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A Prospective Clinical Study of Dynamic Intestinal Obstruction in A Tertiary Care Centre

KEYWORDS: Acute intestinal obstruction, Causes, Emergency intervention, Mortality.

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ABSTRACT *BACKGROUND: This study was done to determine various causes of intestinal obstruction, presentations, epidemiology, factors affecting morbidity and mortality, surgical procedure and its outcome.*

METHODS: Prospective study of 100 cases of acute intestinal obstruction in Department of General Surgery, Tirunelveli Medical College Hospital, Tirunelveli. Cases presented with acute intestinal obstruction and those underwent surgical treatment were studied with an aim to establish the cause, mode of presentation, radiological, haematological findings, operative findings, and outcome of intestinal obstruction. The diagnosis was mainly based on clinical, radiological and haematological parameters.

RESULTS: Age predominance was from 40 to 70 years. Males were predominantly affected. Patients taking mixed diet with less fibre had more predisposition. Abdominal pain, vomiting, abdominal distension and constipation were the common presentation of these patients. Common causes of intestinal obstruction were inguinal hernias, adhesive obstruction, tumours and volvulus, . Small bowel was the most commonly affected part in 74 patients followed by sigmoid volvulus, in 14 patients. Release and repair of hernia was done in 31 patients and resection anastomosis in 31 patients. Wound infection was observed in 36 patients, burst abdomen in 3 patients, anastomotic leak in 12 patients and mortality in 9 patients.

CONCLUSION: Acute intestinal obstruction remains an important surgical emergency. Success in treatment depends largely upon early diagnosis, skillful management and treating the pathological effects of the obstruction.

INTRODUCTION

Dynamic bowel obstruction, a type of bowel obstruction in which the peristalsis is working against an obstructing agent, is a common surgical emergency with high morbidity and mortality [12]. An estimated 20% of hospital general surgical emergency admissions are for the management of intestinal obstruction [13]. Patient with intestinal obstruction are often seriously ill and require frequent assessment, monitoring of vital signs and clinical progress to determine the need for surgical intervention [14]. External hernias, adhesions make up a large number of cases. Clinical presentation varies depending on the type, site, duration etc. Management of acute intestinal obstruction depends on early diagnosis, skillful management and the appreciation of the importance of treating the pathological effects of the obstruction just as much as the cause itself. If detected early, prognosis will be excellent on relieving the obstruction but in late cases where obstruction is with vascular compromise need surgical correction.

MATERIALS AND METHODS

STUDY SAMPLE: 100 Patients who underwent surgical treatment of acute intestinal obstruction during a period of one year in Department of General Surgery, Tirunelveli Medical College Hospital, Tirunelveli.

STUDY PERIOD: This study was conducted for a period of one year from April 2012 to March 2013.

INCLUSION CRITERIA: All cases presenting with acute intestinal obstruction and > 12 years of age. Both males and females were included in the study.

EXCLUSION CRITERIA: Adynamic intestinal obstruction and subacute intestinal obstruction were excluded from this study.

METHODS: Approval from ethical committee of Tirunelveli Medical College was obtained prior to this prospective study. A proforma was made and the cases were recorded accordingly. Preoperatively, all the patients were administered intravenous fluids to correct fluid and electrolyte imbalance; nasogastric suction; urethral catheterization and broad-spectrum antibiotics. The diagnosis was mainly based on clinical examination and often supported by haematological and radiological examinations. All the patients were investigated by taking plain X- ray abdomen, USG abdomen, CT scan abdomen in selected cases. Those warranted surgical treatment were taken up for emergency interventions – resection anastomosis and herniorrhaphy, release and herniorrhaphy, release and closure, resection anastomosis and diversion. The postoperative period was monitored carefully and appropriate interventions were made then and there. Postoperative follow up was done up to one year. The results were recorded on following points - age, sex, symptoms, clinical findings, investigations, etiology, operative findings, operative procedures and complications.

RESULTS

Among the hundred cases studied during the study period, males were predominantly affected (70 males and 30 females) with acute intestinal obstruction. Age of patients ranged between 13 - 90 yrs as depicted in Table -1. Most common age group was 41- 60 yrs. Patients taking mixed diet (72%) had more predisposition probably due to less dietary fibre content. Abdominal pain, vomiting, abdominal distension, constipation were the predominant symptoms in these patients as shown in Chart-1. Commonest clinical sign was tachycardia (99%), followed by absence of bowel sounds (45%) and visible intestinal peristalsis (22%). Plain X ray abdomen erect view (Fig.1), USG abdomen and pel-

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vis were the non invasive investigations found very useful in diagnosing intestinal obstruction. Commonest causes of intestinal obstruction (Table-2) were inguinal hernia (37%), adhesions (22%), tumours (14%), sigmoid volvulus (12%), ventral hernia (10%), TB abdomen 3% and femoral hernia (2%). Ileum was the most commonly affected part in intestinal obstruction due to its involvement in inguinal hernias and adhesive obstruction. Resection and anastomosis (23%) was done for intestinal obstruction with vascular compromise and tumours. Diversion was done (6%) for patients in shock and with malignant obstruction. Hernias with bowel gangrene were treated with resection anastomosis and repair of the hernial site by herniorraphy (18%). Hernias without bowel gangrene were treated with release and repair of hernial site (31%). Adhesive obstruction (22%) was treated by release of obstruction and closure. Postoperative complications were wound infection, burst abdomen, anastamotic leak and mortality (Chart- 2).

Table - 1 : Age, Sex distribution of patients with intestinal obstruction

Age in yrs	Frequency		Percentage
	Male	Female	
< 20 years	1	0	1%
21- 40 years	20	3	23%
41- 60 years	26	17	43%
61- 80 years	22	10	32%
> 81 years	1	0	1%

Chart-1: Symptoms of intestinal obstruction

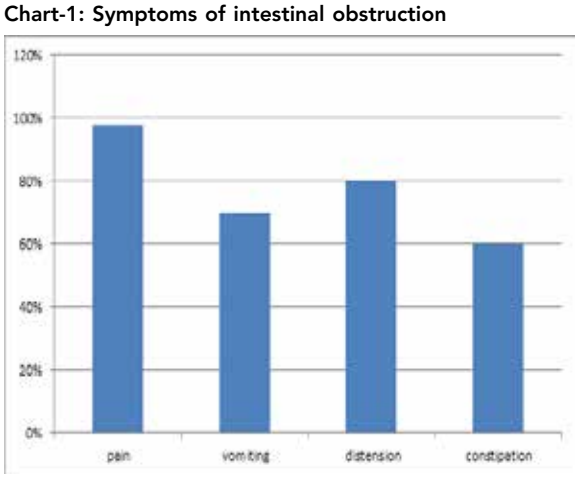
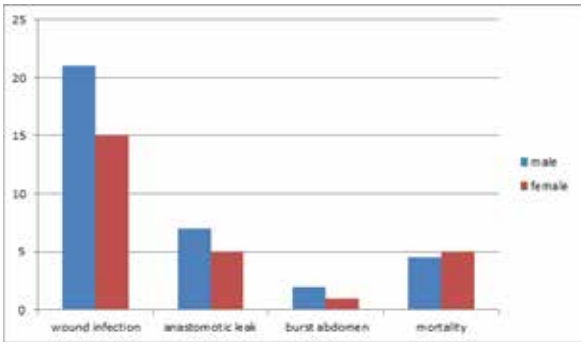


Table - 2 : Etiology of intestinal obstruction

Etiology	No of cases		Percentage
	Male	Female	
Inguinal hernia	34	3	37%
Adhesions	10	12	22%
Tumours	7	7	14%
Sigmoid volvulus,	10	2	12%
Ventral hernia	5	5	10%
TB abdomen	2	1	3%
Femoral hernia	--	2	2%

Chart-2 : Post Operative Complications



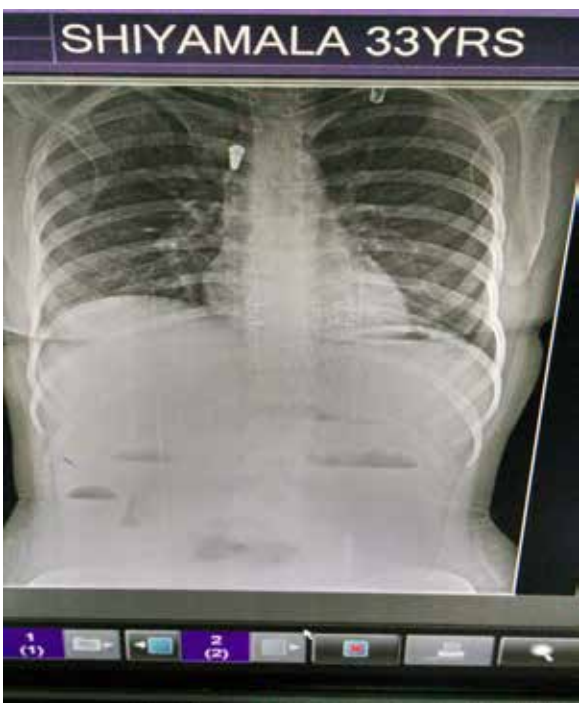


Fig. 1 Plain X ray Abdomen Erect View showing Multiple air fluid levels

Fig. 2 Intraoperative picture showing gangrenous small bowel

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DISCUSSION

Intestinal obstruction occurred in all ages with predominant involvement in 41- 60 yrs of age (43%) and 61 - 80 yrs (32%) in our study which was comparable to studies by Souvik et al [1] and Cole et al. [2]. Incidence was more in elderly as most cases of obstructed hernias occurred in these groups. In the study of Souvik et al [1] male to female ratio was 4:1 whereas in our study the male to female ratio was 2.3:1. These were comparable to previous studies with male predominance probably due to increased incidence of obstructed inguinal hernia in males.

Causes of intestinal obstruction vary with geographical locations. In the present study, inguinal hernia [37%] was the commonest cause of intestinal obstruction[10], whereas in other study groups, adhesive obstruction was observed as the most common cause - 54% in Playforth et al [3] and 41% by Arshad Malik et al [4]. In this study group, the most common etiology was obstructed / strangulated hernia that correlated with the previous findings in third world countries where people present late for hernias and hence they constitute an important part of intestinal obstruction. Adhesive obstruction [22%] due to previous surgeries was the second most common cause. Occurrence of tumours (14%) like carcinoma rectum, carcinoma descending colon, carcinoma transverse colon, carcinoma anal canal constituted another major cause of intestinal obstruction. Sigmoid volvulus (12%), a serious condition in which sigmoid loop rotates around its narrow mesentry producing ischaemia and necrosis of the colon [16] was another important cause of obstruction. Ventral hernia (10%), TB abdomen (3%) and femoral hernia (2%) were the other causes of obstruction observed in this study.

Abdominal pain [98%], abdominal distension [80%], vomiting [70%], constipation [60%] were the predominant symptoms in the patients of this study. Souvik et al [1] had recorded similar symptoms - abdominal pain 72%, abdominal distension 93%, vomiting 91% and constipation 93% where as Khan et al [5] showed that patients with intestinal obstruction exhibited these symptoms 100%, 97%, 92% and 97% respectively (Table-3). The difference might be due to early hospitalization of patients for these complaints in our study.

Table - 3: Symptoms of intestinal obstruction compared with other studies

Study group	Pain abdomen	Vomiting	Distension	Constipation
Present study	98%	70%	80%	60%
Souvik Adhikari [1]	72%	91%	93%	82%
Jahangir-Sarwar Khan [5]	100%	92%	97%	97%
Sreekantha et al [8]	88%	78%	66%	64%

Site of obstruction was commonly ileum due to its involvement in hernias as well as in post operative adhesive obstruction, similar to the study of Souvik et al [1]. Since hernia was the major cause of intestinal obstruction, release and repair of the hernial site was the commonest surgical procedure done in our study. Other procedures done were resection anastomosis and herniorraphy for hernias with vascular compromise (Fig. 2), resection anastomosis for tumours and volvulus, release and closure of adhesions and diversions for malignancy. Similar procedures were adopted and described by many authors who had conducted similar studies in developing countries. [17, 18]

Wound infection was the commonest postoperative complication which is comparable to other studies [18]. Out of nine cases died, six were due to malignancy and three due to anastomotic leak. Most of the deaths were due to malignancy which played significant role in the outcome of the disease [6, 7]. As the malignancy was more in the aged group [11] and the unprepared bowel surgeries, late presentations lead to septicemia and death. Mortality rate (9%) in this study was comparable to Souvik et al [1] 7.35% and Ramachandran CS [9] 12.7%.

CONCLUSION

Acute intestinal obstruction remains an important surgical emergency. External hernias followed by postoperative adhesions were the common causes of intestinal obstruction. Erect abdomen X-ray and USG assisted the diagnosis of acute intestinal obstruction. Release and repair of the hernial site was the commonest surgical procedure done. Wound infection was the major postoperative complication. Mortality was significantly high in acute intestinal obstruction due to malignancy. Success in the treatment of acute intestinal obstruction depends largely upon early diagnosis, skilful management and treating the pathological effects of the obstruction just as much as the cause itself.

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