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## Intestinal obstruction in AL-Hilla general teaching hospital, causes and incidence

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### Abstract

**Background:** The etiology of intestinal obstruction varies globally, with adhesions being the leading cause in developed countries, while hernias remain the most common cause in many developing nations. However, in some countries in Asia and Africa, adhesions have become the predominant cause. Strangulation obstruction increases mortality, necessitating immediate surgical intervention. This study aims to determine the frequency of various causes of intestinal obstruction and assess clinical criteria for diagnosing strangulation.

**Aim of the Study:** To identify the most common causes of intestinal obstruction and their incidence at Al-Hilla General Teaching Hospital.

**Method:** A cross-sectional, prospective study was conducted at Al-Hilla Teaching Hospital from September 2018 to September 2020. All patients diagnosed with acute intestinal obstruction were included. Data on patient demographics, clinical findings, cause of obstruction, management type, preoperative provisional diagnosis, and operative findings were recorded in a questionnaire.

**Results:** A total of 103 patients were studied, with a male-to-female ratio of 2:1. The most common age group was the fifth decade (27.1%). The leading cause of obstruction was hernia (39.8%), followed by adhesions (34.9%) and tumors (13.5%). Inguinal hernia (56.1%) was the most common hernia type, followed by paraumbilical hernia (26.8%) and incisional hernia (14.7%). Laparotomy was the most frequent procedure for postoperative adhesions, followed by appendectomy and gynecological operations. There was a significant correlation between constant pain, localized tenderness, rebound tenderness, and leukocytosis with bowel strangulation.

**Conclusion:** Hernias are the leading cause of intestinal obstruction. Early diagnosis and appropriate management reduce morbidity and mortality, and addressing preventable causes decreases the incidence of obstruction.

**Keywords:** Intestinal obstruction, AL-Hilla general teaching hospital, causes, incidence

### Introduction

Acute mechanical bowel obstruction is a common surgical emergency worldwide, associated with high morbidity and substantial healthcare costs. The management of bowel obstruction has a long history, dating back to the fourth century BC when Praxagoras, a Greek physician, performed an enterocutaneous fistula to relieve obstruction. Initially, nonoperative treatments like hernia reduction and laxatives were used. However, the introduction of antisepsis and aseptic techniques made surgical intervention safer and more common [1, 2]. Significant advances in the treatment of bowel obstruction occurred in the early 20th century. In 1912, Hartwell and Hoguet demonstrated that administering parenteral saline solution could prolong the survival of dogs with intestinal obstruction, leading to the standard practice of intravenous fluid resuscitation in modern management [3]. The development of radiographic techniques in the 1920s and the use of nasogastric tubes in the 1930s for relieving intestinal distention further improved diagnostic and therapeutic approaches. The introduction of antibiotics in the 1940s and 1950s reduced infection-related complications [4, 5]. The causes of acute mechanical intestinal obstruction have shifted over time and vary by region. In western countries, hernias were the leading cause of obstruction until the mid-20th century, but adhesions have since become the most frequent cause [6]. In contrast, in many developing countries, hernias remain the most common cause, with a general reluctance for surgery attributed to factors like poverty, unawareness, and fear of surgical procedures [3, 7]. However, more recent studies indicate that adhesions are increasingly becoming a leading cause in developing countries as well [8-10].

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The pathophysiology of bowel obstruction is better understood today, and treatments like isotonic fluid resuscitation, intestinal tube decompression, and antibiotics have significantly reduced mortality rates. Despite this, bowel obstructions present complex diagnostic and therapeutic challenges for surgeons, particularly regarding the timing and nature of the intervention [11]. Mortality rates vary depending on whether strangulation is present. Strangulated obstructions have a mortality rate of 10-37%, while simple obstructions have a mortality rate of less than 5% [12, 13]. Early recognition and immediate surgical treatment are crucial in reducing mortality associated with strangulated obstructions, which are most commonly seen in patients with obstructed hernias, closed-loop obstructions, or volvulus [14]. Clinical signs such as continuous abdominal pain, fever, tachycardia, peritoneal signs, and leukocytosis are often used to decide whether surgery is necessary. However, studies show that no clinical or laboratory parameters can reliably detect or rule out strangulation in all cases [11]. The aim of study is to find out the commonest causes of intestinal obstruction and their incidence in Al-Hilla general teaching hospital.

**Method:**

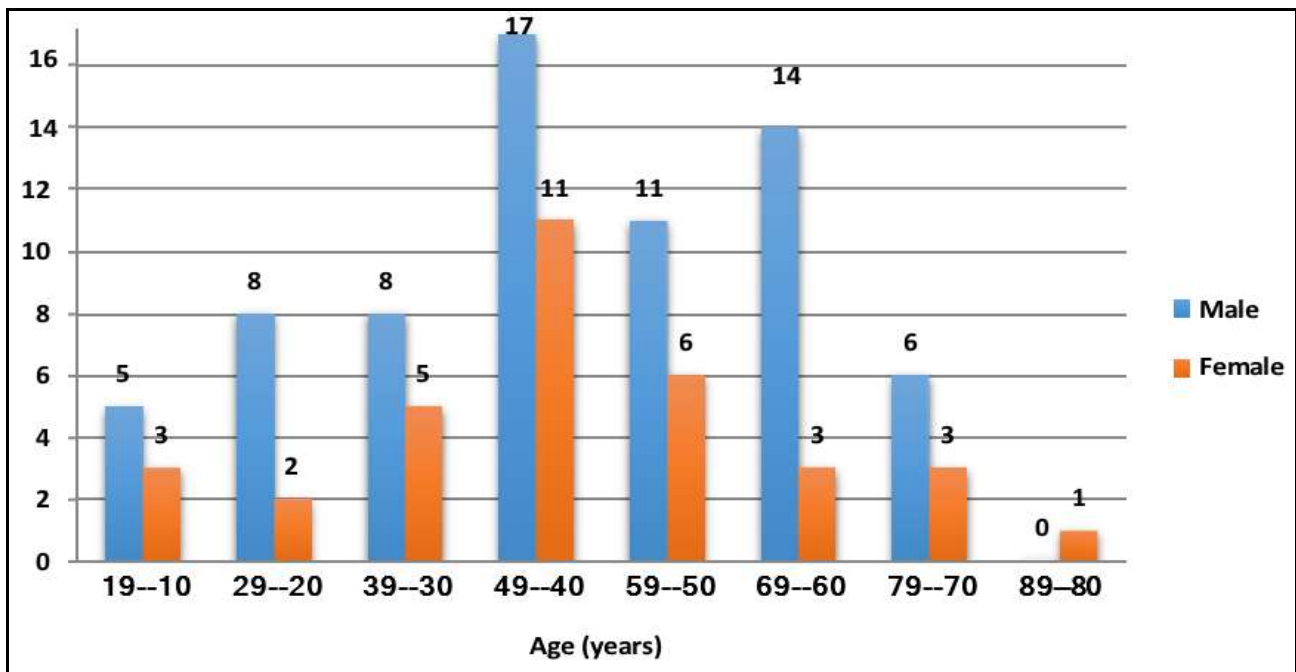
This prospective study was conducted at Al-Hilla General Teaching Hospital between September 2018 and September 2020. All patients admitted to the emergency department with a diagnosis of acute mechanical intestinal obstruction during this period were included. The diagnosis was based on the patient’s history, physical examination, and radiological findings of

intestinal obstruction, such as distended bowel loops and multiple fluid levels on erect and supine abdominal X-rays. Initial management in the emergency department included correction of dehydration and electrolyte imbalances, insertion of a nasogastric tube, and administration of antibiotics. Necessary investigations were performed, including hemoglobin levels, urea, electrolytes (sodium and potassium), blood sugar, electrocardiogram (ECG), and chest X-ray (CXR) where indicated. A leukocyte count was also obtained. In all patients, clinical signs predicting the presence of strangulated intestinal obstruction were carefully assessed. These signs included:

1. Severe, constant abdominal pain.
2. Tenderness, rebound tenderness, and muscle guarding.
3. Tachycardia (heart rate >100 bpm).
4. Elevated temperature (above 38 °C).
5. Hypotension (blood pressure <90/50 mmHg).
6. Leukocytosis (white blood cell count >11,000/mm<sup>3</sup>).

**Results**

103 patients with a diagnosis of acute mechanical intestinal obstruction were admitted to casualty of AL-Hilla teaching hospital in the study period (September 2018 – September 2020). 69 patients (66%) were male, and 34 patients (34%) were females with a ratio 2:1. Age range was 17- 81 years, with highest incidence among patients in 5<sup>th</sup> decade, 28 patients (27.1%).



**Fig 1:** Age and sex distribution

Regarding etiology; obstructed hernia is the most frequent cause of intestinal obstruction (41 patients - 39.8%). Adhesions constitute the second common cause (36 patients - 34.9%). Tumors are the third common cause (14 patients – 13.5%). Volvulus is found in 6 patients (5.8%), fecal impaction in 3 patients (2.9%), two patients with intestinal obstruction due to Crohn’s disease (1.9%), and intussusception in one patient (17years old) (0.9%). Small bowel is the commonest site of intestinal obstruction, found in 84 patients (81.2%), while large bowel in only 19 patients (18.8%). Table 1 shows the etiology of intestinal obstruction and their incidence.

**Table 1:** Etiology of intestinal obstruction in the 103 patients.

Etiology	Small bowel	Large bowel	Total	
			No.	%
Hernias	39	2	41	39.8%
Adhesions	36	-	36	34.9%
Tumors	2	12	14	13.5%
Volvulus	1	5	6	5.8%
Fecal impaction	-	3	3	2.9%
Crohn’s	2	-	2	1.9%
Intussusception	1	-	1	0.9%

Inguinal hernia is the commonest type of hernia causing intestinal obstruction (23 patients – 56.1%), followed by Paraumbilical hernia (11 patients – 26.8%) and incisional hernia (6 patients – 14.7%). There was one case (2.4%) of internal hernia (Right paradouenal hernia). (Table 2). Explorative laparotomy is the commonest operation preceding intestinal obstruction due to postoperative adhesions (21 patients - 58.3%), followed by appendectomy (8 patients - 22.2%), Gynecological operations (5 patients - 13.8%) and tow patients after operation for Paraumbilical hernia (5.5%). (Table 2). Tumors causing intestinal obstruction are found in 14 patients. 12 patient had large bowel tumors, and two patients had small bowel tumor.

**Table 2:** Types of obstructed hernia, Types of operations preceding intestinal obstruction due to postoperative adhesions.

Type of hernia	No. of patients	Percentage
Inguinal	23	56.1%
Paraumbilical	11	26.8%
Incisional	6	14.7%
Internal Hernia	1	2.4%
Operation	No. of patients	Percentage
Laparotomy	21	58.3%
Appendectomy	8	22.2%
Gynecological	5	13.9%
Paraumbilical hernia	2	5.6%

Table 3 shows the anatomical sites of intestinal tumors. Volvulus is found in six patients, and one patient with volvulus of the small bowel (midgut volvulus). 49 Patients initially treated conservatively, 35 of them responded. The other 14 patients were operated on (10 patient had adhesion, 4 patient had tumor). 54 Patient have urgent operation after initial resuscitation. 28 patients were found to have simple obstruction. 20 patients have ischemic bowel (15 patients due to obstructed hernia and 5 patients due to adhesions) which return to normal after releasing the constriction. 6 patients had gangrenous bowel treated by resection (4patients due to hernia and 2 patients due to adhesions).

**Table 3:** Anatomical sites of intestinal tumors causing intestinal obstruction. Patients treated conservatively. Patients initially diagnosed as strangulated obstruction.

Site	No. of patients
Caecum	1
Splenic flexure	2
Descending colon	1
Sigmoid	2
Recto-sigmoid	3
Rectal	3
Jejunum	2
Type of obstruction	No. of patients
Adhesions	30
Tumor	10
Fecal Impaction	3
Chron’s Disease	2
Hernia	4
Type of obstruction	No. of patients
Hernia	37
Adhesions	6
Tumor	4
Volvulus	6
Intussusception	3

Regarding criteria of strangulation (constant abdominal pain, tachycardia, fever, hypotension, localized tenderness,

generalized tenderness, rebound tenderness and leukocytosis); table 4 shows the frequency of these criteria in simple and strangulated obstruction with statistical significant. Clinical sign of hernia strangulation: Localized pain and tenderness. Redness and erythema of skin. Tense swelling. No expansible cough impulse. Irreducibility.

**Table 4:** Frequency of criteria of strangulation.

Clinical features of strangulations	Patients undergoes operation		Patients treated conservatively		P value
	No.	%	No.	%	
Constant pain	20	35.7	9	19.1	<0.012
Tachycardia >100 bpm	23	35.3	12	25.5	0.015
Temperature > 38 °C	15	26.7	4	8.5	0.041
Hypotension	5	0.9	3	6.4	0.062
Localized Tenderness	12	10.7	6	25.5	0.025
Generalized Tenderness	12	21.4	7	14.8	0.024
WBC >11000/mm <sup>3</sup>	12	21.4	10	21.2	0.061

P- value (>0.05 Significant)

**Discussion**

Acute intestinal obstruction is a frequent cause of surgical admissions globally, with its etiology varying across regions. While adhesions are the leading cause in the western world and parts of Asia and the Middle East [15-17], this study found that obstructed hernia was the most common cause of intestinal obstruction, accounting for 39.8% of cases, followed by adhesions (34.9%) and tumors (13.5%). The male-to-female ratio of 2:1 in this study can be attributed to the high prevalence of obstructed inguinal hernia, which is more common in males, as well as the higher incidence of gastrointestinal malignancies in men. The mean age of patients was 46 years, which is consistent with findings from other studies, including those by Al-Marsoomi [18] and Al-Jabiry [19]. In comparison, a study conducted in Saudi Arabia reported adhesions as the leading cause of obstruction, a trend also observed in India and Pakistan [18, 20]. Omari *et al.* [28] found that postoperative adhesions accounted for 52.5% of cases, gastrointestinal tumors for 21%, and obstructed hernias for 9.5%. The increase in laparotomies and awareness of hernias in recent years has contributed to a rise in elective hernia repairs, which might explain the shift in etiology. In this study, laparotomy was the most common preceding operation in cases of obstruction due to adhesions (58.3%), followed by appendectomy (22.2%). This differs from other studies, such as those by Al-Marsoomi [18] and Al-Jabiry [19], where appendectomy was more commonly associated with postoperative adhesions. The increase in laparotomies in recent years, possibly due to civil violence, could explain this difference. Accurately diagnosing strangulated obstruction remains challenging. Silen *et al.* [22] found that only 15% of patients were correctly diagnosed with strangulation, and other studies [23, 24] have also emphasized the difficulty in differentiating simple from strangulated obstruction, recommending early surgical intervention. In this study, clinical signs such as constant abdominal pain, localized tenderness, rebound tenderness, and leukocytosis were significantly associated with bowel strangulation ( $p<0.05$ ), and there was a notable correlation with tachycardia, fever, and hypotension ( $P = 0.05$ ). The more positive clinical signs, the higher the likelihood of strangulation. Mohamed *et al.* [15] found that gangrenous bowel occurred in 6 out of 23 patients who underwent surgery after 24 hours, likely due to delayed intervention during conservative management. Ellis [25] concluded that early surgery is essential even when there are no signs of strangulation. In this

study, six patients developed gangrenous bowel, underscoring the importance of timely surgical intervention to prevent irreversible ischemic damage.

### Conclusion

Hernia is the most common cause of intestinal obstruction in this hospital, followed by adhesion and tumors. The gender discrepancy with males to females (2:1) can be possibly accounted for, as inguinal hernia is more common in males. Also, malignant disease of the gastrointestinal tract is more common in males. Presence of constant pain, localized tenderness, rebound tenderness and leukocytosis have significant correlation with strangulation.

### Conflict of Interest

Not available

### Financial Support

Not available

### References

1. Ihedioha U, Alani A, Modak P, *et al.* Hernias are the most common cause of strangulation in patients presenting with small bowel obstruction. *Hernia*. 2006;10(4):338-340.
2. Townsend CM. Sabiston Textbook of Surgery: The biological basis of modern surgical practice. 18th ed. Philadelphia: Saunders; 2007. Chapter 48 – Small Intestine; pp. 1279-1330.
3. Kossi J, Salminen P, Laato M. The epidemiology and treatment patterns of post-operative adhesions induced intestinal obstruction in Varsinaisuuomi Hospital District. *Scand J Surg*. 2004;93:68-72.
4. Lawal OO, Olayinka OS, Bankole JO. Spectrum of causes of intestinal obstruction in adult Nigerian patients. *S Afr J Surg*. 2005;43:34-36.
5. McEntee G, Pender D, Mulvin D, McCullough M, Naeeder S, Farah S, *et al.* Current spectrum of intestinal obstruction. *Br J Surg*. 2005;74:976-980.
6. Chakrabarty PB, Tripathy BC, Pandak. Acute intestinal obstruction. *J Indian Med Assoc*. 1976;67(3):64-68.
7. Memon AS, Memon JM, Malik A, Soomro AG. Pattern of acute intestinal obstruction. *Pak J Surg*. 1995;11:91-93.
8. Lawal OO, Olayinka OS, Bankole JO. Spectrum of causes of intestinal obstruction in adult Nigerian patients. *S Afr J Surg*. 2005;43:34-36.
9. Adesunkanmi AR, Agbakwuru EA. Changing pattern of acute intestinal obstruction in tropical African population. *East Afr Med J*. 1996;11:727-730.
10. Lefall LD, Syphax B. Clinical aids in strangulation intestinal obstruction. *Am J Surg*. 1970;120:756-759.
11. Townsend CM. Sabiston Textbook of Surgery: The biological basis of modern surgical practice. 18th ed. Philadelphia: Saunders; 2007. Chapter 48, Part 6.
12. Sarr MG, Bulkley G, Zuidema G. Preoperative recognition of intestinal strangulation obstruction: prospective evaluation of diagnostic capability. *Am J Surg*. 1983;145:176-180.
13. Laws H, Aldrete J. Small bowel obstruction: a review of 465 cases. *South Med J*. 1976;69:733.
14. Souba W, Fink MP, Jourkovich F, Kaiser M, Pearce W, Pemberton J, *et al.* ACS Surgery: Principles & Practice. 6th ed. 2007. p. 4.
15. Moran BJ. Adhesion-related small bowel obstruction. *Colorectal Dis*. 2007;9:39-44.
16. Chen XZ, Wei T, Jiang K, Yang K, Zhang B, Chen ZX, *et al.* Etiological factors and mortality of acute intestinal obstruction: A review of 705 cases. *Zhong Xi Yi Jie He Xue Bao*. 2008;6:1010-1014.
17. Mohamed AY, al-Ghaithi A, Langevin JM, Nassar AH. Causes and management of intestinal obstruction in a Saudi Arabian hospital. *J R Coll Surg Edinb*. 1997;42:21-23.
18. Al-Marsoomi A. Pattern of mechanical intestinal obstruction in Al-Yarmouk teaching hospital. Thesis submitted to the Iraqi commission for medical specializations; 2001.
19. Al-Jabiry K. Intestinal obstruction etiology, correlation between preoperative and operative diagnosis. Thesis submitted to the Iraqi commission for medical specializations; 1997.
20. 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):285-287.
21. Omari AH, Alkhatib LL, Khammash MR. Changing pattern of intestinal obstruction in Northern Jordan, King Abdulla Teaching Hospital. *World J Surg*. 2012;36:437-440.
22. Silen W, Hein MF, Goldman L. Strangulation obstruction of the small intestine. *Arch Surg*. 1962;85:121-128.
23. Snyder EN, McCrale D. Closed loop obstruction of the small bowel. *Am J Surg*. 1966;111:398-400.
24. Shantiea AH, Chamberlain BE, Webb WR. Current status of diagnosis and management of strangulation obstruction of the small bowel. *Am J Surg*. 1976;12:299-303.
25. Ellis H. Mechanical intestinal obstruction. *Br Med J*. 1981;282:1903-1904.

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