

## Determining the Relative Frequency of Intestinal Obstruction Causes in Patients Referred to Ahvaz Golestan Hospital During October 2003 to 2008

ABDOLRAHIM NAHIDI<sup>1\*</sup> and ATEFEH GHOSURI<sup>2</sup>

<sup>1</sup>Department of Surgery, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.

<sup>2</sup>School of Medicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.

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### ABSTRACT

Intestinal obstruction is a disruption in the forward movement of intestinal contents which can mechanically or non-mechanically involve small and large intestine. Different structures from duodenum to the anal region can be partially or completely involved. Mechanical obstruction can be induced by obstructing agents in intestinal tract, intestinal wall or by the pressure of the intestine-outside factors on the intestinal wall. Non-mechanical obstruction can be induced by abdominal surgery, pneumonia, fractured vertebrae and ribs, renal colic, radiotherapy, diabetes and medicines and mesenteric artery thrombosis. The present study aimed to investigate the causes and frequency of intestinal obstruction in patients referred to Ahvaz Golestan Hospital during October 2003 to 2008. Research method: The medical records of patients diagnosed with intestinal obstruction were studied. Finally, having finished the treatment process, 214 patients were discharged and their records were investigated according to the study's goals and questions. In this study, 15.65% of the patients voluntarily left the hospital, 2.84% died during the treatment process, and 76.15% (214 patients) were discharged from the Hospital. In the present study, 60.3% of the patients were males and 39.7% were females. The age group of 61-75 years was the most referred age group to the Hospital. Winter showed the highest number (29.5%) of referring patients, and abdominal pain, nausea and vomiting, inability to pass gas and anorexia were the most common symptoms of patients when referring to the hospital. Finally, the patients underwent surgery and non-surgery treatments in two groups, with 45.3% undergoing surgery and 54.7% responding to supporting therapies. In the surgery group, the site of obstruction of 77.3% was in the small bowel, and that of 22.7% was in the colon. The most common causes of intestinal obstruction in the patients were adhesion of bands (52.40%), fecal impaction (13.1%), ileus (9.8%), hernia (7.5%), colon tumor (6.5%), bowel ischemia and gangrene (4.2%), rectosigmoid tumor (3.7%), volvulus (2.3%), and bezoar (0.5%). In this study, the population of male patients with bowel obstruction was more than the females. The most common cause of bowel obstruction in the referring patients was shown to be adhesion bands. The most common reason that led to surgery was adhesion bands and the most common sign that responded to the Medical Treatment was also adhesion bands. The highest figure of surgery as well as that of medical treatment belonged to the age group of 61-75 years. The causes that led to ultimate surgery had nothing to do with time, but the highest response to the medical treatment was in winter.

**Key words:** Intestinal Obstruction, Medical Treatment, Surgical Treatment, Small Bowel, Colon, Adhesion Bands, Fecal Impaction.

### INTRODUCTION

Intestinal obstruction refers to any type of disruption in the passage of matters from the intestinal tract, which can be in mechanical or non-

mechanical forms (1). Mechanical obstruction can involve the small intestine either completely or partially (1). One of the most common causes of abdominal surgery is intestinal surgery and one of the most common causes of intestinal surgery is

intestinal obstruction (1). Small Bowel Obstruction (SBO) is more common and serious and constitutes 90% of the obstruction cases, which has led to more surgeries of the small intestine than the large intestine (4,3,2,5). Based on the anatomic relationship between obstructive lesions and the small intestine, the causes of obstruction can be classified into three categories: factors inside the intestine, factors inside the intestinal wall, factors outside the intestinal wall (1).

Bowel dilation occurs with the two ends closed, as accumulation of gas and fluid happens faster. Bowel lumen dilation occurs faster and intestinal mucosa is exposed to ischemia, necrosis, and perforation faster (6). On the other hand, gas and fluid accumulation in the proximal part to the obstruction site leads to the increased pressures inside the intestines, which causes colicky pains (7). The clinical symptoms of intestinal obstruction are different depending on the severity, duration and type of obstruction (the anatomical site of obstruction, the obstruction's being complete or partial, its being simple, gangrenous, or the two ends closed) (6).

Four main symptoms of intestinal obstruction are abdominal pain, vomiting, bowel distention, and inability to pass gas or stool (7). Simple abdominal photo is the most valuable diagnostic test of intestinal obstruction and will work in intestinal obstruction diagnosis in 50 to 60 percent of the cases (8). Other diagnostic methods of intestinal obstruction include ultrasound, CT scan, barium enema, colonoscopy, and blood test (6, 1, 8, 3). Fifteen percent (over 300000 annual cases) of the emergency admissions include abdominal pain (6) which is one of the most important causes

of mortality and high financial costs worldwide (2). Intestinal obstruction needs rapid diagnosis and emergency treatment measures so that necrosis and intestinal perforation will be more likely if intestinal obstruction is not treated rapidly. This is why surgeons give much importance to timely treatment of this disease (2,9). Since surgeries have increased due to different reasons, it is likely that intestinal obstruction prevalence is increasing in the world. In this study, all of the patients referred to Ahvaz Golestan Hospital (Iran) during October 2003 to 2008 were studied and the common and uncommon causes of intestinal obstruction were investigated and finally the patients were classified into two groups of surgery or medication treatment groups.

## MATERIALS AND METHODS

The present study is a retrospective cross-sectional study conducted on 281 patients who had referred to Ahvaz Golestan Hospital from October 2003 to 2008 and who had been hospitalized with primary diagnosis of intestinal obstruction. We prepared a questionnaire based on the special goals and questions of the research in order to collect the required information. The questionnaire included demographic data including patients' gender, age, type of treatment, cause of intestinal obstruction, disease symptoms, previous history of surgery, and history of chemoradiotherapy.

## RESULTS

A total of 281 records related to intestinal obstruction were reviewed (129 males (60.3%) and 85 females (39.7%)). The patients under study were divided into 6 age groups (Table 1).

**Table 1: The patients' age distribution**

Age groups	number	percent
0-15	14	6.5
16-30	28	13.1
31-45	27	12.6
46-60	45	21
61-75	74	34.6
76-90	26	12.2

**Table 2: The temporal (seasonal) distribution of the patients referring**

season	number	percent
spring	39	18.2
summer	58	27.1
autumn	54	25.2
winter	63	29.5

As shown in the table, the largest number of the patients belongs to the age group of 61-75 years. The referring patients were placed in four groups in terms of the time when they had referred to the hospital (Table 2).

Winter was recognized as the season with the highest rate of patients with intestinal obstruction

The patients were studied based on different symptoms they had when they had referred

**Table 3: The frequency distribution of different symptoms in the total patients referring to the hospital**

Different symptoms	number	percentage
Abdominal pain	156	72.9
Nausea and vomiting	129	60.3
inability to pass gas or stool	167	78
anorexia	99	46.3
Abdominal distension	93	43.5
diarrhea	7	3.3
Suprapubic tenderness	6	2.8
Peritonitis symptoms	4	1.9

**Table 5: Frequency distribution of patients in terms of the site of abdominal pain**

The site of abdominal pain	number	percentage
generalized	80	51.3
Gasser Epithelial	35	22.4
Amblykal	22	14.1
RLQ	19	12.2
total	156	100

**Table 7: History of surgery and chemoradiotherapy in the total patients referring to the hospital**

history	number	percentage
surgery	103	48.1
chemoradiotherapy	7	3.3
No history	104	48.6
total	214	100

to the hospital, i.e. the symptoms that had helped the intestinal obstruction diagnosis in them (Table 3).

The most common symptoms of the referring patients included inability to pass gas or stool, abdominal, Nausea and vomiting, anorexia and abdominal distension (Table 3). The patients were examined in terms of colicky and non-colicky pain as well as the site of abdominal pain (Tables 4 & 5).

After examining these cases, the patients were divided into two groups of surgery treatment and non-surgery treatment (Table 6).

Among the 214 patients under study, 103 patients (48.1%) had the history of surgery, out of

**Table 4: The type of abdominal pain**

Type of abdominal pain	number	percentage
colicky	95	60.9
non-colicky	61	39.1
total	156	100

**Table 6: The type of treatment**

Type of treatment	number	percentage
surgery	97	45.3
medical	117	54.7
total	214	100

**Table 8: Frequency distribution of surgery treatment with regard to the patients' history**

history	number	percentage
surgery	40	41.2
chemoradiotherapy	5	5.2
No history	52	53.6
total	97	100

whom 40 patients underwent surgery and 63 patients received supportive therapies. 7 patients of the patients under study had the history of chemoradiotherapy, out of whom 5 patients underwent surgery and 2 patients received supportive therapies. Moreover, 104 patients (48.6%) of the patients had no history of surgery and chemoradiotherapy, out of whom 52 patients underwent surgery and 52 patients received supportive therapies (Tables 7 & 8).

The most common surgery operations reported by the patients in the surgery group were appendectomy, gastrectomy, splenectomy, cholecystectomy, prostate surgery, resection, herniorrhaphy, rectosigmoid cancer, colon cancer, and laparotomy (Table 10).

In the present study, the site of intestinal obstruction in the group that had undergone surgery

**Table 9: Frequency distribution of medical treatment with regard to the patients' history**

history	number	percentage
surgery	63	53.8
chemoradiotherapy	2	1.8
No history	52	44.4
total	117	100

**Table 10: Frequency distribution of the surgery type in patients with surgery history**

Type of previous surgery	number	percentage
appendectomy	41	39.8
gastrectomy	15	14.6
splenectomy	8	7.8
cholecystectomy	4	3.9
Prostate surgery	4	3.9
resection	9	8.7
herniorrhaphy	6	5.8
Rectosigmoid cancer	3	2.9
Colon cancer	5	4.8
laparotomy	8	7.8
total	103	100

was in two forms based on during-surgery observation: obstruction in small intestine in 75 patients (77.3% of the patients operated upon) and in large intestine in 22 patients (22.7% of the patients that had undergone surgery operation).

The results of examining the causes of intestinal obstruction with regard to the diagnosis based on clinical signs and during-surgery observation have been shown in Table 11.

Of 214 patients with intestinal obstruction, adhesion bands was the most common cause of intestinal obstruction with 112 patients (52.4%), followed by mass stool, ileus, hernia, and colon cancer (Table 11). In next step, the frequency and distribution of the common causes of intestinal obstruction against gender were evaluated (Table 12).

In this study, the relative frequency distributions of intestinal obstruction with the origin of small intestine that need surgery were respectively band adhesion, hernia, ischemia, intestine gangrene, and bezoar. In addition, the relative frequency distributions of intestinal obstruction with the origin of colon that need surgery were respectively colon cancer, rectosigmoid tumor, volvulus, ischemia, and intestine gangrene (Table 13).

**Table 11: Different causes of intestinal obstruction in the patients**

Causes of intestinal obstruction	number	percentage
Band adhesion	112	52.4
Rectosigmoid tumor	8	3.7
Colon cancer	14	6.5
volvulus	5	2.3
Ischemia and gangrene	9	4.2
hernia	16	7.5
Mass stool	28	13.1
ileus	21	9.8
Bezoar	1	0.5
diverticulum	0	0
Ascaris	0	0
total	214	100

**DISCUSSION AND CONCLUSION**

This study, like other similar studies, showed that the males suffering from intestinal obstruction are more than females (11, 10). This can be attributed to the fact that males, compared with females, are more encountered with events such as accidents, shooting, and quarrels that resulting higher rate of surgical operations and problems such as ileus, relative obstruction, and adhesion bands.

The largest number of patients with intestinal obstruction was shown to belong to the age group 65-71 with 34.6%. due to the fact that surgical operations are more common in higher ages and also due to underlying medical diseases and reduced mobility at older ages, the mass of stool is one of the causes of intestinal obstruction in many of these patients. On the other hand, the highest rate of neoplasms at these ages can account for the largest number of intestinal obstruction in this study.

**Table 12: Frequency distribution of intestinal obstruction causes in terms of the patients' gender**

Causes of intestinal obstruction	male		female	
	percentage	frequency	percentage	frequency
Band adhesion	55.8	728	47	40
Rectosigmoid tumor	3.1	4	4.7	4
Colon tumor	7	9	5.9	5
volvulus	3.1	4	1.2	1
Ischemia and gangrene	3.9	5	4.7	4
hernia	6.2	17	9.4	8
Mass stool	13.2	17	12.9	11
ileus	7	9	14.2	12
bezoar	0.7	1	0	0
diverticulum	0	0	0	0
ascaris	0	0	0	0
total	100	129	100	85

**Table 13: Frequency distribution of the causes of intestinal obstruction in terms of causes and surgery site**

causes	Surgery site			
	colon		small intestine	
	percentage	frequency	percentage	frequency
Band adhesion	0	0	68	51
hernia	0	0	21.4	16
Colon tumor	40.9	9	0	0
Ischemia and gangrene	9.1	2	9.3	7
Rectosigmoid tumor	27.3	6	0	0
volvulus	22.7	5	0	0
bezoar	0	0	1.3	1
total	100	22	100	75

The present study showed that winter is the season with the largest number of patients (29.5% of the total patients). This may be due to the dietary habits in this season. As a larger number of the patients are at the older ages, and mobility reduces at these ages, especially at the cold seasons of the year, the incidence of intestinal obstruction in winter is more common than in other seasons of the year.

This study showed that the cause of 77.3% of the patients that had undergone surgery was small intestine, and that of 22.7% of them was colon, which was similar to the conclusions made in two other studies (12, 13). The most common causes of intestinal obstruction were shown to be respectively: band adhesion with 52.4%, mass of stool with 13.1% and ileus with 98%. The age group of 61-75 years had the highest rate of surgical operations of all age groups. In addition, in the age distribution of

intestinal obstruction responding to medical therapy, the age group of 61-75 years had the highest rate of medical treatment of all the age groups.

The results obtained about the time distribution of intestinal obstruction leading to surgery showed that the causes that had ultimately led to surgery had nothing to do with the time when the patients had referred to the hospital. However, the time distribution of intestinal obstruction responding to medical therapy showed that the causes that had responded to the medical therapy were related to the time when the patients had referred to the hospital, so that the highest rate of medical therapy occurred in winter.

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#### REFERENCES

1. Charles Brunicaudi F [et al]. Schwartz's principles of surgery. 8th ed.; 2005. p.1027-1028.
2. Markogiannakis H, Messaris E, Dardamanis D, pararas N, Tzertzemelis D, Giannopoulos P, Larentzakis A, Lagoudianakis E, Manouras A, Bramis I. Acute mechanical bowel obstruction: clinical presentation, etiology, management and outcome. *World J Gastroenterology* 2007; 13(3): 437-432.
3. Erkek AB, Remzi FH. Effect of small bowel obstruction on functional outcome and quality of life: 10 years follow up. *J Gastroenterol Hepatol.* 2008 ;23(9):119-25.
4. Miller G, Boman J, Shrier I, Gordon ph. Natural history of patients with adhesive small bowel obstruction. *Brjsurj.* 2004; 87(9):1240-70.
5. Wysoki A, Krzywon J, cause of intestinal obstruction. *Przegel Lek.* 2005;58(6):507-8.
6. Mitchell S, Mihaela B. Mechanical obstruction of the small bowel and colon. *The medical clinics of north America* 2008; 92(3): 597-575.
7. Hiroakio, Hiroshi A. Yoshihiro I, Takashi I, Kazuyoshi S. Etiology of intestinal obstruction in patients without a prior history of laparotomy or a detectable external hernia or physical examination. *International surgery* 2006; 91(4): 188-93.
8. Liu MY, Lin HH, Wu CS, Jan YY, Wang CS, Tang RP, Wang KL. Etiology of intestinal obstruction-4 years' experience. *changing Yi xue za zhi* 1990; 13(3): 161-6.
9. David Friedel, M.D. Diagnosis . *Methods for bowel obstruction. Total digestive health.* 2007
10. Ahmadi J, Kalantari M, Nahvi H, Ashjaei B, Ebrahim Soltani AR, Joodi M, vali-Balooch M, Mehrabi V. A survey of etiology of intestinal obstruction in a pediatric surgery center in Tehran. *Iranian journal of pediatrics* 2005; 15(2): 165-173.
11. Saber, A. A Study of the Causes of Intestinal Obstruction in Pour-Sina Hospital, Rasht, 1995-97. *Journal of Babol University of Medical Sciences*, 1998; 7:81-87.
12. Lippincott W. Intestinal obstruction. in: *Handbook of disease –medical book online-* 2003;

13. Zafarghandi, H.; Moeini, M.; Shojaeifar, A.; Intestinal Obstruction in Patients from Sina Hospital between 1994 and 1996. *Journal of Tehran University of Medical Sciences* 1999, 4:23-32.