



## Assessing Patient's Factors for the Delay in Operative Treatment for Acute Intestinal Obstruction and Postoperative Complications

Mohammad Abul Kalam Basir<sup>1\*</sup>, Mahboob Hasan<sup>2</sup>, Shormin Momtaj<sup>3</sup>, Sohel Ahmed<sup>4</sup>, Mohammad Tarequl Islam<sup>5</sup>

<sup>1</sup>Associate Professor and Classified Specialist, Department of Surgery, CMH and Army Medical College, Chattogram, Bangladesh.

Email: basiramc101145@gmail.com

Orcid ID: 0009-0002-2439-8204

<sup>2</sup>Professor, Department of Surgery, CMH and Army Medical College, Chattogram, Bangladesh.

Email: drmhasanhbp@gmail.com

Orcid ID: 0000-0002-9829-4646

<sup>3</sup>Graded Specialist, Department of Conservative Dentistry, Military Dental Center, Chattogram, Bangladesh.

Email: shormin.momtaj@gmail.com

Orcid ID: 0009-0002-5379-5313

<sup>4</sup>Classified Specialist, Department of Surgery, Combined Military Hospital, Chattogram, Bangladesh.

Email: sohel101143@yahoo.com

Orcid ID: 0009-0006-5488-5352

<sup>5</sup>Classified Specialist, Department of Surgery, Combined Military Hospital, Chattogram, Bangladesh.

Email: tareq101436@gmail.com

Orcid ID: 0009-0000-8443-2959

\*Corresponding author

Received: 10 April 2023

Revised: 13 May 2023

Accepted: 27 May 2023

Published: 30 June 2023

### Abstract

**Background:** Acute intestinal obstruction is one of the most common surgical emergencies worldwide. Mortality and morbidity increase markedly with late presentation. So, it demands an increased awareness regarding the danger of delaying the treatment. This study aims to explore the causes of delay in operative treatment for Acute Intestinal Obstruction. We carried out the study in the Department of Surgery, Combined Military Hospital, Chattogram Cantonment, Bangladesh. A total of 50 patients were prospectively studied, evaluated, and managed. Patients of acute intestinal obstruction attend in Department of Surgery, Combined Military Hospital Chattogram (CMH Chattogram). The patients were divided into six age groups. A maximum of 18(36%) number was found in 51-60 years, and the mean( $\pm$ SD) age of the study patients was 39.9 $\pm$ 16 years with a range from 1-65 years. In the sex distribution of the study patients, it was observed that 41 (82%) were male and 09 (18%) were female. Forty patients (80%) had no history of previous abdominal operations. Ten patients (20%) develop a single complication, while 13(26%) develop multiple complications. Acute intestinal obstruction is one of the most typical surgical emergencies worldwide. A large proportion of patients with acute intestinal obstruction do not receive appropriate treatment due to pre-admission delay resulting in poor outcomes.

**Keywords:-** Acute Intestinal Obstruction, operative treatment, postoperative complications.

## INTRODUCTION

The most common underlying cause of acute intestinal obstruction in the West has been postoperative adhesions, as suggested by many reports. Several studies conducted in the southern region of Asia have found obstructed

or strangulated hernias to be the most common underlying cause of acute intestinal obstruction. This was attributed to a general reluctance for surgery due to unawareness, poverty, and fear. During the last few years, a change in the etiology of acute intestinal obstruction has been noted in developing countries.<sup>[1]</sup> High age,



comorbidity, nonviable strangulation of the bowel, recurrent operations, and treatment delay of more than 24 hours will be considered factors influencing mortality and complication rates. More patients are now subjected to watchful waiting, which causes long delays in starting operations. Another reason for the general increase in hospital delay might be a development in pre-operative care towards a more thorough but time-demanding preparation for surgery, including more pre-operative investigations and blood tests.<sup>[2]</sup> Knowing that old patients are high-risk patients for developing complications and death. On the other hand, age had no influence on the in-hospital delay, suggesting that the delay may not be influenced by hospital-related factors or surgeons, but is generated by the primary healthcare system or even by the patients themselves (staying at home too long before calling the doctor). A second objective is to elucidate factors influencing delay. A significant difference in total treatment delay was found between men and women, the women having a mean of 34.7 hours longer treatment delay significantly, 0.6 hours in average for every year of age. High age factor is also associated with delay in operative treatment. Old patients are high-risk patients for developing complications and death.<sup>[2]</sup> Age older than 75 years and comorbidity increases the risk of death four to five times compared with younger and healthy patients.<sup>[3,4]</sup> In-hospital delay prior to operation increases the number of complications and fatalities.<sup>[5]</sup> The mortality rate from acute intestinal obstruction rises with each passing hour from the onset of the disease, so early diagnosis is imperative.<sup>[6]</sup> A significant number of mortalities can be reduced by early reporting of the patient to the

hospital, prompt assessment and diagnosis, adequate resuscitation, correction of fluid and electrolyte imbalance, prophylactic measures, staged procedure, and meticulous postoperative care. The length of hospital stays also increased with increasing treatment delay, probably reflecting the increase in complication frequency seen after prolonged treatment delay. Adequate management and avoidance of postoperative complications demand thorough knowledge regarding the pathophysiology of acute intestinal obstruction. Treatment delay is the only factor the healthcare system can influence, and the surgeon regulates the time from admission to operation (in-hospital delay).

## **MATERIAL AND METHODS**

It was a prospective observational study of the Department of Surgery, Combined Military Hospital, Chattogram, Bangladesh, from August 2022 to March 2023. A prospective observational study was conducted on patients attending the Departments of Surgery in CMH Chattogram with complaints of pain, abdominal distension, vomiting, and constipation. Complications were managed according to the standard protocol of management.

The sample was selected from all patients with acute intestinal obstruction who needed surgical intervention. Those who had given written informed consent were finally enrolled in this study. Inclusion criteria were Patients with acute intestinal obstruction by clinical signs, laboratory investigations, and imaging study. The exclusion criteria were Patients not consenting to the protocol.

All data collection tools were pretested. The investigator himself collected the data. Data were shown to the corresponding guide weekly for feedback and necessary correction. The computer-based program Statistical Package analyzed data for the Social Sciences for Windows version 12.0 (SPSS, Chicago, Illinois, USA). Presentation of the result was done by tables and graphs where applicable.

### Ethical assurance for protection of human rights

The CMH Chattogram Research Committee granted their approval, which was ethical permission to use the data collected from the CMH Chattogram's Surgery Department. The patient's or the patient's legal guardian's written informed permission was obtained for this study. They were informed of the study's goals and objectives before giving their consent. The privacy of the patient shall be strictly upheld. The patients' names, residences, and contact information won't be made public.

**Table 1:** Age distribution of the study patients (n=50).

Age	Number of Patients	Percentage
≤ 21	6	12
21-30	2	4
31-40	8	16
41-50	12	24
51-60	18	36
≥60	4	8

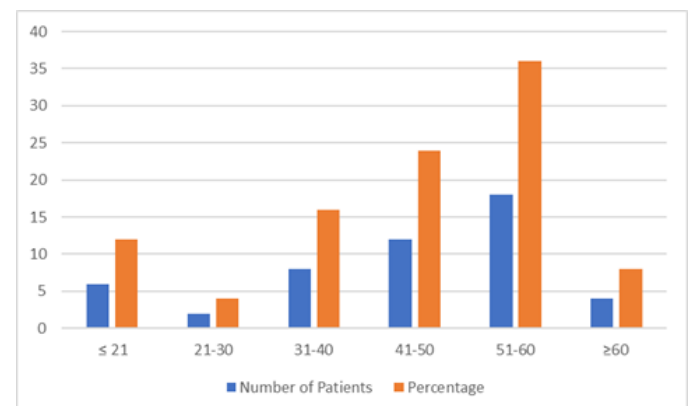
**Table 2:** Sex distribution of the study patients(n=50).

Sex	Number of Patients	Percentage
Male	41	82
Female	9	18

According to the history of previous abdominal operations, the study patients observed where 40(80%) had no history of previous abdominal operations.

## RESULTS

The patients were divided into six age groups. Maximum 18(36%) number was found in 51-60 years and the mean( $\pm$ SD) age was of the study patients were  $39.9 \pm 16$  years with range from 1-65 years.



**Figure 1:** Bar Diagram showing age distribution of the study patients (n=50)

The sex distribution of the study patients was observed, 41 (82%) were male, and 09 (18%) were female. The male-female ratio was 4.1:1 in the whole study.

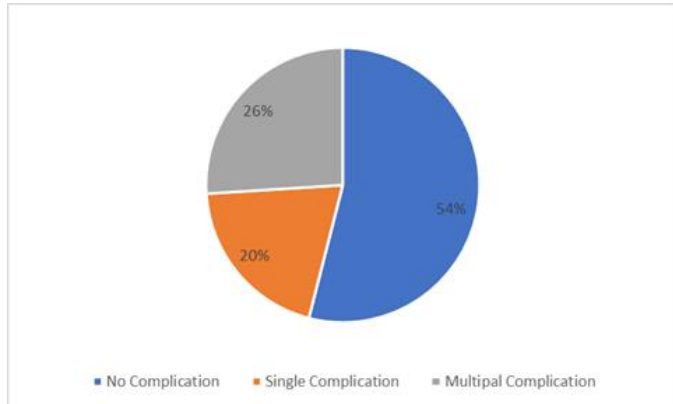
**Table 3:** Distribution of the study patients according to history of previous abdominal operation (n=50)

History of abdominal Operation	Number of Patients	Percentage
Present	10	20
Absent	40	80

The postoperative complications were mainly observed in patients operated on after 72 hours of the onset of symptoms concerning the delay in surgery.

**Table 4:** Incidence of postoperative complications for delay in operative treatment

Postoperative complication	01 days	02 days	03 days	≥ 4 days	Total
Wound infection	0	1	2	10	13
Wound dehiscence	0	0	1	2	3
Respiratory Complication	0	1	0	2	3
Fever	1	1	2	5	9
Thrombophlebitis	0	0	1	1	2
Anastomotic breakdown	0	0	0	1	1
Shock	0	0	1	2	3
Death	0	0	0	0	0
Total complication	1	3	8	24	36



**Figure 2:** the distribution of study patients (n=50) according to the development of postoperative complications

The development of postoperative complications was found in 10(20%) patients who developed a single complication, whereas 13(26%) patients developed multiple complications.

## DISCUSSION

Acute intestinal obstruction is one of the most common surgical emergencies worldwide (McIntee et al. 2005, Madziga and Nuhu 2008)<sup>9,10</sup> Mortality and morbidity increase markedly with late presentation. So, it demands an increased awareness regarding the danger of delaying treatment. This current study observed that the mean( $\pm$ SD) age was 39.9 $\pm$ 16 years with a range from 1-65 years, and more than one-third (36%) patients were in the 6th decade. Dunn et al. (1984)<sup>8</sup> observed age ranged from 13 to 76 years. Adhikari et al,<sup>[2]</sup> (2010) observed that the most familiar age group affected was 20-60, and the mean age was 41.3. Fevang et al,<sup>[2]</sup> (2003) reported that high age is one of the factors associated with treatment delay, knowing that old patients are high-risk patients for developing complications. This study observed that 82% of patients were male and 18% female. The male-female ratio was





4.5:1. Malik et al,<sup>[1]</sup> (2010) found that males constituted 74% of the study population and 26% of females, and the male-female ratio was almost 3:1. Similarly Ohene-Yeboah et al,<sup>[12]</sup> (2006) showed male-female ratio was 1.7:1. According to postoperative complications in this study, it was observed that wound infection was the most common (26%) postoperative complication among the study patients; 18% had a postoperative fever, 4% had thrombophlebitis, 6% had wound disruption, 6% had respiratory complications, shock in 6% and only 2% had burst abdomen. On the other hand, vomiting and UTI were not found in any patient. Rasool et al,<sup>[11]</sup> (2009) found complications in almost two-thirds (65.9%) of their study patients. Among these, 27% had wound infection, 12.37% had postoperative paralytic ileus, and pulmonary atelectasis was found in 50%. The complication was more frequent in the elderly age group, as expected by their more moribund condition due to their poor pulmonary, cardiac, and overall nutritional status. Adhikari et al,<sup>[9]</sup> (2010) reported that wound infection was the most common complication, which occurred in 11.99%, and of these, 5.72% required applications of secondary sutures. Malik et al,<sup>[1]</sup> (2010) mentioned that the most common postoperative complication was wound infection in 14.49% of patients. Respiratory tract infection was found in 10.14% of cases, and

wound dehiscence was 4.34%. However, this study had few limitations as it was carried out with a limited number of patients, in a single center, and within a short duration of time.

## CONCLUSIONS

The only aspect of treatment delay that the healthcare system has some control over is it. When a patient waits too long to go to the hospital for further treatment, the primary healthcare system or even the patient themselves may be to blame for the delay rather than a hospital- or surgeon-related factors or surgeons. Early identification is crucial since acute intestinal blockage has a high fatality risk and worsens the longer it goes untreated.

### Recommendations

A large proportion of patients with acute intestinal obstruction do not receive appropriate treatment due to pre-admission delay resulting in poor outcomes. Considering the findings of the study, recommendations are as follows.

1. Treatment delay is the only factor the health care system can influence to some extent. Primary health care workers, nurses, and paramedics should be trained in dealing with acute abdomen to understand the importance of early presentation and prompt referral to higher centers.
2. Patients admitted with an acute abdomen should be evaluated as early as possible.

small bowel obstruction. *Scand J Surg.* 2003;92(2):131-7. doi: 10.1177/145749690309200204.

3. Playforth RH, Holloway JB, Griffen WO Jr. Mechanical small bowel obstruction: a plea for earlier surgical intervention. *Ann Surg.* 1970;171(5):783-8. doi: 10.1097/0000658-197005000-00018.
4. Lo AM, Evans WE, Carey LC. Review of small bowel obstruction at Milwaukee County General Hospital.

## REFERENCES

1. Malik AM, Shah M, Pathan R, Sufi K. Pattern of acute intestinal obstruction: is there a change in the underlying etiology? *Saudi J Gastroenterol.* 2010;16(4):272-4. doi: 10.4103/1319-3767.70613.
2. Fevang BT, Fevang JM, Søreide O, Svanes K, Viste A. Delay in operative treatment among patients with



- Am J Surg. 1966;111(6):884-7. doi: 10.1016/0002-9610(66)90195-4.
5. Fevang BT, Fevang J, Stangeland L, Soreide O, Svanes K, Viste A. Complications and death after surgical treatment of small bowel obstruction: A 35-year institutional experience. *Ann Surg.* 2000;231(4):529-37. doi: 10.1097/00000658-200004000-00012.
  6. Al Salamah SM, Fahim F, Hameed AM, Abdulkarim AA, Al Mogbal ES, Al Shaer A. How Predictive are the Signs and Symptoms of Small Bowel Obstruction. *Oman Med J.* 2012;27(4):281-4. doi: 10.5001/omj.2012.70.
  7. 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(4):285-7. doi: 10.4103/1319-3767.70617.
  8. 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(3):432-7. doi: 10.3748/wjg.v13.i3.432.
  9. McEntee G, Pender D, Mulvin D, McCullough M, Naeeder S, Farah S, et al. Current spectrum of intestinal obstruction. *Br J Surg.* 1987;74(11):976-80. doi: 10.1002/bjs.1800741105.
  10. Madziga AG, Nuhu AI. Causes and treatment outcome of mechanical bowel obstruction in north eastern Nigeria. *West Afr J Med.* 2008;27(2):101-5.
  11. Rasool A, Rashid BS, Wani R, Peer A. Outcome Of Patients With Acute Intestinal Obstruction Due To Colorectal Carcinoma. *Int J Sur.* 2008;20,1:6151-6162.
  12. Ohene-Yeboah M, Adippah E, Gyasi-Sarpong K. Acute intestinal obstruction in adults in Kumasi, Ghana. *Ghana Med J.* 2006;40(2):50-4. doi: 10.4314/gmj.v40i2.36017.

Source of Support: Nil, Conflict of Interest: None declare