

# Spectrum of Etiology of Intestinal Obstruction - A Hospital-based Study

Naveed Anjum Qureshi<sup>1</sup>, Sunil Kumar Bhat<sup>1</sup>, Bikramjit Singh Sodhi<sup>2</sup>

<sup>1</sup>Senior Resident, Department of Surgery, Government Medical College Jammu, Jammu and Kashmir, India, <sup>2</sup>Senior Resident, Department of Surgery, G S Medical College and Hospital, Pilkhua, Uttar Pradesh, India

## Abstract

**Introduction:** Bowel obstruction remains one of the most common intra-abdominal problems of utmost complexity faced by general surgeons despite better understanding of altered physiology in disease and improved surgical techniques.

**Aim:** The aim is to study the epidemiology, incidence, management, and outcomes of intestinal obstruction.

**Materials and Methods:** This study comprises of 118 patients of acute small and large bowel obstruction managed in a single surgical unit in the Department of Surgery, Government Medical College, Jammu, over 12 months. The diagnosis of intestinal obstruction was made based on detailed history, clinical examination, radiological examination (usually plain X-ray abdomen), and histopathology of the excised gut lesion. Special investigations including contrast studies and contrast-enhanced computed tomography abdomen were done in selected patients only. Patients of gastric outlet obstruction and anorectal malformation were excluded from the study.

**Results:** Acute intestinal obstruction comprised of 5.77% of total number of admissions, age spectrum ranging from 2 days to 82 years with peak incidence in the age group of 30-50 years (28.81%). Males were more commonly affected in all age groups with male-to-female ratio 1.6:1. Small bowel involvement was observed in 78.9% and large bowel in 21.1% of these patients. The most common cause of intestinal obstruction was found to be bands and adhesions (40%), followed by non-specific cases (13%), hernias (8.5%), and bolus obstruction (6%).

**Conclusion:** Adhesions are the most common cause of bowel obstruction. The treatment in each patient should be individualized. A trial of conservative management should be planned in all cases before embarking to a surgical intervention except in patients where strangulation is suspected.

**Key words:** Adhesion, Improved surgical techniques, Intestinal obstruction

## INTRODUCTION

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.<sup>1</sup> 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

the predominant cause of small bowel obstruction, accounting for approximately 60% of cases.<sup>2</sup> Less common causes of obstruction include intestinal intussusception, volvulus, intra-abdominal abscesses, gallstones, and foreign bodies.<sup>3</sup> 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,<sup>4</sup> and its positive predictive value approaches 80% in patients with high-grade intestinal obstruction.<sup>5</sup>

Management of intestinal obstruction is directed at correcting physiologic derangements caused by the obstruction, bowel rest, and removing the source of

### Access this article online



www.ijss-sn.com

Month of Submission : 06-2017  
Month of Peer Review : 07-2017  
Month of Acceptance : 08-2017  
Month of Publishing : 08-2017

**Corresponding Author:** Dr. Bikramjit Singh Sodhi, Boys Hostel No. 209, G S Medical College and Hospital, Pilkhua, Uttar Pradesh, India.  
Phone: +91-7055514532. E-mail: bikramjithot@gmail.com

obstruction and includes intravenous fluid resuscitation with isotonic fluid and antibiotics. With conservative management, resolution generally occurs within 24-48 h. Beyond this time frame, the risk of complications, including vascular compromise and increased surgical evaluation is required<sup>6</sup> followed by histopathologic examination of all excised specimen to confirm the diagnosis.

In the present study, the epidemiology among hospital admissions, as well as management, complications, and outcome of intestinal obstruction in our setup has been reported.

## MATERIALS AND METHODS

This study comprised of 118 cases of acute small and large bowel obstruction managed in a single surgical unit in Government Medical College, Jammu, over 12 months. Patients of anorectal malformation and gastric outlet obstruction were excluded. The diagnosis of acute intestinal obstruction was made in these cases by detail history, clinical examination, and radiological investigation and histopathological examination. Contrast studies including contrast-enhanced computed tomography abdomen were done in selected patients.

Initially, the conservative treatment with intravenous fluids, nasogastric suction, and broad-spectrum antibiotics were administered. In case of complications, surgical intervention was done. The operative procedure in these patients was individualized depending on the peroperative findings, whether the gut was viable or gangrenous. In cases with strangulation obstruction, the gangrenous gut was excised and continuity restored by end-to-end anastomoses or stoma formation. In simple obstruction, the procedure was limited to the release of gut and taking of tissue for biopsy if considered so at the time of surgery. All these cases were carefully managed post-operatively by restricting or avoiding oral feeds, RT suctioning and judicious use of intravenous fluids duration, of which depended on the etiology of obstruction and type of surgery performed. Patients were allowed orally only when intestines started functioning by passage of flatus or stools or functioning if stoma. Post-operatively, antibiotics were used in all cases. Special emphasis was laid on preventing post-operative respiratory and venous complications by early ambulation of patients.

## RESULTS

The total number of admissions during the 1-year study period in our surgical unit was 2044 cases, of which 118 (5.77%) cases of acute intestinal obstruction were

treated. The age-spectrum ranged from 2 days to 82 years. The study showed the peak incidence in the age group 30-39 (15.25%) and 50-59 years (13.56%). The mean age in the current study was 33.2 years. This study included 73 male patients (61.86%) and 45 female patients (38.14%) with male-to-female ratio being 1.6:1. Males were more commonly affected as compared to females in all the age groups Table 1.

Most common symptom was found to be pain abdomen (85%) of the cases followed by vomiting (83%), distension (81%), and constipation (54%). Most common signs observed were tachycardia (80%) and visible intestinal peristalsis (60%). The rectal examination did not reveal any abnormality except in 2 cases (1.69%) of rectal malignancy where rectal growth was felt. The most common cause of intestinal obstruction was post-operative adhesion (39.83%) followed by non-specific causes (12.71%) of all patients. The non-specific group comprised of patients presenting with the clinical and radiological features of intestinal obstruction, but no cause of obstruction was found. Most of these patients were young adults, with maximum number of cases in 30-40 years of age and sex incidence also appeared to be the same (8 males and 7 female patients). None of these patients had a history of previous surgical intervention. All these patients were managed conservatively, average duration of stay in hospital was 2.5 days; however, recurrence was observed in approximately 30% of these patients on follow-up.

The most common cause of intestinal obstruction in our study was post-operative adhesions followed by non-specific cause, hernias and bolus obstruction with intussusception, and Meckel's diverticulum being the least common. Appendectomy was found to be the most common operation leading to post-operative adhesions (21.28%) followed by laparotomy for DU perforation, LSCS, ileal perforation, ileostomy closure, and hemoperitoneum were among the other common causes in decreasing order of their frequency (Table 2).

Intestinal obstruction due to adhesions was present in 31 males and 16 females. Out of these, 20 patients (42.55%) were managed conservatively and 27 patients (57.45%) required surgical exploration. Most common procedure done was adhesiolysis (100%), as adhesions were present in all of these cases followed by adhesiolysis with release of band 9 patients (33.33%), adhesiolysis with excision of Meckel's diverticulum was required in 2 patients (7.41%), and adhesiolysis with ileostomy was required in 4 patients (14.81%) due to gangrenous ileum.

Intervention, outcomes, complications, and mortality are given in Tables 3 and 4. Out of 118 patients managed

**Table 1: Etiology of intestinal obstruction**

Etiology	Number of cases			Percentage
	Male	Female	Total	
Adhesions	31	16	47	39.83
Non-specific	8	7	15	12.71
Hernia	7	2	9	7.63
Bolus obstruction				
Food bolus	5	1	6	
Worm bolus	2	0	2	
Total	7	1	8	6.78
Hirschsprung's disease	4	4	8	6.78
Malignancies				
Colon cancer	0	2	2	
Rectum cancer	2	0	2	
Other	0	2	2	
Total	2	4	6	5.08
Intussusception	1	3	4	3.39
Perforation	2	2	4	3.39
Malrotation	2	2	4	3.39
Pseudo-obstruction	4	0	4	3.39
Small bowel atresia	2	1	3	2.54
Volvulus	2	1	3	2.54
Meckel's diverticulum	1	1	2	1.69
Jejunal diaphragm	0	1	1	0.85
Total	73	45	118	100.00

**Table 2: Etiology of adhesion obstruction**

Previous surgery	Males	Females	Total (%)
Appendectomy	8	2	10 (21.28)
Hysterectomy	0	6	6 (12.76)
DU perforation	5	0	5 (10.64)
LSCS	0	5	5 (10.64)
Ileal perforation	3	0	3 (6.38)
Ileostomy closure	3	0	3 (6.38)
Ectopic pregnancy	0	2	2 (4.25)
Adhesiolysis	3	0	3 (6.38)
Hemoperitoneum	3	0	3 (6.38)
Hernia	2	0	2 (4.25)
Others	0	5	5 (10.64)
Total	27	20	47 (100.00)

for intestinal obstruction, 69 (58.47%) patients were managed surgically including 64 laparotomies and 49 patients (41.53%) were managed conservatively, the most common procedure done was adhesiolysis. All cases of intussusception were treated surgically; hydrostatic reduction was done in none of these patients. Herniation was inguinal in 6/9 patients with 2 cases of paraumbilical and 1 right lumbar hernia. Out of 6 patients found to have malignancy, rectal cancer affected 2 patients and histopathologically were found to be rectal adenocarcinomas. Colon cancer histopathologically were 1 mucinous adenocarcinoma and 1 adenocarcinoma well differentiated. One of the patient was found to have metastatic adenocarcinoma involving the small intestine and the patient was managed conservatively, and the other patient presented with intestinal obstruction was found to have leukemia on blood examination.

Complications in post-operative period were occurred in 41 patients (34.74%). The mortality rate was 4.24% (5 patients). Of these, 4 were males and 1 female patient. Two of these patients died while on conservative management including one patient of abdominal Koch with shock with Addisonian crisis, whereas 3 patients died following surgery, accounting for 43% of surgically treated patients and 4.1% of conservatively treated patients. Three patients who developed sepsis in post-operative period died because of multi-organ failure. Two of these patients were in shock at the time of admission. Most of the patients managed surgically died on the 2<sup>nd</sup> or 3<sup>rd</sup> post-operative day. Average duration of stay was 8.6 days in all cases and 3.2 days in fatal cases.

## DISCUSSION

Acute intestinal obstruction is one of the common life-threatening emergencies all over the world presenting as acute abdomen and requiring surgical intervention.<sup>7,8</sup> A number of recent studies have found adhesive obstruction to be replacing obstructive hernias as the most common cause.<sup>9,10</sup> This study is done to explore epidemiology, management, and outcome of cases of intestinal obstruction presented in our institution during 1 year.

In the present study, 118 cases of acute intestinal obstruction were treated with an incidence of 5.77% (118/2044 cases in surgery unit). The age spectrum ranged from 2 days to 82 years with a mean age of 33.2 years. This study included 73 male patients (61.86%) and 45 female patients (38.14%) with male-to-female ratio being 1.6:1. Males were more commonly affected as compared to females in all the age groups.

Adhikari *et al.*<sup>11</sup> did a study and found the incidence of acute intestinal obstruction to be 9.8% (367/3717), whereas mean age of 41.7 years. Male-to-female ratio was 1.9:1 with male (75.2%) and females (24.8%). Ullah *et al.*<sup>12</sup> in their study of 576 patients also reported 352 male (61.1%) and 224 female (38.9%) with a male-to-female ratio of 1.6:1, which is similar to the our study. Although variation in incidence may be due to poor health-care accessibility and system in our setup.

In our study, 39.83% of cases were due to bands and adhesions. Oladele *et al.*<sup>10</sup> too found adhesive intestinal obstruction as the most common cause of symptoms in 44% of patients. The most common cause of adhesions was appendectomy (21.28%) followed by surgeries for DU perforation and LSCS (10.64% each), surgery for ileal perforation, ileostomy closure, previous adhesiolysis, and hemoperitoneum (6.38% each) similar to study done by Malik *et al.*<sup>13</sup> Although the incidence of obstructed/

**Table 3: Intervention and outcomes of patients with acute intestinal obstruction**

Etiology	Management			Outcome	
	Surgery	Conservative	Total	Complications	Death
Adhesions	27	20	47	22	1
Non-specific	0	15	15	0	0
Hernia	7	2	9	3	1
Hirschsprung's disease	5	3	8	3	0
Bolus obstruction					
Food bolus	6	0	6	2	0
Worm bolus	1	1	2	1	0
Intussusception	4	0	4	2	0
Malrotation	4	0	4	1	0
Bowel atresia	3	0	3	1	0
Volvulus	3	0	3	2	0
Malignancies					
Colon cancer	2	0	2	0	0
Rectum cancer	1	1	2		0
Other	0	2	2	0	2
Perforation	4	0	4	3	0
Jejunal diaphragm	1	0	1	0	0
Pseudo-obstruction	0	4	4	0	0
Meckel's diverticulum	1	1	2	1	0
Total	69	49	118	41	5

**Table 4: Complications of patients operated for intestinal obstruction**

Complications	Number of cases (%)
Wound infection	15 (36.58)
Sepsis	11 (26.83)
Early adhesive obstruction	3 (7.32)
Bed sore	3 (7.32)
Burst abdomen	2 (4.88)
Paralytic ileus	2 (4.88)
Malnutrition	2 (4.88)
Fecal fistula	1 (2.44)
Incisional hernia	1 (2.44)
Recurrent colostomy prolapse	1 (2.44)
Total	41 (100)

strangulated hernia has been reported more in the developing countries, in the present study, hernia was the third common etiology for obstruction. It could be because of the awareness of public and the availability of surgical facilities in the periphery for hernia repair and hernia being treated early. In our study, wound infection was found to be the most common post-operative complication similar to what was seen in the study done by Jain *et al.*<sup>14</sup>

Overall mortality rate in the present series was 4.24% (5 cases), which is low as compared to other studies reported by Adhikari *et al.*<sup>11</sup> 7.35% and Khan *et al.*<sup>15</sup> (15) 7%, which is slightly higher than our study.

## CONCLUSION

From the study conducted in our hospital, we conclude that in our region, adhesions are the most common

cause of bowel obstruction. It would be helpful if surgeons take preventive measures to reduce adhesion formation at laparotomy. Patients visiting the hospital should be encouraged to get radiological investigations done if they feel common symptoms of acute bowel obstruction so that elective surgery can be performed. Second, the patients should be advised to get pathological and microbiological investigations for tuberculosis done because tuberculosis is also emerging as a common cause of bowel obstruction. The late adhesive complications of bowel obstruction, mechanical female infertility, and chronic pain are often neglected during consent process. These should be included in consent and should be considered breach in duty of care not to inform patients.

## REFERENCES

1. Irvin TT. Abdominal pain: A surgical audit of 1190 emergency admissions. *Br J Surg* 1989;76:1121-5.
2. Shelton BK. Intestinal obstruction. *AACN Clin Issues* 1999;10:478-91.
3. Jackson PG, Raiji MT. Evaluation and management of intestinal obstruction. *Am Fam Physician* 2011;83:159-65.
4. Maglinte DD, Heitkamp DE, Howard TJ, Kelvin FM, Lappas JC. Current concepts in imaging of small bowel obstruction. *Radiol Clin North Am* 2003;41:263-83, vi.
5. Lappas JC, Reyes BL, Maglinte DD. Abdominal radiography findings in small-bowel obstruction: Relevance to triage for additional diagnostic imaging. *Am J Roentgenol* 2001;176:167-74.
6. Fevang BT, Jensen D, Svanes K, Viste A. Early operation or conservative management of patients with small bowel obstruction? *Eur J Surg* 2002;168:475-81.
7. McEntee G, Pender D, Mulvin D, McCullough M, Naeeder S, Farah S, *et al.* Current spectrum of intestinal obstruction. *Br J Surg* 1987;74:976-80.
8. Madziga AG, Nuhu AI. Causes and treatment outcome of mechanical bowel obstruction in north eastern Nigeria. *West Afr J Med* 2008;27:101-5.

9. Markogiannakis H, Messaris E, Dardamanis D, Pararas N, Tzertzemelis D, Giannopoulos P, *et al.* Acute mechanical bowel obstruction: Clinical presentation, etiology, management and outcome. *World J Gastroenterol* 2007;13:423-37.
10. Oladele AO, Akinkuolie AA, Agbakwuru EA. Pattern of intestinal obstruction in a semi urban Nigerian hospital. *Niger J Clin Pract* 2008;11:347-50.
11. Adhikari S, Hossein MZ, Das A, Mitra N, Ray U. Etiology and outcome of acute intestinal obstruction: A review of 367 patients in Eastern India. *Saudi J Gastroenterol* 2010;16:285-7.
12. Ullah S, Khan M, Mumtaz N, Naseer A. Intestinal obstruction: A spectrum of causes. *J Postgrad Med Inst* 2009;23:186-92.
13. Malik AM, Shah M, Pathan R, Sufi K. Pattern and acute intestinal obstruction: Is there a change in the underlying etiology? *Saudi J Gastroenterol* 2010;16:272-4.
14. Jain BK, Arora H, Srivastava UK, Mohanty D, Garg PK. Insight into the management of non-traumatic perforation of the small intestine. *J Infect Dev Ctries* 2010;4:650-4.
15. Khan JS, Alam J, Hassan H, Iqbal M. Pattern of intestinal obstruction-a hospital-based study. *Pak Armed Forces Med J* 2007;57:295-9.

**How to cite this article:** Qureshi NA, Bhat SK, Sodhi BS. Spectrum of Etiology of Intestinal Obstruction - A Hospital-based Study. *Int J Sci Stud* 2017;5(5):85-89.

**Source of Support:** Nil, **Conflict of Interest:** None declared.