

Epidemiological Study Assessing Clinic-Etiological Spectrum of Acute Small Intestinal Obstruction: An Observational Study

Mukesh Kumar¹, Praveen Kishore², Ashok Kumar³, Sunil Kumar Ranjan⁴

¹Senior Resident, Department of General Surgery, Government Medical College, Bettiah, Bihar, India

²Senior Resident, Department of General Surgery, Government Medical College, Bettiah, Bihar, India

³Assistant Professor, Department of General Surgery, Government Medical College, Bettiah, Bihar, India

⁴Assistant Professor, Department of General Surgery, Government Medical College, Bettiah, Bihar, India

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Corresponding author: Dr. Praveen Kishore

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Abstract

Aim: The aim of the present study was to evaluate the common etiological factor related to small bowel obstruction in adult patients.

Material & Methods: The cross-sectional study was conducted in the Department of General Surgery, for the duration of 24 months. Total 200 patients age above 15 years were studied after taking informed consent from patient/relatives.

Results: 130 patients were male and 70 were females. All the patients were categorized in different age group, 39 patients belong to 15-25 years age group, 69 patients were in 26-40 years, 52 patients were in 41-55 years, 26 patients were in 56-70 years and remaining 14 were having age above 71 years. The cardinal signs and symptoms were present in almost all the patients. Abdominal pain was present in 192 patients, vomiting in 150 patients, tenderness in 180 patients, absolute constipation in 162 patients, abdominal distension in 186 patients, rebound tenderness in 108 patients, significant finding on per rectal examination in 108 patients, absent/decreased bowel sound in 70 patients, increased bowel sound in 130 patients and palpable mass and swelling was present in 50 patients. Out of 200 patients, Adhesions were present in 36 patients, Hernias in 40 patients, Malignancy in 20 patients, intestinal volvulus in 10 patients, diverticulum in 4 patients, strictures in 12 patients, intestinal tuberculosis in 20 patients, fecal impaction in 6 patients and superior mesenteric artery syndrome in 3 patients. Remaining patients were having non-mechanical (adynamic) intestinal obstruction. Out of these patients, 8 patients were having gangrenous ileum, two female patients were having pelvic abscess and 24 patients were having intestinal obstruction due to unknown paralytic ileus cause.

Conclusion: The causes of intestinal obstruction are variable in different parts of the world. Adhesions are the most common cause of bowel obstruction. The treatment in each patient should be individualized. Atrial of conservative management should be planned in all cases before embarking to a surgical intervention except in patients where strangulation is suspected.

Keywords: Etiology, Acute Small Intestine Obstruction, Adhesion, Improved surgical techniques, laparotomy, low socioeconomic status.

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Introduction

Small bowel obstruction (SBO) remains a leading cause of admission to surgical wards across the globe. One study found that more than 3% of all emergency surgical admissions to a general hospital were secondary to SBO. [1] The morbidity and financial cost of SBO are compounded by the recurrent nature of the disease. This depends, of course, upon the etiology of the obstruction. SBO of different etiologies requires different considerations and nuances in treatment management. SBO secondary to Crohn's will subside with nonoperative treatment. Ellis [2] noted

that problems resulting from adhesions create considerable workload. [3,4]

A wide range of pathologies can inflict both the small and large intestines. Intestinal obstruction accounts for approximately 15% of all emergency department visits for acute abdominal pain. [5] Intestinal obstruction can be broadly differentiated into small bowel and large bowel obstruction. The most common causes of intestinal obstruction include adhesions, neoplasms, and herniation. Adhesions resulting from prior abdominal surgery are India the predominant cause of small bowel

obstruction, accounting for approximately 60% of cases. [6] Less common causes of obstruction include intestinal intussusception, volvulus, intra-abdominal abscesses, gallstones, and foreign bodies. [7] The hallmarks of intestinal obstruction include colicky abdominal pain, nausea and vomiting, abdominal distension, and a cessation of flatus and bowel movements. Diagnosis of such patients should include initial evaluation of clinical signs and symptoms, radiography, complete blood counts, and metabolic panel. Radiography accurately diagnoses intestinal obstruction in approximately 60% of cases [8] and its positive predictive value approaches 80% in patients with high-grade intestinal obstruction. [9]

Management of intestinal obstruction is directed at correcting physiologic derangements caused by the obstruction, bowel rest, and removing the source of obstruction and includes intravenous fluid resuscitation with isotonic fluid and antibiotics. With conservative management, resolution generally occurs within 24-48 h. [10] Beyond this time frame, the risk of complications, including vascular compromise and increased surgical evaluation is required followed by histopathologic examination of all excised specimen to confirm the diagnosis. Better understanding of pathophysiology, use of radiological techniques, correction of fluid and electrolyte imbalance, giving good antibiotics coverage for effective bacteriological control, gastrointestinal decompression, new surgical principles and improvement in field of anesthesia, all can contribute to lower the morbidity and mortality.

Hence the purpose of this study was to evaluate the various acute small intestinal obstruction in adult patient.

Material & Methods

The cross-sectional study was conducted in the Department of General Surgery, Government Medical College, Bettiah, Bihar, India for the duration of 24 months. Total 200 patients age above 15 years were studied after taking informed consent from patient/relatives.

Inclusion Criteria

- Diagnosed cases of intestinal obstruction with the help of X-ray and Ultrasonography.
- Adult patients (Age 15 years and above), regardless of gender.

Exclusion Criteria

- Age below 15 years.

- Patient got expired with in few hours after presentation.
- Patients with abdominal pain due to trauma were excluded from study.

The patient's particulars such as age, gender, pre-operative clinical examinations and investigations, history regarding previous surgeries, post-operative morbidity and mortality were noted from files. The diagnosis of intestinal obstruction was made on the basis of detailed history especially regarding cardinal features of intestinal obstruction like, abdominal distension, pain, vomiting, and absolute constipation, clinical findings, x-ray abdomen and ultra sound of the abdomen. Other investigations for fitness for anesthesia, to exclude a dynamic cause and for the management of intestinal obstruction were carried out, i.e., complete blood picture, electrolytes, urea, creatinine, X ray chest and ECG. Immediately after the admission along with above procedure, resuscitation with IV fluids especially ringer lactate and normal saline infusion were started till the hydration and urine output become normal. Nasogastric decompression was carried out and antibiotic prophylaxis initiated. A close observation of all bedside parameters (like pulse rate, BP, RR, urine output, abdominal girth, bowel sounds and tenderness and guarding) were done. Patients who showed a reduction in the abdominal distension and improvement in the general condition managed conservatively. Patients with clear-cut signs and symptoms of acute obstruction had been managed by appropriate surgical procedure after initial resuscitation. Operative information of every case was recorded on proforma. Frequency and pattern of different causes of small intestinal obstruction were recorded and analyzed.

The postoperative period had been monitored carefully and all the parameters were recorded hourly or fourth hourly basis depending on the patient's general condition and toxemia. Postoperatively Nasogastric tube aspiration, intravenous fluids and antibiotics were administered. Any complications were noted and treated accordingly. All the patients were called for regular follow up depending on their cause of small intestinal obstruction and surgery performed.

Statistical Analysis

The data were recorded, and descriptive analysis was made with SPSS v23 (IBM SPSS Statistics 2015). The data are defined in percent ratios.

Results

Table 1: Distribution of patients with respect to age group and gender

Age groups	Male	Female	Total (%)
15-25 years	25	14	39 (19.5%)
26-40 years	35	34	69 (34.5%)
41-55 years	40	12	52 (26%)
56-70 years	20	6	26 (13%)
70 years and above	10	4	14 (7%)
Total	130	70	200 (100)

130 patients were male and 70 were females. All the patients were categorized in different age group, 39 patients belong to 15-25 years age group, 69 patients were in 26-40 years, 52 patients were in 41-55 years, 26 patients were in 56-70 years and remaining 14 were having age above 71 years.

Table 2: Sign and symptoms present in patients with intestinal obstruction

Signs and Symptoms	No. of patients	Percentage (%)
Pain abdomen	192	96
Vomiting	150	75
Tenderness	180	90
Absolute constipation	162	86
Abdominal distension	186	93
Rebound tenderness	108	54
Absent/decreased bowel sound	70	35
Increased bowel sound	130	65
Significant finding on PR	16	8
Swelling/ palpable mass	50	25

The cardinal signs and symptoms were present in almost all the patients. Abdominal pain was present in 192 patients, vomiting in 150 patients, tenderness in 180 patients, absolute constipation in 162 patients, abdominal distension in 186 patients,

rebound tenderness in 108 patients, significant finding on per rectal examination in 16 patients, absent/decreased bowel sound in 70 patients, increased bowel sound in 130 patients and palpable mass and swelling was present in 50 patients.

Table 3: Causes of intestinal obstruction

Cause	Male	Female	Total
Adhesions	16	20	36
Hernias	22	18	40
Malignancy	10	10	20
Volvulus	6	4	10
Diverticulum	4	0	4
Stricture	8	4	12
Tuberculosis	16	4	20
Fecal impaction	2	4	6
Sup. Mesenteric art. Syndrome	4	2	6
Intestinal perforations	20	4	24
Gangrenous ileum	6	2	8
Pelvic abscess	0	4	4
Paralytic ileus of unknown cause	6	4	10

Out of 200 patients, Adhesions were present in 36 patients, Hernias in 40 patients, Malignancy in 20 patients, intestinal volvulus in 10 patients, diverticulum in 4 patients, strictures in 12 patients, intestinal tuberculosis in 20 patients, fecal impaction in 6 patients and superior mesenteric artery syndrome in 3 patients. Remaining patients

were having non-mechanical (adynamic) intestinal obstruction. Out of these patients, 8 patients were having gangrenous ileum, two female patients were having pelvic abscess and 24 patients were having intestinal obstruction due to unknown paralytic ileus cause.

Table 4: Post-operative complications

Complication	No. of patient	Percentage
Wound infection	30	15
Sepsis	6	3
Pneumonia	4	2
Anastomosis leak	4	2
Wound dehiscence	4	2
Fecal fistula	2	1

Some of the patients developed post-surgical complications including wound infection (30 patients), sepsis (6 patients), pneumonia (4 patients), anastomosis leak (4 patients), wound dehiscence (4 patients) and fecal fistula (2 patients).

Discussion

The causes of small bowel obstruction have changed dramatically since 1900s. [11] Previously hernia was the most frequent cause of small bowel obstruction in developed countries. But later due to more advancement in meticulous hernia surgery and an increasing number of abdominal and pelvic surgeries, adhesions secondary to previous surgery are now most common (nearly 60%) cause of small bowel obstruction in developed countries. More advancement in minimal access surgeries may decrease the frequency of bowel obstruction secondary to adhesions. [12] Malignancy is the second most common account for around 20% cases of small bowel obstruction mostly due to the metastatic lesion. Hernias are dropped to the third most common cause nearly 10%. Most commonly, these represent ventral or inguinal hernias. Internal hernias, usually related to prior abdominal surgery, can also result in small bowel obstruction.

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The cardinal signs and symptoms were present in almost all the patients. Abdominal pain was present in 192 patients, vomiting in 150 patients, tenderness in 180 patients, absolute constipation in 162 patients, abdominal distension in 186 patients, rebound tenderness in 108 patients, significant finding on per rectal examination in 108 patients, absent/decreased bowel sound in 70 patients, increased bowel sound in 130 patients and palpable mass and swelling was present in 50 patients.

Similar findings were reported by a number of studies. [16,17] Out of 200 patients, Adhesions were present in 36 patients, Hernias in 40 patients, Malignancy in 20 patients, intestinal volvulus in 10 patients, diverticulum in 4 patients, strictures in 12 patients, intestinal tuberculosis in 20 patients, fecal impaction in 6 patients and superior mesenteric artery syndrome in 3 patients. Remaining patients were having non-mechanical (adynamic) intestinal obstruction. Out of these patients, 8 patients were having gangrenous ileum, two female patients were having pelvic abscess and 24 patients were having intestinal obstruction due to unknown paralytic ileus cause. The obstructed/ strangulated hernias were found as the first common cause in the present study, while it was the second common cause in the previous study, which almost is analogous with the other studies conducted in the country. [18] The frequency of abdominal tuberculosis as the cause of bowel obstruction in our region is quite high as compared to other studies. [19] Some local studies done in Pakistan by Mehmood Z [20], Zahra T [21] also found that Tuberculosis is the most common cause of intestinal obstruction.

Some of the patients developed post-surgical complications including wound infection (30 patients), sepsis (6 patients), pneumonia (4 patients), anastomosis leak (4 patients), wound dehiscence (4 patients) and fecal fistula (2 patients).

Conclusion

The causes of intestinal obstruction are variable in different parts of the world. Adhesions are the most common cause of bowel obstruction. The treatment in each patient should be individualized. Atrial of conservative management should be planned in all cases before embarking to a surgical intervention except in patients where strangulation is suspected. Among non-mechanical (adynamic) causes, paralytic ileus due to intestinal perforation is common cause of intestinal obstruction in our study although, some patients can be treated conservatively, but an ample portion requires immediate surgical intervention. High mortality was observed in old age patients with late presentation.

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