

Clinical Profile And Outcome Of Subacute Intestinal Obstruction: A Hospital Based Prospective Observational Study

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Intestinal obstruction is one of the commonest surgical emergencies in all age groups. The diagnosis of intestinal obstruction at times poses a difficult problem, especially in those patients who present as subacute intestinal obstruction (SAIO) with atypical features due to which the diagnosis is delayed. SAIO implies incomplete obstruction. Intermittent nature of symptoms and signs delays diagnosis as well as definitive treatment. This study was undertaken to determine the possible clinical profile of this difficult and confusing entity. 57 patients above 10 years of age presenting with subacute intestinal obstruction were studied from July 2018 to December 2019 in a multispeciality hospital in eastern part of India. Patients with acute intestinal obstruction and bowel strangulation were excluded from this study. Males were more affected than the females. Abdominal pain was the commonest symptom seen in 51 (89.4%) patients, followed by non-passage of faeces / flatus in 45 patients (78.9%) and vomiting seen in 39 (68.4%) patients. About 28 patients (49.1%) had undergone previous abdominal surgery, out of which 25 patients were operated for laparotomy. Out of the 57 patients, surgery was needed to relieve obstruction in 18 (31.6%) patients, the remaining 39 patients (68.4%) were managed conservatively. Most commonly performed procedure was adhesiolysis in 12 patients. Subacute intestinal obstruction continues to be one of the most common abdominal problems faced by general surgeons. Early clinical recognition, diagnostic tools and timely management are extremely important in diagnosing this clinical entity, thereby reducing mortality and long-term morbidity.

Keywords: Subacute intestinal obstruction, adhesions, strictures.

Intestinal obstruction is one of the most commonly encountered surgical entities in all age groups, which accounts for approximately 15 percent of patients visiting the emergency department with complaints of acute pain in the abdomen¹. Even *Ebers Papyrus* (1550 BC) and Hippocrates have documented cases of bowel obstruction.

The mode of presentation varies with underlying aetiology. The complications associated with intestinal obstruction are sepsis, bowel ischemia and perforation. There is significant decline in the morbidity and mortality associated with intestinal obstruction because of enhanced knowledge regarding pathophysiology,

improvement of radiological techniques and better approach towards correction of fluid and electrolyte imbalance, administration of antibiotics for controlling bacterial infections, nasogastric decompression and various newer surgical techniques, yet it is a challenge to manage the condition effectively². The diagnosis of intestinal obstruction at times poses a difficult problem, especially in those patients who present as subacute intestinal obstruction (SAIO) with atypical features due to which the diagnosis is delayed. Hence, it is important for the treating physicians to weigh the risks of surgery with the drawbacks of initial conservative management³.

SAIO implies incomplete obstruction⁴. It has been defined in a number of ways and there are many confusions in the treatment protocols. It is characterized by onset of symptoms like colicky abdominal pain, vomiting, and abdominal distension along with continued passage of flatus and/or faeces beyond 6-12 hrs. The patient usually presents with recurrent and intermittent intestinal obstruction, the patient being well in between⁴. SAIO may get relieved within few hours spontaneously/after conservative management or may progress to acute obstruction. Intermittent nature of symptoms and signs delays diagnosis as well as definitive treatment and the patients often suffer for weeks and months before appropriate treatment is instituted. The intestinal obstruction can be of small intestine or large intestine.

Small bowel obstructions are commonly due to adhesions and hernias while large bowel obstructions are frequently due to tumors and volvulus⁵. The diagnosis can be done on plain X-rays; however, CT scan is more accurate. Ultrasound or MRI may be helpful in the diagnosis of children or pregnant women.

The condition may be managed conservatively or with surgery. Usually intravenous fluids are given, a nasogastric tube is administered to

decompress the intestines, and analgesics are given, often accompanied with antibiotics. Complications like sepsis, bowel ischemia and bowel perforation may occur⁶.

Since there are very few studies and insufficient information regarding the causes, course and subsequent management of the cases presenting with features of subacute intestinal obstruction (SAIO), this study was undertaken to determine the possible clinical profile of this difficult and confusing entity.

Aims and objectives

- To study the demographic profile of patients admitted with SAIO in our setup
- To evaluate the various etiological factors of SAIO
- To study the clinical features of patients presenting with SAIO
- To study the importance of investigations in diagnosis of SAIO
- To study the outcome of management (conservative / surgery) of the cases

MATERIAL AND METHODS

We conducted a prospective observational study in which a total number of 57 cases of SAIO were studied from July 2018 to December 2019 in a multispeciality hospital in Eastern India.

Inclusion criteria

All the patients presenting to the surgery OPD or the emergency department with the following features of SAIO were identified and included in the study:-

1. Patients > 10 years of age
2. Patients who continue to pass faeces/ flatus even after 12 hours of starting of the symptoms
3. Much lesser extent of abdominal distension with or without tenderness
4. No guarding, no rigidity
5. Bowel sounds sluggish or absent
6. Plain X-ray abdomen showing gas distended

Common causes of Intestinal obstruction	Uncommon causes of Intestinal obstruction
Adhesions and bands following abdominal surgery	Fecal impaction
External Hernia	Pseudoobstruction
Intussusceptions	colon atresia
Volvulus	Fecaloma
Neoplasms (benign or malignant)	Endometriosis
Strictures (IBD)	Intestinal worms (Ascariasis)

bowel loops/fluid filled bowel loops/multiple air fluid levels

7. Patients in whom non operative management was decided based on clinical and radiological evaluation

Exclusion criteria

1. Patients < 10 years of age
2. Patients presenting with acute intestinal obstruction, in whom operative treatment was planned following clinical and radiological evaluation
3. Patients presenting with signs of bowel strangulation

The demographic profile of the patients was recorded. The history of the patients was taken which included duration of symptoms, the presenting complaints, namely the type of pain, vomiting, passage of faeces and/or flatus, abdominal distension, number of previous attacks in the patients, previous treatment / surgery and presence of any co-morbid condition.

A detailed clinical examination including rectal examination of the patient was done and the findings which included fever, tachycardia, abdominal signs like distension, tenderness, rigidity, guarding, bowel sounds, presence of visible/palpable bowel loops, presence of any lumps were noted. Investigations included haemogram, biochemical parameters, plain X-ray of abdomen in erect and supine posture, ultrasonography of abdomen, CT abdomen (if necessary) and the findings were recorded.

Following a provisional diagnosis of SAIO, the patients were initially managed

conservatively by withholding oral intake, aspiration of gastrointestinal secretions, administration of intravenous fluids and correction of electrolyte imbalance. The patients were observed for features of relief of obstruction like reduction in vomiting, pain score, and passage of faeces / flatus, reduction in tenderness and abdominal girth; disappearance of visible/palpable bowel loops; and reduction in nasogastric tube output. The patients were monitored regularly for development of signs of strangulation like tachycardia, fever, abdominal tenderness, etc. If the patient developed signs of strangulation, the patient was operated on emergency basis. If the patient did not get relieved conservatively within 24-48 hours of observation, exploratory laparotomy was performed.

The patients who got relieved within few hours of conservative treatment were further investigated if there was a history of recurrent similar attacks or if patient developed recurrent symptoms. Ultrasound of the abdomen and pelvis, CT scan abdomen, laparoscopy were undertaken in a sequential order to look for findings suggestive of intestinal obstruction and specific signs which suggest cause of obstruction. In case the investigation provided sufficient information to confirm the diagnosis of a lesion explaining the symptoms of SAIO in the patient, appropriate operative intervention was undertaken. When laparoscopy demonstrated any lesion, it was tackled

Table 1. Age distribution of patients

Age distribution of patients		
Age interval (years)	Number of patients	Percentage (%)
10-20	3	5.3
21-30	6	10.6
31-40	8	14
41-50	8	14
51-60	12	21
61-70	7	12.2
71-80	7	12.2
>80	6	10.6
Total	57	100

Sex distribution (%)

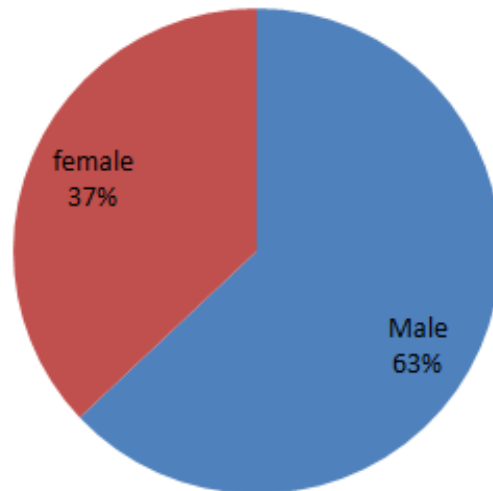


Fig. 1. Sex distribution of patients

under the same anaesthesia either laparoscopically or by exploratory laparotomy.

RESULTS

A clinical study of 57 patients of subacute intestinal obstruction (SAIO) was done for a period of 18 months. It was done in patients above 10 years of age, the age distribution is shown in Table 1. The mean age of presentation was 51.9 years. Patients of SAIO were mainly from the age group 51-60 years (21%). Occurrence of SAIO was common in males [36 in number (63%)] as compared to females [21 in number (37%)] as shown in Figure 1. A total number of 36 patients presented with a history of previous attacks in the past out of which 16 patients (44.4%) and 10 patients (27.7%) had one and two such previous attacks respectively, Table 2.

The present study on SAIO showed that abdominal pain was the commonest symptom seen in 51 (89.4%) patients, followed by non-passage of faeces / flatus in 45 patients (78.9%) and vomiting seen in 39 (68.4%) patients (some patients presented with multiple symptoms), Table 3. Most of the patients (57.9%) presented with a history of duration of symptoms of 4-6 days as shown in Figure 2, followed by 29.8% patients with a duration of 1-3 days and 12.3% with a duration of more than 6 days.

About 28 patients (49.1%) had undergone previous abdominal surgery, out of which 25 patients were operated for laparotomy – gynaecological procedures being commonest (8 patients) and 3 patients underwent laparoscopic procedures in the past, as seen in Table 4.

On examination of the patients, the most common physical finding was abdominal tenderness found in 46 (80.7%) patients, followed

by distension in 35 (61.4%) patients as shown in Table 5.

Out of the plain X-Ray films of 57 patients, a total of 41 showed positive findings. 36 patients had gaseous distension of bowel loops, 7 patients had fluid filled loops and 5 patients had multiple air fluid levels on erect film (7 patients had more than one finding) as shown in Table 6, Ultrasonography of abdomen was required in 53 (92.9%) patients. It showed abnormal findings in 49 (85.9%) patients and was normal in 4 (7.1%) patients. Dilated bowel loops was the most frequent finding seen in 27 (47.3%) patients, Table 7. Ileal strictures were noticed by ultrasonography in previously diagnosed cases of inflammatory bowel disease (IBD). CT scan was required to be performed in 25 (43.8%) patients where the commonest finding was dilated bowel loops as shown in Table 8.

Out of the 57 patients of SAIO, surgery was needed to relieve obstruction in 18 (31.6%) patients, the remaining 39 patients (68.4%) were relieved of the symptoms on being managed conservatively, Figure 3. The most commonly performed surgical procedure was adhesiolysis in 12 patients, Table 9.

After doing the investigations like radiography, ultrasonography, CT scan and performing surgery in the required cases of SAIO,

Duration of symptoms

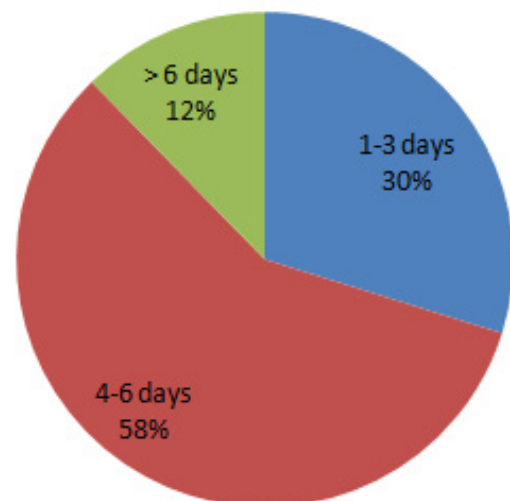


Fig. 2. Duration of symptoms in patients

Table 2. Number of previous attacks in patients

Number of previous attacks	Number of patients	Percentage (%)
One	16	44.4
Two	10	27.7
Three	7	19.4
> Four	3	8.3
Total	36	100

the causes of intestinal obstruction were determined in 40 patients. The commonest cause of intestinal obstruction in the study group was found to be due to adhesions in 21 patients (52.5%) followed by small intestinal strictures due to IBD in 6 patients (15%) as depicted in Table 10.

DISCUSSION

Sub-acute intestinal obstruction (SAIO) is an enigma. It is one of the important causes of morbidity in day to day surgical practice. This is especially true for patients who present with

atypical features, thus causing delayed diagnosis⁷.

In the present clinical study, which has excluded children less than 10 years of age, the peak incidence is seen in the 51-60 years age group (21%), and mean age of presentation is 51.9 years, which is more as compared to the study by Ojha *et al*, where the mean age of presentation with SAIO was 31.8 years. Both males and females are equally affected and the condition can occur at any age⁸, but our study shows that the males (63%) are more affected as compared to the females (37%), male : female ratio being 1.7:1, which is almost similar to the study by Ojha A *et al* where the ratio was 1.5:1⁴.

Table 3. Distribution of symptoms in patients

Symptoms	Number of Patients	Percentage (%)
Abdominal Pain	51	89.4
• Colicky	28	- 49.1
• Continuous	23	- 40.3
Non- passage of faeces or flatus	45	78.9
Vomiting	39	68.4
Distension of abdomen	36	63.1

Table 5. Physical Findings in patients

Findings	Number of patients	Percentage
Abdominal tenderness	46	80.7
Distension of abdomen	35	61.4
Exaggerated bowel sounds	27	47.4
Decreased/absent sounds	18	31.6
Visible/palpable bowel loops	9	15.8
Lump abdomen	3	5.2

Table 7. USG findings in patients

Findings	Number of Patients
Dilated bowel loops	27
Free fluid in abdomen	7
Ileal stricture (IBD)	6
Mesentric lymphadenopathy	3
Contracted pulled up caecum	3
Herniation of contents	3
Total	49

Table 4. Previous abdominal surgery in 28 patients

Types of surgery	Number of patients
Laparotomy	25
• Gynaecological procedure	-8
• Abdominal Trauma	-7
• Intestinal obstruction	-4
• Appendectomy	-3
• Cholecystectomy	-3
Laparoscopic Procedure	3

Table 6. X-ray findings in patients

X-ray findings	Number Of Patients
Gaseous distension of bowel loops	36
Dilated fluid filled bowel loops	7
Multiple air fluid levels	5
Total	41 (7 patients had >one finding)

Table 8. CT findings in patients

CT findings	Number of patients
Dilated bowel loops	7
Bowel thickenings	6
Stricture (IBD)	6
Ileo-caecal Tuberculosis	3
Herniation of contents	3
Total	25

Most of the patients (57.9%) presented within 4-6 days of onset of symptoms. About 36 out of 57 patients had recurrent symptoms, with 16/36 patients (44.4%) of them having one previous attack in the past, again comparable to study by Ojha *et al.*, where 43% patients were reported to have one such previous attack⁴. These findings confirm prolonged suffering of these patients due to SAIO alongwith waxing and waning nature of the condition.

The important features of intestinal obstruction are colicky abdominal pain, nausea and vomiting, abdominal distension, and a cessation of flatus and bowel movements. It is essential to demarcate between true mechanical obstruction and other causes of these symptoms. Most of the patients of SAIO in this study presented with multiple symptoms out of which abdominal pain (89.4%) and non-passage of faeces or flatus

(78.9%) were more frequent as compared to vomiting (68.4%) and distension of abdomen (63.1%). Colicky type of abdominal pain (49.1%) is more common than continuous abdominal pain (40.3%) in the SAIO cases studied. This is in contrast to the study by Ojha *et al.*, where colicky abdominal pain (89%) and vomiting (82%) were more frequent than non-passage of flatus or faeces (46%) and distension of abdomen (44%)⁴. Lower abdominal surgeries, including appendectomies, colorectal surgery, gynaecologic procedures, and hernia repairs, are associated with a greater risk of adhesive small bowel obstruction⁹. In our study, 28/57 (49.1%) patients were found to have a history of previous abdominal surgery, the common surgeries performed being gynaecological procedures in 8 patients and laparotomy for abdominal trauma in 7 patients. On physical examination, the most frequent finding was presence of abdominal tenderness seen in 80.7% patients followed by distension of abdomen (61.4%) which is different from study by Ojha *et al.*, where the most frequent finding was exaggerated bowel sounds (60.3%). Lesser degree of distension may be due to continued passage of flatus/faeces in the SAIO patients. Increased bowel sounds, visible/palpable bowel loops, abdominal distension and lumps in the abdomen were observed in 60.3%, 28.5%, 25.3% and 19.0% patients, respectively in a study by Jain BK *et al*⁹. The findings of our study point more towards subacute nature of the intestinal obstruction, mostly due to small bowel involvement.

The primary investigation of patients with clinical signs and symptoms of intestinal obstruction should include plain upright abdominal radiography. Radiography can quickly detect if intestinal perforation has occurred; free air can be seen above the liver in straight films or

Management of cases

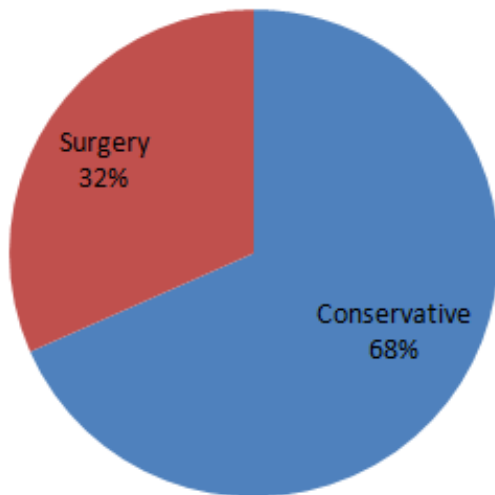


Fig. 3. Management of cases

Table 9. Surgeries performed in patients

Surgical Procedure	Number of Patients
Adhesiolysis	12
Resection and anastomosis of bowel	3
Stricturoplasty	2
Inguinal exploration and herniorraphy	1
Total	18

Table 10. Causes of intestinal obstruction

Causes	Number of Patients	Percentage
Adhesions	21	52.5
Small intestinal strictures (IBD)	6	15
Hernia(Inguinal, Incisional)	5	12.5
Tubercular	5	12.5
Carcinoma	3	7.5
Total	40	

left lateral decubitus films. Radiography can diagnose intestinal obstruction in approximately 60 percent of cases¹⁰. In our study, 36/57 (63.2%) patients had gaseous distension of bowel loops and only 5/57 patients (8.8%) had multiple air fluid levels as compared to Ojha *et al* where 47/63 patients (74.6%) had multiple air-fluid levels on erect films⁴. However, plain X-ray films of abdomen appeared normal in 16/57(36.8%) patients which might be due to early obstruction and high jejunal or duodenal obstruction. As a general rule, most underlying causes of bowel obstruction cannot be diagnosed with an abdominal radiograph, as they are radiologically occult. Ultrasonography remains a reliable investigation for unstable patients with a confusing diagnosis and in patients for whom radiation exposure is contraindicated, such as pregnant women. It is extremely sensitive for diagnosing high-grade intestinal obstruction, sensitivity being almost 85 percent¹¹. Ultrasonography was undertaken in 53 (92.9%) patients. It showed abnormal findings in 49 patients while it was reported normal in 4 patients. Dilated bowel loops were the most frequent finding in 27 patients. Nowadays, CT scan has largely replaced ultrasonography as the first-line investigation in stable patients in whom intestinal obstruction is suspected. In clinically suspected patients of intestinal obstruction, where initial radiography is negative, Contrast enhanced computed tomography (CECT) should be undertaken¹². CT is appropriate for further evaluation of patients with suspected intestinal obstruction in whom clinical examination and radiography do not yield a definitive diagnosis(as in our study). CT is sensitive for detection of high-grade obstruction (up to 90 percent in some series)¹³, and has the additional benefit of defining the cause and level of obstruction in most patients^{14,15}. It is seen that, though CT is highly sensitive and specific for high-grade obstruction, its value decreases in patients with partial obstruction¹. In most patients, CT should be ordered when the diagnosis is in doubt, when there is no surgical history or hernias to explain the etiology, or when there is a high index of suspicion for complete or high-grade obstruction. In our study, CT findings were confirmatory for diagnosing the condition in 25 cases.

The management of intestinal obstruction

should aim at correcting physiologic derangements caused by the obstruction, bowel rest, and removing the source of obstruction. The decision to perform surgery for subacute intestinal obstruction (SAIO) can be difficult. Treatment of stable patients with subacute intestinal obstruction and a history of abdominal surgery presents a challenge. Conservative management of a high-grade obstruction should be attempted initially, using nasogastric decompression, aggressive intravenous rehydration, and appropriate antibiotics. Conservative management is successful in 40 to 70 percent of clinically stable patients, with a greater success rate in those with partial obstruction^{16,17}. With conservative management, resolution generally occurs within 24 to 48 hours. Beyond this time frame, the risk of complications, including vascular compromise, increases. If intestinal obstruction is not resolved with conservative management, surgical evaluation is required¹⁸. In our study 39 (68.4%) patients were managed conservatively in a successful manner and remaining 18 (31.6%) patients were subjected to surgery. Adhesiolysis was the most common surgical procedure performed in 12/18 patients followed by resection and anastomosis of bowel in 3/18 patients.

Following the diagnostic modalities and the surgical procedures, the probable causes of intestinal obstruction in 40 patients were delineated. According to another study, adhesions due to prior abdominal surgery are the predominant cause of small bowel obstruction, these are seen in approximately 60 percent of cases¹⁹. In our study, adhesions were found to be the most common cause in 21 (52.5%) patients followed by small intestinal strictures in 6 (15%) patients, compared to the study by Jain BK *et al*, where adhesions and small intestinal strictures were the two most frequent cause of obstruction seen in 31.8% and 27.2%, respectively⁹. In rest of the 17 patients, in whom the diagnosis could not be ascertained by various means, the causes could be attributed to some obscure pathology including dyselectrolytemia leading to paralytic ileus.

Although conservative management is associated with shorter initial hospitalization, there is also a higher rate of eventual recurrence²⁰. Out of the 39 patients managed conservatively in the study, 5 patients presented again during the study

period, but with acute intestinal obstruction and were managed with surgery (they were not included in the study for the second time).

There were no mortalities noted in our study group during the period of observation. Based on our study, we assume that small intestinal obstruction might be a more common cause of SAIO than large intestinal obstruction. Unfortunately, no relevant data pertaining to the follow up of the progress of patients was available to us at the time of compiling this study, which is the limitation of this study.

CONCLUSION

Subacute intestinal obstruction continues to be one of the most common abdominal problems faced by general surgeons. The present study concluded that subacute intestinal obstruction (SAIO) is seen more commonly in middle age group although no age is immune, with males more commonly affected than females. We observed that abdominal pain was the commonest symptom, while tenderness was the most common sign elicited in these patients. In spite of the atypical presentation of this confusing entity, majority of the cases of SAIO were managed conservatively. Almost half of the patients had a previous history of surgery and post operative adhesions were largely implicated in causation of SAIO. Early clinical recognition and tools like plain X-ray erect abdomen, ultrasonography, CT scan are extremely important in diagnosing this clinical entity.

Based on our findings, we hope that the clinical characteristics of this ill-defined term will become clear and help in the better management of SAIO, thereby reducing mortality and long-term morbidity. We intend to extend this study further by collecting data on the follow up of the progress of the same patients with time.

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