

ORIGINAL RESEARCH

A study of etiology and management of intestinal obstruction at Sharda hospital

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ABSTRACT

Aim: A study of etiology and management of intestinal obstruction at sharda hospital. **Material and methods:** The materials for the study of intestinal obstruction was collected from cases admitted in Sharda Hospital, during period from December 2020 to July 2022. 60 cases of intestinal obstruction were studied. Patient above 18 years was taken. The criteria for selection of cases were based on clinical history, physical findings, radiological and haematological investigations. **Result:** Several intra-op findings are noted, of which the most common was found to be bands (26.67%), followed by adhesions (25%). 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%). 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 1/3rd of our patients had ascites (38.33%). Presence of a hernia, especially irreducible or strangulated, can be a good indicator on underlying intestinal obstruction. **Conclusion:** The incidence is lower compared to similar studies, mostly due to improving socio-economic status of people and better accessibility to health care in this region.

Keywords: Etiology, Management, intestinal obstruction.

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INTRODUCTION

Intestinal obstruction is one of the most common surgical emergencies encountered across the globe. It is an obstruction to the forward movement of bowel contents either due to a mechanical obstruction or due to intestinal atony. 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 associated 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.^{1,2} 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. Early intervention has led to a fall in the number of

strangulation cases, 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.³

MATERIAL AND METHOD

INCLUSION CRITERIA

Patients above 18 years with intestinal obstruction at Sharda hospital.

EXCLUSION CRITERIA

Patients with Post-operative ileus.

METHODOLOGY

The materials for the study of intestinal obstruction was collected from cases admitted in Sharda Hospital, during period from December 2020 to July 2022. 60 cases of intestinal obstruction were studied. Patient above 18 years was taken. The criteria for selection of

cases were based on clinical history, physical findings, radiological and haematological investigations.

STATISTICAL ANALYSIS

Statistical analysis was analyzed by SPSS(its latest version)

RESULT

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

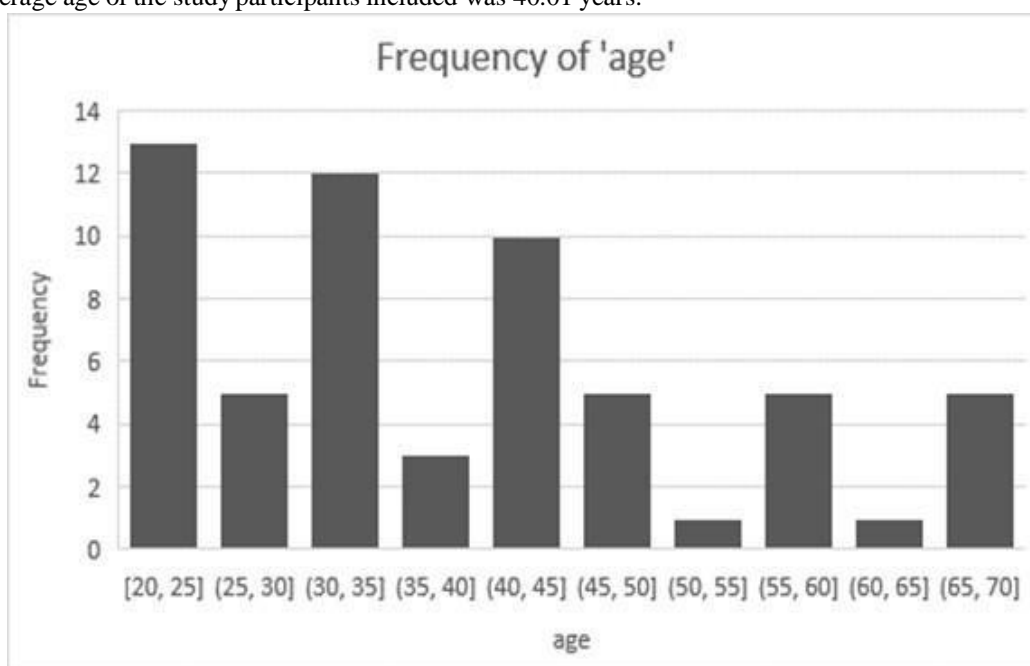


Figure 1:- Frequency of age of the study participants

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

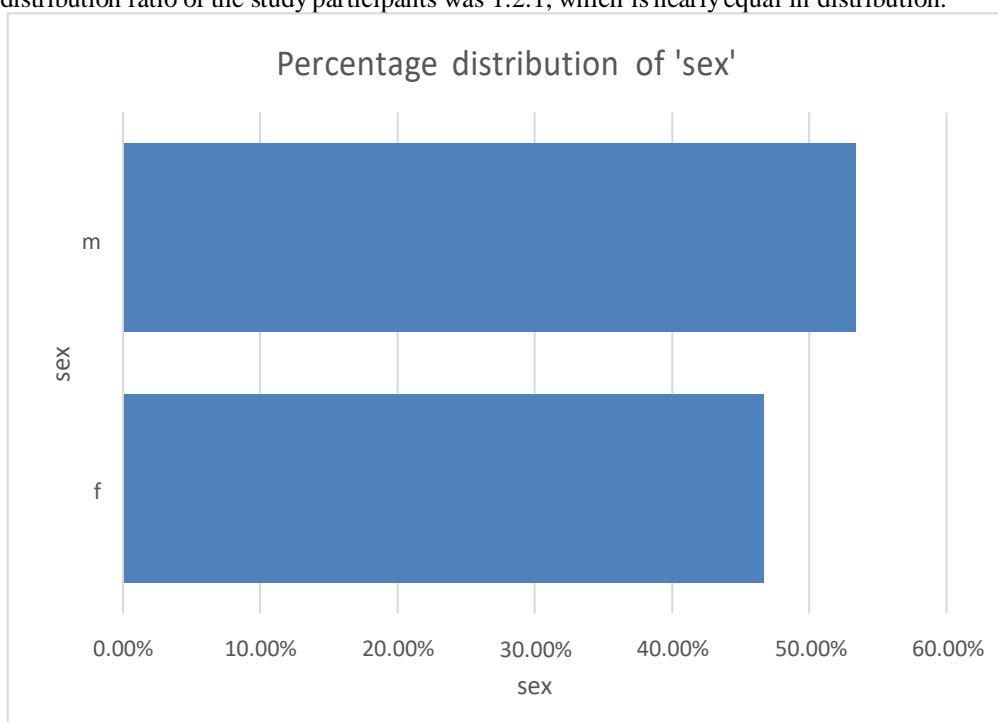


Figure 2:- Sex distribution in the study participants

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%).

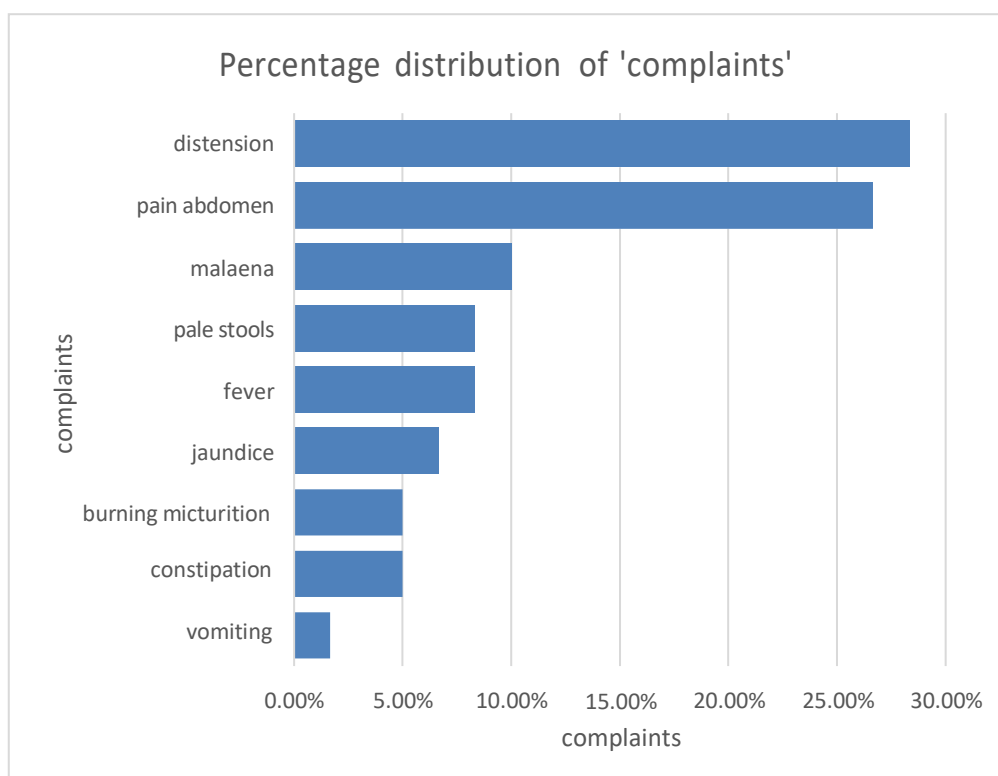


Figure 3:- Percentage distribution of complaints of the study participants

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

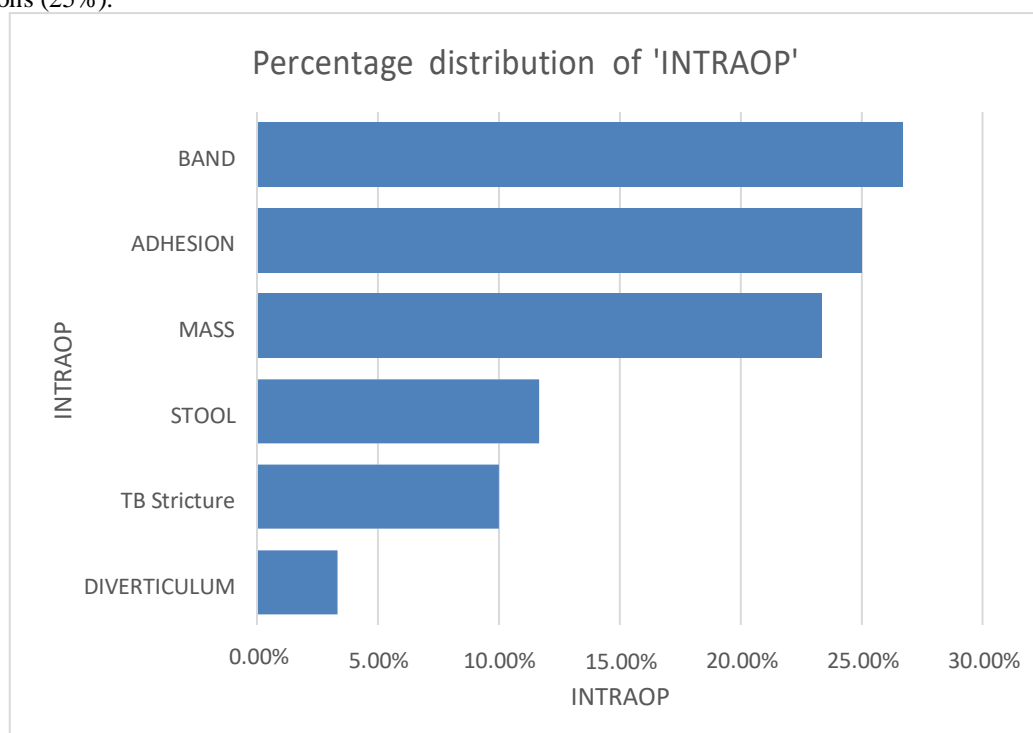


Figure 4:- Percentage distribution of complaints of the study participants

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%).

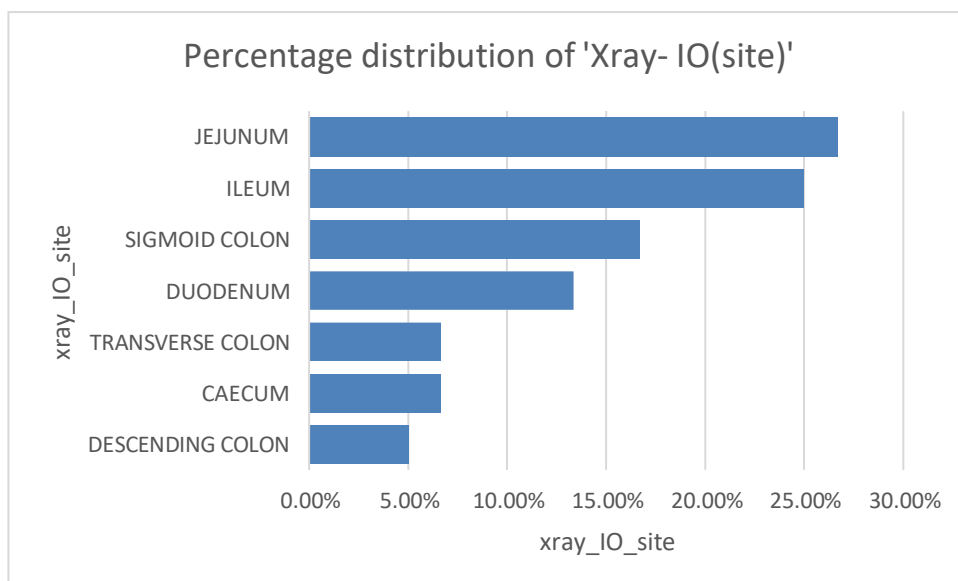


Figure 5:- the site of dilated bowel loops on the X-ray



Figure 6:- obstructed bowel loops placed in the peripheral region, most likely large bowel in origin



Figure 7:- dilated bowel loops suggestive of small intestine obstruction

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 1/3rd of our patients had ascites (38.33%).

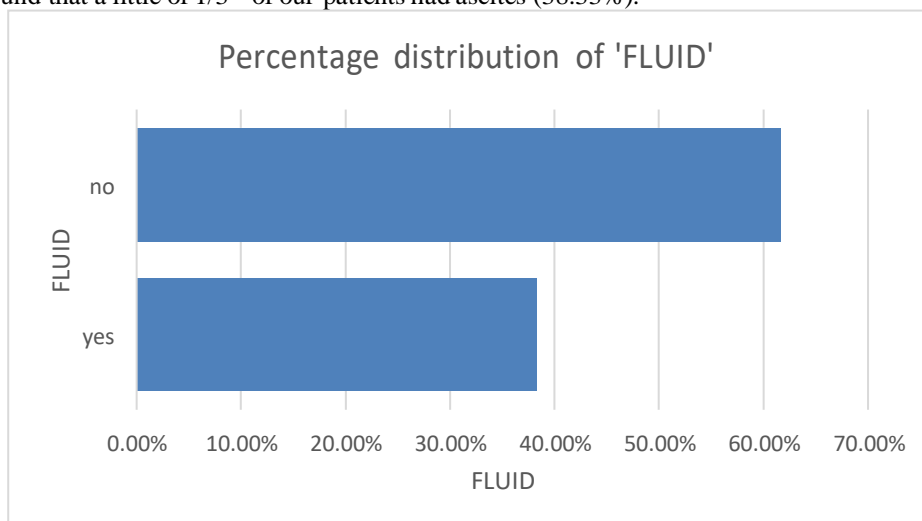


Figure 8:- The site of dilated bowel loops on the X-ray

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%.

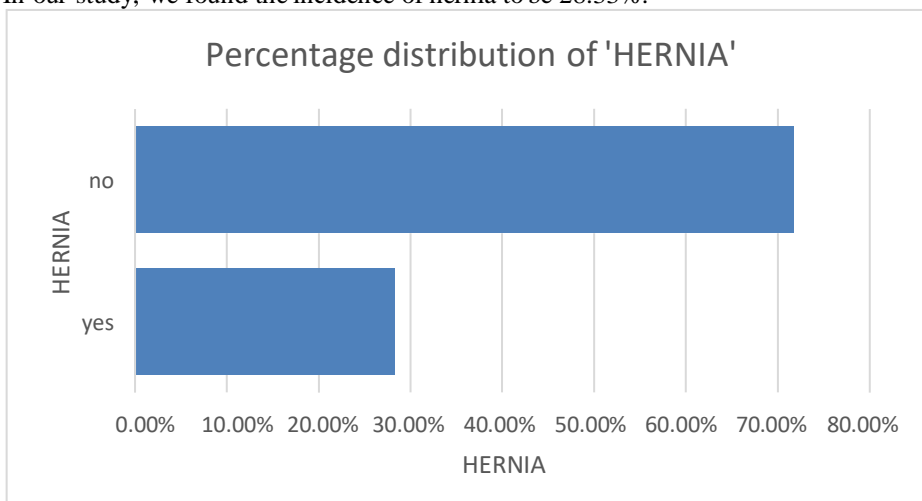


Figure 9:- incidence of hernia in the study participants

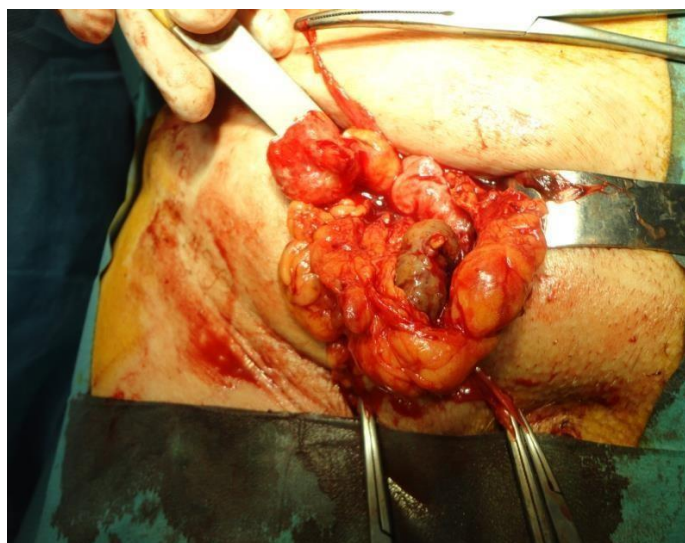


Figure 10:- strangulated inguinal hernia

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.

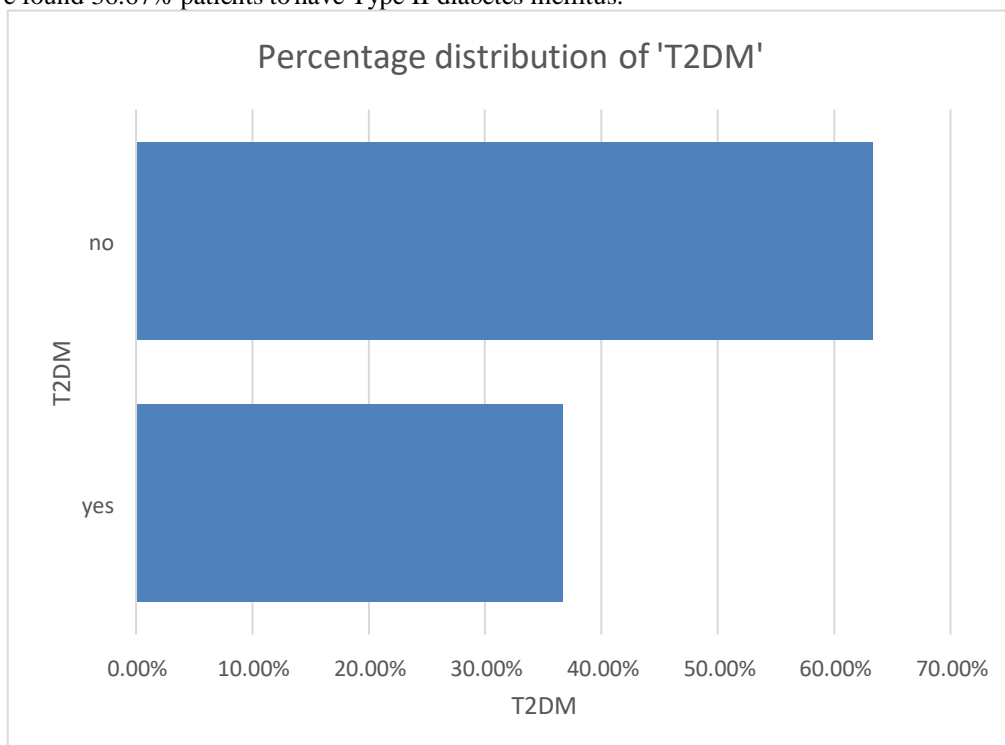


Figure 11:- distribution of type II diabetes mellitus in the study participants

Smoking is an important, independent risk factor for intestinal obstruction. In our study, we found that 21/60 patients were smokers.

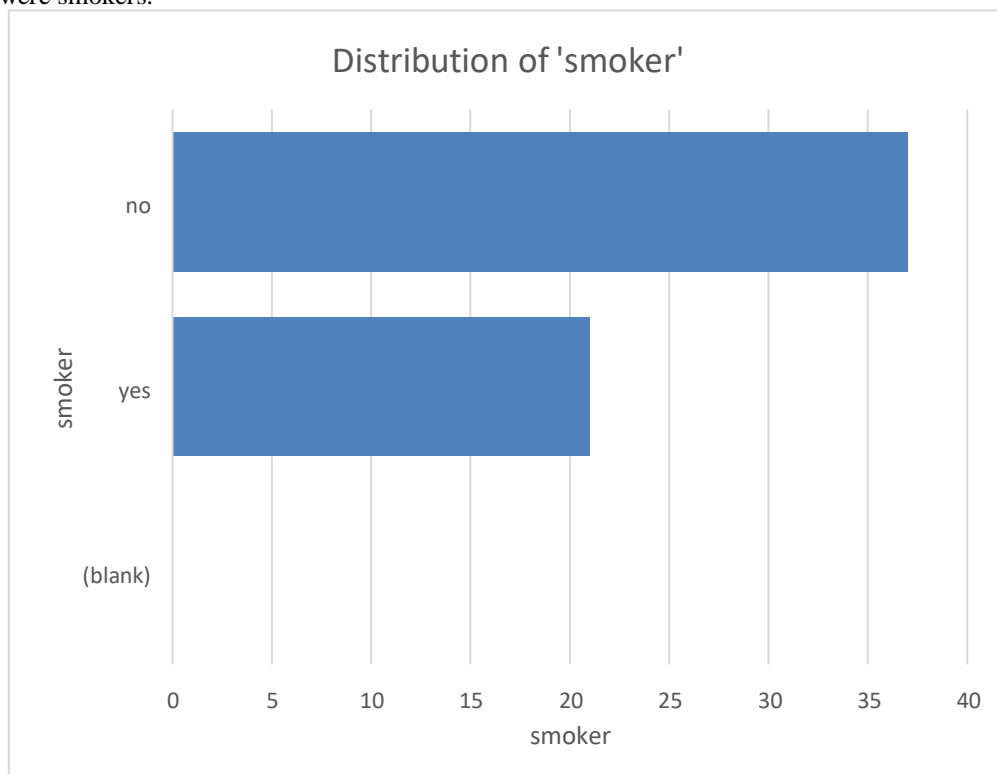


Figure 12:- distribution of smokers in the study population

The number of people consuming alcohol were 23/58.

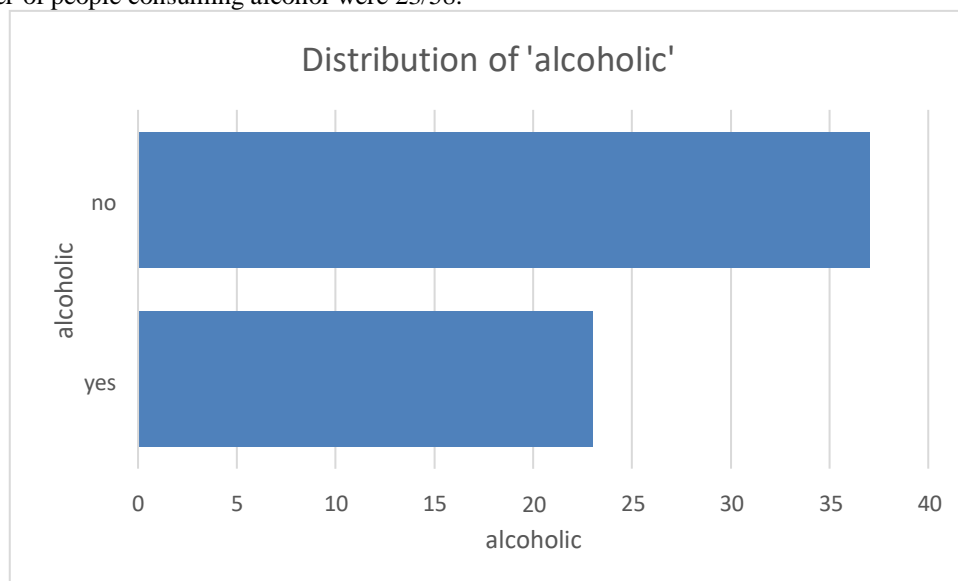
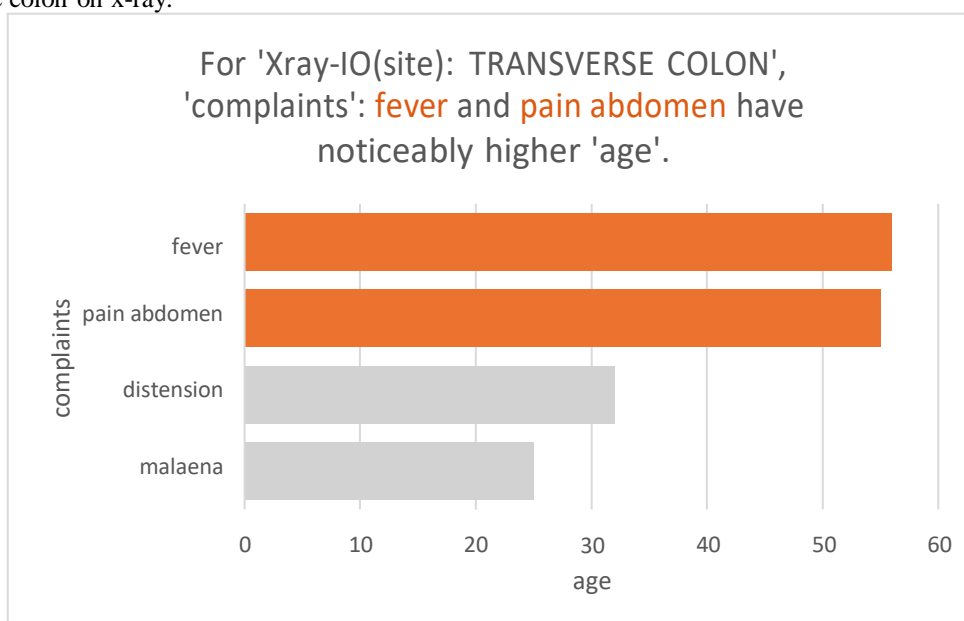


Figure 13:- Distribution of alcoholic in the study

In this study, we observed that fever and pain abdomen in the elderly patients were mainly involving the transverse colon on x-ray.



DISCUSSION

Acute intestinal obstruction (AIO) continues to be one of the most common surgical emergencies worldwide and its clinical pattern, especially with regards to etiology, has been changing over the last few decades. Varying etiologic pattern has been noted in developing nations (Indian subcontinent and some African nations) as compared to the industrialized nations. In this study, we have analyzed the characteristics of cases of AIO in a teaching tertiary care hospital, located in Greater Noida region, which caters to a

large population belonging to diverse socio-economic background from the city and the neighbouring towns and villages. A total of 60 patients were studied over one year.

ETIOLOGICAL PATTERN

The etiology of intestinal obstruction varies from one geographical location to another. Post-operative adhesions appear to be the most common cause in the Western world as well as in parts of Asia (such as China).

Study	Aetiology	Most common site
Present study (n=60)	Bands	jejunum
Chen XZ et al ⁴	Hernia	Small intestine
Moore KL et al ⁵	Adhesions (2 nd MC) 54%	Small intestine

Podolsky DK et al ⁶	Adhesions (2 nd MC) 41%	Small intestine
Robert M Berne et al ⁷	Hernia	Caecum

The second most common etiology in our study was adhesions and its incidence was higher than Chen XZ et al.⁴ study but half of what was found in other study groups like Moore KL et al⁵ (54%) and Podolsky DK et al.⁶ (41%).^{5,6} The most common preceding surgery in patients with adhesions was open appendectomy (50%) followed by laparotomy (22%) and hysterectomy (14%) which was comparable with studies by Gleeson JA et al.⁸ and Sarr MG et al.⁹ Hence, Bands is the leading etiology for AIO in this institution, however, the incidence is lower compared to similar studies, mostly due to improving socio-economic status of people and better accessibility to health care in this region, leading to early surgical repair of hernia.

Adhesions, the second most common etiology for AIO in this study, has a considerably high incidence, which is comparable with other studies, probably due to increased number of timely surgeries for diseases that

Study	age	Sex ratio
Present study (n=60)	40.01 years	1.2:1
Chen XZ et al ⁴	20.63 years	5:1
Gallegos NC et al ¹⁰	17.46 years	3:1
Pickleman J et al ¹¹	20.63 years	2:1

The male: female ratio in this study (1.2:1) is comparable with the Pickleman J et al.¹¹ 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.

CLINICAL PRESENTATION

The clinical feature of intestinal obstruction, pain abdomen, vomiting distension of abdomen and constipation are not present in all cases. In the present study, the frequencies of the clinical features were comparable with the other study groups- Chen XZ et al.⁴ and Gallegos NC et al.¹⁰ The most common signs in this study was exaggerated tympanic bowel sounds (83.82%) which were also comparable with the abovementioned studies.

RADIOLOGY

The erect abdomen X-ray helps us in the diagnosis of intestinal obstruction as well as in differentiating the small bowel with large bowel obstruction. Multiple air fluid level can be seen in small multiple intestinal obstruction whereas only gas shadow seen in large bowel observation until the ileo-caecal valve is competent. Brolin RE et al.¹² reported 90% of cases with multiple air fluid level and Somen Das et al.¹³

previously went untreated, such as surgeries for various intra-abdominal and pelvic malignancies. Tuberculosis assumes great importance as a cause of AIO and is mainly attributed to increasing incidence of HIV and its coexistence with tuberculosis.

DISEASE INCIDENCE

In our clinical study incidence of AIO is 2.30% of all operated cases (emergency and elective) and 6.84 % of all emergency surgeries. In Chen XZ et al. series incidence was 9.87% of total surgical cases.⁴ In Bhargava Anderson's series incidence was 3% of total surgical cases.

AGE INCIDENCE

The mean age in our current study is 40.01 years whereas Chen XZ et al.⁴ shows mean age of 44 years, Gallegos NC et al.¹⁰ series shows mean age is 33 years. These studies are almost comparable.

reported 95% cases with significant findings. In the present study of the 60 cases, 83.82% of X-ray abdomen showed multiple air fluid levels. IV contrast enhanced CT scan can identify the transition zone and help find the level of bowel obstruction when diagnosis is doubtful but it wasn't a part of this study.

SURGICAL MANAGEMENT

In this study, the surgeries preferred for each of the etiologies of AIO are similar to the studies by Chen XZ et al.⁴ and Gallegos NC et al.¹⁰ 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).

CONCLUSION

Bands is the leading etiology for AIO in this institution, located in Greater Noida. However, the incidence is lower compared to similar studies, mostly due to improving socio-economic status of people and better accessibility to health care in this region. Adhesions, the second most common etiology for AIO in this study, has a considerably high incidence, probably due to increased number of timely surgeries for diseases that previously went untreated, such as surgeries for various intra-abdominal and pelvic malignancies.

REFERENCES

1. Enochsson L, Nylander G, Öhman U. Effects of intraluminal pressure on regional blood flow in obstructed and unobstructed small intestines in the rat. *Am J Surg.* 1982 [cited 2022 Oct 3];144(5):558–61.

2. Russel RCG. Intestinal obstruction. Chapter 69, Bailey and Love's Short Practice of Surgery, 25th ed, Arnold Publishers. 2008; PP1188-1203.
3. Winslet MC. Intestinal obstruction. In: Russel RCG, Williams NS, Bullstrode CJK, editors. Bailey & Loves Short practice of Surgery 23rd edn .2000. Edward Arnold Ltd NY. 1058-75.
4. Chen XZ, Wei T, Jiang K, Yang K, Zhang B, Chen ZX, et al. Etiological factors and mortality of acute intestinal obstruction: a review of 705 cases. *Zhong Xi Yi Jie He Xue Bao*. 2008;6:1010
5. Moore KL, Persaud TVN: The digestive system. In: Moore KL, Persaud TVN, ed. *The Developing Human: Clinically Oriented Embryology*, 7th ed. Philadelphia: Elsevier; 2003:255-286
6. Podolsky DK, Babyatshy MW: Growth and development of the gastrointestinal tract. Chapter 23. In: Yamada T ed. *Textbook of Gastroenterology*, Vol. 2. Philadelphia, JB Lippincott, 1995
7. Robert M Berne. Gastrointestinal regulation and motility. 5th ed. Chapter 31. In: *Physiology*, Robert M Berne, Mathew N Levy, Bruce M Koeppen, Bruce A Stanton, eds. Mosby Publication; 2008. p. 539
8. Gleeson JA. The small intestine. *Radiology and Imaging*. David Sutton, 6th ed, 2:1998; 863-890
9. Sarr MG, Bulkley GB, Zuidema GD. Preoperative recognition of intestinal strangulation obstruction: Prospective evaluation of diagnostic capability. *Am JSurg* 1983;145:176-181
10. Gallegos NC, Dawson J, Jarvis M, Hobsley M. Risk of strangulation in groin hernias. *Br JSurg* 1991;78:1171
11. Pickleman J. Small bowel obstruction. In: Zinner MJ, Schwartz SI, Ellis H (eds). *Maingot's Abdominal Operations*, 10th ed. New York, NY: McGraw-Hill; 1997:1159-1172.
12. Brolin RE. The role of gastrointestinal tube decompression in the treatment of mechanical intestinal obstruction. *Am Surg*. 1983;49:131-137.
13. Somen Das. Examination of acute abdomen. *A manual on clinical surgery*, 5th ed, 2002 Aug; 335-356