Original Research Article

Prospective Clinical Study of Intestinal Obstruction it's Changing Etiology and Management Protocols

Salman Ahmed F[1*], Santosh Kumar Rajput K[2], Ganashyam KR[2], Bharat Kumar Hindinamani[3]

[1]Senior Resident, Department of General Surgery, Mysore Medical College and Research Institute, Mysore, Karnataka, India

[2]Senior Resident, Department of General Surgery, Karnataka Institute of Medical Sciences, Hubli, Karnataka, India

[3]Assistant Professor, Department of General Surgery, Karnataka Institute of Medical Sciences, Hubli, Karnataka, India

Received: 17-08-2021 / Revised: 23-09-2021/ Accepted: 31-10-2021

Abstract

Introduction: Bowel obstruction remains one of the most common intra-abdominal problems Faced by general surgeons in their practice whether caused by hernia, neoplasm, adhesion correlated to biochemical disturbances intestinal obstruction of either the small or large bowel continues to be a major cause of morbidity and mortality.**Materials and Methods:** The materials for this clinical study on intestinal obstruction were collected from Cases admitted to various surgical wards in KR Hospital, Mysore attached to Mysore Medical College, during the period from January 2018 to June 2019, fifty cases of intestinal obstruction have been studied. Patients belonged to the age group ranging from 15 years to 85 years, Paediatric age group being excluded from this study. The criteria for selection of cases was based on the clinical history, physical examination findings, radiological and haematological investigations.**Results:** The incidence of acute bowel obstruction in adult age group was studied from the cases admitted in Department of General Surgery, KR Hospital, Mysore attached to the Mysore Medical College, Mysore during the period January 2018 to June 2019. During my study period of 20 months, the total number of admissions in surgery department were 16,533 patients. From this 240 cases with acute intestinal obstruction were treated during this period which comprise 1.5% of the total admissions. Among these cases which were surgically managed, 50 cases were selected randomly for the present study. In The present study, the most common symptoms were pain abdomen (88%) and vomiting (78%), and the most common signs were tachycardia (74%) and visible intestinal peristalsis (80%).**Conclusion:** Postoperative adhesions are the common cause to produce intestinal obstruction. Clinical radiological and operative findings put together can diagnose the intestinal obstruction. Mortality is still significantly high in undiagnosed case of malignancy which presented in emergency with intestinal obstruction. Earlier diagnosis and timely intervention are associated with excellent prognosis. Delayed diagnosis leading to strangulation and increased age are associated with poor outcomes.

Keywords: Bowel obstruction, morbidity, mortality, tachycardia.

Introduction

Bowel obstruction remains one of the most common intra-abdominal problems Faced by general surgeons in their practice whether caused by hernia, neoplasm, adhesion correlated to biochemical disturbances intestinal obstruction of either the small or large bowel continues to be a major cause of morbidity and mortality[1].

They account for 12% to 16% of surgical admissions for acute abdominal complaints[2]. Manifestations of acute intestinal obstruction can range from a fairly good appearance with only slight abdominal discomfort and distension to a state of hypovolemic or septic shock (or both) requiring an emergency operation[3].

The death due to acute intestinal obstruction is decreasing with better understanding of pathophysiology[4]. Improvement in diagnostic techniques, fluid and electrolytes correction, much potent anti-microbials and knowledge of intensive care. Most of the mortalities occur in elderly individuals who seek late treatment and who are having associated pre-existing diseases like, diabetes mellitus, cardiac diseases or respiratory disease[5].

**Correspondence*
Salman Ahmed F
Senior Resident, Department of General Surgery, Mysore Medical College and Research Institute, Mysore, Karnataka, India.
E-mail: salmanahamedf@gmail.com

Early diagnosis of obstruction skill ful operative management, proper technique during surgery and intensive post operative treatment carries a grateful result.

Objectives

To study the various ways of presentation, various etiologies, importance of Early recognition, diagnosis, and management.

To study the various influencing factors like age, sex, diet and socio-economic Status in the pathogenesis of acute intestinal obstruction.

To study the morbidity and mortality rates in acute bowel obstruction.

Materials and Methods

The materials for this clinical study on intestinal obstruction were collected from Cases admitted to various surgical wards in KR Hospital, Mysore attached to Mysore Medical College, during the period from January 2018 to June 2019, fifty cases of intestinal obstruction have been studied. Patients belonged to the age group ranging from 15 years to 85 years, Paediatric age group being excluded from this study. The criteria for selection of Cases was based on the clinical history, physical examination findings, radiological and haematological investigations.

Patients who had subacute Intestinal obstruction, who were treated conservatively were excluded from the study, and only those patients

of acute intestinal obstruction which were managed surgically have been studied to establish the Pathology of intestinal obstruction with an aim to identify the mode of presentation, physical findings, radiological and haematological findings, operative findings and out come of acute bowel obstruction. After admission of the patient, clinical data were recorded according to the Proforma. The diagnosis was mainly based on clinical examination and often supported by haematological and radiological examinations.

Methods

Study has been divided in to
a. Clinicalstudy
b. Investigations
c. Treatment
Study has been conducted under the following headings:
a. History taking
b. Physical examination
c. Laboratory examination
d. Radiological examination–Plain X-ray abdomen–erect view.
e. Ultrasound examination in selected cases
f. Surgical treatment and results
g. Follow-up
a. History taking

A **complete detailed history** was obtained from the patient and the complaints were entered in the proforma in a chronological order. Each complaint in the history of presenting illness has been documented in detailed enquiry.
Physicalexamination

- General physical examination: Evidence of dehydration and its severity were looked in to and vital parameters were recorded.
- Local examination: Abdominal examination was done under the standard headings inspection, palpation, percussion and auscultation. Perrectal examination was done and findings were noted.
- Systemic examination: All other systems were examined carefully to rule out any associated anomalies and to assess the fitness for surgery.

Laboratory examination

(i) Haemoglobin
(ii) TC&DC
(iii) Bleeding and clotting times
(iv) Blood grouping and Rh typing
(v) Urine for albumin estimation and microscopy

Radiological examination

Erect abdomen X-ray is done in all cases, bariumenema and ultra sound Examination is done in selected cases.

Surgical management

Immediately after the admission along with above procedure, resuscitation with IV fluids especially ringer lactate and normal saline infusion is started till the Hydration and urine output be come normal. Nasogastricde compression with Ryles Tube insertion is carried out and antibiotic prophylaxis is started. A close Observation of all bed side parameters (like pulse rate, BP, RR, urine output, urine output, abdominal girth, bowel sounds and tenderness and guarding) was done.
Emergency Blood transfusion was given in required cases. Patients who showed a Reduction in the abdominal distension and improvement in the general condition Especially in those with post operative adhesions, conservative treatment was Confined (by extending the supportive treatment) for next 24 hours,those who Showed improvement by moving bowels or reduction in pain/tenderness were Considered for further conservative treatment and such individuals are excluded From this study. Patients with clear-cut signs and symptoms of acute obstruction Had been managed by appropriate surgical procedure after initial resuscitation.
Surgery adopted and the criteria for deciding the procedure were noted, e.g.release of abandoran adhesion,reduction and caecopexy for intussusception, resection and anastamosis for gangrenous intestine and release and repair for strangulated obstruction. Histopathological examination of the specimen of resection/biopsy was undertaken when ever necessary.
The post operative 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. Post operatively Nasogastric tube aspiration, intravenous fluids and antibiotics were administered. Any complications were noted and treated accordingly.
Post operative follow-up after the discharge of patients was done in majority of the patient still 6months. Most of the patients did not turnup for follow up after one or two visits.The results are tabulated stressing on the following points like age, sex, symptoms, examination findings, investigations, abnormalities, possible causative factors, operative findings and operative procedure that is adopted and Complications if any.

Results

The incidence of acute bowel obstruction in adult age group was studied from the cases admitted in Department of General Surgery, KR Hospital, Mysore attached to the Mysore Medical College, Mysore during the period January 2018 to June 2019. During my study period of 20 months, the total number of admissions in surgery department were 16,533 patients. From this 240 cases with acute intestinal obstruction were treated during this period which comprise 1.5% of the total admissions. Among these cases which were surgically managed, 50 cases were selected randomly for the present study.

Table 1: Distribution Based on Age

Age (years)	Male	Female	Total
16 to 20	1	0	1
21 to 30	4	0	4
31 to 40	8	0	8
41 to 50	5	6	11
51 to 60	7	6	13
61 to 70	8	1	9
71 to 80	3	1	4
81 to 90	0	0	0
Total	36	14	50

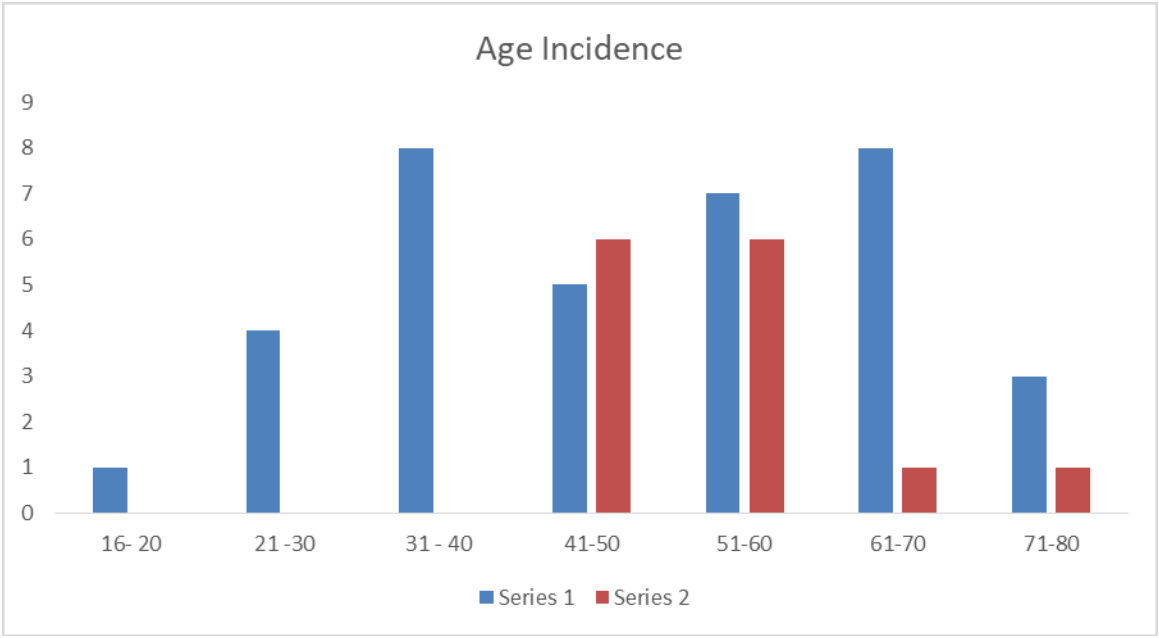

Fig. 1: Distribution Based on Age

According to this study the incidence was highest among age group of 51-60 years which comprises 26%.

Table 2: Distribution Based on Sex

Sex	Number of cases	Percentage
Male	36	72
Female	14	28

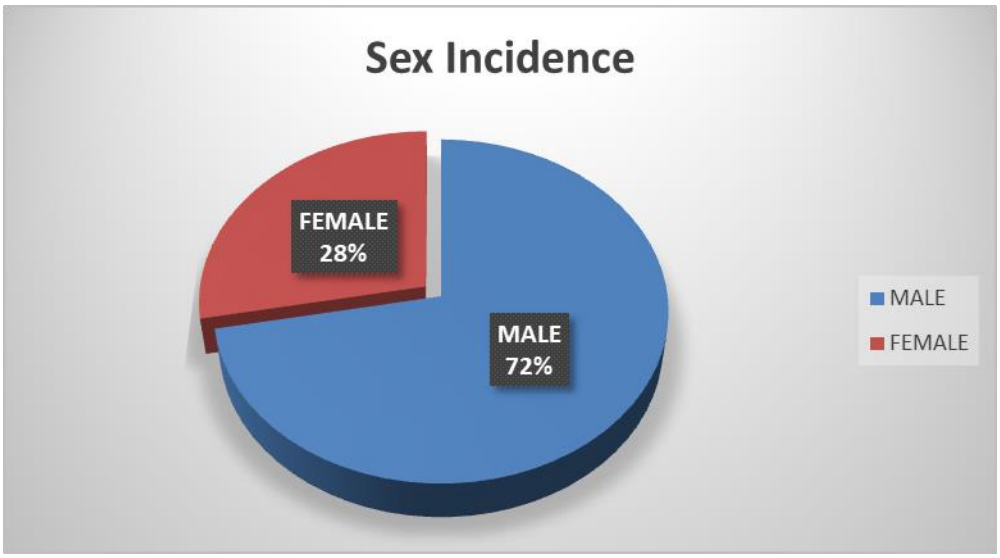

Fig. 2: Distribution Based On Sex

Male patients were more commonly affected in the ratio of 3:1

Table 3: Distribution Based on Diet

Diet	Number of cases	Percentage
Vegetarian	17	34
Non-vegetarian	33	66
Total	50	100

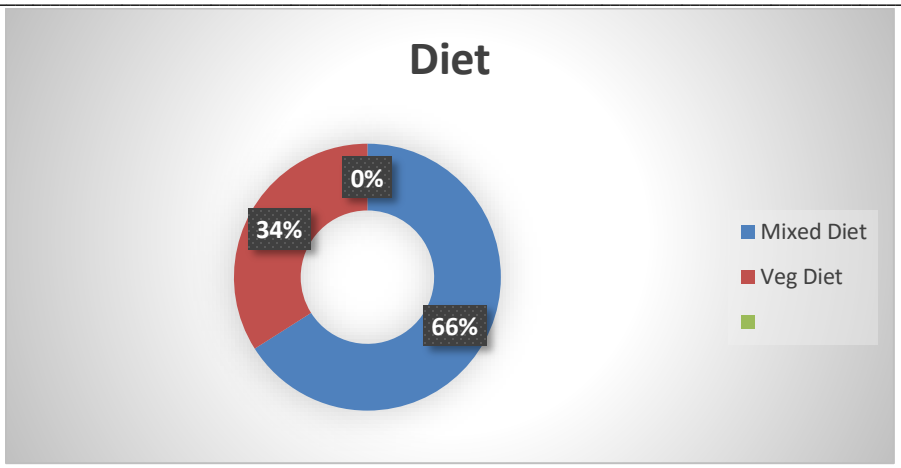

Fig. 3: Distribution Based on Diet

In this study of 50 cases, 33 patients were on non-vegetarian diet which contains more of fatty diets and 18 patients were on vegetarian dietwhich of ten contained high fibre content

Table 4: Distribution Based on Symptoms and Signs

Symptoms	Signs
Abdominal Pain	Tachycardia
Vomiting	Previous Surgical Scar
Abdominal Distension	Tenderness
Constipation	Mass Visible Peristalsis

In The present study, the most common symptoms were pain abdomen (88%) and vomiting (78%), and the most common signs were tachycardia (74%) and visible intestinal peristalsis (80%).

Etiology

Table 5: Distribution Based on Etiology of Intestinal obstruction

Clinical condition	Number of cases
Post operative adhesions	14
Band	5
Obstructed hernia	9
Volvulus	5
TB abdomen	4
Malignancy	11
Intussusception	1
Mesenteric ischaemia	1
Total	50

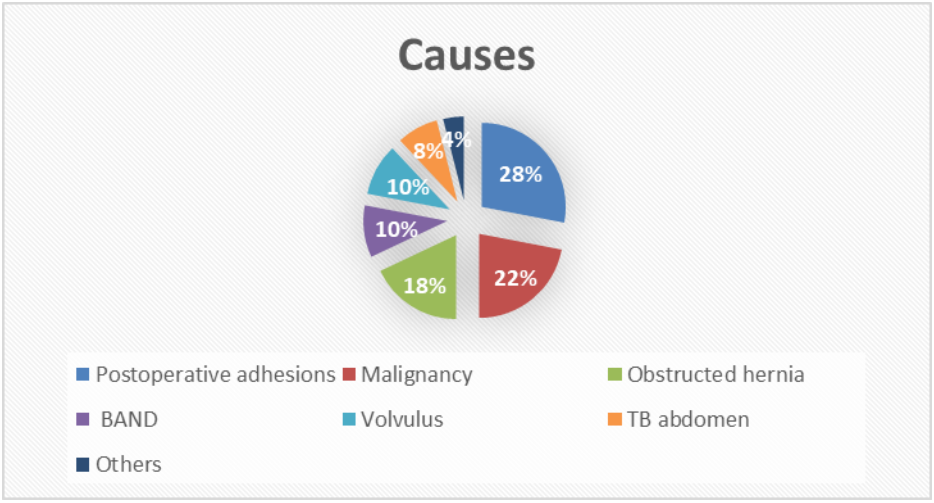

Fig. 4: Distribution Based on Etiology of Intestinal obstruction

Clinical conditions

The most common cause of intestinal obstruction in this study was post operative adhesions. The next common was malignancy. Other conditions include obstructed hernia, volvulus, intussusception, tuberculosis, malignancy, mesenteric ischaemia, in the order of descending frequency.

Post Operative Complications

Table 6: Distribution Based on Complications

Complication	Number of cases
Surgical Site Infection	6
Sepsis	7
Respiratory Tract Infection	5
Fecal Fistula	2
Total	20

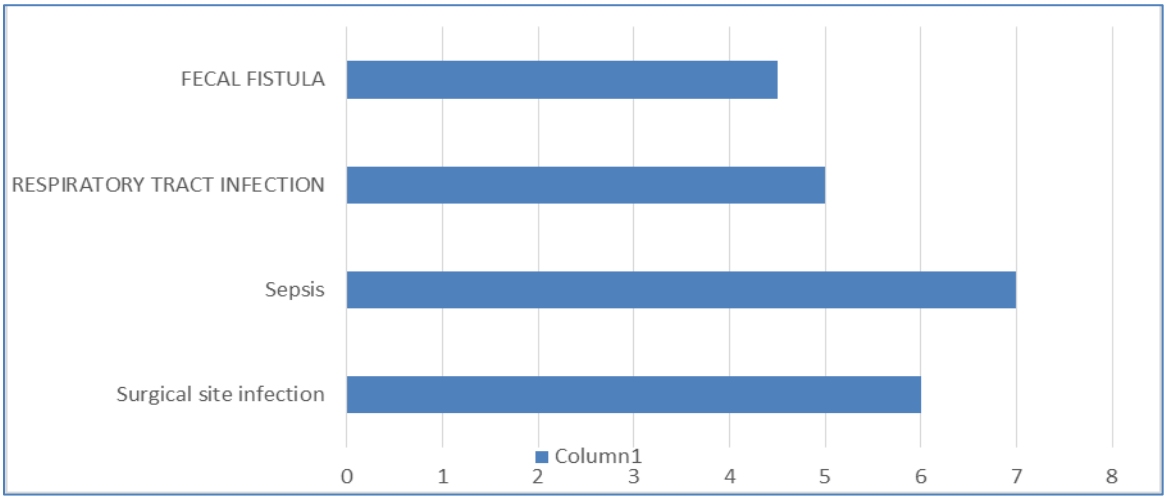

Fig. 5: Distribution Based on Complications

In the present study group there were 7 cases of septicemia, 5 cases of respiratory tract infection and 2 cases of fecal fistula and 6 cases of wound infection.

Management

In our study of 50 cases as accordingly with the etiology the management and the Surgical procedure was done as shown in the table and pie diagram. Release of Adhesions was done in 14 cases, resection anastomosis in 18 cases and Release of adhesion with herniorrhaphy done in 7 of the cases.

Mortality

In the present study of 50 cases, about 7 patients died (14%). The majority of deaths due to complications like sepsis, respiratory infection. In the present study 7 persons died during post operative period. The analysis of cause of death is shown below.

Table 7: Distribution Based On Mortality

Mortality	No. of cases	Percentage
Cured	43	86
Dead	7	14

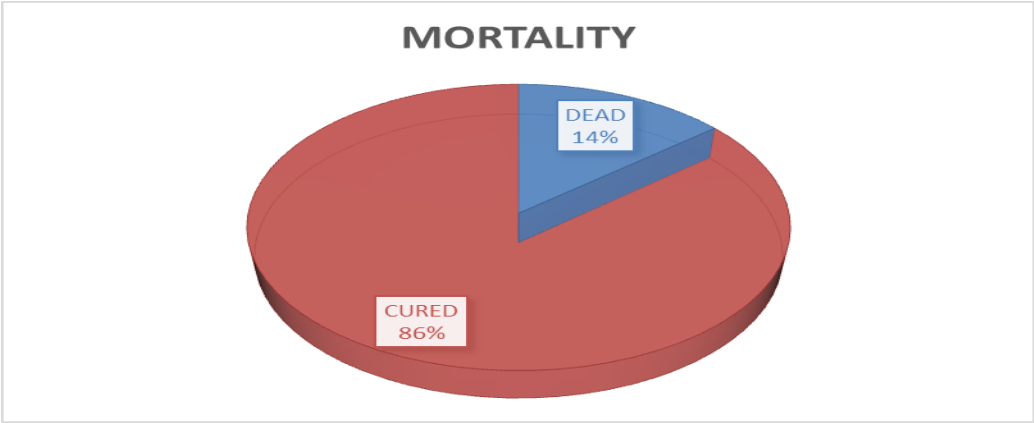

Fig. 6: Distribution Based On Mortality

In study 7 patients died with the percentage of 14%. The common cause of death in these cases is due to complications like septicemia, peritonitis, respiratory infection. In the present study 7 persons died during post operative period. The analysis of cause of death is shown below

Table 8: Distribution Based on Cause of Death

Age and sex	Operative findings	Operative procedure	Cause of death
Prathibha 48/F	Ca Caecum	Resection Anastamosis	Septic Shock
Mehrunnisa 60/F	Adhesion	Release Of Adhesions	Respiratory Tract Infection
Ramanayaka 65/M	Ca Sigmoid	Ileostomy	Septic Shock
Bama 55/M	Ca Colon	Resection Anastamosis	Respiratory Tract Infection
Malappa 60/M	Mesenteric Ischaemia	Resection Anastamosis	Septic Shock
Siddaraju 70/M	Intussusception	Resection Anastamosis	Septic Shock
Shivaraju 43/M	Strangulated Inguinal Hernia	Resection Anastamosis & Herniorhapphy	Septic Shock

Discussion

Acute intestinal obstruction is one of the most common surgical emergency From January 2018 to December 2019, 50 patients were randomly selected among those operated for Intestinal Obstruction.

Disease Incidence

The most common cause was found to be the post operative adhesions followed by malignancy, obstructed/strangulated inguinal hernia, band, volvulus, tuberculosis, intussusception and mesenteric ischemia[6].

Although in the developing countries like India, the commonest cause used to be obstructed/strangulated hernia, commonest cause in our study was adhesions followed by malignancy as the second most common cause[7].

The decrease in the incidence of obstructed hernia indicate the trend towards early surgery before hernia gets complicated. The data of the present series is comparable to Souvik Adhikari series, Cole series and Jahangir-Sarwar Khan[8].

Age Incidence

The age group chosen for our study is age more than 15 Years. The study showed the maximum incidence is in the age group 51-60 of 26% and 41-50 years of 22%. The mean age is our current study is 52 years whereas Souvik Adhikari et al. shows mean age of 44 years, Jahangir Sarwar Khan series shows a mean age of 33 years these studies are almost comparable with our current clinical study[9].

Sex Incidence

In the Souvik Adhikari et al. 44 study, male to female radio was 4:1. In the Osuigwe AN et al. study, male to female ratio was 2:1. In the present clinical study Male to female ratio is 3:1.

Etiology

The cause of acute intestinal obstruction differs from different geographical locations. But the hospital being a government set-up, which is serving mostly the poor socio-economic status, hence the percentage of poor socio-economic status is high so it did not show any significant relation to the disease.

The diet pattern showed 66% to be non-vegetarians and 34% to be vegetarians and it did not show any significance in relation to the disease.

In the present clinical study of 50 cases of acute intestinal obstruction, 28% of the cases occurred due to post operative adhesions who had undergone previous surgeries.

In our study, post operative adhesions are the most common cause of Intestinal obstruction, which can be comparable with the other study groups-Play forth et al. with 54% and Arshad Malik et al. with around 41%. The incidence of obstructed/strangulated hernia is more in developing countries, comparable to our study group. It may be because of the awareness of public, the availability of good surgical facilities in the periphery for the hernia repair, the hernias are managed early, hence incidence of Hernias with obstruction has reduced[10].

Clinical features

The clinical feature of intestinal obstruction like abdominal pain, vomiting abdominal distension and constipation were not present in all cases. Pain abdomen was present in 88% of the patients in the present study, where as vomiting was Present in 78% of the patients. Abdominal distension was present in 80%. The comparison table showing percentage of clinical features by various other study groups are as follows.

In the present study, the clinical features of abdominal pain was 88%, vomiting was 78%, which comparable with the other study groups (Souvik Adhikari et al. And Jahangir Sarwar Khan et al). About 80% of the patients in the present Study group had Abdominal distension.

The abdominal mass on palpation is present in 26% of the total study, more in malignancy and ileocaecal tuberculosis.

Visible peristalsis is present in 80% of the patients. The rectal examination showed abnormality in only four patients, 1 case of intussusception (2%) and 3 cases of malignancy (6%) where in red currant Jelly and rectal growth were the rectal examination findings respectively.

Surgical Management

The surgical management in the present study group includes release of adhesions for post operative adhesions 28%, resection and anastomosis for many of the cases of obstructed/strangulated hernia where the viability of the intestine was doubtful and also for ischemic bowel 32%, release of the constricting agents and herniorrhaphy was done in 6% of the obstructed/strangulated hernia cases.

Release of Band done in 10% of cases Derotation of the volvulus and sigmoid opexy was done in around 8% of the cases. Resection and anastomosis and herniorrhaphy was done in 4% of the cases. Reduction of intussusception was done in one case. In one case Anterior resection was done and in another Abdominoperineal resection and Loop ileostomy done in one case.

Complications

In the present group out of the 50 cases, complications like septicemia occurred in 5 cases, respiratory tract infection in 2 cases, wound infection occurred in two cases. The complication of septicemia was more in the patients with malignancy and one case with mesenteric ischemia where in there was already sepsis at the time of admission. Bowel surgeries were done in unprepared bowel in such cases. In Two cases one with obstructed inguinal hernia and one with carcinoma rectum, the patients already had prior comorbid conditions of COPD, and they suffered from respiratory tract infection.

Mortality

Frequency of mortality in this study is 14% i.e.7 cases out of 50 cases. Among these, 6 cases were because of malignancy and one due to mesenteric ischaemia. Mortality that occurred during various studies have been tabulated as follows.

The mortality rate in the present study is comparable to the Ramachandran CS et al. study but it is more when compared to

Souvik Adhikari et al., Jahangir et al. studies. Out of 7 cases who died, 3 cases were due to malignancy. As the malignancy was more in the aged group, it led to septicemic condition and resulted in death. Two patients were known case of COPD who suffered respiratory tract infection and died. One patient with mesenteric ischaemia died after developing fecal fistula and sepsis. Another patient died due to septicaemia because of late presentation and gangrenous bowel with sepsis at the time of admission.

Hence most of the deaths were due to malignancy which played significant part in the outcome of the disease. The mortality with intestinal obstruction is more in patients who develop strangulation and gangrene of the bowel, also who reached the hospital after 3 days.

Conclusion

Acute intestinal obstruction remains an important surgical emergency in the surgical field. Success in the treatment of acute intestinal obstruction depends largely upon early diagnosis skill full management and treating the pathological effects of the obstruction just as much as the cause itself. Erect abdomen X-ray is valuable investigation in the diagnosis of acute intestinal obstruction. Postoperative adhesions are the common cause to produce intestinal obstruction. Clinical radiological and operative findings put together can diagnose the intestinal obstruction. Mortality is still significantly high in undiagnosed case of malignancy which presented in emergency with intestinal obstruction. Earlier diagnosis and timely intervention are associated with excellent prognosis. Delayed diagnosis leading to strangulation and increased age are associated with poor outcomes.

References

1. Scott GH oughton, Antonio Ramos Dela Medina, Michael GS arr. Bowel obstruction. 11thed. Chapter 17. In: Maingot's Abdominal operations, Michael JZ inner, Stanley WA shley, eds. NewYork: McGraw-HillMedical. 2007, 479-505p.
2. Haridimos Markogiannakis, Evangelos Messaris, Dimitrios Dardamanis, Nikolaos Pararas, Dimitries Tzerzemelis, Panagiotis Giannopoulos et al. Acute mechanical obstruction: Clinical presentation, aetiology, management and outcome. World J Gastroenterol. 2007; 13(3):432-7.
3. Owen H. Wangensteen. Historical aspect. Of the management of the acute intestinal obstruction. Surgery. 1969; 63:363-83.
4. Kloiber H. Die. Roentgen diagnose Deslleus Ohne Koutrastmittel. Arch FK lin Chir. 1919; 112:513.
5. Akguny. Mesosigmoid op1astyasa definitive operation in treatment of acute sigmoid volvulus. Dis Colon Rectum. 1990; 39:579-81.
6. Decker GAG, duPlessis DJ. The duodenum, jejunumandileum. 12thed. Chapter 4.In:LeeMcGregor's Synopsis of Surgical Anatomy. Bombay:Wright Verghese. 1986, 30p.
7. Richard LD Rake, Wayne Vogl A, Adam WM Mitchell. Abdomen. 2nd ed.Chapter 4.In: Gray's Anatomy for students. Philadelphia: Churchill Livingstone Elsevier, 2010, 300p.
8. William FG anong. Regulation of gastrointestinal function.19th ed. Chapter 26. In: Review of medical physiology. Philadelphia, USA: Appleton and Lance, 1999, 483p.
9. Robert MB Erne. Gastrointestinal regulation and motility.5th ed.Chapter 31.In:Physiology, Robert MB erne, Mathew N Levy, Bruce MK oeppen, Bruce AS tanton, eds. Mos by Publication, 2008, 539p.
10. Edwin A Deitch, William M Bridges, Jing Wen Ma, LiMa, Rodney D Berg, Robert D Specian. Obstructed intestine as are servoir for systemic infection. The American Journal of Surgery. 1990; 159(4):394-401.

Conflict of Interest: Nil
Source of support:Nil