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**Original Research Article**

# A clinical study of aetiology of acute intestinal obstruction

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## ABSTRACT

**Background:** Acute intestinal obstruction is one of common abdominal emergency and is associated with significant morbidity and mortality especially if it progresses to bowel ischemia. The diagnosis and management of the patient with intestinal obstruction is one of the more challenging emergencies that a general surgeon can come across. Although the mortality due to acute intestinal obstruction is decreasing with better understanding of pathophysiology and improvement in diagnostic techniques, fluid and electrolyte correction, much potent anti-microbials but still mortality ranges from 10-15% and more so in developing countries.
**Methods:** The study will be conducted in the department of general surgery with symptoms and signs of acute intestinal obstruction admitted in the surgical ward. Fifty cases of intestinal obstruction have been studied. Patients belonged to all the age groups except infants are included in present study. The criteria for selection of cases was based on clinical history, physical findings, radiological and haematological investigations. The study was divided into clinical study, investigations and treatment. The results are tabulated stressing on following points age, sex, symptoms examination findings, investigations, abnormalities, probable causative factors, operative findings and operative procedure adopted and complications if any.
**Results:** The commonest cause of intestinal obstruction in the adults in this study series was postoperative adhesions (36%) followed by obstructed/strangulated hernia (26%). Malignancy of the large bowel was seen in 9 cases constituting 18% of cases where as incidence of Volvulus of bowel was 4% in this series. Although pulmonary tuberculosis is more prevalent in India due to advent in use of antitubercular drugs incidence of abdominal tuberculosis is becoming less. In present study incidence of ileocaecal tuberculosis was 10%. One case of mesenteric ischaemia was present in our study.
**Conclusions:** Acute intestinal obstruction remains an important surgical emergency in the surgical field. Success in the treatment of acute intestinal obstruction depends largely upon its early diagnosis, skilful management and treating the pathological effects of the obstruction just as much as the cause itself.

**Keywords:** Acute intestinal obstruction, Obstructed/strangulated hernia, Postoperative adhesions, Volvulus of bowel

## INTRODUCTION

Intestinal obstruction occurs due to the failure of propagation of intestinal contents and may be due to a mechanical or functional pathology.

Acute mechanical Intestinal obstruction is one of the leading causes of surgical admissions in most emergency departments worldwide. In developing countries, the causes of mechanical bowel obstruction are changing in their pattern because of better health care facilities, early access to hospitals and increasing rate of early surgical intervention.[1]

Intestinal obstruction is a significant cause of morbidity and mortality, especially when associated with bowel gangrene or perforation. Though intestinal obstruction can be diagnosed easily, the underlying cause except postoperative adhesions and external hernias are difficult to be diagnosed preoperatively.

The attempts to treat acute intestinal obstruction dates back to centuries. In 6th century Sushrutha wrote oldest known descriptions of bowel surgery. Forms of intestinal obstruction like strangulated hernia, intussusception were known to the ancient Egyptians.

Adesunkanmi et al, did a retrospective study of one hundred and fourty two patients with acute intestinal obstruction over a period of ten years at Wesly guild hospital to determine the cause and outcome of this problem in African population.[2]

Fuzan et al, and colleagues did a retrospective study of mechanical bowel obstruction in 582 patients in Turkey.[3] Among these adhesions were most common cause (44%) followed by strangulated hernia (23.9%), volvulus (12.7%), and colonic obstruction (10.1%).

Rai et al, conducted a prospective and retrospective study over risk of strangulated and obstructed groin hernias in a period of 10 years.[4] Elderly and young patients had more complications, in children right side hernia was significant factor. Femoral hernia showed more strangulation than others.

Sarkar et al, done a retrospective study of 16 cases of acute sigmoid volvulus.[5] Five cases had complete gangrene (31%), 3 had partial strangulation. Resection and anastomosis was done in all cases with maximum rectal stretching except in one case.

## METHODS

The materials for the clinical study of intestinal obstruction were collected from cases admitted to various surgical wards, fifty cases of intestinal obstruction have been studied. Patients belonged to the all age groups except infants included in the study. The criteria for selection of cases was based on clinical history, physical findings, radiological and haematological investigations.

Patient who were having subacute intestinal obstruction treated conservatively and only those cases of acute intestinal obstruction which were managed surgically were studied to establish the pathology of intestinal obstruction with an aim to know the mode of presentation, physical findings, radiological and haematological findings, operative findings and outcome of acute intestinal obstruction.

After the admission of the patient, clinical data were recorded as per proforma. The diagnosis mainly based on clinical examination and often supported by haematological and radiological examinations.

***Study divided into***

- Clinical study
- Investigations to find out aetiology

Study was conducted under the following headings:

***History taking***

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

***Physical examination***

- General physical examination - evidence of dehydration and the severity of it were looked into it and vital parameters were recorded.
- Local examination - Abdominal examination was done under standard headings inspection, palpation, percussion and palpation. Per rectal examination was done and findings were noted.
- Systemic examination - All other systems were examined carefully to rule out associated anomalies and to assess the fitness for surgery.

***Laboratory examination***

- Haemoglobin
- TC and DC
- BT and CT
- Blood grouping and Rh typing
- Urine for albumin and microscopy

***Radiological examination***

- Plain X-ray, supine and erect abdomen
- Ultrasound abdomen examination
- CT Scan abdomen in selected cases

***Inclusion criteria***

All Patients admitted to department of general surgery with symptoms and signs of acute intestinal obstruction.

***Exclusion criteria***

- Infants with intestinal obstruction
- Adynamic intestinal obstruction.

## RESULTS

A clinical study of 50 cases of acute intestinal obstruction was studied and analysis is as follows.

***Age distribution***

As per the Table 1, the patients with age ranging from < 20 years to 80 years were studied. The maximum incidence in the present study group is 31-40 and 51-60 yrs of age groups with each 10 cases out of 50 cases (20%) and least incidence is between 71-80 yrs of age group with 3 cases (6%) where as 16% incidence observed in 41-50 and 61-70 yrs of age group with 8 cases. In 20-30 yrs of age group incidence was 14% with 7 number of cases.

**Table 1: Age distribution.**

| Age in years | No. of cases | % |
|---|---|---|
| <20 | 4 | 8% |
| 20-30 | 7 | 14% |
| 31-40 | 10 | 20% |
| 41-50 | 8 | 16% |
| 51-60 | 10 | 20% |
| 61-70 | 8 | 16% |
| 71-80 | 3 | 6% |
| Total | 50 | 100% |

As per Table 2 male patients were more commonly affected when compared to females in the ratio of 2:1 in the above table .Out of 50 cases male incidence is 32 cases with 64% and female incidence is 18 cases with 36%.

**Table 2: Sex incidence.**

| Gender | No. of cases | % |
|---|---|---|
| Female | 18 | 36.0 |
| Male | 32 | 64.0 |
| Total | 50 | 100.0 |

**Table 3: Symptoms and signs.**

| Symptoms and signs | Number of cases | Percentage |
|---|---|---|
| Pain abdomen | 42 | 84 |
| Vomiting | 36 | 72 |
| Distension | 33 | 66 |
| Constipation | 19 | 38 |
| Tachycardia | 34 | 68 |
| Previous surgical scar | 18 | 36 |
| Tenderness | 16 | 32 |
| Rigidity | 14 | 28 |
| Mass per abdomen | 12 | 24 |
| Visible peristalsis | 22 | 44 |
| PR findings (significant) | 2 | 4 |

In present study pain in abdomen (84%) is commonest symptom with 42 cases out of 50 cases followed by vomiting (72%) is the second most common symptom with 36 number of cases and the least common symptoms is distension of abdomen (66%) followed by constipation (38%). The most common signs were tachycardia (68%) in 34 number of cases followed by visible intestinal peristalsis (44%) in 22 number of cases and the least common signs is rigidity (28%) followed by mass per abdomen (24%) (Table 3).

**Table 4: Aetiology of intestinal obstruction.**

| Clinical conditions | No. of cases | Percentage |
|---|---|---|
| Post-operative adhesions | 18 | 36 |
| Obstructed hernia | 13 | 26 |
| Malignancy | 9 | 18 |
| TB stricture of ileum | 5 | 10 |
| Volvulus | 2 | 4 |
| Mesentric ischemia | 1 | 2 |
| Meckels diverticulum | 1 | 2 |
| Carcinoid tumour | 1 | 2 |
| Total | 50 | 100 |

The most common type of obstruction was due to adhesions or band arising from the previous surgeries. This constituted about 36% of the cases of the study group. The second most common type of intestinal obstruction was due to obstructed/strangulated external hernia constituted about 26% of the total cases studied. Malignancy of the large bowel was seen in 9 cases constituting 18% of cases where as incidence of Volvulus of bowel was 4% in this series. Although pulmonary tuberculosis is more prevalent in India due to advent in use of antitubercular drugs incidence of abdominal tuberculosis is becoming less. In present study incidence of ileocaecal tuberculosis was 10%. One case each of mesenteric ischaemia, meckels diverticulum and carcinoid tumour was present in our study (Table 4).

## DISCUSSION

Intestinal obstruction is one of the commonly encountered clinical entities. There is probably not a day that goes by, in which a clinical surgeon does not at least once, come across the possible diagnosis of intestinal obstruction. Intestinal obstruction continues to be a frequent emergency, which surgeons have to face (1-4% of emergency operations). The delay in the treatment will lead to high mortality. Since the advancement in understanding the anatomy/physiology fluid and electrolyte management along with modern antibiotics and intensive care unit. The mortality has been decreasing consistently, associated medical problems (like respiratory cardiac or metabolic diseases) and advanced age carries a considerable contribution in adding the mortality.

The following were the observations made from the study of 50 patients of intestinal obstruction in both children and adults.

***Age incidence***

Intestinal obstruction although occurs in all age groups. In our clinical study, it includes all age groups except infants. The mean age in current study is 45 years.

**Table 5: Age incidence of intestinal obstruction in different studies.**

| Age group | Cole et al[6] | Souvik et al[7] | Thampi et al[8] | Singh H,[9] | Present study |
|---|---|---|---|---|---|
| <20 | 10% | 9% | 12% | 10% | 8% |
| 21-30 | 10% | 11% | 16% | 16% | 14% |
| 31-40 | 18% | 15% | 20% | 18% | 20% |
| 41-50 | 16% | 24% | 8% | 15% | 16% |
| 51-60 | 15% | 13% | 20% | 10% | 20% |
| 61-70 | 16% | 20% | 16% | 20% | 16% |
| 71-80 | 9% | 8% | 6% | 5% | 6% |

The study showed the peak incidence is in the age group 31-40 of 20% and 51-60 years of 20% which is comparable with the previous study groups like Cole GJ et al, group, Souvik A et al, Thampi D et al, Singh et al, which are almost similar to present clinical study of intestinal obstruction (Table 5).[6-9]

***Sex incidence***

**Table 6: Sex incidence in different studies.**

| Studies | Male | Female |
|---|---|---|
| Souvik A et al[7] | 4 | 1 |
| Chalya et al[10] | 2 | 1 |
| Present Study | 2 | 1 |

In Souvik A et al, study male to female ratio was 4:1.[7] In Chalya et al, study male to female ratio was 2:1.[10] In present study male to female ratio is 2:1 and comparable to above two studies (Table 6).

***Etiology***

*Comparison of etiology with other studies*

**Table 7: Comparison of etiology with other studies.**

| Cause | Souvik A et al[7] | Thampi et al[8] | Phillipo et al[10] | Khan JS et al[11] | Malik AM et al[12] | Abufalgha et al[13] | Present study |
|---|---|---|---|---|---|---|---|
| Adhesions | 16% | 40% | 19% | 49% | 41% | 50% | 36% |
| Hernia | 36% | 30% | 33% | 34% | 19% | 37% | 26% |
| Malignancy | 6% | 14% | 12% | 5% | 4% | 9% | 18% |
| Tuberculosis | 14% | 4% | 9% | 1% | 24% | - | 10% |
| Volvulus | 17% | 4% | 17% | 3% | 2% | 2% | 4% |
| Mes. Ischaemia/ Miscellaneous | 9% | 2% | - | 2% | 10% | 2% | 2% |

In the present study of 50 cases of acute intestinal obstruction 36% of the cases are due to post-operative adhesions who has undergone previous surgeries.

In the present study, postoperative adhesion is the commonest cause of intestinal obstruction, which is comparable with the other study groups Thampi D et al, with 40% and Malik et al, with 41%.[8,11] Although the incidence of obstructed/strangulated hernia is more in the developing countries in this study group it is the second common aetiology for obstruction. It may be because the awareness of public and the availability of surgical facilities in the periphery for the hernia repair, the hernias are treated early (Table 7).

## 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, skillful 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.

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