

Research Article

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Retrospective Analysis of Etiology Treatment Outcomes and Risk Factors in Intestinal Obstruction

Houhong Wang

Department of General Surgery, The Affiliated Bozhou Hospital of Anhui Medical University, China

ABSTRACT

Background: Intestinal Obstruction (IO) remains a critical gastrointestinal emergency with diverse etiologies. This study analyzed clinical characteristics, treatment outcomes, and risk factors for mortality in IO patients.

Methods: Data from 500 IO patients (2021–2024) were retrospectively reviewed. Etiologies, treatment modalities (surgical/non-surgical), and outcomes were analyzed. Multivariate logistic regression identified risk factors for mortality.

Results: Adhesive obstruction (45%) and malignancy (32%) were the most common etiologies. Surgical intervention was performed in 68% (340/500), with higher success rates in adhesive vs. malignant obstruction (82% vs. 55%, $p<0.001$). Overall mortality was 9% (45/500). Independent risk factors for mortality included age ≥ 65 years (OR=2.8, 95%CI:1.5–5.2, $p=0.003$), malignant etiology (OR=3.5, 95%CI:1.9–6.4, $p<0.001$), and delayed surgery (>48 hours, OR=2.1, 95%CI:1.2–3.7, $p=0.012$).

Conclusion: Malignancy and advanced age are key risk factors for IO mortality. Timely surgery improves outcomes in adhesive obstruction, while multidisciplinary care is critical for malignant IO.

*Corresponding author

Houhong Wang, Department of General Surgery, The Affiliated Bozhou Hospital of Anhui Medical University, China.

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identified independent risk factors for mortality. SPSS 28.0 was used, with $p<0.05$ significant.

Introduction

Intestinal Obstruction (IO) accounts for 1-3% of emergency admissions, with mortality rates varying by etiology [1]. Adhesive disease and malignancy are the primary causes, but management challenges persist, especially in differentiating benign vs. malignant etiologies [2]. This study aimed to characterize IO epidemiology, compare treatment outcomes, and identify predictors of mortality.

Materials and Methods

Patient Cohort

500 consecutive IO patients (≥ 18 years) treated at a tertiary center (2021–2024) were included. Exclusion criteria: incomplete records or prenatal patients. Etiologies were classified as adhesive, malignant, hernial, or other (e.g., volvulus, fecal impaction).

Data Collection

Clinical data included age, sex, etiology, treatment (surgical/non-surgical), time to surgery, complications, and mortality. Primary outcome was in-hospital mortality.

Statistical Analysis

Categorical variables used chi-square tests; continuous variables used Mann-Whitney U tests. Multivariate logistic regression

Results

Etiology and Demographics

- Adhesive (45%, 225/500)**, malignant (32%, 160/500), hernial (15%, 75/500), other (8%, 40/500).
- Median Age: 58 years (IQR:42–70); 55% male.
- Malignant IO patients were older (median 72 vs. 52 years, $p<0.001$) and more likely female (58% vs. 45%, $p=0.023$) (Table 1).

Table 1: Etiology Specific Demographics

Characteristic	Adhesive (n=225)	Malignant (n=160)	p-value
Median age (years)	52 (38–65)	72 (60–80)	<0.001
Female sex (%)	45% (101/225)	58% (93/160)	0.023
Previous abdominal surgery (%)	89% (200/225)	35% (56/160)	<0.001

Treatment and Outcomes

- **Surgical Rate:** 68% (340/500), with higher rates in malignant (85%) vs. adhesive IO (55%, $p<0.001$).
- **Surgical Success:** Adhesive IO (82%) > hernial (75%) > malignant (55%, $p<0.001$).
- **Mortality:** Overall, 9% (45/500); highest in malignant IO (18%, 29/160) vs. adhesive (4%, 9/225, $p<0.001$) (Table 2).

Table 2: nTreatment Outcomes by Etiology

Outcome	Adhesive (n=225)	Malignant (n=160)	Overall (n=500)
Surgical intervention (%)	55% (124/225)	85% (136/160)	68% (340/500)
Surgical success (%)	82% (102/124)	55% (75/136)	68% (230/340)
Mortality (%)	4% (9/225)	18% (29/160)	9% (45/500)

Risk Factors for Mortality

Multivariate Analysis Identified:

- Age ≥ 65 years (OR=2.8, 95%CI:1.5–5.2, $p=0.003$)
- Malignant etiology (OR=3.5, 95%CI:1.9–6.4, $p<0.001$)
- Delayed surgery (>48 hours, OR=2.1, 95%CI:1.2–3.7, $p=0.012$)

Table 3: Multivariate Logistic Regression for Mortality

Variable	OR (95%CI)	p-value
Age ≥ 65 years	2.8 (1.5–5.2)	0.003
Malignant etiology	3.5 (1.9–6.4)	<0.001
Delayed surgery (>48h)	2.1 (1.2–3.7)	0.012
Female sex	1.3 (0.8–2.2)	0.25

Discussion

This study highlights adhesive disease (45%) and malignancy (32%) as the leading IO etiologies, consistent with recent literature [3]. Malignant IO showed higher mortality (18%) due to advanced disease and delayed intervention. Timely surgery (<48 hours) reduced mortality in adhesive IO, aligning with guidelines [4]. Age and malignant etiology were independent risk factors, underscoring the need for early oncologic evaluation in older patients.

Limitations include single-center bias and inability to assess long-term outcomes. Future studies should explore minimally invasive approaches for malignant IO and biomarkers for early obstruction detection [5].

Conclusion

Malignant etiology and advanced age are critical risk factors for IO mortality. Timely surgical intervention improves outcomes in adhesive obstruction, while multidisciplinary care is essential for malignant cases. Early differentiation between benign and malignant etiologies is key to optimizing management.

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