

Evaluation of Surgical and Conservative Management Outcomes in Small Bowel Obstruction at BMIMS, Pawapuri, NalandaSantos Kumar¹, Rohit Kumar², Rajesh Narayan³¹Senior Resident, Department of General Surgery, Bhagwan Mahavir Institute of Medical Sciences, Pawapuri, Nalanda, Bihar, India²Senior Resident, Department of General Surgery, Bhagwan Mahavir Institute of Medical Sciences, Pawapuri, Nalanda, Bihar, India³Professor and HOD, Department of General Surgery, Bhagwan Mahavir Institute of Medical Sciences, Pawapuri, Nalanda, Bihar, India

Received: 14-02-2026 / Revised: 25-02-2025 / Accepted: 11-03-2025

Corresponding Author: Dr. Rohit Kumar

Conflict of interest: Nil

Abstract:**Background:** Small bowel obstruction (SBO) is a common surgical emergency associated with significant morbidity and mortality if not managed appropriately. Management strategies include conservative treatment and surgical intervention depending on the severity and underlying cause.**Aim:** To evaluate and compare the outcomes of surgical and conservative management in patients with small bowel obstruction.**Methodology:** A hospital-based observational retrospective study was conducted in the Department of General Surgery, Bhagwan Mahavir Institute of Medical Sciences, Pawapuri, Nalanda, Bihar, India, for six months. A total of 80 patients aged ≥ 18 years with clinically and radiologically confirmed SBO were included. Patients were managed either conservatively or surgically based on clinical condition. Data were analyzed using SPSS version 27.0.**Results:** The majority of patients were aged 51–60 years (25%), with a male predominance (57.5%). Postoperative adhesions (35%) were the most common cause of SBO, followed by hernia (22.5%). Conservative management was adopted in 60% of patients, while 40% underwent surgery. Complete recovery was observed in 65% of cases, partial recovery in 20%, postoperative complications in 10%, and mortality in 5%.**Conclusion:** Conservative management was effective in most cases of SBO; however, timely surgical intervention remains essential in patients with complications or failure of conservative treatment.**Keywords:** Small bowel obstruction, conservative management, surgical management, adhesions, intestinal obstruction, treatment outcomes.**DOI:** 10.25258/ijpqa.17.3.8

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Introduction

Small bowel obstruction (SBO) is a severe clinical scenario which often requires hospitalization and surgical intervention [1]. It is one of the most frequent causes of acute abdomen that occurs in the general surgical practice. SBO arises when the flow of the intestinal contents through the small intestine is hindered or blocked partly or totally. The blockage can be as a result of many factors such as adhesions following surgery, hernias, tumors, inflammatory bowel diseases, volvulus, and intussusception. The disease is characterized by a high level of morbidity and without proper care can cause severe complications that include bowel ischemia, necrosis, perforation, sepsis, and even death [2]. Due to such possible complications, it is imperative that SBO timely be diagnosed and treated to achieve better

patient outcomes and minimize burden on the healthcare system.

Small bowel obstruction (SBO) happens to be one of the most frequent causes of hospitalization of elderly patients under general surgery care. SBO Treatment can be in form of immediate surgery, a nonoperative management trial that may result in surgery, or non-operative management resulting in the obstruction solution [3]. Choices of the most suitable treatment method to use with older patients with SBO can be a difficult task due to a number of reasons. The aged patients having SBO usually have late onset of the disease and complain of uncharacteristic or general symptoms. Moreover, their physical examination and clinical presentation can be of lower quality. Past studies have constantly revealed that there is

more morbidity and mortality rate of emergency abdominal surgery in older adults in comparison with elective surgery or emergency surgery in young individuals. In this regard, the choice of whether to undergo surgery or not will have to be weighed. Conversely, the postponement of the required surgery among the elderly patients has also been linked to extremely poor results [4]. These complications complicate the choice of time to undergo surgery and nonoperative treatment.

Generally, there are two approaches to the management of SBO, which are conservative (non-operative) management and surgery. Common conservative modalities are bowel rest, nasogastric decompression, intravenous fluid resuscitation, electrolyte replacement and close clinical observation. The strategy is frequently taken into account when the obstruction is not complicated, partial, and is not accompanied by any symptoms of strangulation or peritonitis. Numerous cases of SBO especially those brought about by postoperative adhesions can simply be resolved using a conservative treatment method. The difficulty however is in how to determine the patients that will respond to the conservative treatment and those that will later need surgical intervention. The inability to understand that a patient requires surgery within a certain timeframe may result in bowel compromise and deteriorated patient outcomes [5].

On the other hand, surgical management is recommended in case of bowel strangulation, ischemia, perforation, or failure to relieve obstruction by conservative management. Surgery can involve adhesiolysis, the resection of nonviable bowel segments, repair of hernias, or the resection of obstructing masses [6]. Despite the lifesaving nature of surgery in such cases, it is also associated with great risks especially when it is done in elderly patients who appear to have various comorbidities and lower physiological reserve. This population is more likely to develop postoperative complications like wound infection, anastomotic leak, pneumonia, and extended hospital stay. As such, before administering surgical treatment, there must be meticulous consideration of the risks and benefits of carrying out surgical intervention.

Regardless of such treatment problems, there is little literature research specifically investigating the treatment and outcomes of SBO in geriatric patients [7]. This is alarming especially considering the latest developments in demographics. The population of the aged in Canada is projected to be twice and those aged above 80 years will be tripled by 2050. This will inevitably result in significant rise in the number of elderly patients admitted into the hospital with SBO in the future. As the population is getting older, there will be pressure on the healthcare systems to come up with effective management strategies to reduce complications, and short hospital stays and

enhance the survival rates of elderly patients with SBO.

Along with the demographic shifts, the development of such diagnostic tools as computed tomography (CT) scanning has enhanced the process of diagnosing SBO correctly and identifying its root cause [8]. Imaging studies have a crucial role in the evaluation of the obstruction severity, complications detection, and a choice between the conservative and surgical treatment. Nevertheless, despite the availability of recent diagnostic aids, the best timeliness and selection of treatment is still one of the debatable issues among clinicians.

It is therefore important to have an understanding of the results that accompany various management strategies so that they can be used to guide clinical decision making. Comparison of the results of both surgery and conservative treatments assists clinicians to identify which method is the most effective in various clinical situations and groups of patients. This assessment can also work wonders with the complication rates, rate of recurrence, amount of hospital stays, and overall recovery in a patient. Through the examination of such outcomes, healthcare professionals can come up with evidence-based approaches to maximize patient care and minimize the burden of disease.

Consequently, this study aimed at investigating morbidity, mortality and recurrent bowel obstruction rate in the treatment of the SBO in elderly patients (those aged 70 and above) in a tertiary health care teaching hospital. The research will make contributions to the current literature by conducting an elaborate assessment of the treatment outcomes in patients treated through surgical and conservative treatment methods. The results can be used to inform clinicians on the type of management strategy that can best be used and enhance the overall patient outcomes in case of small bowel obstruction.

Materials and Methods

Study Design: The present study was a hospital-based observational retrospective study designed to evaluate and compare the outcomes of surgical and conservative management in patients diagnosed with small bowel obstruction (SBO). The study aimed to assess clinical presentation, management strategies, and treatment outcomes among patients admitted with SBO.

Study Area: The study was conducted in the Department of General Surgery, Bhagwan Mahavir Institute of Medical Sciences, Pawapuri, Nalanda, Bihar, India.

Study Duration: The study was carried out over a period for six months.

Study Participants: The study participants included patients diagnosed with small bowel

obstruction who were admitted to the Department of General Surgery during the study period.

Inclusion Criteria

- Patients aged 18 years and above diagnosed with small bowel obstruction.
- Patients presenting with clinical symptoms suggestive of SBO such as abdominal pain, vomiting, abdominal distension, constipation, or obstipation.
- Patients with radiological confirmation of small bowel obstruction on abdominal X-ray, ultrasound, or computed tomography (CT) scan.
- Patients who consented to participate in the study.

Exclusion Criteria

- Patients with large bowel obstruction or other colonic pathologies.
- Patients with intestinal obstruction due to malignancy of the colon or rectum.
- Patients with incomplete clinical records or insufficient diagnostic information.
- Patients who refused to provide consent for participation in the study.

Sample Size: A total of 80 patients diagnosed with small bowel obstruction and fulfilling the inclusion criteria were included in the study.

Procedure: All eligible patients admitted with suspected small bowel obstruction during the study period were evaluated in detail after obtaining informed consent. A thorough clinical history was obtained including presenting symptoms such as abdominal pain, nausea, vomiting, abdominal distension, and altered bowel habits. Information regarding previous abdominal surgeries, comorbid conditions, and duration of symptoms prior to hospital admission was also recorded. Each patient underwent a complete physical examination focusing on abdominal findings such as tenderness, distension, bowel sounds, and signs of peritonitis.

Baseline laboratory investigations including complete blood count, serum electrolytes, renal function tests, and other relevant biochemical parameters were performed. Radiological evaluation was carried out using abdominal X-ray in erect and supine positions, ultrasonography of the abdomen, and computed tomography (CT) scan when required to confirm the diagnosis and determine the cause and level of obstruction.

Based on clinical assessment and radiological findings, patients were managed either conservatively or surgically. Conservative management included

bowel rest, nasogastric decompression, intravenous fluid therapy, correction of electrolyte imbalance, analgesics, and close clinical monitoring. Patients who showed improvement in symptoms and resolution of obstruction were continued on conservative management.

Surgical intervention was undertaken in patients who failed to respond to conservative treatment, had evidence of bowel ischemia, strangulation, perforation, or worsening clinical condition. The type of surgical procedure performed depended on the underlying cause and intraoperative findings, which could include adhesiolysis, resection and anastomosis, or hernia repair.

All patients were followed during their hospital stay to evaluate treatment outcomes such as resolution of obstruction, postoperative complications, duration of hospital stay, and recovery status. The management approach (conservative or surgical) and clinical outcomes were documented and analyzed to compare the effectiveness of both treatment modalities.

Statistical Analysis: All collected data were entered into a computerized database and analyzed using Statistical Package for the Social Sciences (SPSS) version 27.0. Descriptive statistics such as frequencies, percentages, means, and standard deviations were used to summarize the demographic and clinical characteristics of the study participants. Comparative analysis was performed to evaluate the outcomes of surgical and conservative management. Appropriate statistical tests were applied where necessary, and the results were presented in the form of tables and charts for better interpretation. A p-value of <0.05 was considered statistically significant.

Result

Table 1 shows the age distribution of the study participants included in the study (n = 80). The highest proportion of participants belonged to the 51–60 years age group, accounting for 20 participants (25%). This was followed by the 41–50 years and >60 years age groups, each comprising 18 participants (22.5%). Participants aged 31–40 years constituted 14 individuals (17.5%), while the lowest representation was observed in the 18–30 years age group with 10 participants (12.5%). Overall, the findings indicate that the majority of the study population was above 40 years of age, suggesting that the condition under investigation was more commonly observed among middle-aged and older individuals. The total number of participants included in the study was 80 (100%).

Age Group (Years)	Frequency (n)	Percentage (%)
18–30	10	12.5
31–40	14	17.5
41–50	18	22.5
51–60	20	25
>60	18	22.5
Total	80	100

Table 2 shows the gender distribution of the study participants included in the research. Out of the total 80 participants, the majority were male, accounting for 46 individuals (57.5%), while females comprised 34 participants (42.5%). This indicates that males formed a slightly higher proportion of the study population compared to females. The difference

suggests a moderate male predominance among the participants included in the study sample. Overall, although both genders were adequately represented, the higher percentage of males may reflect the greater occurrence or reporting of the studied condition among male patients in the selected population.

Gender	Frequency (n)	Percentage (%)
Male	46	57.5
Female	34	42.5
Total	80	100

Table 3 shows the distribution of etiological factors responsible for small bowel obstruction among the 80 study participants. The most common cause identified was postoperative adhesions, accounting for 28 cases (35%), indicating that previous abdominal surgeries play a significant role in the development of intestinal obstruction. Hernia was the second most frequent cause, observed in 18 patients (22.5%). Intestinal tuberculosis was responsible for 10 cases (12.5%), reflecting its continued relevance

as an etiological factor in developing regions. Malignancy contributed to 8 cases (10%), while volvulus was reported in 7 patients (8.7%). Intussusception accounted for 5 cases (6.3%). A small proportion of cases, 4 patients (5%), were categorized under other miscellaneous causes. Overall, the findings indicate that postoperative adhesions and hernia together constitute the majority of small bowel obstruction cases in the present study.

Etiology	Frequency (n)	Percentage (%)
Postoperative adhesions	28	35
Hernia	18	22.5
Intestinal tuberculosis	10	12.5
Malignancy	8	10
Volvulus	7	8.7
Intussusception	5	6.3
Others	4	5
Total	80	100

Table 4 shows the type of management adopted among the 80 patients included in the study. The majority of patients were managed through conservative management, accounting for 48 cases (60%), while 32 patients (40%) underwent surgical management. This indicates that non-operative treatment was the more commonly adopted approach for managing small bowel obstruction in the study population. The higher proportion of conservative management suggests that many patients responded well to initial non-surgical measures such as bowel rest,

nasogastric decompression, and fluid management. However, a considerable proportion of patients still required surgical intervention, highlighting that surgery remains an important treatment option when conservative management fails or when complications such as strangulation or complete obstruction are suspected. Overall, the findings demonstrate that conservative management was the primary treatment strategy, with surgery reserved for selected cases.

Management Type	Frequency (n)	Percentage (%)
Conservative management	48	60
Surgical management	32	40
Total	80	100

Table 5 shows the outcomes of management in patients with small bowel obstruction. The findings indicate that the majority of patients experienced complete recovery, accounting for 52 cases (65%), suggesting that the management strategies used in the study were largely effective. A proportion of 16 patients (20%) showed partial recovery with minor complications, indicating that although improvement occurred, some patients experienced mild postoperative or treatment-related issues. Additionally,

8 patients (10%) developed postoperative complications, reflecting a smaller group who required further medical attention during recovery. Mortality was observed in 4 patients (5%), representing the least frequent outcome but highlighting the potential severity of small bowel obstruction in certain cases. Overall, the results demonstrate that most patients had favorable outcomes following management, with relatively low rates of complications and mortality among the study population of 80 patients.

Outcome	Frequency (n)	Percentage (%)
Complete recovery	52	65
Partial recovery with minor complications	16	20
Postoperative complications	8	10
Mortality	4	5
Total	80	100

Discussion

The current research assessed demographic information together with causes of illnesses and treatment methods and patient results for small bowel obstruction (SBO) cases. The results showed that middle-aged and older people experienced SBO at higher rates because the age group between 51 and 60 years represented the largest patient group while the age groups between 41 and 50 years and above 60 years both accounted for 22.5 percent of cases. The age group between 18 and 30 years made up only 12.5 percent of the total cases. These results support earlier research, which demonstrated that aging increases SBO risk because older people develop more abdominal surgery and hernia and cancer treatment risk factors. Miller et al. (2000) [9] reported that adhesive small bowel obstruction frequently occurs in older adults because of previous surgical interventions and age-related physiological changes. Schraufnagel et al. (2013) [10] found that elderly people make up a large part of SBO hospital admissions because of their multiple medical conditions and earlier abdominal treatments. The age distribution in this research corresponds with previous studies, which found that middle-aged and elderly people experience higher rates of SBO.

The current research demonstrated that its distribution of genders showed more men than women because 57.5% of people studied were male while 42.5% were female. Previous studies have reported identical results to this study. Foster et al. (2006) [11] conducted a population-based study and found that males represented a slightly higher proportion of patients with small bowel obstruction compared

to females. The observed male predominance may be associated with occupational factors, higher exposure to physical strain, and a greater prevalence of hernias among men. The present study found matching gender distributions with existing research which indicates that SBO affects both men and women while showing only small gender-based differences.

The present study found that postoperative adhesions were the most common SBO because which occurred in 35 percent of the studied cases. The second most common cause of the condition was hernias which accounted for 22.5 percent of the cases followed by intestinal tuberculosis at 12.5 percent and malignancy at 10 percent and volvulus at 8.7 percent and intussusception at 6.3 percent. Previous studies have established postoperative adhesions as the main reason for SBO according to the present research findings. Miller et al. (2000) reported that adhesions account for approximately 60–70% of small bowel obstruction cases which develop in developed countries that have high rates of abdominal surgery. Rocha et al. (2009) [12] also found that adhesive obstruction is the predominant etiology among hospitalized SBO patients. The present study found that adhesion-related obstruction occurred at a lower rate because developing regions still experience other factors which cause the condition. Hernias remain a major cause of intestinal obstruction in areas where access to early surgical repair may be limited.

The study results confirmed that the most frequently used management strategy for the treatment of patients occurred through nonoperative methods which treated 60 percent of patients while 40 percent of

patients needed surgical procedures. The results of this study show similar results to previous research which showed that conservative treatment is effective for certain cases of SBO. Williams et al. (2005) [13] reported that 43% to 76% of patients with adhesive small bowel obstruction can successfully achieve treatment results through nonoperative methods which include nasogastric decompression and intravenous fluid therapy plus bowel rest. Rocha et al. (2009) found that patients with high-grade SBO who showed no bowel ischemia or strangulation could achieve successful treatment results through conservative management. The study found that the higher success rate of conservative treatment in this study results from two factors which include early patient diagnosis and systematic patient observation.

The success of conservative treatment methods leads to many patients needing surgical treatment. The present research showed that 40 percent of participants needed surgery because their non-surgical treatment failed or they developed medical complications. Previous studies have demonstrated that waiting too long for surgery increases the chances of negative treatment results. The research of Fevang et al. (2003) [14] showed that waiting too long for surgical treatment of SBO resulted in higher rates of patient complications and extended hospital admissions. The research of Teixeira et al. (2013) [15] showed that patients who received surgical treatment for adhesive small bowel obstruction before their condition became critical had better survival rates than those who had to wait for surgery. The research results show that doctors should make quick decisions about treating patients with SBO who show signs of worsening health or developing medical problems.

The present study found all management outcomes to be beneficial. Complete recovery was achieved in 65% of patients, while 20% experienced partial recovery with minor complications. The study found that 10% of patients developed postoperative complications while 5% died during the procedure. The results match the outcomes from earlier research studies. Foster et al. (2006) showed that most patients with SBO who receive proper treatment will achieve successful recovery although a small number will develop postoperative complications or experience recurrent obstruction. SBO mortality rates range from 3% to 10% based on patient age and existing medical conditions and complications such as bowel ischemia or perforation (Schraufnagel et al., 2013). The current study observed a mortality rate which matches the range of mortality rates found in previous studies.

Another significant issue which arises from conservative treatment methods leads to the potential return of symptoms. Foster et al. (2006) found that patients who received nonoperative treatment

experienced recurrence rates which reached 20 percent after five years. The results show that conservative management provides effective initial treatment, but requires ongoing monitoring to identify recurrence cases at an early stage. Clinical guidelines therefore recommend close observation and timely surgical intervention if conservative treatment fails to produce improvement within a reasonable timeframe. Catena et al. (2011) [16] also emphasized that doctors should wait between 3 and 5 days after starting conservative treatment before considering surgical options which will treat ongoing obstruction problems.

The study results match previous research findings which examined the epidemiology and etiology and treatment results of small bowel obstruction. The condition occurred more frequently in middle-aged and elderly people and showed a slight male predominance. The most common reasons for this condition were postoperative adhesions and hernias. Most patients responded well to conservative treatment while surgical treatment became necessary for patients who developed complications or whose nonoperative treatment failed. The high recovery rate combined with low complication and mortality rates demonstrates how early diagnosis and proper treatment selection and ongoing monitoring can improve results for patients suffering from small bowel obstruction.

Conclusion

The present study evaluated the demographic characteristics, etiological factors, management approaches, and outcomes of patients with small bowel obstruction. The findings indicated that the condition was more common among middle-aged and older individuals, with a slight predominance among male patients. Postoperative adhesions were identified as the leading cause of small bowel obstruction, followed by hernia and other less frequent etiological factors. Conservative management was the most commonly adopted treatment approach and proved effective for the majority of patients, while a considerable proportion required surgical intervention when conservative measures failed or complications were suspected. The overall outcomes were favorable, with most patients achieving complete recovery and relatively low rates of complications and mortality. These findings highlight the importance of early diagnosis, careful clinical evaluation, and timely selection of appropriate management strategies to improve patient outcomes in cases of small bowel obstruction.

References

1. Rami Reddy SR, Cappell MS. A systematic review of the clinical presentation, diagnosis, and treatment of small bowel obstruction. *Current gastroenterology reports*. 2017 Jun;19(6):28.

2. Ahmed M. Ischemic bowel disease in 2021. *World Journal of gastroenterology*. 2021 Aug 7;27(29):4746.
3. Hajibandeh S, Hajibandeh S, Panda N, Khan RM, Bandyopadhyay SK, Dalmia S, Malik S, Huq Z, Mansour M. Operative versus non-operative management of adhesive small bowel obstruction: a systematic review and meta-analysis. *International Journal of Surgery*. 2017 Sep 1; 45:58-66.
4. Vidán MT, Sánchez E, Gracia Y, Maranón E, Vaquero J, Serra JA. Causes and effects of surgical delay in patients with hip fracture: a cohort study. *Annals of internal medicine*. 2011 Aug 16;155(4):226-33.
5. Fevang BT, Jensen D, Svanes K, Viste A. Early operation or conservative management of patients with small bowel obstruction? *European Journal of Surgery*. 2002 Nov;168(8-9):475-81.
6. ten Broek RP, Kok-Krant N, Bakkum EA, Bleichrodt RP, Van Goor H. Different surgical techniques to reduce post-operative adhesion formation: a systematic review and meta-analysis. *Human reproduction update*. 2013 Jan 1;19(1):12-25.
7. Springer JE, Bailey JG, Davis PJ, Johnson PM. Management and outcomes of small bowel obstruction in older adult patients: a prospective cohort study. *Canadian Journal of Surgery*. 2014 Dec;57(6):379.
8. Li Z, Zhang L, Liu X, Yuan F, Song B. Diagnostic utility of CT for small bowel obstruction: systematic review and meta-analysis. *PloS one*. 2019 Dec 30;14(12):e0226740.
9. Miller G, Boman J, Shrier I, Gordon PH. Natural history of patients with adhesive small bowel obstruction. *British journal of surgery*. 2000 Sep 1;87(9):1240-7.
10. Schraufnagel D, Rajae S, Millham FH. How many sunsets? Timing of surgery in adhesive small bowel obstruction: a study of the Nationwide Inpatient Sample. *Journal of Trauma and Acute Care Surgery*. 2013 Jan 1;74(1):181-9.
11. Foster NM, McGory ML, Zingmond DS, Ko CY. Small bowel obstruction: a population-based appraisal. *Journal of the American College of Surgeons*. 2006 Aug 1;203(2):170-6.
12. Rocha FG, Theman TA, Matros E, Ledbetter SM, Zinner MJ, Ferzoco SJ. Nonoperative management of patients with a diagnosis of high-grade small bowel obstruction by computed tomography. *Archives of surgery*. 2009 Nov 16;144(11):1000-4.
13. Williams SB, Greenspon J, Young HA, Orkin BA. Small Bowel Obstruction: Conservativevs. Surgical Management. *Diseases of the colon & rectum*. 2005 Jun 1;48(6):1140-6.
14. Fevang BT, Fevang JM, Søreide O, Svanes K, Viste A. Delay in operative treatment among patients with small bowel obstruction. *Scandinavian journal of surgery*. 2003 Jun;92(2):131-7.
15. Teixeira PG, Karamanos E, Talving P, Inaba K, Lam L, Demetriades D. Early operation is associated with a survival benefit for patients with adhesive bowel obstruction. *Annals of surgery*. 2013 Sep 1;258(3):459-65.
16. Catena F, Di Saverio S, Kelly MD, Biffi WL, Ansaloni L, Mandalà V, Velmahos GC, Sartelli M, Tugnoli G, Lupo M, Mandalà S. Bologna guidelines for diagnosis and management of adhesive small bowel obstruction (ASBO): 2010 evidence-based guidelines of the World Society of Emergency Surgery. *World Journal of Emergency Surgery*. 2011 Jan 21;6(1):5.