



Clinical characteristics, treatment strategies, and outcomes of intestinal obstruction in geriatric patients: A comparative cohort study

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ABSTRACT

Objective: Intestinal obstruction remains one of the most common surgical emergencies and is associated with considerable morbidity and mortality, particularly in elderly patients. Age-related physiological changes, multiple comorbidities, and delayed presentation may adversely affect treatment outcomes. This study aimed to compare the clinical characteristics, management strategies, and outcomes of geriatric patients with intestinal obstruction with those of younger adults.

Material and Methods: This retrospective single-center cohort study included 277 adult patients hospitalized for mechanical intestinal obstruction between January 2018 and December 2025. Patients were divided into a geriatric group (≥ 65 years, $n=171$) and a younger group (<65 years, $n=106$). Demographic characteristics, comorbidities, laboratory findings, etiology of obstruction, treatment modalities, postoperative complications, intensive care unit (ICU) admission, and mortality were analyzed. Major complications were defined as Clavien-Dindo grade III or higher. Multivariable logistic regression analysis was performed to identify independent predictors of mortality.

Results: Geriatric patients had significantly higher rates of comorbidity (66.7% vs. 45.3%, $p<0.001$), delayed hospital presentation (59.1 ± 53 vs. 35.4 ± 24 hours, $p<0.001$), elevated C-reactive protein and creatinine levels, and lower glomerular filtration rates compared with younger patients. The distribution of obstruction etiologies differed significantly between groups ($p<0.001$). Although overall surgical treatment rates were similar (53.2% vs. 44.3%, $p=0.14$), geriatric patients required ICU admission more frequently (51.5% vs. 31.1%, $p<0.001$). Major complications occurred significantly more often in the geriatric group (31.0% vs. 7.5%, $p<0.001$). Mortality was markedly higher among elderly patients (14.0% vs. 0.9%, $p<0.001$). Multivariable logistic regression identified increasing age (odds ratio: 1.08, 95% confidence interval: 1.01-1.16, $p=0.033$) and surgical treatment (OR 4.92, 95% CI 1.44-16.83, $p=0.011$) as independent predictors of mortality.

Conclusion: Geriatric patients with intestinal obstruction experience significantly higher morbidity and mortality than younger adults. Advanced age is an independent predictor of mortality, highlighting the importance of early diagnosis, careful perioperative assessment, and optimized management strategies in this high-risk population.

Keywords: Intestinal obstruction, elderly, geriatric surgery, mortality, morbidity, emergency surgery

INTRODUCTION

Intestinal obstruction remains one of the most common causes of emergency surgical admission and is associated with substantial morbidity and mortality worldwide (1,2). The etiology of intestinal obstruction is influenced by patient demographics, previous surgical history, and age. While postoperative adhesions remain the predominant cause of intestinal obstruction, malignancies, abdominal wall hernias, volvulus, and inflammatory disorders continue to contribute significantly to its overall burden (3,4).

The global increase in life expectancy has led to a growing number of elderly patients presenting with acute surgical emergencies. The management of intestinal obstruction in older adults is particularly challenging due to age-related physiological changes, a higher burden of comorbidities, reduced functional reserve, and delayed presentation to medical care (5-7). These factors may adversely affect treatment outcomes and increase the risk of postoperative complications and mortality.

Several studies have shown that elderly patients undergoing emergency abdominal surgery have poorer clinical outcomes compared with their younger counterparts (8,9). However, the relative contributions of age itself, underlying comorbidities, and

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treatment strategies remain a matter of debate. Furthermore, data comparing the clinical presentation, management approaches, and outcomes of intestinal obstruction between elderly and younger populations are limited. Decision-making between conservative and surgical management is particularly complex in elderly patients. Delayed diagnosis, atypical clinical presentation, and concerns regarding operative risk may influence both treatment selection and timing. Understanding the differences between elderly and younger patients may facilitate earlier diagnosis, optimize treatment strategies, and ultimately improve patient outcomes.

Therefore, the aim of this study was to compare the clinical characteristics, treatment modalities, postoperative outcomes, and mortality rates of elderly patients (≥ 65 years) presenting with intestinal obstruction with those of younger patients (< 65 years). In addition, we sought to evaluate the impact of advanced age on postoperative morbidity and mortality among patients with intestinal obstruction.

MATERIAL and METHODS

Study Design

This single-center retrospective cohort study included consecutive adult patients who were hospitalized and treated for intestinal obstruction in the department of general surgery between January 2018 and December 2025. Patient data were retrospectively collected from electronic medical records, operative reports, laboratory findings, and discharge summaries.

The primary aim of the study was to compare the clinical characteristics, management strategies, and treatment outcomes of geriatric patients aged ≥ 65 years with those of younger patients aged < 65 years presenting with intestinal obstruction. In addition, the impact of advanced age on postoperative morbidity and mortality was evaluated. This study was approved by the Local Institutional Review Board of University of Health Sciences Türkiye, Hamidiye Scientific Research Ethics Committee (approval no: 7/33, date: April 07, 2023). Due to the retrospective nature of the study, the requirement for informed consent was waived.

Patient Selection

Patients aged 18 years and older were included in the study. The study population was divided into two groups according to age: A geriatric group (≥ 65 years) and a younger group (< 65 years). Patients with incomplete medical records and those for whom follow-up data were unavailable were excluded from the study.

Diagnosis and Evaluation

The diagnosis of intestinal obstruction was established based on clinical symptoms, including abdominal pain, nausea and vomiting, abdominal distension, and failure to pass flatus or

stool, in conjunction with physical examination findings and radiological investigations. Diagnostic evaluation included plain abdominal radiography, abdominal ultrasonography and computed tomography. Complete blood count, biochemical analyses, and inflammatory markers were assessed in all patients at the time of admission. Patient demographics and clinical characteristics, including age, sex, history of previous abdominal surgery, comorbidities, American Society of Anesthesiologists (ASA) score, duration of symptoms before admission, laboratory parameters, and imaging findings, were recorded.

Management Strategy

The treatment modality was determined according to the patient's clinical condition, radiological findings, and the attending surgeon's judgment. In patients managed conservatively, oral intake was discontinued, intravenous fluid and electrolyte replacement was administered, nasogastric decompression was performed when indicated, and patients were closely monitored through serial clinical assessments.

Surgical intervention was undertaken in cases of suspected strangulation, evidence of bowel ischemia, perforation, generalized peritonitis, or failure of conservative management. Surgical procedures were tailored to the underlying cause of obstruction and included bowel resection, colorectal resection, adhesiolysis, hernia repair, stoma creation, or other necessary interventions when appropriate.

Data Collection and Outcome Measures

The etiology of intestinal obstruction, treatment modality, operative time, need for stoma creation, intensive care unit (ICU) admission, length of hospital stay, postoperative complications, and mortality were evaluated. The primary outcome was defined as in-hospital mortality. Secondary outcomes included postoperative complications, requirement for ICU admission, operative time, stoma creation, and length of hospital stay. Postoperative complications were assessed according to the Clavien-Dindo classification. Complications of Grade III or higher were defined as major complications.

Statistical Analysis

All statistical analyses were performed using IBM SPSS Statistics software. The normality of continuous variables was assessed using the Kolmogorov-Smirnov test and visual inspection of histograms. Normally distributed data were presented as mean $\pm$ standard deviation, whereas non-normally distributed data were expressed as median (minimum-maximum) or median (interquartile range), as appropriate. Comparisons of continuous variables between the two independent groups were performed using the Student's t-test for normally distributed data and the Mann-Whitney U test for non-normally distributed data. Categorical variables were expressed as numbers (n) and

percentages (%). Comparisons of categorical variables were performed using the Pearson chi-square test, while Fisher's exact test was used when the expected cell count was less than five. To identify independent risk factors associated with mortality, logistic regression analysis was performed. Initially, variables were evaluated using univariable analysis. Variables considered clinically relevant or showing an association at a significance level of $p < 0.10$ in the univariable analysis were entered into a multivariable logistic regression model. Results were reported as odds ratios (ORs) with 95% confidence intervals (CIs). All statistical tests were two-sided, and a p -value of < 0.05 was considered statistically significant.

RESULTS

A total of 277 patients treated for intestinal obstruction were included in the study. Of these, 171 (61.7%) were aged 65 years or older, while 106 (38.3%) were younger than 65 years. The prevalence of comorbidities was significantly higher in the geriatric group compared with the younger group (66.7% vs. 45.3%, $p < 0.001$). In addition, elderly patients presented to the hospital significantly later than younger patients, with a mean symptom duration before admission of 59.1 ± 53 hours compared with 35.4 ± 24 hours, respectively ($p < 0.001$) (Table 1).

Geriatric patients had significantly higher C-reactive protein (CRP) and serum creatinine levels, whereas their estimated glomerular filtration rate (eGFR) was significantly lower than that of younger patients. Furthermore, the distribution of ASA scores indicated a higher perioperative risk profile among elderly patients (Table 2).

In terms of treatment strategy, the rate of surgical intervention was comparable between the two groups (53.2% vs. 44.3%, $p = 0.14$). However, operative time was significantly longer in geriatric patients compared with younger patients (126.9 ± 50.7 minutes vs. 108.3 ± 44.6 minutes, $p < 0.001$). Among patients who underwent stoma creation, the geriatric group underwent 10 end ileostomies, 9 loop ileostomies, and 2 double-barrel stomas, whereas the younger group underwent 12 loop ileostomies, 6 end colostomies, 3 end ileostomies, and 3 double-barrel stomas. The requirement for ICU admission was markedly higher in the elderly group (51.5% vs. 31.1%, $p < 0.001$). Although the overall length of hospital stay was longer among geriatric patients, the difference did not reach statistical significance (7.1 ± 7.8 days vs. 5.5 ± 3.5 days, $p = 0.39$).

When the etiological causes of intestinal obstruction were analyzed, peritoneal adhesions and colorectal malignancies were identified as the most common causes in both age groups. However, the distribution of etiological factors differed significantly between the groups ($p < 0.001$). Incarcerated abdominal wall hernias, fecal impaction, internal herniation, mesenteric ischemia, and gallstone ileus were observed more frequently in elderly patients, whereas diverticular disease was more prevalent among younger patients (Table 3).

Among patients who underwent surgery, no significant difference was observed between the two groups regarding the indications for operative intervention ($p = 0.08$) (Table 4). However, the distribution of surgical procedures differed significantly between the age groups ($p = 0.006$) (Table 5). Small bowel resection and hernia repair were performed more

Table 1. Baseline characteristics and treatment outcomes of patients with intestinal obstruction according to age group

Variable	≥ 65 years (n=171)	< 65 years (n=106)	p-value
Age, years	76.2 ± 6.9	47.7 ± 15.6	< 0.001
Male sex, n (%)	99 (57.9)	60 (56.6)	0.83
Previous abdominal surgery, n (%)	96 (56.1)	70 (66.0)	0.08
Comorbidity, n (%)	114 (66.7)	48 (45.3)	< 0.001
Time to admission, h	59.1 ± 53.0	35.4 ± 24.0	< 0.001
WBC ($\times 10^3/\mu\text{L}$)	10.2 ± 5.7	11.5 ± 4.9	0.11
CRP (mg/L)	52.6 ± 81.4	33.8 ± 53.3	0.003
Creatinine (mg/dL)	1.20 ± 0.60	1.07 ± 1.10	< 0.001
eGFR (mL/min/1.73 m ²)	62.7 ± 23.5	88.7 ± 28.1	< 0.001
Conservative treatment, n (%)	80 (46.8)	59 (55.7)	0.14
Surgical treatment, n (%)	91 (53.2)	47 (44.3)	0.14
ICU admission, n (%)	88 (51.5)	33 (31.1)	< 0.001
Length of hospital stay, days	7.1 ± 7.8	5.5 ± 3.5	0.39
Mortality, n (%)	24 (14.0)	1 (0.9)	< 0.001

Values are presented as mean $\pm$ standard deviation or n (%). CRP: C-reactive protein, eGFR: Estimated glomerular filtration rate, WBC: White blood cell, ICU: Intensive care unit.

Variable	≥65 years (n=91)	<65 years (n=47)	p-value
ASA I	1 (1.1)	2 (4.3)	
ASA II	12 (13.2)	17 (36.2)	
ASA III	62 (68.1)	24 (51.1)	
ASA IV	15 (16.5)	4 (8.5)	
ASA V	1 (1.1)	0	0.013
General anesthesia	80 (87.9)	45 (95.7)	
Spinal anesthesia	11 (12.1)	2 (4.3)	0.14
Operative time (min)	126.9±50.7	108.3±44.6	<0.001
Stoma creation, n (%)	21 (23.1)	24 (51.1)	<0.001

Values are presented as mean ± standard deviation or n (%). ASA: American Society of Anesthesiologists physical status classification.

Preoperative diagnosis	≥65 years (n=171)	<65 years (n=106)	p-value
Colorectal cancer	25 (14.6%)	15 (14.2%)	
Peritoneal adhesions	76 (44.4%)	55 (51.9%)	
Volvulus	12 (7.0%)	12 (11.3%)	
Incarcerated inguinal hernia	11 (6.4%)	3 (2.8%)	
Incarcerated umbilical/incisional hernia	11 (6.4%)	2 (1.9%)	
Diverticular disease	2 (1.2%)	15 (14.2%)	
Idiopathic	17 (9.9%)	4 (3.8%)	
Fecal impaction	5 (2.9%)	0	
Internal herniation	6 (3.5%)	0	
Mesenteric ischemia	2 (1.2%)	0	
Inflammatory bowel disease	2 (1.2%)	0	
Small bowel tumor	1 (0.6%)	0	
Gallstone ileus	1 (0.6%)	0	
Overall comparison			<0.001

Values are presented as n (%). Comparisons were performed using the χ^2 test or Fisher's exact test, as appropriate.

frequently in geriatric patients, whereas colorectal resection was more commonly performed in younger patients.

Evaluation of postoperative outcomes demonstrated a significantly greater severity of complications among elderly patients. According to the Clavien-Dindo classification, the distribution of postoperative complications differed significantly between the two groups ($p<0.001$). The rate of major complications (Clavien-Dindo grade $\geq$ III) was 31.0% in geriatric patients compared with 7.5% in younger patients. Notably, Clavien-Dindo grade IV and V events, representing life-threatening complications and death, respectively, were substantially more frequent in the elderly group. The detailed distribution of postoperative complications according to the Clavien-Dindo classification is presented in Table 6.

The most striking finding of the study was the marked difference in mortality rates between the two age groups.

Mortality was observed in 14.0% of geriatric patients, compared with only 0.9% of younger patients ($p<0.001$). Logistic regression analysis was performed to identify factors associated with mortality in the geriatric patient group. Age and the need for surgical intervention emerged as independent predictors of mortality. In the multivariable analysis, each one-year increase in age was associated with an 8% increase in the risk of mortality (OR: 1.08, 95% CI: 1.01-1.16, $p=0.033$). Similarly, patients who underwent surgical treatment had an approximately fivefold higher risk of mortality compared with those managed conservatively (OR: 4.92, 95% CI: 1.44-16.83, $p=0.011$). In contrast, time to admission, CRP level, and serum creatinine level did not retain independent significance in the multivariable model (Table 7). In the expanded univariate logistic regression analysis, male sex, previous abdominal surgery, WBC, ASA score, and the Charlson comorbidity index

Table 4. Preoperative diagnoses among patients who underwent surgical treatment

Preoperative diagnosis	≥65 years (n=91)	<65 years (n=47)	p-value
Colorectal cancer	22 (24.2%)	10 (21.3%)	
Peritoneal adhesions	25 (27.5%)	18 (38.3%)	
Volvulus	9 (9.9%)	11 (23.4%)	
Incarcerated inguinal hernia	9 (9.9%)	3 (6.4%)	
Incarcerated umbilical/incisional hernia	11 (12.1%)	2 (4.3%)	
Diverticular disease	1 (1.1%)	3 (6.4%)	
Meckel's diverticulum	2 (2.2%)	0	
Fecal impaction	3 (3.3%)	0	
Small bowel tumor	2 (2.2%)	0	
Mesenteric ischemia	3 (3.3%)	0	
Gallbladder perforation	2 (2.2%)	0	
Internal herniation	2 (2.2%)	0	
Overall comparison			0.08

Values are presented as n (%). Comparisons were performed using the χ^2 test or Fisher's exact test, as appropriate.

Table 5. Surgical procedures performed among patients who underwent surgery

Surgical procedure	≥65 years (n=91)	<65 years (n=47)	p-value
Colorectal resection	26 (28.6%)	24 (51.1%)	
Stoma creation	4 (4.4%)	5 (10.6%)	
Small bowel resection	21 (23.2%)	4 (8.5%)	
Hernia repair	16 (17.6%)	0	
Adhesiolysis	19 (20.9%)	14 (29.8%)	
Gastroenterostomy	2 (2.2%)	0	
Enterotomy	2 (2.2%)	0	
Cholecystectomy	1 (1.1%)	0	
Overall comparison			0.006

Values are presented as n (%). Comparisons were performed using the χ^2 test or Fisher's exact test, as appropriate. Surgical procedures were analyzed only among patients who underwent operative treatment.

Table 6. Distribution of postoperative complications according to the Clavien-Dindo classification

Clavien-Dindo	≥65 years (n=171)	<65 years (n=106)	p
None	56 (32.7)	6 (5.7)	
I	36 (21.1)	76 (71.7)	
II	26 (15.2)	16 (15.1)	
IIIA	1 (0.6)	6 (5.7)	
IIIB	5 (2.9)	1 (0.9)	
IVA	22 (12.9)	0	
IVB	1 (0.6)	0	
V	24 (14.0)	1 (0.9)	<0.001

Values are presented as n (%). Comparisons were performed using the Pearson chi-square test. Clavien-Dindo grade V represents postoperative mortality.

were also evaluated; however, none of these variables was significantly associated with mortality.

Overall, geriatric patients were characterized by a higher burden of comorbidities, delayed presentation, poorer renal function, increased need for ICU admission, higher rates of major postoperative complications, and significantly increased mortality compared with younger patients.

DISCUSSION

Intestinal obstruction remains a significant cause of morbidity and mortality in the elderly population (10,11). Previous studies have reported that advanced age is associated with poorer clinical outcomes in patients with intestinal obstruction (12). These observations may be explained by age-related reductions in physiological reserve, the increased prevalence of comorbid diseases, polypharmacy, limited tolerance to surgical stress, and decreased postoperative functional recovery. Consistent with this explanation, geriatric patients in our cohort exhibited a significantly higher comorbidity burden and more advanced ASA classifications than younger patients. Notably, the principal finding of this study was the substantially increased rates of major morbidity and mortality among geriatric patients with intestinal obstruction. Moreover, advanced age emerged as an independent predictor of mortality, underscoring the profound impact of aging on clinical outcomes in this patient population.

The distribution of etiological factors underlying intestinal obstruction differed significantly between geriatric and younger patients ($p < 0.001$). Although postoperative adhesions represented the most common cause in both groups, incarcerated

hernias, fecal impaction, mesenteric ischemia, and gallstone ileus were more frequently observed among geriatric patients, whereas diverticular disease and volvulus were more prevalent in younger individuals. While the etiological distribution among surgically treated patients did not reach statistical significance, a tendency toward more complex pathologies, including incarcerated hernias, mesenteric ischemia, and fecal impaction, was observed in the geriatric population. These differences may have contributed to the higher rates of morbidity and mortality observed in elderly patients. Among patients who underwent surgical intervention, the distribution of operative procedures differed significantly between age groups ($p = 0.006$). Small bowel resection and hernia repair were performed more frequently in geriatric patients, whereas colorectal resection was more common among younger patients. This variation may be explained by differences in the underlying etiologies of intestinal obstruction between the two age groups (13). In particular, the higher prevalence of incarcerated abdominal wall hernias and mesenteric vascular compromise in geriatric patients may have increased the need for small bowel resection and hernia repair procedures. In contrast, the higher rate of colorectal resection observed in younger patients may be attributable to the more frequent surgical management of colorectal malignancies and other colonic pathologies requiring bowel resection. Furthermore, the increased rate of stoma formation in the younger cohort may represent a consequence of the higher frequency of colorectal resections performed in this group.

When treatment modalities were compared, non-operative management was more frequently successful in patients aged < 65 years, whereas surgical intervention was more commonly

Table 7. Univariate and multivariate logistic regression analysis of factors associated with mortality in geriatric patients (≥ 65 years)

Variable	Univariate OR (95% CI)	p-value	Multivariate OR (95% CI)	p-value
Age (years)	1.07 (1.01-1.14)	0.026	1.08 (1.01-1.16)	0.033
Male sex	1.25 (0.51-3.04)	0.623	—	—
Previous abdominal surgery	0.40 (0.16-1.02)	0.056	0.50 (0.18-1.40)	0.186
Comorbidity	2.31 (0.88-6.04)	0.089	1.21 (0.39-3.76)	0.743
Time to admission (hours)	1.01 (1.00-1.02)	0.041	1.01 (0.99-1.02)	0.118
WBC ($\times 10^3/\mu\text{L}$)	0.98 (0.90-1.08)	0.704	—	—
CRP (mg/L)	1.01 (1.00-1.01)	0.021	1.00 (0.99-1.01)	0.162
Creatinine (mg/dL)	2.94 (1.18-7.34)	0.020	1.89 (0.61-5.81)	0.268
Surgical treatment	5.78 (1.82-18.36)	0.003	4.92 (1.44-16.83)	0.011
ICU admission	3.46 (1.21-9.86)	0.020	—	—
Charlson comorbidity index	1.21 (0.86-1.70)	0.268	—	—
ASA score†	1.77 (0.76-4.16)	0.188	—	—

ORs and 95% CIs were calculated using logistic regression analysis. Variables with $p < 0.10$ in the univariate analysis and clinically relevant variables were included in the multivariable logistic regression model. OR: Odds ratio, CI: Confidence interval, CRP: C-reactive protein, ICU: Intensive care unit, ASA: American Society of Anesthesiologists Physical Status Classification. †: ASA score was evaluated only among patients who underwent surgical treatment because ASA classification was available only for operated patients. ICU admission was excluded from the multivariable model because it was considered an intermediate clinical outcome rather than a baseline predictor.

required in geriatric patients. This difference may be related to the higher prevalence of malignancy, previous abdominal surgery, and reduced physiological reserve among elderly patients. Fevang et al. (14) reported that older patients experienced longer treatment delays and that delayed operative treatment was associated with increased postoperative morbidity and prolonged hospitalization, highlighting the importance of timely surgical assessment when indicated. In our study, the prolonged time to presentation in the geriatric group (59 hours) further supports this observation. Richardson et al. (15) reported that delayed surgical intervention in patients with small bowel obstruction was associated with increased perioperative complications, prolonged hospitalization, and greater healthcare resource utilization, underscoring the importance of timely operative management when indicated.

Contrary to our expectations, the rate of stoma formation was higher among younger patients. This finding may be related to the greater proportion of cases requiring colorectal resection in the younger cohort. Indeed, colorectal resection was performed significantly more frequently in younger patients than in geriatric patients (51.1% vs. 28.6%). Therefore, the observed difference in stoma formation appears to be more closely associated with the underlying pathology and the type of surgical procedure performed rather than with age itself.

Ozkan et al. reported that all patients who died following surgery had at least one comorbid condition. In contrast, in their study evaluating emergency abdominal surgery in elderly patients, comorbidities were also present in 66.3% of survivors, suggesting that while comorbid diseases are common among elderly surgical patients, their presence alone may not fully account for adverse outcomes (16). Consistent with our findings, previous studies have reported that morbidity is not necessarily associated with increased mortality (17). Fukuda et al. (18) reported an overall complication rate of 43.6%, consistent with previously published series. Despite the relatively high incidence of postoperative morbidity, the mortality rate remained limited to 16.0%, suggesting that the occurrence of complications does not necessarily translate into increased mortality. Fukuda et al. (18) suggested that underlying medical comorbidities may not independently influence mortality in elderly patients undergoing emergency abdominal surgery, possibly owing to advances in perioperative care and improved management of chronic medical conditions. Consistent with this observation, although the prevalence of comorbidities in our geriatric cohort was as high as 67.3%, the mortality rate was 14%, supporting the notion that the presence of comorbid disease alone may not fully account for mortality risk. However, geriatric patients were found to present later to the hospital, have a greater burden of comorbidities, and experience poorer postoperative outcomes.

In particular, the rates of ICU admission, major complications, and mortality were significantly higher in the geriatric group. Furthermore, multivariable analysis identified advanced age as an independent predictor of mortality. These findings suggest that the adverse impact of aging cannot be explained solely by the burden of comorbid disease but is also related to age-associated physiological changes, diminished physiological reserve, and a reduced capacity to adapt to surgical stress.

One of the important findings of our study was the significantly longer time to hospital presentation among geriatric patients. In elderly individuals, atypical symptom presentation, altered pain perception, lack of social support, and delays in access to healthcare services may contribute to delayed diagnosis and treatment (19). Delayed presentation has been associated with increased bowel dilatation, fluid and electrolyte imbalances, deterioration of renal function, and a higher risk of bowel ischemia. Consistent with this observation, geriatric patients in our cohort had significantly higher creatinine levels and lower eGFR values. It should also be noted that the time to hospital presentation in the geriatric population may vary considerably across different regions. Regional disparities in healthcare accessibility and utilization may contribute to prolonged presentation times. Therefore, the duration of symptom onset to hospital admission should be interpreted in the context of local healthcare access and compared with findings from other centers.

Postoperative outcomes revealed significantly higher rates of ICU admission and major complications among geriatric patients. The increased incidence of Clavien-Dindo grade III or higher complications in elderly patients highlights the greater vulnerability of this population to surgical interventions. Serious complications, including cardiopulmonary events, sepsis, and multiple organ failure, are known to occur more frequently in elderly patients. Therefore, geriatric patients with intestinal obstruction should undergo careful perioperative assessment and close monitoring within a multidisciplinary care framework.

The most striking finding of our study was the marked difference in mortality rates between the two age groups. Mortality was approximately 15-fold higher in geriatric patients than in younger individuals. Furthermore, logistic regression analysis identified advanced age as an independent predictor of mortality. This finding suggests that chronological age is not merely a demographic characteristic but also reflects age-related physiological changes and diminished physiological reserve that may adversely affect clinical outcomes. The higher mortality observed among surgically treated elderly patients may be attributable to increased frailty, reduced physiological reserve, impaired pulmonary and renal function, limited postoperative mobilization, and challenges in postoperative care. In our cohort, the mortality rate among geriatric patients was 14.0%.

Although this mortality rate was lower than the 23.5% reported by van Beekum et al. (20), it remained significantly higher than that observed in younger patients. Similarly, Paul et al. (21) reported an in-hospital mortality rate of 18.2% among patients who underwent surgery for mechanical bowel obstruction. The authors reported significantly higher morbidity and mortality rates among geriatric patients. In a study by Koşar and Görgülü (22) published in 2021, 534 patients were evaluated over a 10-year retrospective period. The authors reported a mortality rate of 10.6% in the geriatric group (≥ 65 years) (22). However, no logistic regression analysis was performed to identify independent predictors of mortality. In contrast, our study employed multivariable logistic regression analysis and demonstrated that advanced age is an independent risk factor for mortality.

Study Limitations

This study has several limitations. First, its retrospective design and single-center setting may limit the generalizability of the findings. In addition, important geriatric assessment parameters, including frailty, nutritional status, and functional capacity, could not be evaluated. Nevertheless, the relatively large sample size, direct comparison between age groups, complication assessment based on the Clavien-Dindo classification, and the use of multivariable analysis for mortality represent important strengths of the study. Furthermore, the comprehensive evaluation of both clinical and postoperative outcomes adds to the robustness of our findings.

CONCLUSION

Geriatric patients treated for intestinal obstruction were characterized by a higher burden of comorbidities, greater need for ICU admission, higher rates of major complications, and significantly increased mortality compared with younger patients. Furthermore, advanced age was identified as an independent predictor of mortality. These findings suggest that early diagnosis, meticulous perioperative assessment, and appropriate treatment strategies are crucial for improving clinical outcomes in geriatric patients presenting with intestinal obstruction.

Ethics

Ethics Committee Approval: This study was approved by the Local Institutional Review Board of University of Health Sciences Türkiye, Hamidiye Scientific Research Ethics Committee (approval no: 7/33, date: April 07, 2023).

Informed Consent: Due to the retrospective nature of the study, the requirement for informed consent was waived.

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For transparency, the authors note that an artificial intelligence-assisted language model (ChatGPT, OpenAI) was utilized to support text editing and language correction. This assistance was limited to linguistic refinement; all scientific content, critical analysis, and final editorial decisions were made exclusively by the authors.

Footnotes

Author Contributions

Surgical and Medical Practices - K.Ö., A.S.M., İ.H.; Concept - K.Ö., A.S.M., B.S.; Design - M.E.U., B.S., İ.H.; Data Collection or Processing - K.Ö., M.E.U., A.F.T., Ü.Y.; Analysis or Interpretation - K.Ö., M.E.U., A.F.T., B.S.; Literature Search - A.S.M., A.F.T., İ.H.; Writing - K.Ö., A.S.M., İ.H.

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