

A Hospital-Based Assessment of Various Etiological Factors of Intestinal Obstruction in Patients Presenting with Intestinal Obstruction

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Abstract

Aim: To evaluate the various etiological factors of intestinal obstruction in patients presenting with intestinal obstruction in our tertiary care center.

Methodology: The study cross sectional study was conducted in department of surgery, D M.C.H, Darbhanga, Bihar. from July 2019 to June 2020 . Total 100 patients age above 15 years were studied. The diagnosis of intestinal obstruction was made on the basis of detailed history especially regarding cardinal features of intestinal obstruction like, abdominal distension, pain, vomiting, and absolute constipation, clinical findings, x-ray abdomen and ultra sound of the abdomen. Other investigations for fitness for anesthesia, to exclude a dynamic cause and for the management of intestinal obstruction were carried out, i.e., complete blood picture, electrolytes, urea, creatinine, X ray chest and ECG. A close observation of all bedside parameters (like pulse rate, BP, RR, urine output, abdominal girth, bowel sounds and tenderness and guarding) were done. Operative information of every case was recorded on proforma. Frequency and pattern of different causes of intestinal obstruction were recorded and analyzed. Histopathological examination of the specimen of resection/ biopsy was undertaken whenever necessary. The postoperative period had been monitored carefully and all the parameters were recorded hourly or fourth hourly basis depending on the patient's general condition and toxemia. Postoperatively Nasogastric tube aspiration, intravenous fluids and antibiotics were administered. Any complications were noted and treated accordingly. All the patients were called for regular follow up depending on their cause of intestinal obstruction and surgery performed.

Results: 62% patients were male and 38% were female. All the patients were categorized in different age group, 18% patients belong to 15-25 years age group, 33% patients were in 26-40 years, 28% patients were in 41-55 years, 11% patients were in 56-70 years and remaining 10% were having age above 71 years. Abdominal pain was present in 96% patients, vomiting in 77% patients, tenderness in 91% patients, absolute constipation in 85% patients, abdominal distension in 90% patients, rebound tenderness in 48% patients, significant finding on per rectal examination in 8% patients, absent/ decreased bowel sound in 31% patients, increased bowel sound in 64% patients and palpable mass and swelling was present in 21% patients. Out of 100 patients, 77% patients were having intestinal obstruction due to mechanical causes like Adhesions were present in 18% patients, Hernias in 23% patients, Malignancy in 7%

patients, intestinal volvulus in 4% patients, diverticulum in 1% patients, strictures in 4% patients, intestinal tuberculosis in 16% patients, fecal impaction in 2% patients and superior mesenteric artery syndrome in 2% patients. Remaining 23% patients were having non-mechanical (adynamic) intestinal obstruction. Out of these 23% patients 15% patients developed paralytic ileus due to gastrointestinal tract perforations (ileum, duodenal, appendix etc.), 2% patients were having gangrenous ileum, 1% patient were having pelvic abscess and 5% patients were having intestinal obstruction due to unknown paralytic ileus cause. The outcome observed in patients were as, 84% patients improved, 9% patients developed morbid condition, 3% lost to follow up and 4% patient died.

Conclusion: Our study presented that the most common etiological reason for small intestinal obstruction is hernia and adhesions, respectively. The treatment of abdominal tuberculosis is mainly conservative (non-operatively) with anti-tuberculous therapy, and surgical treatment is reserved for complications. To find the exact and earlier diagnosis and treatment of small bowel obstruction, randomized studies may be more informative and useful.

Keywords: Intestinal Obstruction, Perforations, Tenderness.

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Introduction

Intestinal obstruction is one of the common surgical disorders in general surgery practice and most of the times it is a life threatening emergency. Intestinal obstruction can be categorized in to various types: It can be mechanical (dynamic) or non-mechanical (adynamic). Common causes of intestinal obstruction are obstructed hernias, post-operative adhesions, tumors, foreign bodies, inflammatory bowel disease, fecal impaction, volvulus and paralytic ileus etc [1]. Mechanical obstruction is the cause of about 10 to 20% of cases of severe abdominal pain of sudden onset requiring admission to hospital [2, 3]. Abdominal pain, vomiting, constipation, abdominal distension and failure to pass flatus are the cardinal features of intestinal obstruction.

Intestinal obstruction of either the small or large bowel continues to be a major cause of morbidity and mortality. Mortality rates range from up to 3% for simple obstructions to as much as 30% when there is strangulation or perforation of the obstructed bowel. Approximately 5% of external hernias will require an emergency operation if they are not repaired electively

[4]. The study on bowel obstruction from the Mayo Clinic showed that 50% of patients undergoing an operation for malignant bowel obstruction died within six months [5].

Previously hernia was the most frequent cause of small bowel obstruction in developed countries. But later due to more advancement in meticulous hernia surgery and an increasing number of abdominal and pelvic surgeries, adhesions secondary to previous surgery are now most common (nearly 60%) cause of small bowel obstruction in developed countries. More advancement in minimal access surgeries may decrease the frequency of bowel obstruction secondary to adhesions [6].

Patient with intestinal obstruction are often seriously ill and detailed history and thorough clinical examination, frequent assessment, monitoring of vital signs and clinical progress are required to diagnosis and plan treatment [7]. Successful management requires early diagnosis and treatment with meticulous fluid, electrolyte balance and timely surgical intervention [8]. Delaying necessary surgery has also been associated with very poor outcomes

especially in elderly patients [9]. The purpose of this study is to evaluate the various etiological factors of intestinal obstruction in patients presenting with intestinal obstruction in our tertiary care center.

Methodology

The study cross sectional study was conducted in department of surgery, D M.C.H, Darbhanga, Bihar. from July 2019 to June 2020. Total 100 patients age above 15 years were studied after taking informed consent from patient/relatives. Random sampling technique was used.

Inclusion criteria: Diagnosed cases of intestinal obstruction with the help of X-ray and Ultrasonography. Adult patients (Age 15 years and above), regardless of gender.

Exclusion criteria: Age below 15 years. Patient got expired with in few hours after presentation. Patients with abdominal pain due to trauma were excluded from study.

The diagnosis of intestinal obstruction was made on the basis of detailed history especially regarding cardinal features of intestinal obstruction like, abdominal distension, pain, vomiting, and absolute constipation, clinical findings, x-ray abdomen and ultra sound of the abdomen. Other investigations for fitness for anesthesia, to exclude a dynamic cause and for the management of intestinal obstruction were carried out, i.e., complete blood picture, electrolytes, urea, creatinine, X ray chest and ECG. Immediately after the admission along with above procedure, resuscitation with IV fluids especially ringer lactate and normal saline infusion were started till the hydration and urine output become normal. Nasogastric decompression was carried out and antibiotic prophylaxis initiated. A close

observation of all bedside parameters (like pulse rate, BP, RR, urine output, abdominal girth, bowel sounds and tenderness and guarding) were done.

Emergency Blood transfusion was given in required cases. Patients who showed a reduction in the abdominal distension and improvement in the general condition managed conservatively. Patients with clear-cut signs and symptoms of acute obstruction had been managed by appropriate surgical procedure after initial resuscitation. Operative information of every case was recorded on proforma. Frequency and pattern of different causes of intestinal obstruction were recorded and analyzed. Histopathological examination of the specimen of resection/ biopsy was undertaken whenever necessary. The postoperative period had been monitored carefully and all the parameters were recorded hourly or fourth hourly basis depending on the patient's general condition and toxemia. Postoperatively Nasogastric tube aspiration, intravenous fluids and antibiotics were administered. Any complications were noted and treated accordingly. All the patients were called for regular follow up depending on their cause of intestinal obstruction and surgery performed.

Results

Total 100 patients were enrolled in the study with age 15 years and above. 62% patients were male and 38% were female. All the patients were categorized in different age group, 18% patients belong to 15-25 years age group, 33% patients were in 26- 40 years, 28% patients were in 41-55 years, 11% patients were in 56-70 years and remaining 10% were having age above 71 years.

Table 1: Distribution of patients with respect to age group and gender.

| Age groups | Male (62%) | Female (38%) | Total (100%) |
|-------------|------------|--------------|--------------|
| 15-25 years | 12% | 6% | 18% |
| 26-40 years | 15% | 18% | 33% |
| 41-55 years | 19% | 9% | 28% |

| | | | |
|--------------------|----|----|-----|
| 56-70 years | 7% | 4% | 11% |
| 70 years and above | 5% | 5% | 10% |

The cardinal signs and symptoms were present in almost all the patients. Abdominal pain was present in 96% patients, vomiting in 77% patients, tenderness in 91% patients, absolute constipation in 85% patients, abdominal distension in 90% patients, rebound

tenderness in 48% patients, significant finding on per rectal examination in 8% patients, absent/decreased bowel sound in 31% patients, increased bowel sound in 64% patients and palpable mass and swelling was present in 21% patients.

Table 2: Sign and symptoms present in 130 patients with intestinal obstruction.

| Signs and Symptoms | Percentage (%) |
|------------------------------|----------------|
| Pain abdomen | 96% |
| Vomiting | 77% |
| Tenderness | 91% |
| Absolute constipation | 85% |
| Abdominal distension | 90% |
| Rebound tenderness | 48% |
| Absent/decreased bowel Sound | 31% |
| Increased bowel sound | 64% |
| Significant finding on PR | 8% |
| Swelling/ palpable mass | 21% |

Out of 100 patients, 77% patients were having intestinal obstruction due to mechanical causes like Adhesions were present in 18% patients, Hernias in 23% patients, Malignancy in 7% patients, intestinal volvulus in 4% patients, diverticulum in 1% patients, strictures in 4% patients, intestinal tuberculosis in 16% patients, fecal impaction in 2% patients and superior mesenteric artery syndrome in 2% patients. Remaining 23% patients

were having non-mechanical (adynamic) intestinal obstruction. Out of these 23% patients 15% patients developed paralytic ileus due to gastrointestinal tract perforations (ileum, duodenal, appendix etc.), 2% patients were having gangrenous ileum, 1% patient were having pelvic abscess and 5% patients were having intestinal obstruction due to unknown paralytic ileus cause.

Table 3:

| Cause | Total |
|----------------------------------|-------|
| Adhesions | 18% |
| Hernias | 23% |
| Malignancy | 7% |
| Volvulus | 4% |
| Diverticulum | 1% |
| Stricture | 4% |
| Tuberculosis | 16% |
| Fecal impaction | 2% |
| Sup. Mesenteric art. syndrome | 2% |
| Intestinal perforations | 15% |
| Gangrenous ileum | 2% |
| Pelvic abscess | 1% |
| Paralytic ileus of unknown cause | 5% |

Out of 100 patients, 19% were managed conservatively and 81% patients underwent surgery. Some of the patients developed post-surgical complications including wound infection (16%), sepsis (3%), pneumonia (2%), anastomosis leak

(1%), wound dehiscence (2%) and fecal fistula (1%). The outcome observed in patients were as, 84% patients improved, 9% patients developed morbid condition, 3% lost to follow up and 4% patient died.

Table 4: Post-operative complications

| Complication | No. of patients |
|------------------|-----------------|
| Wound infection | 16% |
| Sepsis | 3% |
| Pneumonia | 2% |
| Anastomosis leak | 1% |
| Wound dehiscence | 2% |
| Fecal fistula | 1% |

Discussion

The spectrum of etiology of acute intestinal obstruction has been a matter of research in many developed and developing countries. Review from various kinds of the literature shows that the spectrum of causes of bowel obstruction varies demographically [10, 11]. In the present study, 18% patients belong to 15-25 years age group, 33% patients were in 26-40 years, 28% patients were in 41-55 years, 11% patients were in 56-70 years and remaining 10% were having age above 71 years. Markogiannakis H et, al [12] reported mean age of the patients as 63.8±1.3 years while mean age of patients was 25 years in a study conducted by Drozd W et, al [13]. In our study the most commonly effected age group was 26-40 years similar results was shown in the studies by Singh H et, al [14] and Cole GJ et al [15], the most commonly affected age group was 31 to 40 years. But in a study conducted by Adhikari S et al [16], most commonly affected age group was 41 to 50 years.

In the current study the main cause of mechanical intestinal obstruction was hernias followed by adhesions and intestinal tuberculosis as the second most common cause [17]. The obstructed/strangulated hernias were found as the first

common cause in the present study, while it was the second common cause in the previous study, which almost is analogous with the other studies conducted in the country [18]. Small bowel obstructions are most often due to adhesions and hernias while large bowel obstructions are most often due to tumors and volvulus [19].

In the present study, 77% patients were having intestinal obstruction due to mechanical causes like Adhesions were present in 18% patients, Hernias in 23% patients, Malignancy in 7% patients, intestinal volvulus in 4% patients, diverticulum in 1% patients, strictures in 4% patients, intestinal tuberculosis in 16% patients, fecal impaction in 2% patients and superior mesenteric artery syndrome in 2% patients. Remaining 23% patients were having non-mechanical (adynamic) intestinal obstruction. Out of these 23% patients 15% patients developed paralytic ileus due to gastrointestinal tract perforations (ileum, duodenal, appendix etc.), 2% patients were having gangrenous ileum, 1% patient were having pelvic abscess and 5% patients were having intestinal obstruction due to unknown paralytic ileus cause.

In contrast to Developed Nations, abdominal tuberculosis is still a common cause of intestinal obstruction in the

developing world. In present study, 16% patients were having intestinal tuberculosis. The wide spectrum of presentation makes abdominal tuberculosis a difficult disease to diagnose [20]. The incidence of tuberculosis is also increasing in the West due to an increase in the immigrant population, ageing population and HIV infection [21, 22].

In our study, Post-operative adhesions was 2nd most common cause of small intestinal obstruction occurring in 18% patients whereas obstructive hernias were at 1st position with 23% patients. This is in contrary to most of the studies in developing countries where strangulated herniae are the leading cause of intestinal obstruction[23, 24] while in developed countries, and even developed region of developing countries, postoperative adhesions and malignant tumours are the main causes[25, 26]

A study [25] from Chandigarh India (consider as a developed region) has described adhesions and hernias to be the most common and second most common cause of intestinal obstruction respectively. According to a study by McEntee et al., adhesions formed the most important cause of intestinal obstruction in western population [27].

Conclusion

Our study presented that the most common etiological reason for small intestinal obstruction is hernia and adhesions, respectively. The treatment of abdominal tuberculosis is mainly conservative (non-operatively) with anti-tuberculous therapy, and surgical treatment is reserved for complications. To find the exact and earlier diagnosis and treatment of small bowel obstruction, randomized studies may be more informative and useful.

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