



A clinical study of acute intestinal obstruction in a teaching hospital

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Abstract:

INTRODUCTION- acute intestinal obstruction is one of the commonest surgical emergencies in all age groups with similar mode of presentation but a variety of causes. The age old dictum of " never let the sun set or rise in small bowel obstruction" holds good to reduce the incidence of strangulation. Success in treating intestinal obstruction depends on the cause and also on skillful management and appropriate treatment of pathological effects of intestinal obstruction. **OBJECTIVES-** to study the common causes of intestinal obstruction faced by a general surgeon and to study methods of early diagnosis and intervention for better outcome. **MATERIALS AND METHODS--** Cases admitted in the department of General surgery, Sri Venkateswara Medical College and SVRR hospital between July 2009 to November 2011 forms the material of the study. Investigations used in this study along with clinical examination are biochemical, radiological and others. All patients in whom a diagnosis of intestinal obstruction was established on admission and confirmed during operation between July 2009 to November 2011 were included in the study. Patients admitted with the diagnosis of intestinal obstruction and treated conservatively, cases of gastric outlet obstruction and pediatric age group are excluded from the study. A total of 135 cases are included in this study. **RESULTS--**The age varied between 14 and 85 years. Mean age was 48.9 years. The maximum no. of patients, 29[21.48%] belonged to 61-70years age group. In this study totally 93 males [68.89%] and 42 females [31.11%] were studied. The male to female ratio was 2.21:1. The most common cause was obstructed hernia, 36 cases [26.67%]. Next comes the adhesive intestinal obstruction, 35cases[25.93%]. Adhesive obstructions were decreased because of availability of minimally invasive surgery. **CONCLUSION--**The most common cause was irreducible hernia, next the adhesive obstruction followed by Sigmoid volvulus, Tumors, Ileo-caecal tuberculosis, Mesenteric ischemia, intussusception and others. From this study, abdominal pain, vomiting, constipation, distention of abdomen are the most common features of intestinal obstruction. Fever and Tachycardia were present in majority of cases. Shock was associated with high mortality. Surgical intervention, when early, considerably reduced the mortality.

Key words: Acute intestinal obstruction, Extra cellular fluid, Respiratory ICU

Introduction:

Acute intestinal obstruction is one of the commonest surgical emergencies in all age groups. Mode of presentation is same, but underlying cause varies in each age group. In earlier part of the century mortality and morbidity was very high. Now with better understanding of pathophysiology, improvement in radiological techniques of diagnosis and high degree of refinement in correction of fluid and electrolyte imbalance, introduction of antibiotics for effective bacteriological control, introduction of techniques in gastrointestinal decompression, new surgical principles, like on table lavage and resection and primary anastomosis replacing staged procedures

and number of days in hospital stay, improvement in field of anesthesia, has all contributed to lower the morbidity and mortality.

The dictum of ' never let the sun set or rise in small bowel obstruction' has made early surgical intervention must for intestinal obstruction [1]. This in turn has reduced the incidence of strangulation of bowel, which was a major cause of mortality. Success in treating intestinal obstruction depends on the cause and also on skillful management of pathological effects of intestinal obstruction.

Materials and Methods

Cases admitted in the department of General Surgery, Sri Venkateswara Medical College and S.V.R.R.Hospital between July 2009 to November 2011 forms the material of the study. Investigations utilized in this study along with clinical examination are Biochemical, Radiological and others.

All patients in whom a diagnosis of intestinal obstruction was established on admission and confirmed during operation between July 2009 to November 2011 were included in the study.

Patients of intestinal obstruction treated conservatively, cases of gastric outlet obstruction and pediatric age group are excluded from the study. A total of 135 cases are included in this study.

The diagnosis was established by the admitting surgeon based on clinical picture, supported by radiological evidence like plain x-ray of abdomen, ultrasonography and confirmed at laparotomy.

Operative details included the cause of obstruction, presence of strangulation and nature of procedure performed.

Mortality was defined as death following surgery while post operative morbidity, as duration of hospital stay and associated complications following surgery. Patients were followed up till the time of their discharge from hospital and for further two years.

Ethical Committee Approval

The present study has got the approval of Ethical committee of Sri Venkateswara medical College, Tirupati.

Surgical Management

Patients with clinical features of acute intestinal obstruction, are resuscitated and investigated simultaneously. Severity of dehydration is assessed by clinical parameters and intravenous fluids Ringer's lactate and Normal saline are given till peripheral pulse, venous filling and urine output are satisfactory. Patients are monitored regularly by looking at level of consciousness, pulse rate, blood pressure, O₂ saturation and urine output. Blood is transfused whenever needed. Abdomen is repeatedly examined for signs of strangulation. All cases with established diagnosis and indication for surgery are taken up for surgery by inguinal exploration or laparotomy and pathology is identified and dealt with. Procedures usually done are release of constricting agent in herniae, resection of gangrenous bowel, derotation of volvulus, palliative resection of growths etc. Cases are done under spinal, epidural or general anaesthesia. Old people and shocked patients with low O₂ saturation needed intubation and RICU

support post operatively. Usual post operative complications are wound infection, wound dehiscence, atelectasis, pneumonia, anastomotic leak etc. Few people developed incisional hernia at six months follow up. A total of 15 deaths occurred during the study. The results regarding age, sex, causes are tabulated.

Results

135 cases of intestinal obstruction which were admitted during July 2009 to November 2011 in S.V.R.R. Hospital were studied in this work in detail. These cases were studied with reference to clinical features, duration of illness, investigations, operative details and post operative recovery period.

Total cases studied-135, Males-93 Females-42

1. GROIN HERNIAS:

Total operated-27. 20% of cases of intestinal obstruction

Inguinal hernias-24 [17.78%] Femoral hernias-3 [2.22%]

1.1 Inguinal Hernias

Total cases 24. This is the commonest of all hernias contributing 66.67% of all obstructed hernias. All were males except one female. Most of the cases were at the age of 55 years. Associated diseases- six patients were cases of known T.B on treatment and 3 were diabetics and four had prostatic enlargement.

Management: All 24 cases were operated after correcting fluid imbalance and investigations by appropriate procedures.

Most of the cases were dehydrated and electrolyte study revealed hyponatremia and hypokalemia. Levels of obstruction- constriction rings were found at the level of external ring in 15 cases [62.5%] and at internal ring in 9 cases [37.5%].

Complications- four cases developed wound sepsis post operatively.

Femoral Hernia

Total 3cases [8.33% of groin hernias]. The male to female ratio is 1:2. One case was 82 year old female with pain abdomen, irreducible left groin swelling and vomiting of 3 days duration, the content was part of circumference of bowel wall with gangrenous changes. Hence resection and anastomosis was done followed by herniorrhaphy. Another case was 55 year old with acute intestinal obstruction with viable small bowel. So reduction and repair was done.

1.2 other hernias:

Incisional hernia 4 (11.11%) Umbilical hernia 3 (8.33%) Epigastric hernia 1 (2.78%)

All the 3 umbilical hernia patients had strangulated bowel and underwent small bowel resection and anastomosis.

2. Adhesions And Bands: There were 35 cases [25.93%] of intestinal obstruction due to adhesions and bands which underwent surgery.

Incidence is more in males than in females with ratio of 26:9. Obstruction due to post operative adhesions equals to congenital or inflammatory bands. Of the 35 cases 17 cases were due to post operative adhesions. 7 cases were due to post operative peritonitis, [2] 2 after gastro-jejunostomy, 2 after appendectomy, 2 after hysterectomy, 2 after stab injury, 1 after feeding jejunostomy, one after hernia. Small bowel was involved in the obstruction in all cases. Six cases had gangrenous bowel and resection and anastomosis was done. Other 28 cases had viable bowel and only adhesiolysis was done. All cases recovered well in the post operative period except 3 cases that underwent resection and anastomosis and expired due to septicemia.

3. Volvulus: Total no. of cases 20. 14.81%, most were cases of sigmoid volvulus. Third common cause of intestinal obstruction was volvulus of the gut. It forms 14.81% in the present series. In western countries the incidence of volvulus is low, in parts of India, Africa and South America this is more common than in Europe and North America. Sigmoid volvulus- age incidence 40-70 years; Sex incidence with male to female ratio is 3:1

11 cases gave h/o intermittent constipation. All of them were of poor economic status and used to take bulky diet consisting of food rich in carbohydrate and roughage like cereals and rice, and bowel habit of passing bulky stools except in constipated cases.[3]. 20 cases presented with sigmoid volvulus for the first time and they were admitted for progressive abdominal distention, constipation and abdominal pain. Vomiting was a very late feature and present only in 3 cases. Electrolyte study revealed not much of change except mild hyponatremia. All patients had redundant mesocolon and narrow pedicle. All had anticlockwise rotation from half twist to one and half twists. Out of 20 cases 15 had viable bowel treated with resection of redundant bowel. Remaining 5 cases had gangrenous bowel with poor general condition, Hartmann's procedure was done. One patient expired on 2nd post operative day due to septicemia shock.

4. Tumors-Total no. of cases 18[13.33%].

Age incidence is more than 50yrs. male to female ratio is 5:4.

Carcinoma of left colon-4cases , Carcinoma of right colon-4 cases

Carcinoma rectum-5 , Carcinoma caecum -3
Sigmoid colon-1, Transverse colon-1.

All the tumors of the colon and rectum presented with intestinal obstruction were adenocarcinomas. All patients presented with acute intestinal obstruction. clinically all patients had distended abdomen and constipation. All cases were treated by defunctioning colostomy and bypass procedure like ileotransverse anastomosis. Total IT colostomies were 9 and colostomies were 9. Tumors of colon presenting with intestinal obstruction formed major portion of mortality in this study. Elderly age, co-morbid illness, late presentation formed important causes of mortality in this study.[4]

5. Intussusception: no. of cases-5[3.71%] Age incidence 14-50yrs

Sex ratio- male: female = 2:3

Two cases were diagnosed pre operatively as intussusceptions by the typical h/o colicky abdominal pain, sausage shaped mass and red current jelly stools. Other three cases were operated for acute intestinal obstruction with visible peristalsis and pre operatively intussusceptions were confirmed. Three cases were severely dehydrated and the electrolyte study showed decreased sodium, potassium and chloride. Patients were resuscitated with normal saline. [5]

6. Ileo caecal tuberculosis:

No. of cases-10 [7.41%] Age incidence- 30-50yrs Sex incidence-M:F=3:2

Associated pulmonary tuberculosis was seen in 3 cases. The incidence is becoming less due to early detection and mass screening programmes and adequate chemotherapy for pulmonary tuberculosis. Cases were operated depending upon the structures involved and type of disease by procedures like resection and end to end anastomosis, Rt.hemicolectomy, Ileo-transverse anastomosis and adhesiolysis, anti tuberculous treatment post-operatively.[6]

7. Internal Herniation: one male patient of 35 yrs had herniation of ileal loop through rent in the mesentery. Per-operatively ileum was gangrenous, which was excised.

8. Miscellaneous:

8.1. Mesenteric vascular ischemia:

No. of cases-7 [5.18%] Age incidence-30-60yrs
M: F ratio=5:2

All seven patients presented with abdominal pain, distention and tenderness. Three patients presented with bloody mucus stools. All patients had bowel ischemia and gangrene which were resected.

8.2. Trichobezoar-one patient of 16 yrs presented with intestinal obstruction, at laparotomy a mass of hair was found in small bowel.

8.3. Faecal Impaction: one case of faecal impaction in transverse colon, relieved at laparotomy.

Table 1: Age and sex distribution of patients with intestinal obstruction

Age group	Male	Female	Total	Percentage
13-20 yrs	4	4	8	5.92%
21-30yrs	6	3	9	6.67%
31-40yrs	21	8	29	21.48%
41-50yrs	15	10	25	18.52%
51-60yrs	13	11	24	17.78%
61-70yrs	25	4	29	21.48%
71-80	8	1	9	6.67%
81-90yrs	1	1	2	1.48%
	93	42	135	100%

Table 3: Symptoms distribution of patients with intestinal obstruction

S. No	Symptoms	Percentage
1	Pain	94.30
2	Vomiting	82.10
3	Constipation	73.20
4	Distention	60
5	Inguinal swelling	15.40
6	Fever	8.90
7	Bleeding per rectum	5.70
8	Intra abdominal lump	3.30

Table 2: Causes of intestinal obstruction

Cause	Male	Female	Total	Percentage
Obstructed hernia	27	9	36	26.67%
Adhesive obstruction	26	9	35	25.93%
Sigmoid volvulus	15	5	20	14.81%
Tumors	10	8	18	13.33%
Ileo caecal TB	6	4	10	7.41%
Mesenteric ischemia	5	2	7	5.18%
Intussusception	2	3	5	3.71%
Miscellaneous	2	2	4	2.96%
	93	42	135	100%

Table 4: Comparison of cause of intestinal obstruction in present series with other series

Series	Gill and Eggleston 1965	Cole 1965	Brooks and Burtner 1966	Nelson and Ellis 1962-83	Ramchandran C.S 1982	McEntee 1985	Arun Kumar Gupta et al;1997	Present series 2009 2012
Cause	N=147	N=436	N=250	N=297	N=417	N=228	N=128	N=135
Hernia	27.0%	35.0%	25%	23%	13.6%	25%	11.7%	26.67%
Adhesions	15%	10%	23%	31%	23.15%	32%	54.7%	25.93%
Volvulus	25%	3.7%	6.4%	5%	27.4%	4.05%	18.85%	14.81%
Intussusception	12%	27%	19.05%	1.05%	7.4%	0	2.35%	3.71%
Malignancy	0	1%	5%	30%	9.3%	26%	8.65%	13.33%

Table 5: Acute intestinal obstruction-mortality rates in various series

S.No.	Series	Year	Number of cases	Mortality
1	Smith et al	1955	1252	14.5
2.	Barling	1956	355	20
3.	Savage PT	1959	179	15
4.	Waldon and Hampton	1961	493	14
5.	Gill and Eggleston	1965	147	16
6.	Katiala et al	1972	558	8
7.	Stron et al	1973	264	33
8.	Sufian and Matsumoto	1975	171	19
9.	Belokar et al	1978	267	17.2
10.	Stewardon et al	1978	238	5.5
11.	Ramachandran et al	1982	417	12.7
12.	Nelson and Ellis	1984	279	8

13.	Rao KP et al	1984	48	8.5
14.	Mc Entee et al	1987	220	11.4
15.	Muncha P Jr	1987	314	9.6
16.	Arun Kumar Gupta et al	1997	128	8.6
17.	Present series	2012	135	11.11

Discussion

In the present study 135 patients with pre operative and post operative diagnosis of intestinal obstruction in Sri Venkateswara Medical College and S.V.R.R.Hospital during the period of two and half years from July 2009 to November 2011 were included. All the patients were studied in detail with regard to symptomatology and clinical features.

Age and sex distribution of the patients is shown in table 1. The youngest patient was of 14 years and the oldest patient was of 85 years. Mean age was 48.9 years. The maximum no. of patients, 29[21.48%] belonged to 61-70years age group. In this study totally 93 males [68.89%] and 42 females [31.11%] were studied. The male to female ratio was 2.21:1.

The clinical features were shown in table 3. Pain abdomen was the commonest clinical feature and was present in 94.30% of patients. This is followed by abdominal distention, about 82.10%, constipation 69.10%, vomiting 78%.of patients. Muscle guarding and rise in temperature suggested strangulation. The diagnosis of intestinal obstruction was made by clinical examination and radiological examination.

The causes of intestinal obstruction observed in this series are shown in table 2. The most common cause was obstructed hernia, 36 cases [26.67%]. Next comes the adhesive intestinal obstruction, 35cases[25.93%]. Adhesive obstructions were decreased because of availability of minimally invasive surgery.

In this study more no. of obstructed hernia patients belonged to old age. Mortality rises sharply when the patient is above 60years. No significant variation was observed with regard to age when compared to other studies.

Fever: the guidelines provided by Harold Lafall [USA1972] read an elevated body temperature in the presence of symptoms of intestinal obstruction may be interpreted as a sign of intestinal strangulation. Body temperature of >102°F with features of obstruction raises the suspicion of

strangulation. When the temperature is below 100°F the outcome is bright where as when the body temperature crosses 103°F the results are gloomy. The patient with high body temperature of short duration is critically ill and requires early surgery than the patient with long duration with no fever, whose prognosis is better.

Time relation: The time interval between onset of symptoms and arrival to the hospital for admission and surgical intervention was noted. When the duration was increased the mortality also increased. 60% of cases reported after 48 hours; where death rate was as high as 36.60%. 40% of cases who reported less than 48 hours had the death rate of 20%, showing the importance of immediate surgical intervention. [7,8].

When the patient was resuscitated well pre operatively with gastric decompression, I.V.fluids and antibiotics, a time delay of few hours, has not been observed to increase the mortality.

Conclusion

This study mainly emphasizes on the usual causes of intestinal obstruction that were met with and I have also analyzed the clinical presentation, etiological factors and management of these cases. This study did not include Paralytic ileus, other forms of functional intestinal obstruction and sub-acute intestinal obstruction which were treated conservatively and pediatric cases.

In this study the most common cause was irreducible hernia, next comes the adhesive obstruction followed by Sigmoid volvulus, Tumors, Ileo-caecal tuberculosis, Mesenteric ischemia, intussuception and others.

From this study, abdominal pain, vomiting, constipation, distention of abdomen are the most common features of intestinal obstruction. Fever and Tachycardia were present in majority of cases. Shock was associated with high mortality. Surgical intervention, when early, considerably reduced the mortality.

When the time lag was more than 72 hours, patients were past 60 yrs, the mortality raised sharply.

Active and correct pre-operative preparation of 4-6 hrs is rewarding. Release of obstruction, By-pass operations, Resection and end to end anastomosis and Exteriorizations are the procedures available. [Paul-Mickuliz procedure]



Figure 1: Air fluid levels in acute intestinal obstruction

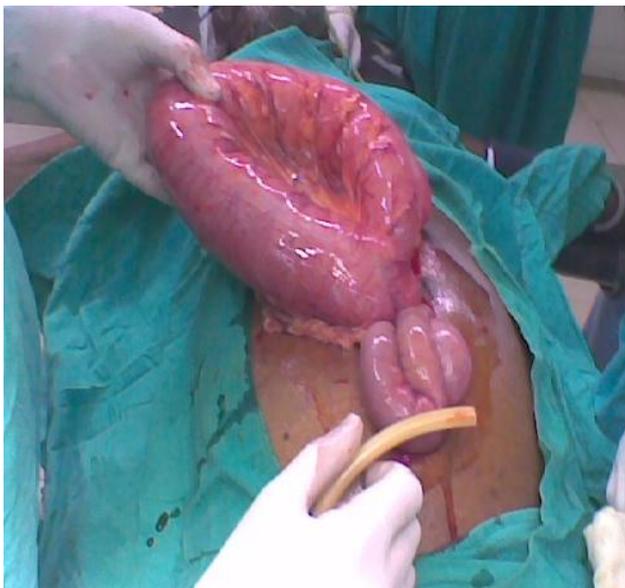


Figure 2: Sigmoid volvulus

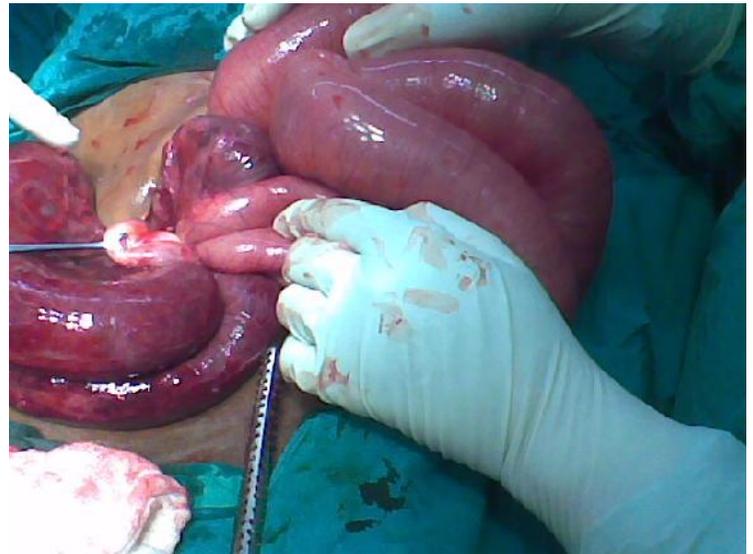


Figure 3: Adhesion and kinking of small bowel with internal herniation- complex type of obstruction



Figure 4: Jejunum-jejunal intussusception



Figure 5: Resected gangrenous intussusception

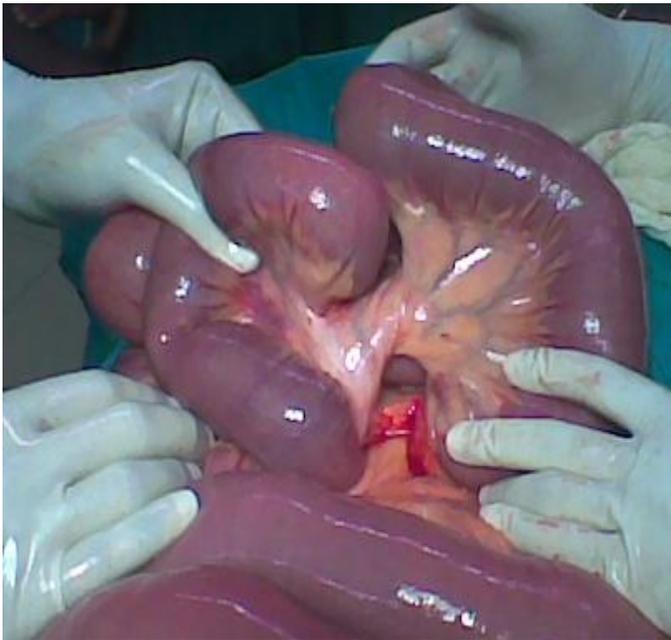


Figure 6: Twisted narrow based mesentery with small bowel volvulus



Figure 7: stricture of small intestine

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Acknowledgement

Authors acknowledge the immense help received from the scholars whose articles are cited and included in references of this manuscript.

Source of funding: Nil

Conflicts of interest: Nil

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