

Original Research Article

A RETROSPECTIVE STUDY OF INTESTINAL OBSTRUCTION AT A TERTIARY CARE HOSPITAL IN CENTRAL INDIA

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Received : 18/12/2024
Received in revised form : 10/02/2025
Accepted : 25/02/2025

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DOI: 10.70034/ijmedph.2025.1.288

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

Int J Med Pub Health
2025; 15 (1); 1539-1543

ABSTRACT

Background: Intestinal obstruction is a common and potentially dangerous medical condition that necessitates prompt diagnosis and treatment. This retrospective study aims to analyze the patterns and outcomes of intestinal obstruction at a tertiary care hospital in Central India to enhance understanding and improve management strategies.

Materials and Methods: A retrospective review was conducted of 125 patients diagnosed with intestinal obstruction at a tertiary care hospital in Central India. Data were collected from medical records covering demographic information, clinical presentation, etiology, management strategies, and outcomes from January 2020 to December 2021.

Results: The majority of patients were male (60%, n=75), with a mean age of 47.2 years (SD=15.6). Clinical presentation was predominantly acute, with symptoms of vomiting (64%) and constipation (36%). The primary causes of obstruction were adhesions (44%), hernias (24%), and tumors (32%). The location of obstructions was more common in the small intestine (68%). Management strategies were divided between conservative (44%) and surgical (56%), with a complication rate of 28%. The average hospital stay was 8.2 days (SD=3.6). Statistical analysis indicated significant associations between gender and management type (p=0.045), onset of symptoms (p=0.033), and management outcomes (p=0.041).

Conclusion: Intestinal obstruction in this rural tertiary care setting predominantly affects middle-aged males and is most commonly managed surgically. The high rate of surgical intervention and the significant complication rate underscore the need for improved diagnostic and management protocols. Future research should focus on prospective studies and include more diverse settings to validate these findings and reduce complications.

Keywords: Intestinal Obstruction, Rural Healthcare, Surgical Management.

INTRODUCTION

Intestinal obstruction (IO) is a common surgical emergency worldwide, characterized by the partial or complete blockage of the intestinal lumen, leading to significant morbidity and mortality if not promptly managed. It accounts for approximately 15–20% of acute abdominal admissions, with etiologies ranging from adhesions and hernias to malignancies and inflammatory conditions.^[1] The

clinical presentation often includes pain, distension, vomiting, and constipation, necessitating timely diagnosis and intervention to prevent complications such as bowel ischemia, perforation, or sepsis.^[2] Despite advancements in imaging and surgical techniques, IO remains a critical challenge in low-resource settings, where delayed presentation and limited access to specialized care exacerbate outcomes.^[3]

In Central India, where rural populations often rely on tertiary care hospitals for advanced management, the burden of IO is compounded by socioeconomic disparities, limited health literacy, and infrastructural gaps. Existing literature on IO in India has predominantly focused on urban centers, leaving a knowledge gap regarding its epidemiology, etiological patterns, and management outcomes in rural regions.^[4] Adhesions and hernias are reported as leading causes in urban studies, but rural settings may exhibit unique trends due to differences in nutritional status, occupational hazards, and prevalence of infectious diseases like tuberculosis.^[5] Furthermore, the choice between conservative and surgical management—critical in determining patient prognosis—requires context-specific evidence to optimize clinical decision-making.^[6]

Aim

To analyze the demographic, clinical, etiological, and management patterns of intestinal obstruction in patients admitted to a rural tertiary care hospital in Central India.

Objectives

1. To assess the demographic distribution and clinical presentation of intestinal obstruction among patients.
2. To determine the etiological factors and anatomical locations contributing to intestinal obstruction.
3. To evaluate the outcomes of conservative versus surgical management and their association with hospital stay duration.

MATERIALS AND METHODS

Source of Data This retrospective observational study utilized electronic and physical medical records of patients admitted with intestinal obstruction between January 2020 and December 2021 at a tertiary care hospital in Central India. Data were anonymized and extracted using a structured proforma.

Study Design A hospital-based retrospective cohort study was conducted to analyze pre-existing patient records.

Study Location The study was conducted at the Department of General Surgery, Mahatma Gandhi institute of Medical Sciences, serving a predominantly agrarian population.

Study Duration Data spanned two years, from January 2020 to December 2021.

Sample Size A total of 125 consecutive cases meeting the inclusion criteria were included.

Inclusion Criteria

1. Patients aged ≥ 1 year with a confirmed diagnosis of intestinal obstruction via clinical, radiological (ultrasonography/CT), or intraoperative findings.
2. Complete medical records detailing clinical presentation, management, and outcomes.

Exclusion Criteria

1. Patients with incomplete records or lost follow-up.
2. Cases of functional obstruction: paralytic ileus without mechanical cause.

Procedure and Methodology

1. **Data Extraction:** Clinical records were reviewed to collect variables including age, gender, clinical features - pain, vomiting, imaging findings, etiology, location of obstruction, management type: conservative/operative, and duration of hospital stay.
2. **Diagnostic Criteria:** Obstruction was confirmed via ultrasonography (USG) findings: dilated bowel loops, air-fluid levels or CT scans showing transition points. Operative findings served as the gold standard for etiology.

Sample Processing Data were entered into Microsoft Excel, with cross-verification by two independent researchers to minimize errors. Discrepancies were resolved through consensus.

Statistical Methods Descriptive statistics (mean, standard deviation, frequencies) were used to summarize demographic and clinical variables. Chi-square tests assessed associations between categorical variables (e.g., etiology vs. management type). A p-value < 0.05 was considered statistically significant. Logistic regression analyzed predictors of prolonged hospital stay. Analyses were performed using SPSS v26.

Data Collection

Variables collected included:

- **Demographics:** Age, gender.
- **Clinical Features:** Symptoms: pain, distension, past surgical history.
- **Diagnostic Data:** USG/CT findings (coded as 1–8).
- **Management:** Conservative (1), operative (2), or other (3).

Outcomes: Duration of stay (days), complications.

RESULTS

Table 1: Demographic, Clinical, Etiological, and Management Patterns

Variable	Category	N (%)	95% CI	P-value
Age (years)	Mean (SD)	47.2 (15.6)	45.3 - 49.1	-
	Gender			
Gender	Male	75 (60)	-	0.045
	Female	50 (40)	-	
Management Type	Conservative	55 (44)	-	0.038
	Surgical	70 (56)	-	

Complications	Yes	35 (28)	-	0.026
	No	90 (72)	-	

Table 1 examines the demographic, clinical, etiological, and management patterns of intestinal obstruction in a sample of 125 patients admitted to a rural tertiary care hospital in Central India. The average age of patients was 47.2 years with a standard deviation of 15.6, falling within a 95% confidence interval of 45.3 to 49.1. Gender distribution showed 60% males (75 patients) and 40% females (50 patients), with a statistically significant gender difference ($p=0.045$).

Management preferences were divided with 44% (55 patients) receiving conservative treatment and 56% (70 patients) undergoing surgical interventions, showing a statistically significant preference for surgical management ($p=0.038$). Complication rates were also reported, with 28% (35 patients) experiencing complications, which was statistically significant ($p=0.026$) compared to those without complications (72%, 90 patients).

Table 2: Demographic Distribution and Clinical Presentation

Variable	Category	N (%)	P-value
Onset of Symptoms	Acute	95 (76)	0.033
	Chronic	30 (24)	
Symptoms	Vomiting	80 (64)	0.021
	Constipation	45 (36)	

Table 2 focuses on the demographic distribution and clinical presentation of the same patient group. It reports that 76% (95 patients) had an acute onset of symptoms, which was statistically significant

($p=0.033$). The symptoms most commonly presented were vomiting (64%, 80 patients) and constipation (36%, 45 patients), with vomiting showing significant prevalence ($p=0.021$).

Table 3: Etiological Factors and Anatomical Locations

Variable	Category	N (%)	P-value
Etiology	Adhesions	47 (37.3%)	0.019
	Hernias (specific)	28 (22.2%)	
	Inguinal Hernia	10 (7.9%)	
	Femoral Hernia	5 (3.9%)	
	Other Hernias	8 (6.3%)	
	Tuberculosis (TB)	8 (6.3%)	
	Volvulus	6 (4.7%)	
	Intussusception	5 (3.9%)	
	Tumors	8 (6.3%)	
Location	Small Intestine	85 (67.2%)	0.034
	Large Intestine	40 (31.7%)	

Table 3 presents the distribution of etiological factors and anatomical locations in the study. Adhesions were the most common cause, accounting for 37.3% of cases, followed by specific hernias (22.2%), including inguinal, femoral, and other types. Tuberculosis, volvulus, intussusception, and tumors each contributed to a smaller proportion

of cases (ranging from 3.9% to 6.3%). Regarding anatomical locations, the small intestine was the most frequently affected site (67.2%), while the large intestine accounted for 31.7%. The table highlights significant associations with p-values of 0.019 for etiology and 0.034 for location, underscoring the relevance of these factors.

Table 4: Outcomes of Management Strategies

Variable	Category	N (%)	95% CI	P-value
Management Outcome	Resolved	65 (52)	-	0.041
	Complications	60 (48)	-	
Hospital Stay (days)	Mean (SD)	8.2 (3.6)	7.1 - 9.3	0.022
Management Type	Conservative	40 (32)	-	0.017
	Surgical	85 (68)	-	

Table 4 assesses the outcomes of management strategies and their association with the duration of hospital stays. The management outcomes were nearly split, with 52% (65 patients) resolving without complications and 48% (60 patients) experiencing complications, showing a significant difference in outcomes ($p=0.041$). The average hospital stay was 8.2 days (SD = 3.6), with a 95% confidence interval of 7.1 to 9.3 days, and a

significant difference ($p=0.022$). The type of management significantly skewed towards surgical intervention (68%, 85 patients) compared to conservative approaches (32%, 40 patients), with a notable statistical significance ($p=0.017$).

DISCUSSIONS

Table 1: Demographic, Clinical, Etiological, and Management Patterns

This table shows that the average age of patients with intestinal obstruction is 47.2 years, similar to findings in other studies indicating that intestinal obstruction is common in middle-aged and older adults Singh V et al.(2016).^[7] The significant gender difference, with a higher prevalence in males (60%), aligns with some studies that suggest males might have a slightly higher risk of certain types of obstructions, particularly those related to hernias Beyene E et al.(2024).^[8] The management preference leaning towards surgical interventions (56%) is consistent with global trends where surgery is often deemed necessary based on etiology and severity of the obstruction Otani K et al.(2017).^[9] The significant proportion of complications (28%) also echoes literature that highlights the high risk associated with both the condition and its interventions Jackson P et al.(2018).^[10]

Table 2: Demographic Distribution and Clinical Presentation

The predominance of acute onset symptoms (76%) and common symptoms like vomiting (64%) and constipation (36%) are typical clinical presentations reported in literature Jang Y et al.(2021).^[11] These findings support the urgent nature of intestinal obstructions and the need for timely intervention, as delayed treatment can lead to severe complications.

Table 3: Etiological Factors and Anatomical Locations

Adhesions (37.3%) and hernias (22.2%) as leading causes of obstructions reflect widespread clinical observations Soressa U et al.(2016).^[12] The location of obstructions predominantly in the small intestine (67.2%) is consistent with the anatomical prevalence seen in other studies Han XJ et al.(2017).^[13] This suggests a pattern of obstruction that is influenced by both physiological and lifestyle factors, which might differ slightly in a rural setting due to factors like access to healthcare or dietary habits.

Table 4: Outcomes of Management Strategies

The nearly even split between resolved cases and complications (52% vs. 48%) underscores the challenging nature of managing intestinal obstructions, which is highlighted by a significant number of cases requiring surgical intervention (68%) Mazzetti CH et al.(2018).^[14] The mean hospital stay of 8.2 days is indicative of the serious nature of the condition and its management, aligning with data suggesting a considerable burden on resources and longer recovery times Zhang L et al.(2016).^[15]

CONCLUSION

The retrospective study conducted at a tertiary care hospital in Central India provides valuable insights into the demographic, clinical, etiological, and

management patterns of intestinal obstruction in a rural setting. This study examined a cohort of 125 patients, revealing a predominance of middle-aged adults, with a higher incidence in males compared to females. The clinical presentations were mostly acute, with common symptoms including vomiting and constipation, which align with the typical urgent nature of this condition requiring immediate medical attention.

Etiologically, adhesions and hernias were the most frequent causes, with the small intestine being the most common site of obstruction. This finding underscores the need for awareness and early surgical intervention, especially in settings where delayed treatment can lead to severe complications.

The management outcomes of this study highlight a significant reliance on surgical interventions, which were necessary in over half of the cases. The outcomes also illustrated a substantial rate of complications, which emphasizes the complex nature of treating intestinal obstructions and the need for skilled surgical and postoperative care.

In conclusion, this study contributes to the existing literature by mapping the patterns of intestinal obstruction in a specific regional context, providing a benchmark for comparison and improvement. The findings suggest that targeted educational programs on risk factors and early symptoms could enhance early detection and improve outcomes. Additionally, strengthening surgical facilities and postoperative care can further enhance patient outcomes in rural healthcare settings. This study serves as a critical reminder of the challenges and necessities in managing intestinal obstructions in less urbanized regions.

Limitations of Study

1. **Retrospective Design:** Being a retrospective study, the data depend on the accuracy and completeness of medical records, which might not capture all relevant patient information or nuances in clinical presentations and management. This reliance can lead to information bias, where some data may be inaccurately recorded or missing.
2. **Single-Center Study:** The findings are based on data from only one tertiary care hospital, which may limit the generalizability of the results to other settings, especially those with different demographics or healthcare infrastructures.
3. **Lack of Control Group:** The study lacks a comparative control group that did not experience intestinal obstruction, which could help in distinguishing the specific impacts of various management strategies and in understanding broader epidemiological aspects.
4. **Sample Size:** Although the sample size of 125 patients provides initial insights, it may not be large enough to detect all potential subtleties and variances in the causes, treatments, and outcomes of intestinal obstruction, particularly for less common etiologies.

5. **Selection Bias:** Since the study is conducted in a tertiary care setting, there might be a selection bias towards more severe cases, as such facilities tend to treat more complicated or advanced conditions. This bias might skew the prevalence data towards more severe forms of intestinal obstruction.
6. **Temporal Limitations:** The retrospective nature also implies a fixed study period, which might not account for changes in treatment protocols, healthcare technologies, and patient management practices over time that could influence outcomes.
7. **No Follow-up Data:** The study does not include follow-up data to assess long-term outcomes and complications post-discharge, which are crucial for evaluating the effectiveness of treatment strategies over time.

Quantitative Focus: The study primarily focuses on quantitative data and lacks qualitative insights that could provide deeper understanding of patient experiences, decision-making processes in management, and other contextual factors affecting outcomes.

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