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Original Research Article

Retrospective Assessment of Causes, Management Outcomes, and Associated Factors Among Patients Diagnosed with Intestinal Obstruction

Jeemy Shailesh Kumar Prajapati[1], Ravikumar Pankaj Kumar mendha[2], Ishwar Devamanvar Ahir[3]

[1]Junior Resident (Academic) Department of General Surgery, Shri M.P. Shah Government Medical College, Jamnagar, Gujarat, India

[2]Junior Resident (Academic) Department of General Surgery, Shri M.P. Shah Government Medical College, Jamnagar, Gujarat, India

[3]Senior Resident, Department of General Surgery, Shri M.P. Shah Government Medical College, Jamnagar, Gujarat, India

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Corresponding Author: Dr. Ravikumar Pankaj Kumar Mendha

Conflict of interest: Nil

Abstract:

Background: Intestinal obstruction is a common surgical emergency associated with considerable morbidity and mortality worldwide. Delayed diagnosis and treatment may result in serious complications, including bowel ischemia, perforation, sepsis, and death. Understanding local etiological patterns, management approaches, and outcome determinants is essential for improving patient care and surgical outcomes.

Aim: To assess the causes, management outcomes, and factors associated with treatment outcomes among patients diagnosed with intestinal obstruction in a tertiary care hospital in Gujarat, India.

Methodology: A hospital-based retrospective observational study was conducted in the Department of General Surgery at Shri M.P. Shah Government Medical College, Jamnagar, Gujarat, India. Medical records of 76 patients diagnosed with intestinal obstruction were reviewed. Data regarding demographic characteristics, clinical presentation, etiology, treatment modality, postoperative complications, and outcomes were collected and analyzed using descriptive and inferential statistics.

Results: Intestinal obstruction predominantly affected males and middle-aged adults. Most patients presented more than 24 hours after symptom onset. Adhesion/band obstruction was the most common etiology, followed by sigmoid volvulus and hernia. Operative management was required in the majority of patients, with resection and anastomosis being the most frequently performed procedure. Most surgically treated patients had an uncomplicated postoperative course, while surgical site infection was the commonest complication. Favorable outcomes were achieved in most patients, whereas morbidity and mortality occurred in a smaller proportion. Advanced age, delayed presentation, previous abdominal surgery, comorbidities, gangrenous bowel, and prolonged hospitalization were significantly associated with unfavorable outcomes.

Conclusion: Intestinal obstruction remains a significant surgical emergency. Early diagnosis, timely intervention, and focused management of high-risk patients are crucial for improving outcomes and reducing complications and mortality.

Keywords: Intestinal obstruction, Adhesive bowel obstruction, Volvulus, Hernia, Surgical management, Postoperative complications, Management outcome, Risk factors, Retrospective study, Gujarat.

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Introduction

Intestinal obstruction (IO) is one of the most frequent and difficult surgical emergencies in clinical practice and continues to be a leading cause of hospital admission all over the world [1]. It is an important cost to health care systems due to its high prevalence, the rapid nature of clinical deterioration, and the impact on patient morbidity and mortality. Although the use of diagnostic imaging, peri-operative management and surgical techniques has improved, intestinal obstruction is still a serious condition which is often overlooked and has the potential of causing serious complications including bowel ischaemia, perforation, sepsis and death if it is not diagnosed early and treated promptly. Intestinal obstruction remains a major part of emergency surgery admissions in India and more so in fast-growing states like Gujarat, therefore, continued surveillance of causes, management and outcome of intestinal obstruction is essential.

Obstruction is the stoppage or failure of the normal forward movement of gastrointestinal contents through the intestine. This interruption can take place at any point along the intestine and can be partial or complete. The clinical feature of intestinal obstruction depends on the location, severity and duration of the obstruction, and therefore include abdominal pain, vomiting, abdominal distention, constipation and failure to pass flatus [2]. If diagnosis and treatment is delayed, there may be an increased morbidity and mortality due to vascular compromise of the bowel. Thus, early recognition and suitable care and treatment are vital in order to enhance outcomes for patients.

There are a number of different ways to divide intestinal obstruction. In terms of anatomy, it can be divided in small bowel obstruction and large bowel obstruction. Pathophysiologically, it can be mechanical obstruction (due to physical obstruction) or functional obstruction (motility is impaired without mechanical obstruction). The small bowel obstruction is the most common cause of intestinal obstruction (around 80% of cases), while the large bowel obstruction represents the remaining 20% of cases [3]. The etiology of intestinal obstruction differs from geographic region to geographic region and from population to population because of the differences in lifestyle, the availability of health services, surgical procedures, and the prevalence of the disease.

In small bowel obstruction, the underlying conditions are almost 90% postoperative adhesions, incarcerated hernias and neoplasms [4]. The most common cause is adhesive small bowel obstruction (55-75%), and this is the predominant cause in many developed and developing nations. The rising number of abdominal surgeries around the world has led to a rise in the incidence of adhesion obstruction. Hernias remain a significant cause, especially in areas where there is a delay in seeking care and low uptake of elective surgical services. Small bowel obstruction is also caused by neoplastic lesions, inflammatory conditions and congenital abnormalities. On the other hand, large bowel obstruction is more commonly associated with colorectal malignancies, especially sigmoid colon and rectosigmoid malignancies [5]. Other causes are less important, such as volvulus, intussusception, inflammatory bowel disease (including Crohn's disease), and rarely postoperative adhesions.

Intestinal obstruction management will depend on some factors such as intestinal viability, severity, underlying cause of obstruction, complications, and clinical status of the patient. The management of the initial episode is aimed at aggressive fluid resuscitation, electrolyte replacement, gastrointestinal decompression by nasogastric tube, and prevention of aspiration [6]. The treatment is either conservative or surgical depending on the clinical presentation and radiological findings. In some cases where there is no strangulation or peritonitis, conservative management may be effective. In cases of complete obstruction, bowel ischemia, perforation, strangulated hernias, volvulus or failure to achieve conservative management, however, surgical intervention is the mainstay of therapy. Surgery may involve adhesiolysis, bowel resection and anastomosis, hernia repair, release of constricting bands, derotation of volvulus or stoma formation.

Surgery is an important part of the treatment of intestinal obstruction, but it is important to be concerned about postoperative complications. Patients who have undergone surgical management may experience infection of wounds, wound dehiscence, pneumonia, sepsis, intra-abdominal abscess, anastomotic leaks and other complications that could impact recovery and hospitalization [7]. Evaluation of the outcomes of management and identification of factors that led to good or bad outcomes is therefore essential to enhance quality of care and to maximize resource use.

Intestinal obstruction is known to be a major cause of acute abdomen that needs emergency surgical intervention6. Bowel obstruction is still a major cause of morbidity and mortality in surgery worldwide [8]. In 2015 it was estimated that there were around 3,200,000 cases of bowel obstruction in the world and that almost 264,000 people died from it [9]. While the burden is especially high in low- and middle-income countries, in many areas delays in diagnosis, inadequate access to health care or limited emergency surgical services are significant challenges. The epidemiology of intestinal obstruction has changed in India over the years with the prevalence of postoperative adhesions, malignancies, and complex surgical scenarios increasing. But there are still some regional differences, and it is important to have local data.

Although several studies have been done on the epidemiology and etiological profile of intestinal obstruction, few data are available to assess the outcome of treatment and factors affecting prognosis in many parts of India including Gujarat. Knowing the local causes of intestinal obstruction, treatment modalities, post-operative results, and factors that predict successful management are important to consider when making evidence-based decisions and planning for health. Hence, this retrospective study was conducted to evaluate the etiology, outcomes of treatment and risk factors in patients with intestinal obstruction in Gujarat, India. The results of this study will prove helpful for the clinicians, administration of the hospitals and the policy makers in the hospital as baseline data for surgical care improvement and in the existing literature of intestinal obstruction. Moreover, the findings from the study can be used as a basis for future studies to minimize the risk of complications, improve patient outcomes and

enhance emergency surgical care and services in the region.

Materials and Methods

Study Design: This study was designed as a hospital-based retrospective observational study aimed at assessing the causes, management outcomes, and associated factors among patients diagnosed with intestinal obstruction. The study involved a detailed review and analysis of previously recorded medical records of patients admitted and treated for intestinal obstruction in the Department of General Surgery. The retrospective design enabled the evaluation of clinical characteristics, etiological factors, treatment modalities, and patient outcomes based on available hospital records.

Study Area: The study was conducted in the Department of General Surgery, Shri M.P. Shah Government Medical College, Jamnagar, Gujarat, India.

Study Duration: The study was carried out over a period of 8 months from October 2023 to May 2024.

Sample Size: A total of 76 patients diagnosed with intestinal obstruction were included in the study. All eligible patient records were reviewed during the study period and meeting the predefined inclusion criteria. Since the number of available cases was limited, complete enumeration of all eligible records was undertaken to maximize the representativeness and reliability of the findings.

Study Population: The study population comprised all patients admitted to the Department of General Surgery with a diagnosis of intestinal obstruction and managed either conservatively or surgically. The study included patients of all age groups and both sexes whose medical records contained sufficient information regarding diagnosis, management, and treatment outcomes.

Data Collection: Data were collected retrospectively from hospital records, including admission registers, inpatient case sheets, operation theatre records, discharge summaries, and medical record department archives. A structured data collection proforma was used to extract relevant information from the patient files. The collected data included demographic characteristics such as age and sex, clinical presentation, duration of symptoms, previous abdominal surgeries, comorbid conditions, causes and types of intestinal obstruction, treatment modalities employed, operative findings, postoperative complications, duration of hospital stay, and final management outcomes.

Inclusion Criteria

- Patients of all age groups and both sexes diagnosed with intestinal obstruction.
- Patients admitted under the Department of General Surgery during the study period.
- Patients with complete medical records containing relevant clinical, diagnostic, treatment, and outcome information.

Exclusion Criteria

- Patients with incomplete or missing medical records.
- Records lacking essential information regarding diagnosis, treatment, or outcome.
- Patients discharged against medical advice before completion of treatment.
- Patients referred to another institution before definitive management.

Procedure: Eligible case files were retrieved from the Medical Record Department and reviewed systematically. Relevant demographic, clinical, diagnostic, operative, and outcome-related information was extracted using a predesigned data collection form. The collected data were verified for completeness and accuracy before being entered into a computerized database. Patients were categorized according to the etiology of intestinal obstruction, type of management received, and treatment outcomes. Subsequently, associations between patient characteristics, causative factors, treatment modalities, and outcomes were assessed.

Statistical Analysis: The collected data were entered into Microsoft Excel and subsequently analyzed using the Statistical Package for Social Sciences (SPSS) version 25.0. Descriptive statistical methods were used to summarize the demographic and clinical characteristics of the study population. Continuous variables were expressed as mean and standard deviation, whereas categorical variables were presented as frequencies and percentages. Associations between management outcomes and various demographic and clinical factors were assessed using the Chi-square test or Fisher's exact test, as appropriate. Variables demonstrating significant associations were further evaluated using multivariable logistic regression analysis to identify independent predictors of management outcomes. Odds ratios with 95% confidence intervals were calculated, and a p-value of less than 0.05 was considered statistically significant."

Result

Table 1 presents the demographic and clinical characteristics of the 76 patients diagnosed with intestinal obstruction. Males constituted the majority of the study population, accounting for 68.4% (n=52), while females represented 31.6% (n=24). The most affected age group was 41–60 years, comprising 36.8% (n=28) of patients, followed by 21–40 years (31.6%, n=24), those older than 60 years (21.1%, n=16), and patients younger than 20 years (10.5%, n=8). Most patients presented to the hospital more than 24 hours after symptom onset (71.1%, n=54), whereas only 28.9% (n=22) sought medical care

within 24 hours. Abdominal pain was the most common presenting symptom, reported by 97.4% (n=74) of patients, followed by vomiting (80.3%, n=61), abdominal distension (76.3%, n=58), and failure to pass stool or flatus (72.4%, n=55). A previous history of intestinal obstruction was noted in 18.4% (n=14) of patients, while 25.0% (n=19) had undergone prior abdominal surgery. Comorbid conditions were present in 23.7% (n=18) of cases. These findings indicate that intestinal obstruction predominantly affected middle-aged and older males, with most patients presenting late and exhibiting the classic clinical features of abdominal pain, vomiting, and abdominal distension.

Table 1: Demographic and Clinical Characteristics of Patients Diagnosed with Intestinal Obstruction (N = 76)

Variable	Frequency (n)	Percentage (%)
Sex		
Male	52	68.4
Female	24	31.6
Age Group (Years)		
<20	8	10.5
21–40	24	31.6
41–60	28	36.8
>60	16	21.1
Duration of Symptoms Before Admission		
≤24 hours	22	28.9
>24 hours	54	71.1
Presenting Symptoms		
Abdominal Pain	74	97.4
Vomiting	61	80.3
Abdominal Distension	58	76.3
Failure to Pass Stool/Flatus	55	72.4
Previous Intestinal Obstruction		
Yes	14	18.4
No	62	81.6
Previous Abdominal Surgery		
Yes	19	25
No	57	75
Comorbidity		
Yes	18	23.7
No	58	76.3

Table 2 shows the etiological distribution of intestinal obstruction among the 76 study participants. Small bowel obstruction (SBO) was more common than large bowel obstruction (LBO), with adhesion/band being the leading cause overall, accounting for 26.3% (n=20) of cases. Hernia was the second most common etiology, observed in 18.4% (n=14) of patients, followed by sigmoid volvulus in 19.7% (n=15) and small bowel volvulus in 14.5% (n=11). Among large bowel obstruction cases, sigmoid volvulus was the predominant cause, while colorectal malignancy accounted for 9.2% (n=7) of cases. Other less frequent causes included intussusception (5.3%, n=4), tubercular stricture (3.9%, n=3), and miscellaneous etiologies (2.7%, n=2). These findings indicate that adhesive obstruction and hernias were the major contributors to intestinal obstruction, whereas sigmoid volvulus was the most common cause of large bowel obstruction in the study population.

Table 2: Etiologies of Intestinal Obstruction among Study Participants (N = 76)

Etiology	Frequency (n)	Percentage (%)
Large Bowel Obstruction (LBO)		
Sigmoid Volvulus	15	19.7
Colorectal Malignancy	7	9.2
Small Bowel Obstruction (SBO)		
Adhesion/Band	20	26.3
Small Bowel Volvulus	11	14.5
Hernia	14	18.4
Intussusception	4	5.3

Tubercular Stricture	3	3.9
Others	2	2.7
Total	76	100

Table 3 presents the management modalities and surgical procedures performed among the 76 patients diagnosed with intestinal obstruction. The majority of patients underwent operative management, accounting for 72.4% (n=55), while 27.6% (n=21) were managed conservatively. Among the surgically treated patients, resection and anastomosis was the most commonly performed procedure, constituting 34.5% (n=19) of operations. Adhesiolysis or band release was the second most frequent procedure, performed in 21.8% (n=12) of cases, followed by hernia repair in 16.4% (n=9) and derotation of volvulus in 14.5% (n=8). Stoma formation was required in 9.1% (n=5) of patients, while manual reduction was the least common procedure, performed in 3.6% (n=2) of cases. These findings indicate that surgical intervention was the predominant treatment approach for intestinal obstruction, with resection and anastomosis being the most frequently employed operative procedure.

Table 3: Management Modalities and Surgical Procedures among Patients with Intestinal Obstruction (N = 76)

Variable	Frequency (n)	Percentage (%)
Management Modality		
Conservative Management	21	27.6
Operative Management	55	72.4
Operative Procedures (n = 55)		
Resection and Anastomosis	19	34.5
Adhesiolysis/Band Release	12	21.8
Hernia Repair	9	16.4
Derotation of Volvulus	8	14.5
Stoma Formation	5	9.1
Manual Reduction	2	3.6

Table 4 summarizes the postoperative complications among the 55 patients who underwent surgical management for intestinal obstruction. The majority of operated patients experienced no postoperative complications, accounting for 70.9% (n=39) of cases. Among those who developed complications, surgical site infection was the most common, occurring in 12.7% (n=7) of patients. Respiratory complications were observed in 5.5% (n=3) of cases, while wound dehiscence and septic shock each occurred in 3.6% (n=2) of patients. Anastomotic leak and intra-abdominal collection were the least frequent complications, each affecting 1.8% (n=1) of patients. These findings indicate that although most patients had an uncomplicated postoperative course, surgical site infection remained the predominant postoperative complication following surgery for intestinal obstruction.

Table 4: Postoperative Complications among Operated Patients (n = 55)

Postoperative Complication	Frequency (n)	Percentage (%)
No Complication	39	70.9
Surgical Site Infection	7	12.7
Respiratory Complications	3	5.5
Wound Dehiscence	2	3.6
Septic Shock	2	3.6
Anastomotic Leak	1	1.8
Intra-abdominal Collection	1	1.8
Total	55	100

Table 5 presents the management outcomes according to the specific etiologies of intestinal obstruction among the 76 patients studied. Overall, favorable outcomes were achieved in 77.6% (n=59) of patients, while 22.4% (n=17) experienced unfavorable outcomes. Adhesions/bands and hernias showed the highest rates of favorable outcomes, with 85.0% (n=17) and 85.7% (n=12) of patients recovering successfully, respectively. In contrast, colorectal malignancy was associated with the poorest outcome, with only 57.1% (n=4) achieving a favorable outcome and 42.9% (n=3) experiencing unfavorable outcomes. Sigmoid volvulus and small bowel volvulus demonstrated similar outcome patterns, with favorable outcomes in 73.3% (n=11) and 72.7% (n=8) of cases, respectively. Intussusception had a favorable outcome rate of 75.0% (n=3), while tubercular stricture showed favorable outcomes in 66.7% (n=2)

of patients. All patients classified under the "others" category achieved favorable outcomes (100%, n=2). These findings suggest that the prognosis of intestinal obstruction varies according to the underlying etiology, with malignant causes generally associated with poorer outcomes compared to benign conditions such as adhesions and hernias.

Table 5: Management Outcome for Specific Etiologies of Intestinal Obstruction (N = 76)			
Etiology	**Favorable Outcome n (%)**	**Unfavorable Outcome n (%)**	**Total n (%)**
Sigmoid Volvulus	11 (73.3)	4 (26.7)	15 (100.0)
Colorectal Malignancy	4 (57.1)	3 (42.9)	7 (100.0)
Adhesion/Band	17 (85.0)	3 (15.0)	20 (100.0)
Small Bowel Volvulus	8 (72.7)	3 (27.3)	11 (100.0)
Intussusception	3 (75.0)	1 (25.0)	4 (100.0)
Hernia	12 (85.7)	2 (14.3)	14 (100.0)
Tubercular Stricture	2 (66.7)	1 (33.3)	3 (100.0)
Others	2 (100.0)	0 (0.0)	2 (100.0)
Total	59 (77.6)	17 (22.4)	76 (100.0)

Table 6 compares selected clinical and demographic variables according to the management outcomes of patients with intestinal obstruction. Patients with unfavorable outcomes had a significantly higher mean age compared to those with favorable outcomes (57.2 vs. 45.8 years; p=0.012). The mean duration of symptoms before presentation was also longer among patients with unfavorable outcomes (4.7 ± 2.8 days) than those with favorable outcomes (2.8 ± 1.9 days), showing a significant difference (p=0.028). Similarly, the mean pulse rate was significantly higher in the unfavorable outcome group (102.8 ± 18.2 beats/min) compared to the favorable outcome group (89.5 ± 14.6 beats/min; p=0.006). Patients with unfavorable outcomes had a lower mean systolic blood pressure (106.2 ± 15.8 mmHg) than those with favorable outcomes (118.4 ± 12.5 mmHg), which was also statistically significant (p=0.011). Furthermore, the mean length of hospital stay was substantially longer in the unfavorable outcome group (11.9 ± 5.6 days) compared to the favorable outcome group (6.3 ± 3.1 days), with a highly significant difference (p<0.001). These findings indicate that older age, delayed presentation, tachycardia, lower systolic blood pressure, and prolonged hospitalization were significantly associated with unfavorable outcomes in patients with intestinal obstruction.

Table 6: Comparison of Study Variables According to Management Outcome among Patients with Intestinal Obstruction (N = 76)					
Outcome	**Age (Years)**	**Duration of Symptoms (Days)**	**Pulse Rate (beats/min)**	**Systolic BP (mmHg)**	**Length of Hospital Stay (Days)**
Favorable					
Mean	45.8	2.8	89.5	118.4	6.3
SD	16.4	1.9	14.6	12.5	3.1
Maximum	82	10	128	150	18
Minimum	14	1	62	90	2
Unfavorable					
Mean	57.2	4.7	102.8	106.2	11.9
SD	15.7	2.8	18.2	15.8	5.6
Maximum	84	14	142	140	26
Minimum	18	1	72	80	4
p-value	0.012	0.028	0.006	0.011	<0.001

Table 7 shows the factors associated with the management outcomes of patients diagnosed with intestinal obstruction. Patients aged over 60 years had a significantly higher proportion of unfavorable outcomes, with 7 of 16 patients experiencing poor outcomes compared to 10 of 60 patients aged 60 years or younger (p=0.018). A duration of symptoms greater than 24 hours before presentation was also significantly associated with unfavorable outcomes, observed in 15 patients compared to only 2 patients presenting within 24 hours (p=0.041). Previous abdominal surgery was linked to poorer outcomes, with 8 of 19 affected patients experiencing unfavorable results (p=0.015). The presence of comorbidities showed a strong association with adverse outcomes, as 9 of 18 patients with comorbid conditions had unfavorable outcomes compared to only 8 of 58 patients without comorbidities (p=0.002). Gangrenous bowel was the strongest predictor of poor outcome, with 10 of 18 patients developing unfavorable outcomes, whereas only 7 of 58 patients with viable bowel experienced adverse results (p<0.001). Addi-

tionally, a hospital stay longer than 7 days was significantly associated with unfavorable outcomes, occurring in 13 patients compared to 4 patients with shorter hospital stays (p=0.001). These findings indicate that advanced age, delayed presentation, previous abdominal surgery, comorbidities, gangrenous bowel, and prolonged hospitalization were significant factors associated with unfavorable management outcomes in patients with intestinal obstruction.

Table 7: Factors Associated with Management Outcome of Intestinal Obstruction (N = 76)			
Variables	**Unfavorable (n=17)**	**Favorable (n=59)**	**p-value**
Age >60 years	7	9	0.018
Age ≤60 years	10	50	
Duration of Symptoms >24 Hours	15	39	0.041
Duration of Symptoms ≤24 Hours	2	20	
Previous Abdominal Surgery	8	11	0.015
No Previous Abdominal Surgery	9	48	
Comorbidity Present	9	9	0.002
No Comorbidity	8	50	
Gangrenous Bowel	10	8	<0.001
Viable Bowel	7	51	
Hospital Stay >7 Days	13	21	0.001
Hospital Stay ≤7 Days	4	38	

Table 8 presents the overall management outcomes of the 76 patients diagnosed with intestinal obstruction. A favorable outcome was achieved in the majority of patients, accounting for 77.6% (n=59), indicating successful recovery following treatment. However, 22.4% (n=17) of patients experienced unfavorable outcomes. Among these, morbidity was observed in 17.1% (n=13) of cases, while mortality occurred in 5.3% (n=4) of patients. These findings suggest that although most patients had satisfactory treatment outcomes, intestinal obstruction remained associated with a considerable risk of complications and death, emphasizing the importance of timely diagnosis and appropriate management.

Table 8: Overall Management Outcome of Patients Diagnosed with Intestinal Obstruction (N = 76)		
Outcome	**Frequency (n)**	**Percentage (%)**
Favorable Outcome	59	77.6
Unfavorable Outcome	17	22.4
└─ Morbidity	13	17.1
└─ Mortality	4	5.3
Total	76	100

Discussion

The present study showed that males (68.4%) were more common than females and the highest number of cases were in the age group 41-60 years (36.8%). The findings are similar to those previously reported in Ethiopia, India, and Nigeria which indicated a significant male predominance in patients with intestinal obstruction with approximately 60-75% being males. The male sex prevalence has been attributed to the higher prevalence of volvulus and hernia related obstructions in males. The age distribution was similar as reported by Tiwari et al. [10] and Mariam et al. [7] who found that intestinal obstruction occurs more frequently in adults in the middle and old age group. Regional differences in demographic characteristics were seen with relatively younger patients in studies conducted at Adama and Nekemte [11,12]."

Delayed presentation was particularly noted in this study as 71.1% of the patients presented after 24 hours. Similar findings have been reported by Soressa et al. [11] that delayed seeking of healthcare was noted among patients with intestinal obstruction and also by Yohannes et al. [13] and Oladele et al. [14] among patients with intestinal obstruction, respectively. These may be associated with inadequate access to health care facilities, socio-economic factors and limited knowledge of symptom severity. As in the previous reports, abdominal pain was the commonest presenting symptom (97.4%) followed by vomiting, abdominal distension and constipation. Abdominal pain was reported in 95.5% of the patients by Yohannes et al. [13] and abdominal pain was observed in almost all cases by Mariam et al. [7] which is a cardinal feature of intestinal obstruction.

25.0% of patients in this study had a previous history of abdominal surgery, while 18.4% had had one or more previous intestinal obstructions. This study corroborates the known association between postoperative adhesions and the development of bowel obstruction. Kapan et al. [8] and Oladele et al. [14] also reported that previous abdominal surgery was one of the predisposing factors for intestinal obstruction.

Twenty-three (23.7%) of our patients had other medical comorbidities, which is comparable to the 21.6% reported by Kapan et al. [8]. Surgically treated patients are also becoming more likely to be affected by chronic diseases which can lead to poor outcomes and long recovery times.

In our study, etiology included the following: adhesion or band (26.3%) followed by sigmoid volvulus (19.7%) and hernia (18.4%). These results are similar to those of studies done in Turkey, Nigeria, and Greece where the most frequent cause of intestinal obstruction after surgery was reported to be postoperative adhesions. There is a good correlation between the majority of adhesions with the increasing number of abdominal operations and their long-term complications. However, ethnographic differences in dietary habits, anatomical variations and the health care patterns were reported in Ethiopia where small bowel volvulus was the predominant cause of obstruction [13,14]. In the present study, nearly 1/5 of cases was due to sigmoid volvulus, which is similar to the situation in the African countries, where volvulus is still a major cause of obstruction of the large bowel. The cause of colorectal malignancy, which accounted for 9.2% of the cases, was similar to that reported by Markogiannakis et al. [15] which found malignancy to be a significant cause of large bowel obstruction, particularly in elderly patients.

Most patients in our study had an operation (72.4%) and 27.6% had a conservative approach. This rate of surgery falls in the range of those reported by others, such as Tiwari et al. [10] who reported a rate of operative treatment of 78.5% and Soressa et al. [11] who reported approximately 70% of patients undergoing surgery. However, the success rate of conservative management was greater reported by Markogiannakis et al. [15] who presumably recorded earlier diagnosis and better access to advanced imaging/ monitoring facilities. In patients who underwent surgery, most cases were for resection and anastomosis (34.5%), and the next most common surgeries were adhesiolysis and hernia repair. There were similar operative findings reported by Soressa et al. [11] and Mariam et al. [7] who noted that bowel resection was often required because of bowel ischemia or gangrene.

The overall outcome was favorable in 77.6% and unfavorable in 22.4% of patients, with morbidity and mortality being the two components of this (17.1% and 5.3%, respectively). The success rate was similar to that found in studies in Ethiopia and India, which range from 75–80%. The most frequent postoperative complication in our study was surgical site infection (12.7%), followed by the occurrence of respiratory complications, wound dehiscence and septic shock. This has been consistently reported in previous studies, in which surgical site infection was the most common postoperative complication in intestinal obstruction patients. The mortality rate (5.3%) recorded in our study was slightly higher than 1.7%-4.0% recorded in Ethiopia but significantly lower than some of the African settings where mortality was greater than 10% [24]. Bowel gangrene and septic shock still play a role in intestinal obstruction deaths.

The present study identified several factors that were significantly associated with negative outcomes. Patients with poor outcome were significantly older (57.2 yrs vs. 45.8 yrs), presented later (4.7 days vs. 2.8 days), had higher pulse rate and had lower systolic blood pressure and longer hospital stay. Advanced age, late presentation, underlying disease, previous abdominal surgery and gangrenous bowel were all significantly associated with poor outcomes. The same relationships have been described by Mariam et al. [7], Kapan et al. [8] and Soressa et al. [11] who found advanced age, long duration of symptoms, comorbidity and bowel ischemia important factors for morbidity and mortality. Of particular significance was the significant association we observed between bowel gangrene and adverse outcome, with 58.8% of patients having bowel gangrene who had an adverse outcome. This finding confirms the previous evidence of the high risk of postoperative complications and mortality caused by intestinal ischemia and late surgery [11,12]. Thus, early diagnosis, timely referrals, vigorous resuscitation and surgical intervention are still important in enhanced outcomes in patients with intestinal obstruction.

Conclusion

This retrospective study emphasizes the role of intestinal obstruction as a major surgical emergency with various aetiologias, mainly the small as well as the large bowel pathologies. The clinical features were mostly typical and occurred after a variable period of time from symptom onset, with a significant percentage of patients needing operative intervention. Surgical management was generally associated with favorable outcomes, although postoperative complications contributed to morbidity in a subset of patients. Advanced age, delayed presentation, previous abdominal surgery, associated comorbid conditions, bowel gangrene, and prolonged hospitalization were identified as important factors linked to unfavorable outcomes. Early diagnosis, timely referral, prompt surgical decision-making, and careful management of high-risk patients are essential to improve treatment outcomes and reduce complications associated with intestinal obstruction.

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