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ORIGINAL ARTICLE

Intestinal Obstruction: Etiology and Complications in Patients Undergoing Surgery

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ABSTRACT

Objective: Aimed to determine the causes and complications in patients undergoing surgical intervention for intestinal obstruction.

Study Design: Prospective/Cross-sectional study

Place and Duration: Department of surgery Lady Reading Hospital Peshawar from July 2022 to June 2023.

Methodology: Total 110 patients of either gender presented with intestinal obstruction were included in this study. Detail demographics were recorded after taking informed written consent. Causes and postoperative complications were recorded. Data was analyzed by SPSS 23.0.

Results: Mean age of patients was 42.48±12.54 years. 60 (54.55%) were males while 50 (45.45%) were females. Most commonly found causes of intestinal obstruction were adhesion in 35 (31.82%) followed by tuberculosis, rectal carcinoma and obstructed hernia in 24 (21.82%), 18 (16.36%), and 16 (14.55%) patients respectively. Postoperative complications were found in 12 (10.91%) patients, most common complication was wound infection in 5 (4.55%) patients followed by wound dehiscence in 3 (2.73%), 2 (1.82%) had burst abdomen and mortality found in 2 (1.82%).

Conclusion: We concluded that the most commonly found causes of intestinal obstruction were adhesion, abdomen tuberculosis and rectal carcinoma. Most common complication was wound infection.

Keywords: Intestinal Obstruction, Tuberculosis, Adhesion, Wound Infection, Mortality

INTRODUCTION

Intestinal obstruction (IO) refers to the disruption or impairment of the passage of intestinal contents[1]. Obstruction may occur in the small intestine, large intestine, or both, referred to as generalized ileus, depending on its anatomical location. Over 76% of intestinal obstruction (IO) occurs in the small intestine[2]. As the primary cause of acute abdomen, this issue poses a significant global challenge, straining surgical resources, particularly in countries located within the 'volvulus belt,' such as Africa, India, Iran, Russia, and Brazil[3]. Mortality rates associated with this issue range from 3% to 30% globally[4]. Adhesions, neoplasms, and herniation represent the primary etiological factors for acute intestinal obstruction[5].

Treatment options for intestinal obstruction vary based on the underlying cause and severity of the condition. Certain cases necessitate surgical intervention through abdominal opening, whereas others do not require any operative procedure. Treatments include a low-fiber diet, enema, tube deflation, decompression, and self-expanding metal stents[7]. Surgical intervention, including minimally invasive laparoscopic surgery or more complex open surgical procedures, is employed to address intestinal obstruction[8].

Each year, millions of individuals undergo surgical management, which represents approximately 13% of the global total disability-adjusted life years, a crude mortality rate of 0.5-5%, and a 25% rate of postoperative complications[9]. The prevalence of adverse surgical outcomes for intestinal obstruction in Ethiopia varies between 13.6% and 26.5%[10]. Additionally, the likelihood of unfavorable surgical outcomes is greater in operations for gangrenous large bowel obstruction (LBO) compared to small bowel obstruction (SBO)[11].

In 2017, the World Society of Emergency Surgery revised the Bologna guidelines concerning the diagnosis and management of adhesive small bowel obstruction. Advancements in medicine include the implementation of a safe surgery checklist, enhanced monitoring, and improved safety practices during anesthesia, surgical techniques, and conservative management. The surgical management outcomes of intestinal obstruction present ongoing challenges for the healthcare system[13]. Surgery for intestinal obstruction (IO) can result in various post-operative complications, including incision site infections, wound dehiscence, pneumonia, and sepsis. These complications are particularly prevalent following emergency surgeries for IO and may even lead to mortality, reflecting the potential adverse outcomes associated with this surgical intervention[6].

The incidence of intestinal obstruction and the outcomes of its surgical management may be influenced by various factors. This may involve factors related to patients and clinical settings. Factors influencing morbidity and mortality include the cause of obstruction, age, health-seeking behavior, duration of illness prior to surgery, length of postoperative hospital stays, comorbidity, presence of peritonitis, hematocrit level, and the timing of complication detection[14].

This study aimed to establish baseline information regarding the management outcomes of intestinal obstruction (IO) and the factors associated with surgically managed patients.

METHODOLOGY

The present study was conducted at Department of surgery Lady Reading Hospital Peshawar from July 2022 to June 2023. Total 110 patients of either gender presented with intestinal obstruction were included in this study. Detail demographics were recorded after taking informed written consent. The study included all patients who had surgery after being identified with intestinal blockage during the clinical evaluation. Exclusion criteria included no patients with a tentative diagnosis of intestinal blockage whose surgical results showed peritonitis. We did not include patients who had paralytic ileus either. Every patient who complained of nausea, vomiting, and total lack of stool was checked for intestinal blockage and abdominal distension.

The patient underwent an X-ray of the abdomen in the emergency room. Intestinal blockage was tentatively detected in patients with various airfluid levels and dilated gut. The emergency room successfully resuscitated all patients, and vital baseline investigations were dispatched for subsequent care. A full blood count, random blood sugar level, hepatitis-B and hepatitis-C profile, chest x-ray, and electrocardiography (if necessary) were all part of the evaluation. Anesthesia consultation was followed by the execution of an exploratory laparotomy. A pre-designed form was used to document the operational findings. Depending on what caused the intestinal blockage, the surgical method was adjusted

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accordingly. As judged essential, biopsies were obtained. A definitive diagnosis was reached by tracing histopathological results. As is customary practice, postoperative care was administered. Additionally, there were documented postoperative problems.

We used SPSS version 23.0 to input the data and evaluate the findings. We provided numerical variables, such as age, as mean ± SD. The frequency of causes and complications, which are categorical variables, were represented numerically and as percentages.

RESULTS

Mean age of patients was 42.48±12.54 years. 60 (54.55%) were males while 50 (45.45%) were females. 54 (49.09%) patients had urban residence while 56 (50.91%) patients had rural residence. 34 (30.91%) patients were illiterate while 76 (69.09%) were literate. (Table 1)

Table 1: Baseline details of all the included patients

Variables	No.	Percentages
Mean Age (Years)	42.48±12.54	-
Gender		
Male	60	54.55%
Female	50	45.45%
Residence		
Urban	54	49.09%
Rural	56	50.91%
Education		
Literate	76	69.09%
Illiterate	34	30.91%

Regarding etiology of intestinal obstruction, most commonly found causes of intestinal obstruction were adhesion in 35 (31.82%) followed by tuberculosis, rectal carcinoma, obstructed hernia, Small bowel carcinoma, band, sigmoid volvulus, sigmoid carcinoma, colon carcinoma, metastasis, and intussesception in 24 (21.82%), 18 (16.36%), and 16 (14.55%), 4 (3.64%), 3 (2.73%), 2 (1.82%), 2 (1.82%), 2 (1.82%), 2 (1.82%), and 2 (1.82%) patients respectively. (Figure 1)

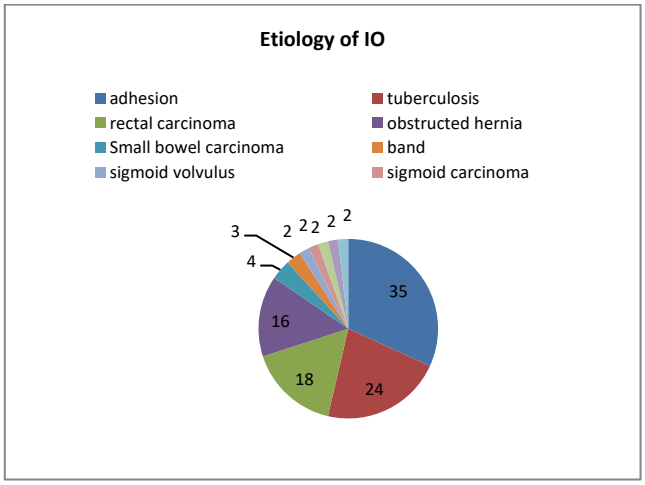

Figure 1: Etiology of Intestinal Obstruction

Table 2: Complications following surgical interventions

Variables	No.	Percentages
Complications		
Wound Infection	5	4.55%
Wound Dehiscence	3	2.73%
Burst Abdomen	2	1.82%
Mortality		
Yes	2	1.82%
No	108	98.18%

Postoperative complications were found in 12 (10.91%) patients, most common complication was wound infection in 5 (4.55%) patients followed by wound dehiscence in 3 (2.73%), 2 (1.82%) had burst abdomen and mortality found in 2 (1.82%). (Table 2)

DISCUSSION

It is one of the most common abdominal surgical emergency to deal with a blockage of the intestines. It is possible for the patient to pass away if the obstruction in the digestive tract is not released in a timely manner. As a result, it is imperative to make an early diagnosis and begin treatment if necessary[15]. There is a wide range of incidences of IO across different nations, which accounts for more than three percent of all surgical emergencies. For example, it is uncommon in the United States of America and Western Europe, while it is widespread in India, Iran, Afghanistan, and certain regions of Africa[16].

We conducted present study with aimed to determine the etiology of intestinal obstruction and mortality and morbidity associated with intestinal obstruction in patients undergoing surgical interventions. In this regard 110 patients with IO were included. Mean age of patients was 42.48±12.54 years. 60 (54.55%) were males while 50 (45.45%) were females. 54 (49.09%) patients had urban residence while 56 (50.91%) patients had rural residence. 34 (30.91%) patients were illiterate while 76 (69.09%) were literate. Bankole AO et al[17] in their study included patients with a relatively higher mean age of 45.6 ± 14.8 years as compared to the present study. The male preponderance in the present study was similar to the reference study. Moghadam AG et al, in their retrospective study also observed male preponderance (65%) as compared to females (35%)[18].Findings of the present study were also supported by Ahmad MS et al[19] in which the author reported a preponderance of males in 68.75%.

The predominant form of obstruction in this research was small bowel obstruction (SBO) at 60%, followed by large bowel obstruction (LBO) at 20%, with the remaining 20% exhibiting characteristics of a mixed presentation. Moghadam AG et al. corroborated these data, indicating that the predominant form of intestinal blockage was small bowel, accounting for 66.7%[18].

In present study we found that the most commonly found causes of intestinal obstruction were adhesion in 35 (31.82%) followed by tuberculosis, rectal carcinoma, obstructed hernia, Small bowel carcinoma, band, sigmoid volvulus, sigmoid carcinoma, colon carcinoma, metastasis, and intussesception in 24 (21.82%), 18 (16.36%), and 16 (14.55%), 4 (3.64%), 3 (2.73%), 2 (1.82%), 2 (1.82%), 2 (1.82%), 2 (1.82%), and 2 (1.82%) patients respectively. According to the research conducted by Bankole AO et al. [17], mechanical intestinal obstruction (MIO) can be caused by adhesions 48.5% of the time, colorectal tumors 25.7%, external hernias 15.2%, volvulus 5.7%, intussusception 1.9%, granulomatous infection 1.9%, and internal hernia 0.9%. Thus, the reasons listed here are comparable to those in the current study. After prior operations, 36% of the 50 instances of acute intestinal blockage in the research by Nasiruddin S et al.[19] were caused by adhesions. Nontuberculous strictures were shown to be the most prevalent cause of intestinal blockage needing surgical intervention, followed closely by adhesions, according to Gogineni JC et al.[20].

In current study we found that Postoperative complications in 12 (10.91%) patients, most common complication was wound infection in 5 (4.55%) patients followed by wound dehiscence in 3 (2.73%), 2 (1.82%) had burst abdomen and mortality found in 2 (1.82%). These findings were similar to the study by Moghadam AG et al[18], the most common postoperative complication was wound infection which constituted 18 (30%). The most common postoperative complication was surgical site infection, affecting 39.3% of operated cases in a study by Bankole AO et al[17]. Kahn TS et al[21] also reported wound-related sepsis as the most common complication. The mortality rate reported by Moghadam AG et al

was 9.2%[17]. The mortality rate in the present study was higher as compared to 2.5% reported in the study by Soressa U et al.

CONCLUSION

Small bowel obstruction is the most prevalent form of intestinal obstruction, exhibiting a higher incidence in males. Clinically stable patients should initially undergo conservative management accompanied by continuous clinical monitoring to assess the resolution of obstruction. Diagnostic evaluation should be conducted to determine the underlying cause of the obstruction. Patients exhibiting clinical instability due to acute intestinal obstruction, as well as those failing to improve with conservative management within 48 hours, require intervention through emergency surgery. The reduction in the occurrence of obstructed hernias, coupled with a rise in adhesive obstructions, indicates a shift in the pattern of intestinal obstruction. Abdominal tuberculosis is increasingly recognized as a prevalent cause of acute bowel obstruction.

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