

Clinical study of surgical management of acute intestinal obstruction in the adults at a tertiary hospital

P Karuppasamy^{1*}, S Fareed Ul Hameed²

¹Associate Professor, Department of General Surgery, Melmaruvathur Adhiparasakthi Institute of Medical Sciences and Research Melmaruvathur, Tamil Nadu, INDIA.

²Associate Professor, Department of General Surgery, Karpaga Vinayaga Institute of Medical Sciences & Research centre, Chengalpet District, Tamil Nadu, INDIA.

Email: karuppasamy01@yahoo.co.in

Abstract

Background: Intestinal obstruction remains one of the most common surgical diagnosis made in emergency departments worldwide, management of which requires quick, appropriate diagnosis, rational and effective therapy. Present study was aimed to study surgical management of acute intestinal obstruction in the adults at a tertiary health center. **Material and Methods:** Present study was hospital based, prospective and observational study, conducted in patients > 18 years age of either gender, diagnosed with acute intestinal obstruction underwent surgical management. **Results:** Among 132 patients, most common age group was between 51- 60 years (28.03 %), male patients (57.58 %) were more than females (42.43 %). In present study, most common sign and symptoms were abdominal pain (93.18 %), abdominal distension (83.33 %) and obstipation (81.82 %), tenderness (77.27 %) and vomiting (68.94 %). Common etiologies for surgical management for acute intestinal obstruction in present study were intra-abdominal adhesions (52.27 %), incisional hernia (12.12 %), abdominal tuberculosis (11.36 %) and sigmoid volvulus (5.30 %). Adhesiolysis + Resection Anastomosis (52.27 %) was most common surgical procedure followed by herniorrhaphy (16.67 %) and resection anastomosis (9.85 %). In patients underwent surgical management for acute intestinal obstruction in present study, common complications noted in post-operative period were wound infection (10.61 %), Sepsis (8.33 %), urinary tract infection (6.06 %), burst abdomen (5.3 %) and basal atelectasis (3.03 %). In present study 8.33 % mortality was noted. Age > 60 years, malignancy, major surgeries were common among patients could not survived. **Conclusion:** Male, age more than 50 years, abdominal pain, abdominal distension and obstipation were common factors in patients underwent surgical management for acute intestinal obstruction. Common etiologies were intra-abdominal adhesions, incisional hernia, required adhesiolysis + Resection Anastomosis, herniorrhaphy.

Keywords: surgical management, acute intestinal obstruction, intra-abdominal adhesions, incisional hernia, hypothermia.

*Address for Correspondence:

Dr P Karuppasamy, D-6, Doctors Quarters, Melmaruvathur Adhiparasakthi Institute of Medical Sciences and Research Melmaruvathur, Tamil Nadu, INDIA..

Email: karuppasamy01@yahoo.co.in

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INTRODUCTION

Intestinal obstruction remains one of the most common surgical diagnosis made in emergency departments worldwide, management of which requires quick, appropriate diagnosis, rational and effective therapy.¹ Common intra-abdominal etiologies are hernia, neoplasm, adhesions or related to biochemical disturbances of either the small or large bowel. Intestinal obstruction can be classified as dynamic (mechanical) or adynamic (pseudo obstruction). Mechanical obstruction is characterised by blockage of bowel (luminal, mural, extramural), resulting in increased intestinal contractility as a physiologic

response to relieve the obstruction.^{2,3} For surgical management of acute intestinal obstruction, factors considered for decision on operative or non-operative management. The factors considered are age of the patients, duration of obstruction, volume of nasogastric aspirate, findings on the radiological imaging, previous abdominal surgeries and malignancy.⁴ Early diagnosis and timely intervention may decrease morbidity and mortality of these patients. Depending on the etiology of intestinal obstruction, the common surgical techniques used include decompression procedures like enterostomy and colostomy, resection and end-to-end anastomosis, release of adhesions and bands, volvulus untwisting, herniorrhaphy, hemicolectomy and ileo-transverse anastomosis.⁵ Present study was aimed to study surgical management of acute intestinal obstruction in the adults at a tertiary health center.

MATERIAL AND METHODS

Present study was hospital based, prospective and observational study, conducted in Shri Venkateshwara Medical College, Hospital & Research Centre, Pondicherry, during October 2017 to September 2018 (1 year). Study approval was taken from institutional ethical committee.

Inclusion criteria: Patients > 18 years age of either gender, diagnosed with acute intestinal obstruction underwent surgical management, willing to participate in study

Exclusion criteria: Patients managed conservatively, Patients who were not fit for surgery, Adynamic intestinal obstruction, Patients not willing to be a part of this study Study was explained to patients/relatives and a written informed consent was taken. Patients underwent history taking and physical examination (systemic examination, abdominal examination and per rectal examination) and findings were noted. Routine laboratory investigations (CBC, urine examination, LFT, RFT) and Radiological examination (erect abdomen X-ray) were done in all patients. Additional workup such as barium enema/ultrasound examination/CT scan was done in selected cases. On admission, patients received resuscitative measures (IV fluids, Nasogastric decompression with Ryles tube insertion) and close observation of all bedside parameters (like pulse rate, BP, RR, urine output, urine output, abdominal girth, bowel sounds and tenderness and guarding). Patients with signs and symptoms of acute obstruction underwent appropriate surgical procedure after initial resuscitation. The postoperative period had been monitored carefully and all the parameters were recorded hourly or fourth hourly basis depending on the patient's general condition and toxemia. Postoperatively Nasogastric tube aspiration, intravenous fluids and antibiotics were administered. Any complications were noted and treated accordingly. Postoperative follow-up after the discharge of patients was done till 3 months. Data was collected and compiled using Microsoft Excel, analysed using SPSS 23.0 version. Statistical analysis was done using descriptive statistics

RESULTS

During study period, 132 patients underwent surgical management for acute intestinal obstruction. In present study, most common age group was between 51- 60 years (28.03 %) followed by 41-50 years (23.48%) and 31-40 years (17.42 %) age group. Male patients (57.58 %) were more than females (42.43 %).

Table 1: Age and Gender distribution

Age (Years)	No. of patients	Percentage
19 – 30	14	10.61
31 – 40	23	17.42
41 – 50	31	23.48
51 – 60	37	28.03
61 – 70	16	12.12
≥71	11	8.33
Gender	132	
M10ale	76	57.58
Female	56	42.42

In present study, most common sign and symptoms were abdominal pain (93.18 %), abdominal distension (83.33 %) and obstipation (81.82 %), tenderness (77.27 %) and vomiting (68.94 %),

Table 2: Sign and symptoms

Sign and symptoms	No. of Cases	Percentage
Abdominal pain	123	93.18
Abdominal distension	110	83.33
Obstipation	108	81.82

Tenderness	102	77.27
Vomiting	91	68.94
Increased bowel sound	78	59.09
Guarding	57	43.18
Absent bowel sound	31	23.48
Visible peristalsis	16	12.12
Rigidity	12	9.09
Groin swelling	5	3.79
Palpable mass	2	1.52

On erect abdomen X ray, common findings were multiple air fluid levels (83.33 %), dilated bowel loops (74.24 %) and coffee-bean sign (3.79 %).

Table 3: Radiological sign

Radiological sign	No. of patients	Percentage
Multiple air fluid levels	110	83.33
Dilated bowel loops	98	74.24
Coffee-bean sign	5	3.79

Common etiologies for surgical management for acute intestinal obstruction in present study were intra-abdominal adhesions (52.27 %), incisional hernia (12.12 %), abdominal tuberculosis (11.36 %) and sigmoid volvulus (5.30 %).

Table 4: Etiology

Etiology	No. of Cases	Percentage
Intra- Abdominal Adhesions	69	52.27
Incisional hernia	16	12.12
Abdominal tuberculosis	15	11.36
Sigmoid volvulus	7	5.30
Obstructed inguinal hernia	6	4.55
Rectum/anal canal growth	5	3.79
Sigmoid colon growth	4	3.03
Internal hernia	4	3.03
Ascending and descending colon growth	3	2.27
Intussusception	3	2.27

Adhesiolysis + Resection Anastomosis (52.27 %) was most common surgical procedure followed by herniorrhaphy (16.67 %) and resection anastomosis (9.85 %).

Table 5: Surgical management

Procedure	No. of Cases	Percentage
Adhesiolysis + Resection Anastomosis	69	52.27
Herniorrhaphy	22	16.67
Resection and Anastomosis	13	9.85
colostomy	8	6.06
Hartmann's Procedure	7	5.30
Hemicolectomy	7	5.30
Double barrel ileostomy	5	3.79
Jejunostomy	1	0.76

In patients underwent surgical management for acute intestinal obstruction in present study, common complications noted in post-operative period were wound infection (10.61 %), Sepsis (8.33 %), urinary tract infection (6.06 %), burst abdomen (5.3 %) and basal atelectasis (3.03 %). In present study 8.33 % mortality was noted. Age > 60 years, malignancy, major surgeries were common among patients could not survived.

Table 6: Post-operative complications

Postoperative complication	No. of Cases	Percentage
Wound infection	14	10.61
Sepsis	11	8.33
Urinary tract infection	8	6.06
Burst abdomen	7	5.30
Basal atelectasis	4	3.03

DISCUSSION

The common symptoms of acute intestinal obstruction are nausea, vomiting, abdominal pain with distension and obstipation. Acute intestinal obstruction is usually diagnosed clinically aided by radiological investigations, and in some cases diagnostic laparoscopy. Adhesions and bands form the most common causes for small intestinal obstruction: up to three fourths of all cases. Peritoneal adhesions are common after laparotomy and are exacerbated by intra-abdominal infection, the tissue ischemia associated with wound closure, external beam radiation, and the inevitable presence of foreign material such as sutures.⁶ Although small bowel obstruction can occur any time after laparotomy, the risk is found to be greatest in the first few postoperative years. In study by Deolekar SR *et al.*,⁷ mean age of patients was 45.8 years and 60% were males. The most common cause of IO was found to be postoperative adhesions followed by paralytic ileus. Out of 80 patients of IO, 50 required surgical intervention, majority of which were treated with release of adhesions (38%) and resection anastomosis (44%). Poorer outcomes were observed in cases of malignancy and mesenteric ischemia. Mortality (14%) was mainly due to complications like septicemia and respiratory tract infection. In study by Junaid Alam *et al.*,⁸ 263 patients were diagnosed to have acute intestinal obstruction, with males preponderance (66.15%), commonest among 41-50 years, abdominal pain was the most common presenting symptom and abdominal distension was the most common physical finding on clinical examination. The most common radiological finding was multiple air fluid levels seen on X patients, the main cause of obstruction was ileocecal tuberculosis followed by Adhesions and Bands. Small bowel obstruction was present in 81.36% cases. The most common surgical procedure was segmental bowel resection with end-to-end anastomosis. Wound dehiscence, burst abdomen was the major cause of morbidity. 5.32% mortality rate was reported during post operative period, common in patients with strangulated hernia and increased age. Chakma N *et al.*,⁹ studied 87 cases of acute intestinal obstruction, common age group affected was 41-50 years, common sex was male, the commonest cause of acute intestinal obstruction in this study was adhesion and band (41.4%) followed by malignancy (26.4%). The other causes of intestinal obstruction are obstructed hernia (9.2%), volvulus (6.9%), stricture (5.7%), ileocecal tuberculosis (3.4%), superior mesenteric artery thrombosis (3.4%). The most common operation performed was adhesiolysis (39%) followed by resection and anastomosis (17.2%) and the most common post-operative complication observed was wound infection (29.9%). The mortality rate was 9.2%. In study by Gadhavi JM,¹⁰ among 60 patients, for management of

small bowel obstruction, major surgeries were adhesiolysis (14 patients), resection and anastomosis (8 patients), band release procedure (4 patients), hernia repair (8 patients), resection, hernia repair, volvulus derotation and Mekell's diverticulectomy was done in 2 patients respectively. For the management of large bowel obstruction colostomy (8 cases), resection and anastomosis (4 cases), intussusception milking (2 cases), volvulus derotation (2 cases) and right hemicolectomy (4 cases for CA ascending colon) were done. Early diagnosis of obstruction, pre-operative preparation, skillful operative management, proper technique during surgery and intensive postoperative treatment carries a grateful result. Although the mortality due to acute intestinal obstruction is decreasing with better understanding of pathophysiology, improvement in diagnostic techniques, fluid and electrolyte correction, much potent anti-microbials and surgical management, but still mortality ranges from 3% for simple obstruction to as much as 30% when there is vascular compromise or perforation of the obstructed bowel.¹¹ The optimal outcome for patients presenting with intestinal obstruction is influenced by several factors, such as whether the obstruction is partial or complete, the presence of ischemic or gangrenous bowel, perforation, duration of symptoms, development in the early postoperative period, the admitting service, and etiology.^{12,13} The evaluation of patients with suspected bowel obstruction endeavors not only to confirm the diagnosis but also to determine the need for and timing of surgery.

CONCLUSION

Male, age more than 50 years, abdominal pain, abdominal distension and obstipation were common factors in patients underwent surgical management for acute intestinal obstruction. Common etiologies were intra-abdominal adhesions, incisional hernia, required adhesiolysis + Resection Anastomosis, herniorrhaphy. Age > 60 years, malignancy, major surgeries were common factors among patients could not survived.

REFERENCES

1. Malik AM, Shah M, Pathan R, Sufi K. Pattern of acute intestinal obstruction: is there a change in the underlying etiology? Saudi J Gastroenterol. 2010;(4):272-4.
2. Jim Hill. Intestinal obstruction. Bailey and Love Short Practice of Surgery. 27th edition. Arnold International; 2018:1280.
3. Mahmoud NN. Colon and rectum. Townsend, Beauchamp, Evers Matlox Sabiston. Textbook of surgery 1st south Asian edition. Elsevier. 2017;2:1336-7.
4. Zielinski MD, Eiken PW, Bannon MP, Heller SF, Lohse CM, Huebner M, Sarr. Small bowel obstruction-who needs an operation? A multivariate prediction model. World J Surg. 2010;34:910-19.

5. David PJ, Brooks DC. Maingot's abdominal operations. 11th ed. McGraw Hills; 2007: 479-508.
6. Pillai V, Benjamin RK, Chisthi MM. A Pattern of Intestinal Obstruction Cases – A Tertiary Care Centre Study. *Ann. Int. Med. Den. Res.* 2017; 3(2):SG41-SG45.
7. Deolekar SR, Mahapatra B, Subudhi S, Singhal P. A study of surgical management and its outcome in adult patients with intestinal obstruction. *Int Surg J* 2019;6:4370-7.
8. Junaid Alam *et al.* (2017) 'A Clinical Study of Acute Intestinal Obstruction in Adults at A Tertiary Care Centre in North India', *International Journal of Current Advanced Research*, 06(12), pp. 8616-8621.
9. Chakma N, Sarkar B, Sarkar P. A retrospective study of intestinal obstruction patients in AGMC and GBP Hospital, Tripura. *J. Evolution Med. Dent. Sci.* 2016;5(103):7531-7533,
10. Gadhavi JM, Charpot R. Clinical study and surgical management of acute intestinal obstruction in the adults. *Int Surg J* 2020;7:3703-6.
11. N K Hazra, Om Bahadur Karki, Hemant Batajoo, Niraj Thapa, Doledra Rijal, Abhijit De, Acute Intestinal Obstruction in Children: Experience in a Tertiary Care Hospital, *American Journal of Public Health Research*, 2015, Vol. 3, No. 5A, 53-56.
12. Teixeira PG, Karamanos E, Talving P, Inaba K, Lam L, Demetriades D. Early operation is associated with a survival benefit for patients with adhesive bowel obstruction. *Ann Surg.* 2013;258:459-65.
13. Malangoni MA, Times ML, Kozik D, Merlino JI. Admitting service influences the outcomes of patients with small bowel obstruction. *Surgery.* 2001;130:706-13.

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