

(RESEARCH ARTICLE)



## A study of etiology and management of intestinal obstruction

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### Abstract

Though the diagnosis of intestinal obstruction is simple, the identification of the underlying cause may not be that simple. At times the underlying cause may become evident only during laparotomy. There is a high risk of morbidity and mortality linked with the condition, making early diagnosis and management crucial. The management may be conservative or surgical based on cause and requires adequate fluid and electrolyte resuscitation. Hence, we analyzed the various aetiological factors and management techniques of intestinal obstruction in a tertiary care center.

**Keywords:** Carcinoma colon; Tenesmus; Abdominal distension; Intestinal obstruction

### 1. Introduction

Intestinal obstruction, till date, continues to be the most common surgical emergency worldwide, with variables cases based on age, sex, region and socio-economic status. It is either a mechanical obstruction or atony of the intestine that prevents the forward flow of bowel contents. There are multiple predisposing factors which may or may not be diagnosed preoperatively. Though the diagnosis of intestinal obstruction is simple, the identification of the underlying cause may not be that simple. At times the underlying cause may become evident only during laparotomy. There is a high risk of morbidity and mortality linked with the condition, making early diagnosis and management crucial. The management may be conservative or surgical based on cause and requires adequate fluid and electrolyte resuscitation.

Early surgical intervention has been stressed upon with the classical dictum – ‘never let the sun set or rise in a case of unresolved bowel obstruction’ (3). Intervention if taken early, has caused a decrease in the cases of strangulation, which was a major cause of mortality. Early diagnosis, aggressive resuscitation, timely surgical intervention, improved surgical techniques with adequate postoperative care have improved outcome in these patients.

Hence, we analyzed the various etiological factors and management techniques of intestinal obstruction in a tertiary care center.

### 2. Material and Methods

This was a retrospective observational study performed on all patients diagnosed with intestinal obstruction.

The patients diagnosed between January 2020 and January 2024 were included.

Those that were managed conservatively, were hemodynamically unstable or developed IO after a concurrent surgery were excluded.

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Demographic details, details of clinical examination, surgical procedure and intraoperative findings and complications were noted.

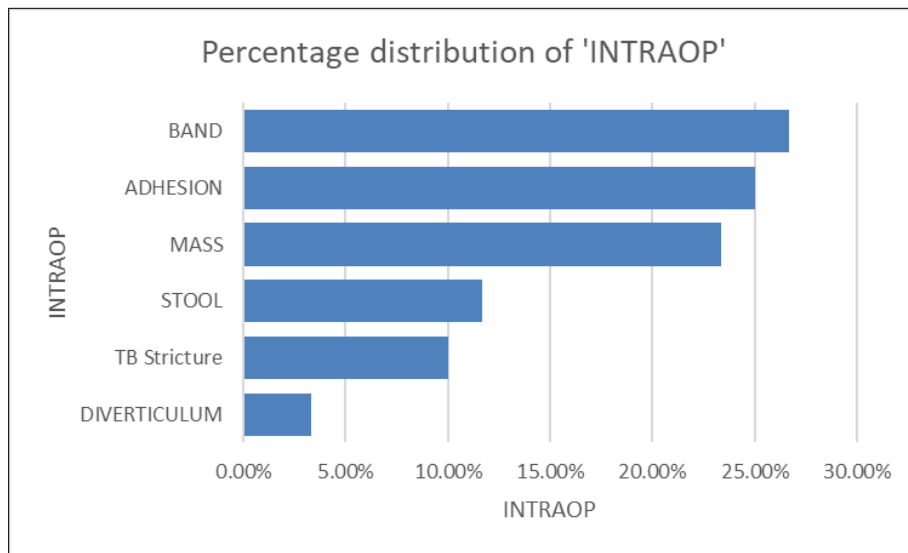
### 3. Results

The average age of the study participants included was 40.01 years.

The sex distribution ratio of the study participants was 1.2:1, which is nearly equal in distribution.

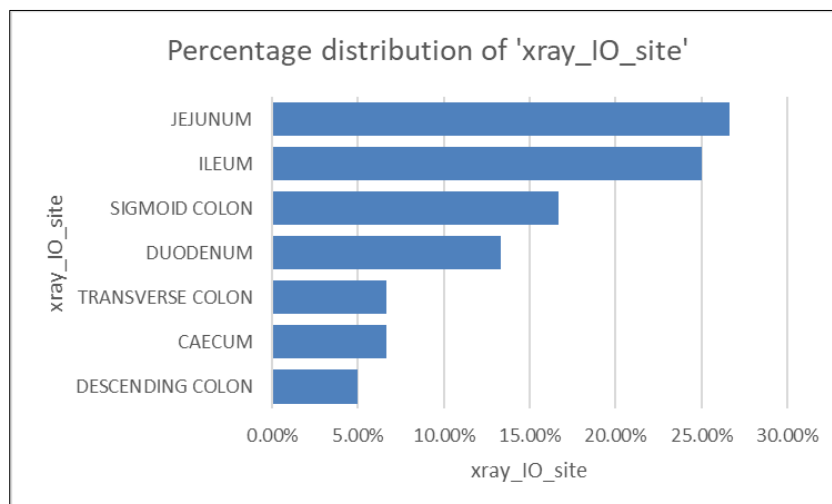
The most common complaints in our study participants that were diagnosed with intestinal obstruction were abdominal distension (28.33%) followed by pain abdomen (26.67%).

Several intra-op findings are noted, of which the most common was found to be bands (26.67%), followed by adhesions (25%).



**Figure 1** Percentage distribution of complaints of the study participants

X-ray is useful in diagnosing the level of lesion in intestinal obstruction, based on the number of dilated loops, the dimensions and location of the dilated bowel loops. In our study, we found the most common site of obstruction to be small intestine, with jejunum being the most common site. (26.67%)



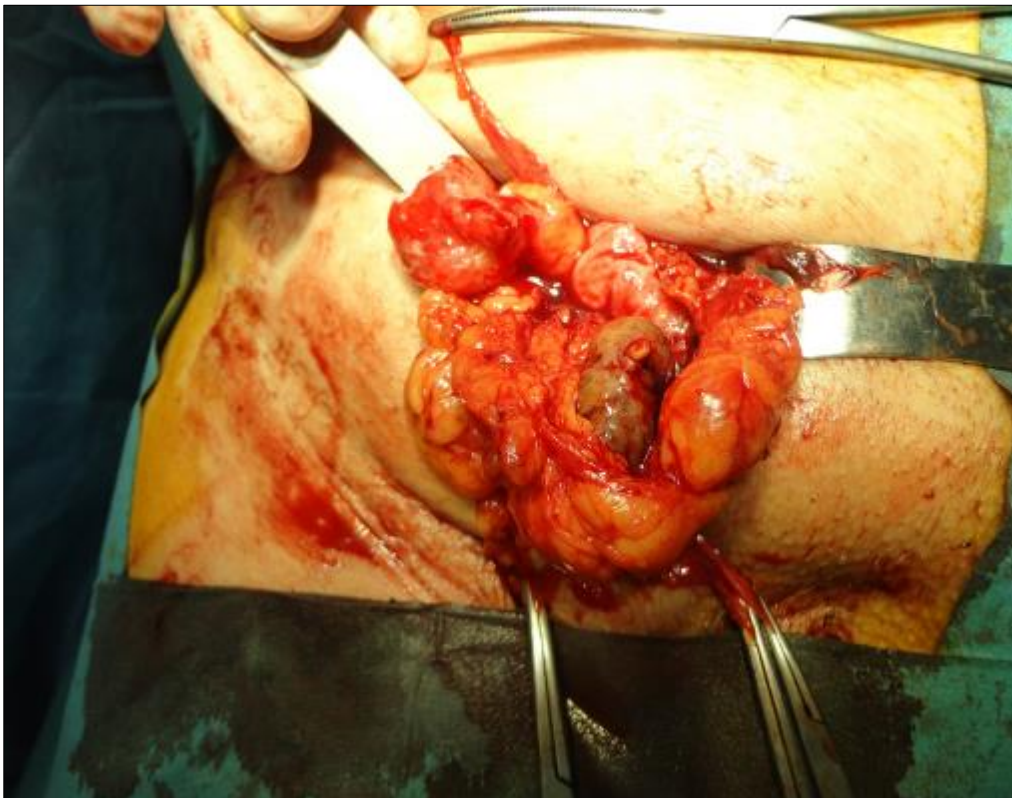
**Figure 2** The site of dilated bowel loops on the X-ray



**Figure 3** Obstructed bowel loops placed in the peripheral region, most likely large bowel in origin

Ascitic fluid can be seen in cases of intestinal obstruction, with variable aetiological factors in place. In our study, we found that a little of 1/3<sup>rd</sup> of our patients had ascites (38.33%).

Presence of a hernia, especially irreducible or strangulated, can be a good indicator on underlying intestinal obstruction. In our study, we found the incidence of hernia to be 28.33%.



**Figure 4** Strangulated inguinal hernia

Most common associated co-morbidity in patients with intestinal obstruction is Type II diabetes mellitus. In our study, we found 36.67% patients to have Type II diabetes mellitus.

Smoking is an important, independent risk factor for intestinal obstruction. In our study, we found that 21/60 patients were smokers. The number of people consuming alcohol were 23/58.

## 4. Discussion

The previous several decades have seen a change in the clinical pattern of acute intestinal obstruction (AIO), which has remained one of the most frequent surgical emergencies globally. In contrast to industrialized countries, varying trends of etiologic patterns have been seen in developing countries (the Indian subcontinent and some African countries).

The Greater Noida region's teaching tertiary care hospital, which covers a significant population with a diversity of socioeconomic backgrounds from the city and other towns and villages, was the subject of this study's analysis of AIO cases' features. Over the course of a year, 60 patients in all were evaluated.

### 4.1. Study group characteristics

#### 4.1.1. Etiological pattern

There are regional variations in the aetiology of intestinal obstruction. In the West and certain areas of Asia, post-surgical adhesions are found to be a common cause (such as China).

**Table 1** Etiological pattern

Study	aetiology	Most common site
Present study (n=60)	Bands	jejunum
Souvik Adhikari et al	Hernia	Small intestine
Playforth et al	Adhesions (2 <sup>nd</sup> MC) 54%	Small intestine
Arshad Malik et al	Adhesions (2 <sup>nd</sup> MC) 41%	Small intestine
Cole GJ et al	Hernia	Caecum

Adhesions were the second most frequent cause in our analysis, with a prevalence that was greater than that of the Souvik Adhikari et al.8 study but lower than that of Playforth et al. (54%) and Arshad Malik et al. (41%). This is likely because more timely surgeries are being performed for diseases that were not previously treated, like procedures for various intra-abdominal and pelvic malignancies.

In the current study, we saw that open appendectomy, laparotomy and hystrectomy were frequent causes of adhesions, with 5%, 22% and 14% incidence respectively. This was similar to the observations in the studies by Adesunkanmi AR et al.2 and Foster NM et al.

Therefore, bands are the primary cause of AIO at this institution; nevertheless, the incidence is lower than in studies of a comparable nature, mostly because individuals in this area have better socioeconomic conditions and have easier access to healthcare, which has led to early surgical hernia repair.

As a major contributor to AIO, tuberculosis is primarily blamed because of HIV's rising prevalence and co-infection with the disease.

#### 4.1.2. Disease Incidence

In this study, IO was seen in 2.30% of all post-op cases (emergency and elective) and 6.84 % of all emergency surgeries. In a study by Souvik Adhikari et al., it was 9.87% in incidence, while in a study by Bhargava et al, it was 3%.

#### 4.1.3. Age Incidence

The mean age in our current study is 40.01 years, which is similar to the findings by Souvik Adhikari et al. (shows mean age of 44 years) and , Jahangir et al (shows mean age is 33 years). These studies are almost comparable.

**Table 2** Comparison with other studies

Study	age	Sex ratio
Present study (n=60)	40.01 years	1.2:1
Souvik Adhikari et al	20.63 years	5:1
Jahangir S khan et al	17.46 years	3:1
Arshad Malik et al	26.98 years	2:1
Osuigwe et al	20.63 years	2:1

The male: female ratio in this study (1.2:1) is comparable with the Osuigwe A N et al. and lower than the studies cited in the table above.

The gender discrepancy is lacking in our patients with male being equally affected as the females which is unaccounted for in our country, where there exists an inherent gender disparity.

Ideally, these conditions such as hernia and TB are seen more commonly in men. Also, women in rural India are mostly housewives which limit their exposure to tubercle bacilli in contrast to males. Again, volvulus and malignant disease of the gastrointestinal tract are more common in males as compared to females.

#### 4.1.4. Clinical presentation

The clinical feature such as pain, vomiting, distension of abdomen and constipation/obstipation are not present in all cases.

In the present study, the frequencies of the clinical features were comparable with the other study groups- Souvik Adhikari et al. and Jahangir Sarwar Khan et al.

The most common signs in this study was exaggerated tympanic bowel sounds (83.82%) which were also comparable with the above mentioned studies.

#### 4.1.5. Radiological investigation

We can diagnose intestinal blockage and distinguish between small bowel obstruction and large bowel obstruction using an upright abdomen X-ray. While just a gas shadow is visible in the large bowel during surveillance until the ileo-caecal valve is functional, multiple air fluid levels are visible in small multiple intestinal blockage.

Savage et al. reported 95% of patients with significant findings, whereas Taneja et al. reported 90% of cases with multiple air fluid levels.

In the present study, 83.82% of cases ( i.e from a total of 60 cases) of X-ray abdomen showed multiple air fluid levels. When a diagnosis is uncertain, an IV contrast enhanced CT scan can assist locate the transition zone and determine the degree of intestinal blockage, however it wasn't used in this study.

#### 4.1.6. Surgical Management

In this study, the surgeries preferred for each of the etiologies of AIO are similar to the studies by Souvik Adhikari et al.<sup>8</sup> and Jahangir Sarwar Khan et al.<sup>57</sup> Reduction of obstructed hernia with anatomical repair and laparotomy with resection-anastomosis were the most common surgeries performed in this study (26.47% and 25.00% respectively).

#### Limitations of the study

In contrast to the previous studies mentioned above, instances of intestinal obstruction that improved with conservative care were excluded from this analysis that were labeled "subacute." hence, certain etiological factors, such as adhesions and TB, were not entirely comparable with the earlier investigations.

## 5. Conclusion

- In this institution, located in Greater Noida, Bands is the most prevalent cause for AIO. The incidence is lower than in comparable research, mostly as a result of the region's improved socioeconomic conditions and increased access to healthcare.
  - Adhesions, the second most frequent cause for AIO in this study, have a remarkably high frequency, perhaps as a result of an increase in the early treatment of illnesses including diverse intra-abdominal and pelvic malignancies.
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## Compliance with ethical standards

### *Disclosure of conflict of interest*

No conflict of interest to be disclosed.

### *Statement of informed consent*

Informed consent was obtained from all individual participants included in the study.

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