



A CLINICAL STUDY ON VARIOUS PRESENTATION AND MANAGEMENT OF ACUTE INTESTINAL OBSTRUCTION

General Surgery

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ABSTRACT

BACKGROUND: The diagnosis and management of patient with intestinal obstruction is one of the more challenging emergency that a general surgeon can come across. With better understanding of pathophysiology, improvement in diagnostic techniques, fluid and electrolyte correction, much potent antibiotics and surgical management the complications arising due to late presentation can be limited.

AIMS AND OBJECTIVES: To analyze different modes of presentation, various etiological factors of acute intestinal obstruction and to evaluate the different lines of management and its outcome.

METHODOLOGY: This study was conducted in M.B Government Hospital attached to R.N.T. Medical College Udaipur. 50 patients fulfilling the inclusion criteria were part of this study.

RESULTS: Intestinal obstruction is more common in the age group of 41-50 years. Male to female ratio is 2.6:1. Small bowel obstruction is more common than large bowel obstruction. Four cardinal features of intestinal obstruction are pain abdomen, vomiting, distension and constipation. Most common etiological factor is postoperative adhesions followed by abdominal hernia. Malignancy as a cause for obstruction is more common in large bowel than small bowel.

Most patients were treated by operative procedure in comparison to conservative management; adhesiolysis (14 cases) was carried out commonly.

CONCLUSION: Obstruction due to adhesions is increasing in incidence due to increased abdominal & pelvic surgeries. The obstruction due to external hernias is decreasing due to early elective surgeries. The morbidity and mortality depends on the age of the patient, etiology of obstruction, site of obstruction, state of hydration, viability of the bowel, delay in diagnosis and surgical intervention and associated medical illness. Early diagnosis of possible strangulation will markedly decrease morbidity and mortality.

KEYWORDS

obstruction, adhesion, resection and anastomosis, adhesiolysis.

INTRODUCTION

Intestinal obstruction is define as obstruction of forward propulsion of intestinal content either due to dynamic, adynamic or pseudo-obstruction. In earlier part of century mortality and morbidity was very high. Now with better understanding of path physiology, improvement in radiological techniques of diagnosis and high degree of refinement in correction of fluid and electrolyte imbalance, introduction of antibiotics to effective bacteriological control, introduction of techniques in gastrointestinal decompression, new surgical principles, as in large bowel obstruction introduction of on table lavage and resection and primary anastomosis has replaced staged procedures and number of days in hospital stay. Improvement in field of anaesthesia has all contributed to lowering the morbidity and mortality.

AIMS AND OBJECTIVES

1. To analyze different modes of presentation of acute intestinal obstruction.
2. To study the various etiological factors of acute intestinal obstruction.
3. To evaluate the different lines of management and its outcome.

MATERIAL AND METHODS

The material for this prospective study were collected from patients admitted with acute intestinal obstruction in single surgical unit at M. B. Government Hospital attached to R.N.T. Medical College, Udaipur from the June 2017 to November 2018. 50 cases of acute intestinal obstruction were studied.

Patients came to hospital with signs and symptoms of Intestinal obstruction and willful for surgical management in our hospital were included after taking informed written consent.

Patient below 12 year of age, patients who were treated on OPD basis, refuse admission and terminally ill cases were excluded in this study.

Method of Collection of Data:

After admission to the hospital, case selection was done on basis of

history and clinical examination. Data was collected prospectively regarding the clinical features and investigations. Based on the clinical findings and radiological evidence patients were diagnosed to have intestinal obstruction.

Immediately after admissions all patients were subjected to initial resuscitation with IV fluids as required. Nasogastric decompression was done in all patients using Ryle's tube. Urine output measurement was done. Antibiotic prophylaxis was started, close observation of all bedside parameters (like pulse rate, blood pressure, abdominal girth, bowel sounds and tenderness and guarding) was done.

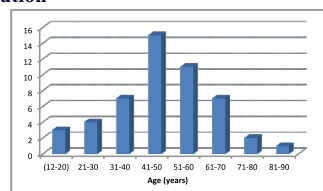
Further plan of intervention was decided upon patient's response to resuscitative measures, clinical and radiological findings, blood parameters and resolution or aggravation of signs and symptoms.

Patients who did not respond to adequate conservative management were taken up for appropriate surgical procedure after resuscitation. Postoperatively patient's condition was assessed and investigations and complications were documented. When patients underwent surgical intervention, any tissue removed was subjected for histopathological examination.

A specially designed detailed proforma was used to document and organize individual patient data. The proforma was updated, during patients hospital stay and during follow up.

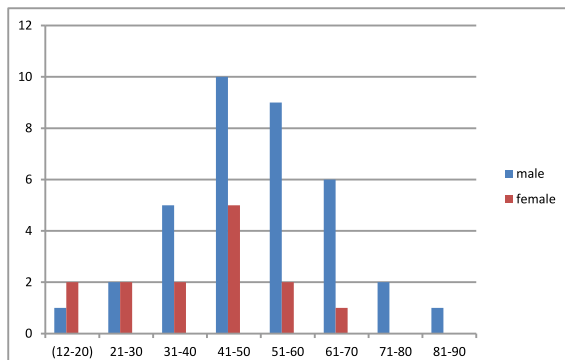
OBSERVATION AND RESULTS

1. Age Distribution



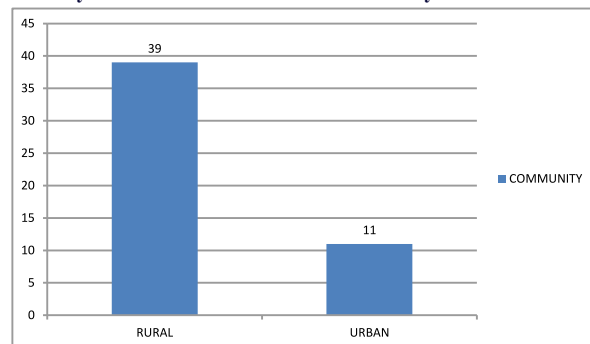
The study was done in adult age groups ranging from 12 to 90 years with a mean age of 49.3 years. The maximum incidence present in 41-50 age group.

2. Sex Incidence



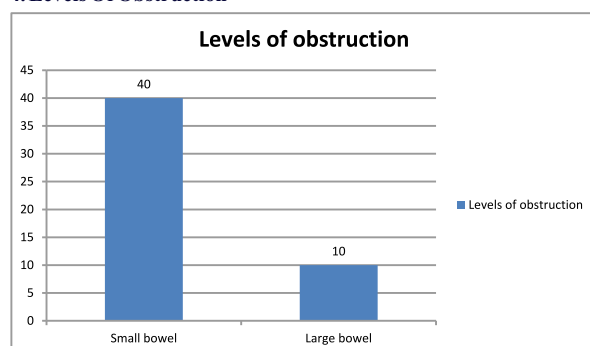
The occurrence of acute intestinal obstruction was common in male (72% case) with comparison to female (28% case). There were 36 male & 14 female with male to female patients ratio 2.6:1.

3. Analysis Of Patients On Basis Of Community Rural Or Urban



Out of 50 patients 78% (39) belonged to rural community in comparison to only 22% (11) to urban community.

4. Levels Of Obstruction



There were more of small bowel obstruction (40 case) when compared to large bowel obstruction (10 case).

5. Analysis Of Symptoms And Signs

S. NO.	SYMPTOMS & SIGN	CASE	PERCENTAGE %
1.	Pain Abdomen	50	100
2.	Vomiting	44	88
3.	Distension	39	78
4.	Constipation	37	74
5.	Fever	12	24
6.	Visible Peristalsis	6	12
7.	Mass Per Abdomen	8	16
8.	DRE- growth	3	6
9.	Tenderness	42	84
10.	Rigidity	10	20
11.	Guarding	4	8
12.	Groin swelling	11	22

Out 50 patients all 100% (50) presented with pain abdomen, constipation was present in 74% (37) patients; abdominal distension was present in 78% (39) patients, abdominal tenderness in 84% (42) patients, rigidity was seen in 20% (10) patients.

6. ETIOLOGY OF ACUTE INTESTINAL OBSTRUCTION.

a. Small bowel obstruction – 40 cases (80%)

Cause	Case	Percentage %
Adhesion & Band	20	40
Obstructed Hernia	11	22
Intussusception	1	2
Meckel's Diverticulum	1	2
Tuberculosis	5	10
Appendicular pathology	2	4

Out 50 cases of acute obstruction 40% (20 cases) were of adhesion and bands, 22% (11 cases) were of obstructed hernia, 8% (5 cases) of tuberculosis, 4% (2 cases) of appendicular pathology, 2% (1 case) of each intussusception and meckels diverticulum.

b. Large bowel obstruction – 10 case (20%)

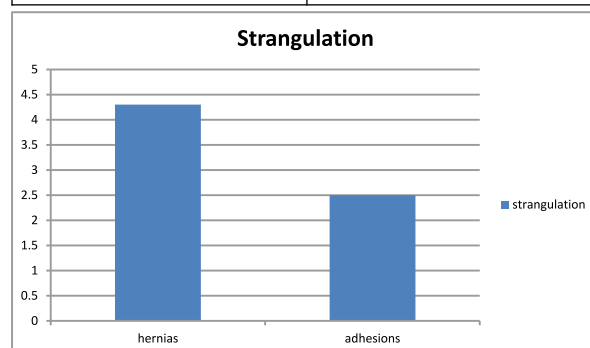
Causes	Cases	Percentage %
Malignancy	7	14
Volvulus	2	4
Stricture	1	2
TOTAL	10	20

Out 50 patients 10 patients had large bowel obstruction in which 14% (7 cases) were of malignancy, 4% (2 cases) were of sigmoid volvulus and 2% (1 case) of stricture.

7. Strangulation & Causes Of Strangulation

The incidence of strangulation was seen in up to 16% (8 cases).

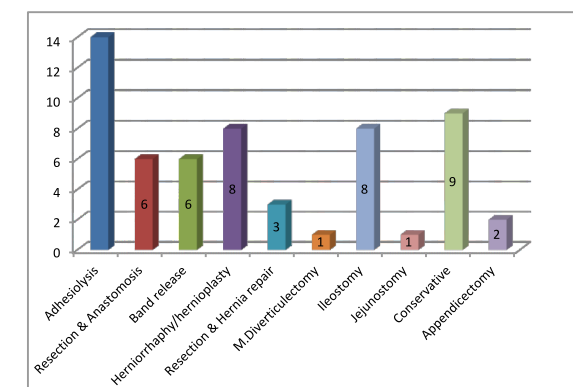
Causes	Cases
Hernias	3
Adhesions	5
Total	8



Out of 50 patients, intra-operative complication in form of strangulation was seen in 16% cases. 5 cases of adhesion and 3 cases of hernias had strangulation.

8. MANAGEMENT

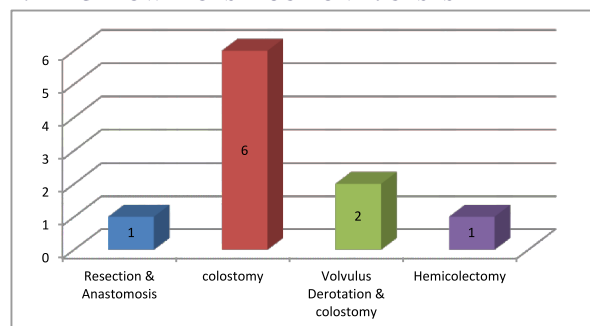
A. SMALL BOWEL OBSTRUCTION - 40 CASES



Small bowel obstruction Adhesiolysis (14 cases) was carried out commonly followed by Resection and anastomosis and band release

was done in 06 cases each. Herniorrhaphy and hernioplasty in 08 cases, stoma in (09 cases), Meckel's diverticulectomy was done in one case and appendicectomy in 2 cases. 09 cases were managed conservatively.

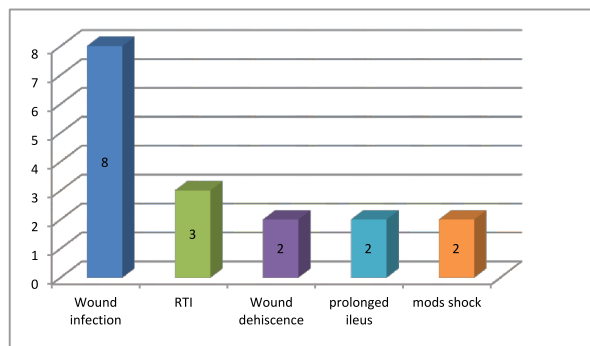
B. LARGE BOWEL OBSTRUCTION- 10 CASES



Large bowel obstruction

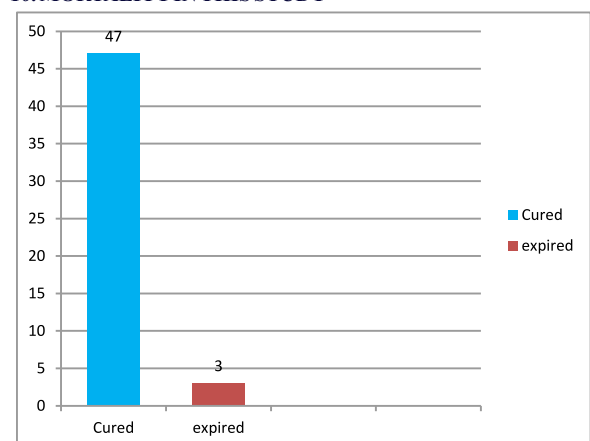
Colostomy was done in 6 cases, resection & anastomosis in 1 case and hemicolectomy in one case, derotation of volvulus with colostomy in 2 cases.

9. COMPLICATIONS OBSERVED IN THIS STUDY



Out of 41 patients operated, post operative complications were seen in 14 cases. Wound site infection was most common complication and seen in 8 (19.5%) patients Respiratory tract infection was seen in 3 (7.3%) cases. Prolonged ileus, post operative shock with multiple organ dysfunction syndrome (MODS), wound dehiscence were seen in 2 (4.8%) patients each.

10. MORTALITY IN THIS STUDY

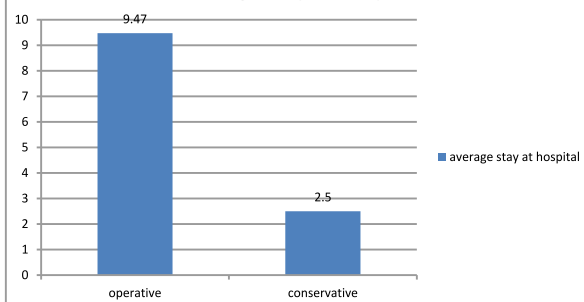


Out of 50 patients 47 patients (94%) were cured and discharged whereas 3 patients (6%) were expired following surgery.

11. Analysis Of Patients Operated To Those Discharged Conservatively On Basis Of Duration Of Hospital

Type of management	Average duration of hospital stay (days)	Number of cases
Operative	9.47	41
Conservative discharge	6.44	9

Average stay at hospital



Average duration of hospital stay for operated patient was 9.47 days and for patients who were discharged conservatively had 6.44 days.

DISCUSSION

1. INCIDENCE

Total 770 patients were admitted in our surgery unit from June 2017 to November 2018. In our clinical study incidence of intestinal obstruction is 6.4% of total admission in single surgical unit. In Adhikari¹ and sinha² series incidence of acute intestinal obstruction was 9.87% and 3.54% respectively of total admissions.

In the present series small bowel obstruction contributed to 80% and large bowel obstruction 20%. This is comparable with reports of Michel¹ and Becker⁷ where small bowel obstruction constituted to 80% and large bowel obstruction constituted 20%.

2. AGE INCIDENCE

The acute intestinal obstruction occurs in all age groups. The age distribution in our series ranges from 12 to 90 years with mean age of 49 years. Maximum incidence was seen between age group of 41-50 years (30%).

Fuzan⁵ reported mean age of 56 yrs. Ramachandran⁶ in his study reported the maximum incidence was between 21-40 yrs.

Study done by Gills & Eggleston⁷ reported that 60% of intestinal obstruction occurs in 30-60 age groups their study almost correlate with present study.

AGE GROUP	COLE GJ ⁸ (%)	SOUVIK ADHIKARI ¹ (%)	HARBHAN SINGH ⁹ (%)	PRESENT STUDY (%)
12-20	10	9	10	6
21-30	10	11	16	8
31-40	18	15	18	14
41-50	16	24	15	30
51-60	15	13	10	22
61-70	9	12	10	14
71-80	9	8	5	4
81-90	6	4	4	2

3. SEX INCIDENCE

In our study the incidence of intestinal obstruction in males was 36 cases (72%) and that of females was 14 cases (28%). Male to female ratio is 2.6:1.0 (3:1)

The male preponderance is consistent with series reported from other part of world. Fuzan⁵ and Lee¹⁰ reported 2:1 male to female ratio. Budharaja¹¹ reported in his study a ratio of 4:1 between male and female. Previous study is comparable to present study.

4. AETIOLOGY

The cause of intestinal obstruction differs among different geographical locations. In the present clinical study about 78% of the patients were belonging to rural population and remaining 22% were from urban population which does not yield much statistical significance because our hospital being a government hospital, which is serving most of the poor socio-economic status hence the percentage of patients belonging to rural background are high.

In our study the following etiological factors were found,

Adhesions	40%
Obstructed Hernias	22%

Volvulus	04%
Carcinoma colon	14%
Tuberculosis	10%
Intussusceptions	02%
Abdominal tuberculosis	08%
Meckel's diverticulum	02%
Appendicular pathology	04%

a. Adhesions

A total of 20 (40%) cases attributed to adhesions. Among adhesions 12 (24%) case of the intestinal obstruction was due to postoperative adhesions and remaining 3 (6%) cases of tubercular adhesions and 5 (10%) cases was found to be non-specific.

Majority of incidence was found within 1 year of surgery.

Jain and Prasad¹² found that adhesions contributed for intestinal obstruction up to 25.5%.

Ti and Young¹³ reported that postoperative adhesions and bands contributed up to 23.8% as cause of intestinal obstruction in 62 cases with only postoperative adhesions in 52 patients (19.2%)

Fuzan⁵ study in 582 patients found that, in 246 (42.2%) patients the cause for intestinal obstruction was adhesions due to previous operations.

The rise in adhesion related intestinal obstruction is due to increase in abdomino-pelvic surgeries.

b. Hernia

A total number of 11 (22%) cases of intestinal obstruction are related to hernia in this study of 50 cases. Out of these 11 cases, 3 (27%) cases are strangulated hernia. Out of 11 cases, 10 cases of hernia are male and one female patient. All 3 cases of the strangulated hernia patients underwent resection and anastomosis. In other 8 cases only hernia repair was done. Out of 11 case, 9 case of inguinal hernia and two case of femoral hernia.

Ramachandran⁶ reported 38.6% of overall incidence of strangulated small bowel obstruction with 21.4% of obstructed hernia in adults, which is comparable to our study.

Budharaja¹¹ studies revealed the aetiology for acute intestinal obstruction secondary to obstructed hernia (small bowel and large bowel) accounted for 33%. In his study, the incidence of gangrene was up to 22%. That is also comparable to this study. Earlier hernia related obstruction & strangulation were higher but now due to early diagnosis and management hernia related obstruction and strangulation decreased.

c. Volvulus

Volvulus constituted for about 4% in our studies, 2 cases. Both cases were of sigmoid volvulus.

Budharaja¹¹ series revealed that 18.2% of intestinal obstruction was due to volvulus & in that 11.9% was due to small bowel volvulus and 6.19% due to large bowel volvulus.

Peter¹⁴ study showed that 26% of small bowel obstruction was due to volvulus.

Roggo and Ottinger¹⁵ series reported that the twisted segment was found to be gangrenous in 46% of patients. They also proposed in their study that small bowel Volvulus accounts for 3.5% - 6.2% of all cases of small bowel obstruction and 5% - 22.7% of all intestinal obstructions. This study comparable to present study Ramachandran⁶ in his study quotes that volvulus is the second commonest cause of small bowel obstruction which accounted for nearly 24%.

Gill⁷ reported that incidence of volvulus was 25% (36cases), out of these small bowel volvulus accounted for 23 patients and large bowel volvulus for 13 patients.

d. Bands

In our study intestinal obstruction due to bands accounted for 12% (06) case of obstruction.

A study series by Gill and Eggleston⁷ of 147 cases showed that 6.8% of small intestinal obstruction is due to bands.

e. Appendicular pathology

Two patient (4%) out of 50 had appendicular pathology in form of inflamed appendix which was adherent to caecum, ileum and omentum leading to acute small bowel obstruction.

f. Malignancy

In the present study acute intestinal obstruction related to malignancy constituted 7 (14%) cases. Three case of rectal growth, one of descending colon and three case of right colon growth.

Ti¹³ noted that carcinoma of descending colon and rectum constituted 37.2%. Ascending colon and caecum constituted 9.8%.

Thompson¹⁶ in his series recorded the incidence of obstructing carcinoma of right colon equals 26% and left colon 69%.

Ramachandran⁶ found in his study that sigmoid colon cancer accounted for 6.6% of intestinal obstruction in large bowel, which is nearer to our study.

Fuzan⁵ revealed the cause of malignant large bowel obstruction of which ascending colon constituted 3.38% and sigmoid colon constituted up to 27%.

g. Intussusception.

In our study out of 50 cases of acute intestinal obstruction one case was of intussusception (2%) causing small bowel obstruction.

Ti¹³ revealed his study of 261 patients the incidence of intussusception accounted for 6.3% (17 cases) of intestinal obstruction. Out of 17 cases, 14 were infants and 3 adults.

h. Tubercular abdomen.

The present study accounted for 10% (5 cases) of tubercular abdomen as a cause for intestinal obstruction.

The study series of Sircar¹⁷ reported to have 5% of cases of abdominal tuberculosis present with acute intestinal obstruction.

Kapoor¹⁸ in series managed 109 cases of abdominal tuberculosis out of which 09 (8.2%) cases were purely had acute intestinal obstruction. The increase in tuberculosis related obstruction is due to not taking proper treatment.

I. Meckel's diverticulum

Our study concluded with the incidence of Meckel's diverticulum constituting for 2% (1 case) of acute intestinal obstruction. Budharaja¹¹ reported to have incidence of 1.23% of Meckle's diverticulum causing intestinal obstruction. Ramachandran⁶ in series stated about 4.2% of acute intestinal obstruction was due to Meckel's diverticulum.

CLINICAL FEATURES

Maximum presenting symptoms in this study was

Pain abdomen	–	100% (50 cases)
Vomiting	–	88% (44 cases)
Distension abdomen	–	78% (39 cases)
Constipation	–	74% (37 cases)

Asbun¹⁹ in their retrospective analysis of 105 cases of small bowel obstruction found that incidence of pain abdomen 82%, vomiting 88%, were commoner than constipation (28%) and distension of abdomen (56%).

Budharaja¹¹ in his study reported that, symptoms of in order of frequency were pain abdomen 95%, distension of abdomen 82%, vomiting 75%, absolute constipation 50% constituting acute intestinal obstruction.

Mass per abdomen on palpation is present in 8 (16%) patients of total study more in malignancy and ileocaecal tuberculosis.

DRE examination reveals growth in 3 patients of malignancy and blood stain in one case of Intussusception.

MANAGEMENT

Radiology

All patients in our study group were subjected to initial skiagram abdomen. Findings of multiple air fluid levels and distended intestinal

loops were noted. Taneja¹⁷ report shows 90% of cases with multiple air fluid level and Savage et al²⁰ reports 95% cases with significant findings. In the present study 66 % of skigram showed multiple air fluid levels. Distended loops were seen in 15 Cases i.e. 30.0%.

TREATMENT

All patients were subjected to initial resuscitation with Nasogastric intubation, Intra venous fluids, and input output management. Decision for advocating trial of expectant management was decided upon patient's overall general condition. Emergency surgery without initial expectant management was advocated in few patients in whom the features of peritonitis or other signs of endangered gut viability were present. Out of 50 admissions 29 patients were taken for emergency surgery after initial resuscitation without attempting expectant management and among those where expectant management was attempted 12 patients who did not respond to conservative management were taken for emergency surgery. A total of 9 (18%) patients were treated and discharged with conservative management. 41 (82%) patients were operated.

Percentage of successful conservative management among various studies is given in table

STUDY	YEAR	PERCENTAGE TREATED CONSERVATIVELY
William SB et al ²¹	2005	43
Rocha FG et al ²²	2009	46
Schwab DP et al ²³	2001	61
Present study	2018	18

- 41 cases were operated in this study.
- 9 cases managed conservatively.

- Adhesiolysis was done in 14 cases.
- Resection and anastomosis was done in 07 cases

3 cases of obstructed hernia.

2 cases of tubercular stricture.

1 case each of meckel's diverticulum and intussusception

- Release of bands was done in 6 cases.
- Derotation / undoing of volvulus were done in 2 cases.
- Hernioplasty and herniorrhaphy was done in 8 cases
- Resection and hernia repair was done in 3 cases.
- Colostomy was done in 06 cases (2 cases of volvulus, 4 cases of malignancy)
- Ileostomy done in 08 cases and jejunostomy in one patient.

POST-OPERATIVE COMPLICATIONS

Wound infection – 8 cases (19.5%)

Respiratory tract infection – 3 cases (7.3%)

Wound dehiscence – 2 cases (4.8%)

Prolonged ileus – 2 cases (4.8%)

Multi organ failure and shock – 2 case (4.8%)

Deaths – 3 cases (7.3%)

MORTALITY

In present study mortality is of 6% due to complication of acute intestinal obstruction. Among the patient who die are due to of following cause;-

1. Respiratory infection
2. Shock due to septicaemia (peritonitis)
3. Multi organs failure due to septicaemia.

Gill & Eggleston⁷ study in 1965 has mortality of 16%, and C.S. Ramachandran⁶ study in 1982 12.7% mortality.

The decrease in mortality is due to better understanding of pathophysiology of obstruction, resuscitative and supportive treatment, and aggressive surgical therapy in combination of improved technique in anaesthesia.

The mortality in intestinal obstruction is high in individual who develop strangulation and gangrene of bowel, those present late, elderly and having associated disease.

So, it is quite evident that the duration of symptom, age, associated disease, general condition of patient and operative procedure adopted has a definitive role in prognosis and mortality.

FOLLOW UP

12 patients out of 47 attended follow up i.e. 25.5 % attended follow up with loss of follow up 75%. 10 out of 38 patients (26%) who were operated attended follow up whereas only 22% (2 out of 9) patient who were discharged after conservative treatment attended follow up.

CONCLUSION

Following conclusions are derived from the study

- Intestinal obstruction still remains an important surgical emergency.
- Late presentation of patient with complication possesses a challenging problem for surgical management.
- Patient with a clinical picture of the obstruction of bowel demand vigorous correction of fluid and electrolyte and metabolic disorders which can be severe and life threatening.
- Clinical, radiological findings help in arriving to a diagnosis while operative finding put together can bring about best and accurate diagnosis.
- Early operation avoids peritonitis and systemic sepsis associated with multi organ failure.
- A trial of conservative non operative management for limited period may give good results in patients with intestinal obstruction especially with prior history of abdominal surgery, tuberculosis.

DECLARATIONS

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Conflict of interest: none declared

Ethical approval: ethically approved.

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