

ORIGINAL ARTICLE**Clinicopathological Study and Management of Acute Small Bowel Obstruction at a Tertiary Care Hospital**

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ABSTRACT:

Background: Intestinal obstruction stands as a prevalent surgical emergency, and its therapeutic approach has undergone a series of advancements over time. The objective of this study was to explore the diverse causes, the range of clinical symptoms, the determinants influencing the choice between conservative and surgical treatment, the different surgical techniques employed, and the overall results, all in the context of the underlying causes in patients experiencing intestinal obstruction. **Methods:** This was a prospective study that encompassed 100 patients who met the specified inclusion criteria. The study spanned one year and focused on individuals with a preliminary diagnosis of intestinal obstruction. **Results:** The majority of patients in this study were males, primarily falling within the age group of 30 to 45 years, with the fewest patients in the 70 to 85-year age range. The most frequently observed clinical symptom was abdominal pain, and the most common sign was tenderness, while the least common indications were irreducible hernia and the presence of an abdominal mass. The leading cause of intestinal obstruction was identified as adhesions, with worm infestation being the least common. Surgical procedures were the primary mode of treatment for the majority of patients, with laparotomy involving resection and anastomosis being the most commonly performed procedure, while hernioplasty was the least common. **Conclusion:** Our study findings underscore the significance of early diagnosis, sufficient preoperative hydration, prompt diagnostic procedures, and timely surgical intervention in enhancing the survival rates among patients with intestinal obstruction. By enhancing preoperative preparation and employing skilled anesthetic management, it is conceivable that the mortality associated with abdominal exploration can be minimized to a significant extent.

Keywords: Acute intestinal obstruction, adhesions, etiology, obstructed/strangulated hernias

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INTRODUCTION

Bowel obstruction is a prevalent issue in gastrointestinal surgery across the globe. It stands as the most common problem impacting the small intestine and can complicate various abdominal procedures, even those using laparoscopic techniques¹. Despite advancements in surgical practices, bowel obstruction remains a challenging concern, resulting in substantial morbidity and mortality due to disruptions in the normal flow of the digestive system. As a consequence, intestinal obstruction places a significant clinical and economic burden, leading to frequent emergency room visits, substantial financial costs, and productivity losses as individuals are away from their responsibilities.

Intestinal obstruction is a complex symptom arising from a wide range of underlying causes, with the specific patterns varying significantly worldwide. These patterns are influenced by environmental, cultural, dietary, demographic, and medical service-related factors, as well as individual anatomical distinctions. Over the last century, there have been notable shifts in the factors leading to intestinal obstruction, driven by changes in epidemiological and environmental factors, healthcare service provisions, and educational improvements²⁻⁴. Recognizing the underlying causes of bowel obstruction and

addressing risk factors play a crucial role in reducing both morbidity and mortality. Furthermore, focusing on prognostic indicators for survival is of utmost importance when making therapeutic decisions and aiming for the best possible outcomes⁵. This study was undertaken with the primary goal of understanding the causes, clinical progression, and predictive factors influencing the outcomes of intestinal obstruction among the adult population.

Intestinal obstruction results from interference with the passage of food, liquids, and intestinal contents, which can be attributed to either mechanical or neurological causes. Preoperatively defining the predisposing conditions can be challenging due to their diverse nature. The etiology of acute intestinal obstruction varies, ranging from more common causes like adhesions, hernias, and malignancies to rarer conditions such as intussusception. While the classic presentation involves abdominal pain, vomiting, constipation, and abdominal distension, a comprehensive understanding of surgical anatomy, pathophysiology, and the signs and symptoms of obstruction is essential, as well as the use of appropriate diagnostic investigations⁶. This study delves into an analysis of the diverse causes of intestinal obstruction, including their anatomical and pathological characteristics, modes of presentation,

age-related factors, diagnostic methods, surgical management, potential complications, mortality rates, and overall outcomes. Notably, intestinal obstruction can affect either the small bowel (SBO) or the large bowel (LBO)⁷. Small bowel obstruction (SBO) can be categorized into two primary types: mechanical and functional obstruction. Mechanical obstruction occurs when the intestinal lumen is physically blocked, preventing the passage of luminal contents. In contrast, functional obstruction arises due to disturbances in gut motility, which disrupt the coordinated transit of contents through the gastrointestinal tract. This form is often referred to as ileus or pseudo-obstruction.

On the other hand, large bowel obstruction (LBO) can result from either a mechanical interruption in the flow of intestinal contents or the abnormal dilation of the colon without any identifiable structural lesion. Additionally, there are unique forms of obstruction, such as intussusception (resulting from the invagination of one bowel segment into another), volvulus (an axial twist of the gastrointestinal tract around its mesentery), gallstone ileus (mechanical bowel obstruction), adhesions (typically postoperative or postinflammatory), hernias, and worm obstruction due to *Ascaris lumbricoides*. Other potential causes include sigmoid volvulus, cecal volvulus, congenital cysts (e.g., enterogenous cysts), and tumors (e.g., non-Hodgkin lymphoma). The typical symptoms of intestinal obstruction encompass colicky abdominal pain, vomiting, abdominal distension, and obstipation, which refers to the inability to pass flatus and feces. In some cases, visible peristalsis may be observed in thin patients, while others may exhibit pronounced distention⁸. Complete obstruction typically necessitates immediate surgical intervention, whereas partial obstruction can often be managed conservatively with resuscitation and tube decompression alone. It's worth noting that the pattern of intestinal obstruction in India differs from that in Western countries, with obstructed hernias being a prevalent cause, especially in Indian studies. However, limited data is available from the central regions of India, particularly concerning the rural population.

MATERIALS AND METHODS

A prospective study involving 100 patients with acute intestinal obstruction was conducted over a one-year period. The study encompassed all patients admitted to a surgical unit who presented with both radiological and clinical evidence of acute bowel obstruction, without gender-based restrictions. However, individuals under the age of 10 and those with incarcerated and irreducible hernias or paralytic ileus were excluded from the study.

Upon admission, all patients entered through the casualty department and were received by two of the co-authors in the ward. Immediate fluid and electrolyte resuscitation was initiated for every patient, and essential investigations were conducted prior to surgery. Patients with a history of prior laparotomies were initially placed on conservative management, which included nasogastric decompression, correction of fluid and electrolyte imbalances through intravenous administration, and the use of broad-spectrum antibiotics. If relief from obstruction was not achieved through conservative treatment within 48 hours, a decision was made to proceed with laparotomy.

Patients who exhibited clinical suspicion and had a previous history of tuberculosis were initially placed on a conservative treatment plan as well. Data collection commenced promptly upon the patient's arrival in the ward and was undertaken by two of the co-authors⁹.

The study involved the analysis of various variables, including demographic information, the time elapsed between the onset of symptoms and admission to the ward, symptoms and signs observed, results of imaging studies, the nature of initial resuscitation, the type of treatment administered, operative findings, the underlying cause of obstruction, and the ultimate treatment outcomes.

RESULTS

In the current study, the largest proportion of patients fell within the 30-45 years age group, with the second most significant group being between 21-30 years. The average age of the patients in this study was 36 years.

Table 1: Demographic study

Age of patients	Number of patients
< or equal to 20	4
21-30	24
31-40	28
41-50	20
>50	4

Fig 1: Sex Ratio: Males constituted 80% & females 20%

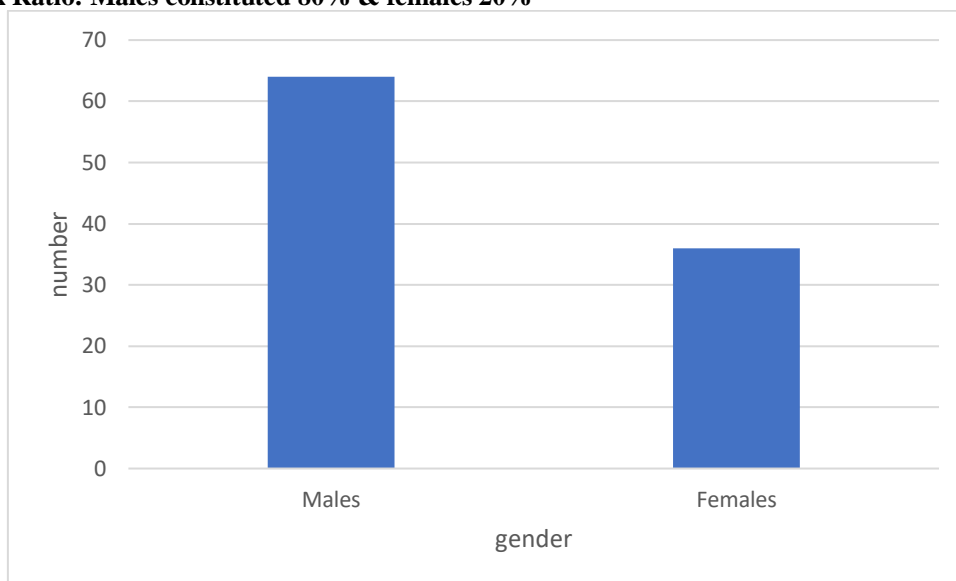
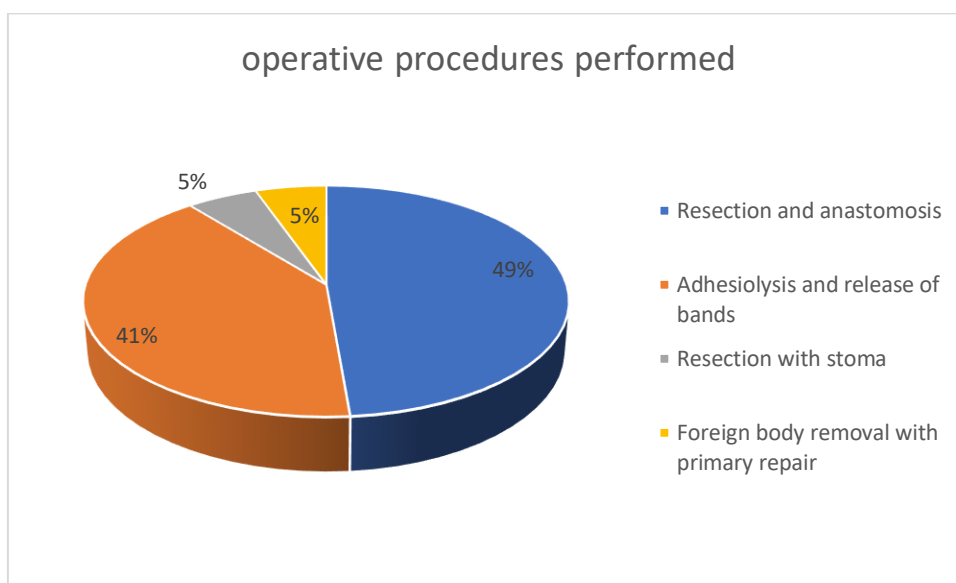


Table 2: Surgical procedures performed

Operative procedure performed	No.	%
Resection and anastomosis	36	48.65
Adhesiolysis and release of bands	30	40.54
Resection with stoma	4	5.4
Foreign body removal with primary repair	4	5.4



DISCUSSION

In this study, a total of 100 patients, with an average age of 36 years and a wide age range spanning from 13 to 85, presented with typical symptoms of acute bowel obstruction over a two-year period and were included in the research. The study population comprised 80% males and 20% females. The majority of cases (84%) involved obstruction in the small bowel, with the remaining 16% affecting the large bowel. Common presenting features included abdominal distension (87%), vomiting (73%), complete constipation (88%), dehydration (69%), and

abdominal pain (74%). Notably, many patients experienced a significant delay in hospital admission following the onset of symptoms. Preliminary diagnostic assessments included a complete blood count, plain X-ray of the abdomen (in both erect and supine positions), abdominal ultrasound, and serum electrolyte and urea analysis. Notably, 87% of patients showed multiple air-fluid levels on plain X-ray films. In two cases, where patients presented with acute intestinal obstruction attributed to abdominal tuberculosis, an interesting finding emerged as we also diagnosed concomitant pulmonary tuberculosis.

This highlights the importance of a comprehensive evaluation when dealing with complex cases that could involve multiple organ systems.

For patients exhibiting signs of adhesive obstruction and suspicion of abdominal tuberculosis, our initial approach was to opt for conservative treatment. These individuals were subjected to a trial of conservative management that extended for a period of 48 to 72 hours. Surprisingly, a significant majority, approximately 78% of these patients, exhibited a positive response to this conservative approach, ultimately achieving complete recovery. Nevertheless, there remained a subset, constituting 22% of the patients, who did not show improvement and, in fact, experienced a worsening of their condition, necessitating surgical exploration.

Overall, 68 patients required surgical intervention, and during these procedures, the underlying causes of obstruction were identified. This, intriguingly, correlated with the specific site of obstruction. Adhesive obstruction emerged as a dominant issue, and abdominal tuberculosis was another notably frequent cause. This finding represents a noteworthy shift compared to data collected a few decades ago in the same geographical setting when obstructed hernias prevailed as the primary cause of acute bowel obstruction¹⁰.

The choice of treatment modalities varied based on the underlying cause of obstruction. These ranged from conservative measures, including resuscitation, to more extensive interventions such as laparotomy with resection and anastomosis, whenever indicated. This flexibility in treatment strategies underscores the importance of a tailored and patient-centric approach in managing acute bowel obstruction, taking into account the diverse etiologies and clinical presentations encountered in real-world medical practice.

CONCLUSION

Our study findings reveal that early diagnosis, sufficient preoperative hydration, timely investigations, and prompt surgical intervention contribute significantly to improved survival rates among patients with intestinal obstruction. Enhanced preoperative preparation and skillful anesthetic management have the potential to further reduce mortality rates associated with abdominal exploration to a minimum. Among patients presenting with acute mechanical small bowel obstruction (SBO), abdominal pain and abdominal distension are the most commonly reported symptoms and physical findings. Our study identified worm (ascariidial) obstruction as

the leading cause of this type of obstruction, followed closely by postoperative adhesions. Despite initially attempting conservative management for all patients, our series maintained a notably high operative rate. This is primarily because distinguishing simple from strangulation obstruction based solely on clinical, biochemical, and radiological criteria remains a challenging task. In our findings, the majority of bowel obstructions resulted from benign lesions such as adhesions, hernias, and volvulus. However, neoplasms have now surpassed volvulus as the primary cause of large bowel obstruction. Notably, an unfavorable prognosis is associated with the presence of strangulation, shock, delayed presentation, and loop obstruction. Given the significant impact of intestinal obstruction on both the quality and duration of an individual's life, it is crucial to implement measures aimed at preventing adhesion formation, performing elective hernia repair, conducting regular screening for cancer, and ensuring timely and effective cancer treatment. These measures are essential in reducing the overall morbidity and mortality associated with bowel obstruction.

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