Clinical Study of Acute Intestinal Obstruction

Hemant Borse¹ and Gaurav Patil²*

¹Professor, Department of General Surgery, Dr. Vasantrao Pawar Medical College, Hospital and Research Centre, Nashik - 422003, Maharashtra, India; drhborse@gmail.com
²Former PG Student, Department of General Surgery, Dr. Vasantrao Pawar Medical College, Hospital and Research Centre, Nashik - 422003, Maharashtra, India; gaurav@gmail.com

Abstract

Background: Acute intestinal obstruction is one of the most common surgical emergencies. There are many causes of acute intestinal obstruction like bands and adhesions, neoplasms, strictures etc. Aims and objectives: In this study we have tried to find out common clinical presentation, aetiology and treatment of acute intestinal obstruction. Materials and Methods: This is a prospective study conducted at department of General Surgery, Dr. Vasantrao Pawar Medical College, Hospital and Research Centre, Nashik, Maharashtra in which we have studied 45 cases of acute intestinal obstruction to find out the clinical presentation, aetiology and treatment of acute intestinal obstruction. Conclusions: Acute intestinal obstruction is more common in females than in males. Small intestinal obstruction is more common than large intestinal obstruction. The commonest cause of intestinal obstruction is adhesions. The next most common cause is Tubercular stricture. Malignancy is most common cause of large intestinal obstruction. Most of the patients having large bowel obstruction required laparotomy.

Keywords: Acute Intestinal Obstruction, Large Intestinal Obstruction, Small Intestinal Obstruction, Tubercular Strictures

1. Introduction

Acute intestinal obstruction is a common cause of acute abdomen. It accounts for about 12–16% of surgical admission for acute abdomen¹. Presentation of the patients varies according to the aetiology, site of obstruction, duration of the disease etc. Some patient responds to conservative management were as some require surgery. In this study we have studied 45 cases of acute intestinal obstruction to find out the common way of presentation, common aetiological factor and treatment.

2. Aims and objectives

To find out common clinical presentation, aetiology and treatment of acute intestinal obstruction.

3. Materials and Methods

It was prospective study conducted at a medical college and tertiary care hospital. All newly diagnosed patients admitted in the medical college were included in the study. Study was conducted from August 2011 to December 2013.

3.1 Inclusion Criteria

Patients of acute intestinal obstruction diagnosed clinically and on radiological investigations.

3.2 Exclusion Criteria

Patients not giving consent for the study and patients with previous history of intestinal obstruction who had undergone laparotomy for the same.
3.3 Methodology

The study was conducted in surgery department of Dr. Vasantrao Pawar Medical College, Hospital and Research Centre, Nashik, Maharashtra. Appropriate approval was taken from the Institutional Ethical Committee. Written and informed consent was taken from all the participants. Total 45 patients clinically and radiologically diagnosed to have acute intestinal obstruction were included in the study after satisfying the inclusion and exclusion criteria.

A patient was said to have intestinal obstruction clinically on following criteria – pain in abdomen, nausea and vomiting, abdominal distension, constipation or obstipation. A patient was said to have acute intestinal obstruction radiologically on following criteria X-ray abdomen standing showing significant air fluid levels, ultrasonography abdomen pelvis showing dilated bowel loops with to and frow peristalsis movements. CT scan abdomen and pelvis was done only when required.

History and examination finding were noted in prescribed format. All routine blood investigations were done. X-ray abdomen standing and Ultrasonography of abdomen and pelvis was done all patients. CT scan abdomen and pelvis was done only when required. The findings of the investigations were also noted in the proforma.

Depending on patients clinical conditions and investigations patients were given conservative treatment or operative treatment. During surgery the intra operative findings were noted. Post-operative complications if any was noted and most of the patients were followed up for the period of approximate 3 months.

4. Observations and Results

1. Age distribution

It was found that among 45 cases, 10 were from the age group of below 10 years followed by 7 cases among 11 to 20 year olds (Table 1).

2. Sex Incidence

Intestinal obstruction was more common in males. There were 32 males and 13 females. The male:female ratio was 2.6:1

3. Level of Obstruction

Intestinal obstruction was more common in small intestine (31) as compared to large intestine (13).

| Age  | Total cases |
|------|-------------|
| 0-10 | 10          |
| 11-20| 07          |
| 21-30| 05          |
| 31-40| 06          |
| 41-50| 06          |
| 51-60| 08          |
| 61-70| 01          |
| 71-80| 02          |
| 81-90| 01          |

Table 1. Age distribution
4. Symptoms and Signs

Table 2. Symptoms and signs of acute intestinal obstruction

| Sr No | Symptom/Sign          | Number | Percentage |
|-------|-----------------------|--------|------------|
| 1     | Pain in abdomen       | 36     | 85         |
| 2     | Vomiting              | 30     | 71         |
| 3     | Abdominal distention  | 22     | 52         |
| 4     | Constipation          | 20     | 47         |
| 5     | Tenderness            | 18     | 42         |
| 6     | Hyperperistalsis      | 10     | 23         |
| 7     | Absent bowel sound    | 9      | 21         |
| 8     | Sluggish bowel sound  | 19     | 20         |
| 9     | Groin swelling        | 4      | 1          |
| 10    | Guarding              | 18     | 42         |
| 12    | Rigidity              | 2      | 4          |
| 13    | Palpable mass         | 3      | 6          |

As seen from table 2, most common presenting complaint was pain in abdomen (85%) followed by vomiting (71%).

5. Aetiology of Acute Intestinal Obstruction

A. Small Bowel Obstruction

Most common aetiolo-gical factor for small bowel obstruction was found to be adhesions and tubercular strictures. (Table 3)

Table 3. Aetiological factors for Small bowel obstruction

| Aetiology              | Number of cases | Percentage |
|------------------------|-----------------|------------|
| Adhesions              | 7               | 23         |
| Obstructed hernia      | 4               | 12         |
| Small bowel volvulus   | 1               | 3          |
| Bands                  | 6               | 20         |
| Tuberculous stricture  | 7               | 23         |
| Worm ball formation    | 2               | 6          |
| Intussusception        | 4               | 12         |
B. Large Bowel Obstruction
Most common aetiology for large bowel obstruction was neoplasms followed by Hirschsprung disease (Table 4)

Table 4. Aetioloical factors for large bowel obstruction

| Aetiology           | Number of cases | Percentage |
|---------------------|-----------------|------------|
| Neoplasms           | 6               | 42         |
| Hirschsprung        | 3               | 22         |
| Volvulus            | 2               | 15         |
| Intussusception     | 3               | 21         |

6. Management
A. Small Bowel Obstruction
Out of the 31 cases of small bowel obstruction, 25 required surgical intervention (Table 5); while 6 cases were conservatively managed (Table 6)

Table 5. Operative procedures for small bowel obstruction

| Type of surgery                  | No of cases |
|----------------------------------|-------------|
| Adhesinolysis                    | 3           |
| Resection anastomosis            | 8           |
| Release of band                  | 5           |
| De-rotation of volvulus          | 2           |
| Hernia repair                    | 5           |
| Enterotomy and worm removal      | 2           |
| Total                            | 25          |

Table 6. Conservative management for small bowel obstruction and its aetiology

| Cause                                      | No of cases |
|--------------------------------------------|-------------|
| Paralytic ileus                            | 2           |
| Abdominal tuberculosis                      | 2           |
| H/O of recent surgery and adhesions        | 2           |
| Total                                      | 6           |
B. Large Bowel Obstruction
All 14 cases of large bowel obstruction required operative management (Table 7)

| Type of surgery                  | No of cases |
|----------------------------------|-------------|
| Resection and anastomosis        | 7           |
| Colostomy                        | 3           |
| Reduction of intussusception     | 4           |
| Total                            | 14          |

7. Post-operative Complications
Most common post-operative complications included wound infection, wound dehiscence. Two deaths were reported during the post-operative follow-up due to septicemia and respiratory failure (Table 8)

| Complication     | No of cases |
|------------------|-------------|
| Wound infection  | 8           |
| Wound dehiscence | 4           |
| Fecal fistula    | 2           |
| Chest infection  | 6           |
| Death            | 2           |
| Total            | 22          |

5. Discussion
Intestinal obstruction is commonly encountered surgical entity. Earliest references of this disease appear in the code of Hammurabi written around 2200 BC. Hippocrates mentioned about intestinal obstruction. He mentioned treatment of the ileus with enemas and inflation of rectum. “Sushrut Samhita” mentions the treatment of intestinal obstruction with incision and extraction of any concretions of foreign body and replacement of part after moistening them with honey and butter and sewing up incision.

Presentation of acute intestinal obstruction varies from patient to patient. Patient generally present with combination of pain in abdomen, vomiting, distention of abdomen and constipation. Patient can be treated with conservative treatment or laparotomy depending on the clinical presentation.

The observations in our study are as follows

1. Incidence
In our study intestinal obstruction was common in small intestine. Small bowel obstruction contributed to 69% large bowel obstruction to 31%. Length of the small intestine is more than large intestine and small intestine
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is more mobile than the large intestine, these may be the reason for obstruction in small intestine. Our results are comparable with most of the studies. Mechel and Becker where small bowel obstruction constituted to nearly 70% and large bowel obstruction constituted 30%.

2. Age of Presentation
Acute intestinal obstruction can occur in all age groups. The age distribution in our series of 45 patients ranges from new born to 85 years with mean age of 35.4 years. Maximum incidence was seen between 0-10 years (22%).

A study done by Buddharaja reported 13% cases of acute intestinal obstruction below 12 years. Fuzan reported mean age of 56 years. Ramchandran in his study reported the maximum incidence between 21-40 years.

3. Sex Incidence
In our study the incidence of intestinal obstruction in male was 32 (72%) and that of female was 13 (28%). Male to female ratio was 2.6:1.

Male prepondence is seen in all studies reported from the other part of word. Fuzan and Lee reported 2:1 male to female ratio.

4. Aetiology
In our study following aetiological factors were found

Adhesions 16%
Hernias 09%
Volvulus 07%
Bands 13%
Ca colon 13%
Intussusception 16%
Hirschsprung's 06%
Tubercular stricture 16%
Worm ball formation 04%

Bands and adhesions are most common cause of acute intestinal obstruction in most of the series on acute intestinal obstruction as reported by Jain and Prasad, Ti and Young and Fuzan.

In our study 4 patients (9%) were having intestinal obstruction due to hernia. 2 patients were having strangulated inguinal hernia and required resection and anastomosis.

5. Volvulus
Volvulus was responsible for intestinal obstruction in 7% (3 cases). Out of these 3 cases 1 was small bowel volvulus and 2 cases were of sigmoid volvulus.

A study conducted by Shankaran reported 24 cases of volvulus in south India out of which sigmoid volvulus constituted 50% of cases.

Buddharaja series revealed that 18.2% of intestinal obstruction are due to volvulus, small bowel volvulus 11.9% and large bowel volvulus 6.19%.

Ramchandran in his study mentioned that volvulus is second commonest cause of small bowel obstruction.

6. Bands
In our study intestinal obstruction due to bands accounted for 13% of acute intestinal obstruction.

A study series of 147 cases by Gill and Eggleston reported that 6.8% of small intestinal obstruction are due to bands.

7. Malignancy
In our study, 13% (6 cases) of acute intestinal obstruction were due to malignancies. Ca rectum - 2 cases, Ca transverse colon 2 cases, Ca ascending colon 1 and Ca caecum 1. In were malignancies of large bowel. In most of the studies it is mentioned that acute intestinal obstruction due to malignancies is due to large bowel malignancies.

8. Intussusception
In our study 45 cases, 7 cases (16%) obstructions were due to intussusception. Out of this 3 were in small intestine and 4 were in large intestine. All were below 10 years.

Ty in his study of 261 cases mentions the incidence of intussusception 6.3% (17 cases). In this 17 cases 14 were infants and 3 were adults.

9. Hirschsprung's Disease
Hirschsprung's disease accounted for 7% (3 cases) in our study.

10. Tubercular Stricture
In our study 1% (7 cases) of obstruction were due to tubercular stricture.

11. Worm Ball Formation
Worm ball formation was seen in 2 cases (4%)

12. Clinical Features
Pain in abdomen – 85% (36 cases)
Vomiting – 71% (30 cases)
Abdominal distention – 52% (22 cases).
Constipation – 47% (20 cases).
The commonest features were pain in abdomen, vomiting, abdominal distention and constipation.

Asbun 50 in his retrospective analysis of 105 patients of acute intestinal obstruction found that the incidence
of pain in abdomen 82%, vomiting 88%, distention of abdomen 56% and constipation 28%.

Buddharaja reported the order of symptoms according to their frequency are pain in abdomen 95%, distention of abdomen 82%, vomiting 75% and constipation 50%.

13. Small vs Large Bowel Obstruction Symptoms
Constipation and distention of abdomen were predominant symptoms in large bowel obstruction. Pain in abdomen and vomiting were predominant symptoms in small bowel obstruction.

14. Management
Management of patient with intestinal obstruction depends on many factors like age of the patient, clinical presentation, general condition and investigations.
- Out of 45 patients, 39 patients required surgery, 25 patients of small intestinal obstruction and 14 patients of large intestinal obstruction.
- Out of the 31 patients of small intestinal obstruction, 6 patients were managed conservatively.
- All patients of large bowel obstruction required surgery.

15. Post-operative Complications

| Table 9. Post-operative Complications |
|--------------------------------------|
| Wound infection | 5 |
| Chest infection | 5 |
| Faecal fistula | 1 |
| Wound dehiscence | 2 |
| Septicemia | 2 |
| Multi organ failure | 2 |
| Death | 4 |

6. Conclusion
Following conclusions are derived from study of 45 cases of acute intestinal obstruction in a tertiary health care center.

7. References
1. Jones R S, Intestinal obstruction Sabiston D C. Textbook of general surgery– The biological basis of modern surgical practice 13th edition 1986 W B Sonders company 905–13.
2. Michel M L Jr, Knapp L, Davidson A, Acute intestinal obstruction; comparative study of small intestinal and colic obstruction Surg 1950; 28: 90–110.
3. Becker W F, Acute intestinal obstruction of colon, an analysis of 205 cases Surg. Gynaec 1953, 95: 677–682.
4. Buddhara S N, Govindrajalu S Acute intestinal obstruction in Pondicherry, IJS 1776; 111–117. https://doi.org/10.1002/bjs.1800780223
5. Fuzan M, Kaymake E, Harmancioglu O, Principal causes of mechanical bowel obstruction in surgically treated adults in Western Turkey. BJS 1991; 78: 202–03.
6. Ramchandran C S. Intestinal volvulus. IJS 1989; 66–70.
7. Lee S H, Ong etal. Changing pattern of intestinal obstruction in Malaysia – a review of 100 consecutive cases BJS 1991; 78: 181–182. https://doi.org/10.1002/bjs.1800780215
8. Jain B L, Prasad N. Intestinal obstruction, IJS,1963;25: 635. https://doi.org/10.2307/4440482
9. Ti T K, Young N K, The pattern of intestinal obstruction in Malaysia. BJS. 1976; 963–965. https://doi.org/10.1002/bjs.1800631219
10. Shankaran V, Volvulus in south India. IJS. 1962: 784–790.
11. Gill S S, Eggleston F C, Acute intestinal obstruction. Arch Surg 1965; 91: 389–92. https://doi.org/10.1001/archsurg.1965.01320160043009

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