percentage of patients belonging to the poor socio-economic class is considerably high. Regarding the diet pattern observed in this study, 64% of participants were non-vegetarians, while 36% were vegetarians, but no significant association with the disease was identified (Table 4).



**Figure 2: The etiology of intestinal obstruction in the cases of the study**

In our study, the primary factor contributing to intestinal obstruction was postoperative adhesions (42%), with hernia (20%), malignancy (16%),

tuberculosis stricture (14%), and volvulus (08%) following in decreasing order of occurrence (Figure 2).

**Table 3: Surgical operations performed in the cases of the study.**

Type of surgery	Frequency (%)
Resection and anastomosis	10(25)
Release of Adhesion	4 (10)
Herniorrhaphy	9 (22.5)
Hemicolectomy	3 (7.5)
Untwisting of volvulus	3 (7.5)
Tube caecostomy	1 (2.5)

The management approach for intestinal obstruction consisted of the following procedures:

- Resection and anastomosis were performed in 10 cases, encompassing instances of adhesion, stricture, ileocaecal growth, volvulus of the small intestine, and multiple strictures of the jejunum due to a carcinoid tumor.
- Adhesiolysis was conducted in 4 cases, addressing postoperative adhesions, inflammatory adhesions, and constricting bands.
- Anatomical hernia repair was undertaken in 9 cases, with 7 being inguinal hernias (Bassini repair) and 2 being incisional hernias.

- Untwisting of the sigmoid volvulus was performed in 3 cases, while hemicolectomy was carried out in 4 cases.
- Tube caecostomy was implemented in 1 case of stomach carcinoma infiltrating the transverse colon (Table 3).

In our study, a total of 8 patients experienced postoperative complications, accounting for 20% of the sample. The postoperative complications observed in this study were as follows: wound infection (7.5%) in five patients, respiratory infection (5%) in four patients, entero-cutaneous fistula (2.5%), and paralytic ileus (5%) in two patients (Table 4).

**Table 4: Postoperative complications in the cases of the study**

Postoperative complications	Frequency	Percentage
Wound Infection	3	7.5
Respiratory Infection	2	5
Postoperative paralytic ileus	2	5
Enterocutaneous fistula	1	2.5

## Discussion

The most common emergency encountered by a general surgeon is intestinal obstruction, which accounts for approximately 1-4% of emergency operations. The majority of these cases (approximately 50%) in our study were found to occur in individuals aged 31 – 50 years. In this study, 75% of males and 25% of women had acute intestinal obstruction, indicating a sex predilection for males. Previous research in this field has demonstrated a higher incidence of intestinal obstruction in males, in agreement with the observations of the current study. A clinical study conducted by A Souvik et al. [11] as well as the group led by Cole et al. [12], demonstrated findings that are quite similar to our investigation of acute intestinal obstruction. In our current study, the mean age of the participants was  $43.5 \pm 8.5$  years, while A. Souvik et al. [11] reported a mean age of 44 years, and the JS Khan et al. [13] series had a mean age of 33 years. These results

are comparable to those of our clinical study, indicating similar trends and characteristics. Typical indications for acute intestinal obstruction include nausea, vomiting, abdominal pain, swelling, and inability to pass stool. Clinically, acute intestinal obstruction is usually diagnosed through a combination of physical examination, radiological tests, and sometimes the use of diagnostic laparoscopy. In this study, abdominal pain was the most common symptom in (100%) cases, followed by abdominal distension (100 %) of cases were the primary symptoms, vomiting in (90%) of cases, and abdominal tenderness in 85% of cases. In this study, we found the following etiological factors for intestinal obstruction: postoperative adhesions (42%), hernia (20%), malignancy (16%), tuberculosis stricture (14%), and volvulus (08%). Adhesions and bands are the leading causes of small intestinal obstruction, accounting for up to 75% of cases. Adhesions in the peritoneal cavity often occur after previous laparotomy procedures and can be aggravated by intra-abdominal infection, tissue ischemia resulting from wound closure, external beam radiation, and the presence of foreign materials, such as sutures. [14]

According to Playforth et al. [15], obstructed/strangulated hernias account for 54% of cases, making it the second most frequent cause of intestinal obstruction in the study group. While obstructed/strangulated hernias are typically more prevalent in developing countries, the relatively high incidence in this particular study could be attributed to factors such as increased public awareness, better access to surgical facilities for hernia repair in peripheral areas, and prompt management of hernias. [16, 17] While small bowel obstruction can develop at any time following a laparotomy procedure, the highest risk is observed within the

first few years after surgery. In a study conducted by Deolekar et al. [7], the average age of the patients was 45.8 years, with males comprising 60% of the sample. The primary cause of intestinal obstruction is postoperative adhesions, followed by paralytic ileus. Of the 80 patients with intestinal obstruction, 50 required surgical intervention, with the majority undergoing procedures such as adhesion release (38%) and resection-anastomosis (44%). Cases involving malignancy and mesenteric ischemia showed poorer outcomes, and mortality (14%) was primarily attributed to complications, such as septicemia and respiratory tract infections. Another study by Alam et al. [19] diagnosed 263 patients with acute intestinal obstruction, with a predominance of males (66.15%), particularly in the 41-50 age range. Abdominal pain was the most commonly reported symptom, whereas abdominal distension was the most prevalent physical finding on clinical examination.

The most frequently performed surgical procedure in cases of intestinal obstruction was resection-anastomosis, accounting for 25% of cases, followed by herniorrhaphy in 22.5% of cases, and the release of adhesions and bands (10%). Similar findings were reported in a study conducted by Deolekar et al. [7] where resection anastomosis was the most commonly performed surgery in cases of intestinal obstruction (44%). Other studies have also shown a comparable distribution between resection-anastomosis and the release of adhesions. [11, 14, 20, 21] In our study, a total of 8 patients experienced postoperative complications, accounting for 20% of the sample. Several factors can influence optimal outcomes for patients with intestinal obstruction. These factors include whether the obstruction is partial or complete, the presence of ischemic or gangrenous bowel, the occurrence of perforation, the duration of symptoms, the development of obstruction in the early postoperative period, the admission service, and the underlying cause. Consideration of these factors is essential to determine the best possible outcome for patients. These factors have been highlighted in studies mentioned in the references [22, 23]

## Conclusion

Intestinal obstruction is an important surgical emergency. The late presentation of patients with complications poses a challenge for surgeons in terms of management. Patients presenting with symptoms of bowel obstruction require prompt resuscitation and correction of electrolyte imbalances, which can be severe and life-threatening. The increasing number of abdominal and pelvic surgeries has led to postoperative adhesions becoming the most common cause of intestinal obstructions. A multidisciplinary approach involving clinical evaluation, radiological investigations, and operative findings is crucial to

achieving an accurate diagnosis of intestinal obstruction. Early intervention is imperative to prevent the development of peritonitis and systemic sepsis, which can lead to multi organ failure.

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