

Causes and Management of Acute Mechanical Small Bowel Obstruction in Adults

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ABSTRACT

Objective: To determine causes and management of acute mechanical small bowel obstruction in adults.

Study Design: Randomized clinical study.

Place and Duration of Study: This study was conducted at the Surgical Department, People's Medical College Hospital, Nawabshah, Jamshoro and Jinnah Post Graduate Medical Centre Karachi from August 2014 to July 2015.

Materials and Methods: The study pertains to patients admitted into the hospital casualty surgical department during the emergency with diagnosis of acute mechanical small bowel obstruction on the basis clinical features like abdominal pain, vomiting, distension, constipation and radiological evidence of small bowel obstruction with multiple fluid levels. Clinical examination were inspection of abdomen any distension, peristalsis or old scar was noted. Any tenderness, rigidity, distension, palpable mass were noted on palpation. Groins, hernial orifices and scrotal examination was done for strangulated hernias. Any fluid thrill and shifting dullness was recorded. On auscultation normal, borborygmi or absent bowel sounds were also recorded. All base line investigations, ultrasound and C.T scan were not carried out preoperatively. All cases in this study were treated surgically.

Results: Out of 50 patients 19(38%) were 14-25 years of age. This was the age group with highest incidence of the disease. Only 6 patients (12%) were above 65 years in this study. Out of 50 patients 30 (60%) were male and (40%) were female. Distension was the most commonly found physical finding in 40 (80%) cases followed by dehydration was second common sign in 23 (46%) cases, tenderness 20 (40%) cases, previous operation scar 15 (30%) cases and external hernias 11(22%) in descending order of frequency. The main cause of obstruction was adhesion, band and strictures in 30 (60%) cases, external hernias 11(22%) cases, internal hernias 4(8%) cases, volvulus 3(6%) cases, congenital anomalies 1(2%) case, worms 1(2%) case and other rare causes 1(2%) case. All patients in this study were treated surgically. Out of 50 patients complications encountered in 6(12%) cases, out of these 6 cases 3 (6%) were wound infection, all responded well to simple drainage and antibiotic cover. 1(2%) cases of wound dehiscence, responded to tension sutures, antibiotic cover and abdominal bandage. Chest infection was seen in 1(2%) cases ranging from mild bronchitis to severe respiratory distress.

Conclusion: We conclude that management of bowel obstruction is careful, pain taking and repeated clinical assessment of the patient.

Key Words: Bowel Obstruction, Acute Mechanical, Causes of Bowel Obstruction

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INTRODUCTION

Small bowel mechanical obstruction is the obstruction to the onward flow of contents in the duodenum, jejunum and ileum, caused by mechanical occlusion of the bowel lumen¹. Commonly small bowel obstruction is the jejunal or ileal obstruction because duodenal

obstruction is rare and is not seen in the adults and also because it's clinical presentation is similar to gastric outlet obstruction and not similar to intestinal obstruction². Small bowel obstruction is a common cause of acute abdominal distress and accounts upto 20% of emergency admissions for a general surgeon to deal with³.

The incidence of causes of the disease vary from country to country and alter from year to year⁴. In geographic areas with long life expectancy and good surgical care post operative adhesions cause at least fifty percent of all the obstructions in third world countries and is the second major cause of obstruction in the developed countries⁵. Small bowel mechanical obstruction presents with central abdominal colic, early vomiting, central abdominal distention and constipation. X-ray abdomen is a key to the diagnosis^{6,7}. Small bowel obstruction is a surgical emergency in which early diagnosis and prompt treatment can avoid high mortality rate⁸. Statistical data is usually lacking in our part of the world, however one come across

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patients of acute small bowel mechanical obstruction in emergency unit in People's Medical College Hospital, Nawabshah, Jamshoro and JPMC Karachi.

MATERIALS AND METHODS

This is randomized clinical trial study conducted at Surgical Department of Nawabshah, Jamshoro and Jinnah Post Graduate Medical Centre Karachi, from August 2014 to July 2015.

The study pertains to patients admitted into the hospital casualty surgical department during the emergency with diagnosis of acute mechanical small bowel obstruction on the basis clinical features like abdominal pain, vomiting, distension, constipation and radiological evidence of small bowel obstruction with multiple fluid levels. Clinical examination were inspection of abdomen any distension, peristalsis or old scar was noted. Any tenderness, rigidity, distension, palpable mass were noted on palpation. Groins, hernial orifices and scrotal examination was done for strangulated hernias. Any fluid thrill and shifting dullness was recorded. On auscultation normal, borborygmi or absent bowel sounds were also recorded. All base line investigations, ultrasound and C.T scan were not carried out preoperatively. All cases in this study were treated surgically.

RESULTS

A total of 50 patients with acute Mechanical small bowel obstruction were collected during 2 year period. Out of 50 patients 19(38%) were 14-25 years of age (Table no.1). This was the age group with highest incidence of the disease. Only 6 patients (12%) were above 65 years in this study. Out of 50 patients 30 (60%) were male and (40%) were female. Thirty three patients were from poor class. Three were rich and fourteen were from middle class. Patient's complain were abdominal pain 100% (50 cases), vomiting 92%(46 cases) and constipation 100% (50 cases). Analysis of symptoms showed that 20 (40%) patients had presenting complaints for less than five days. In 23 (46%) patients the pre-intervention period was between 5 to 10 days, in 6 (12%) patients it was 11 to 15 days. While in 2 (4) patients it was more than 15 days. Distension was the most commonly found physical finding in 40 (80%) cases followed by dehydration was second common sign in 23 (46%) cases, tenderness 20 (40%) cases, previous operation scar 15 (30%) cases and external hernias 11(22%) in descending order of frequency (Table No.1). The main cause of obstruction was adhesion, band and strictures in 30 (60%) cases, external hernias 11(22%) cases, internal hernias 4(8%) cases, volvulus 3(6%) cases, congenital anomalies 1(2%) case, worms 1(2%) case and other rare causes 1(2%) case (Chart No.1). All patients in this study were treated surgically. Release of adhesion only was performed in 13(26%) cases,

resection and end to end anastomosis was done in 9 (18%), repair of hernia in 7(18%), ileostomy in 6(12%), side to side by pass anastomosis in 3(6%), right hemicolectomy in 3(6%), stricturoplasty in 2(4%), while in one (2%) ileotransverse end-to-side and one (2%), enterotomy was performed.

Table No.1: Demographic variable of patients

Variable	No. Patients	Percentage
Symptoms		
• Abdominal pain	50	100%
• Vomiting	46	92%
• Constipation	50	100%
Age		
• 14-25 years	19	38%
• 26-35 years	5	10%
• 36-45 years	11	22%
• 46-55 years	9	18%
• 56-65 years	9	18%
Physical Finding		
• Distension	40	80%
• Dehydration	24	48%
• Tenderness	22	44%
• Operation scar	15	30%
• External Hernia	11	22%

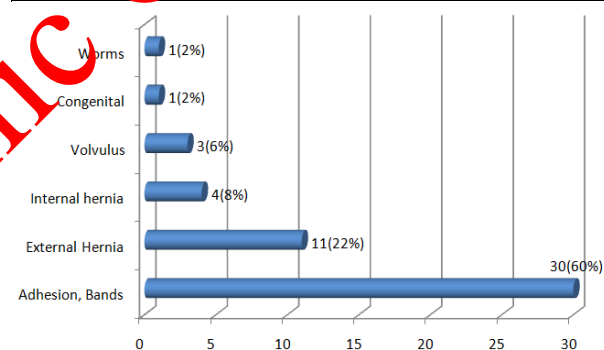


Chart No.1: Causes of Obstructions

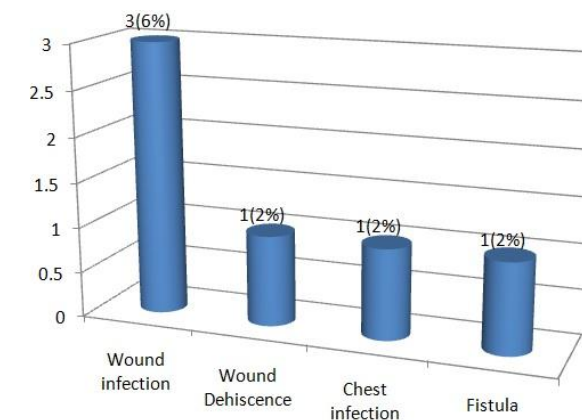


Chart No.2: Postoperative Complication

Out of 50 patients complications encountered in 6(12%) cases, out of these 6 cases 3 (6%) were wound

infection, all responded well to simple drainage and antibiotic cover. 1(2%) cases of wound dehiscence, responded to tension sutures, antibiotic cover and abdominal bandage. Chest infection was seen in 1(2%) cases ranging from mild bronchitis to severe respiratory distress. However all responded to chest physiotherapy, bronchodilators, expectorants and appropriate antibiotics.

DISCUSSION

Small bowel obstruction is a common cause of acute abdominal distress and accounts for 20 percent of all surgical emergencies⁹. The over all incidence in the present study was only 11.5%. This low incidence was because our study was limited to mechanical obstruction in adults only. Small bowel obstruction is the disease of all age groups. Most studies indicate that this disease most commonly occurs in 2nd, 3rd and 4th decade¹⁰. The same was the finding in our study as the most affected age group was 14-25 years. Males predominates females in this study and most of the patients were poor, belonging to areas lacking basic health facilities.

In this study presenting complaints were same as in some other studies, pain, vomiting, constipation, distension, tenderness, external hernia, dehydration^{11,12}. Pre-intervention period in 60 percent patients was 5-15 days. This indicate that most of the patients presented late. This may be because either in initial stage patients were improperly treated or referred by "Quacks" and general practitioners.

Abdominal X-ray is a key to the diagnosis and this was proved in our study as all the X-ray films were positive. Causes of bowel obstruction vary from country to country and alter from year to year². Adhesions usually postoperative is the major cause of obstruction in areas with good health facilities¹³. Our study has the same results because in our study adhesions were the major cause of obstruction, but our study differs from Fuzun⁴ study because the number of patients with postoperative adhesions (25%) were equal to that of tubercular adhesion (25%). This is because of high incidence of abdominal tuberculosis in this region. However adhesions, bands were the major cause of obstruction in our study.

Hernia is the major cause of obstruction in developing communities¹³, due to infrequent herniorrhaphy and abdominal operations. In prospective study conducted at Rawalpindi General Hospital reported commonest cause of intestinal obstruction was obstructed inguinal hernia (44 %), followed by adhesions (24 %) ¹⁴. In our study the cause of obstruction were postoperative adhesions 60% and external hernias 22%. The reason for this type of pattern in our study is due to increasing number of laparotomies, increased incidence of abdominal tuberculosis after the migration of Afghan

refugees and increasing number of herniorrhaphies in this area.

In this study all the patients demanded surgical exploration. In 12% cases gut was gangrenous. This percentage is lower than 20% in the study of Malik A¹⁵. However the main factor of non viability of gut was late presentation.

The result of treatment varied with the type of pathology. Early presentation and early surgical intervention has an impact on the survival of these patients. Patients presented late with peritonitis due to gangrene of gut or tubercular perforation showed high mortality rate. The rest of the patients treated surgically did very well showing 100% survival rate. Mortality rate in our study was 6.65% which we consider satisfactory, considering the fact that most of our patients were received in extremely serious and unstable state. In previous studies the rate of mortality 4.85% reported¹⁵.

CONCLUSION

From this study we conclude that management of bowel obstruction is careful pain taking and repeated clinical assessment of the patient. Every patient with obstruction may have strangulation. Strangulation nearly always requires urgent operation. Small bowel obstruction that appears simple may prove to be strangulated. Therefore conservative measures are continued only while improvement continues. Operation should be deliberate, meticulous and conclusive in curing obstruction, rather than indecisive, hurried procedures that leave the patient unrelieved.

Conflict of Interest: The study has no conflict of interest to declare by any author.

REFERENCES

1. Scott FI, Osterman MT, Mahmoud NN, Lewis JD. Secular trends in small-bowel obstruction and adhesiolysis in the United States: 1988-2007. *Am J Surg* 2012; 204:315-320.
2. Kozol R. Mechanical bowel obstruction: a tale of 2 eras. *Arch Surg* 2012; 147:180-4
3. Catena F, Di Saverio S, Coccolini F, Ansaloni L, De Simone B, Sartelli M, et al. Adhesive small bowel adhesions obstruction: Evolutions in diagnosis, management and prevention. *World J Gastrointest Surg* 2016;8(3):222-31.
4. Fuzun M, Kaymark E, Harmancioglu O, Astarcioglu K. Principle causes of mechanical bowel obstruction in surgically treated adults. *Br J Surg* 1991;78:202-3.
5. Rau R, Soroko E, Jasilionis D, Vaupel JW. Continued reductions in mortality at advanced ages. *Population and Development Review* 2008; 34(4):747-768.

6. Taylor MR, Lalani N. Adult small bowel obstruction. *Acad Emerg Med* 2013;20:528-531.
7. Kozol R. Mechanical bowel obstruction: a tale of 2 eras. *Arch Surg* 2012;147:180-4.
8. Okabayashi K, Ashrafian H, Zacharakis E, Hasegawa H, Kitagawa Y, Athanasiou T, et al. Adhesions after abdominal surgery: a systematic review of the incidence, distribution and severity. *Surg Today* 2014;44: 405-420.
9. Anderson MCA, Willium MT, Humphery. Contrast radiography in small bowel obstruction. *Military Med* 1997;162:749-75.
10. Di Saverio S, Coccolini F, Galati M, Smerieri N, Biffl WL, Ansaloni L, et al. Bologna guidelines for diagnosis and management of adhesive small bowel obstruction (ASBO): 2013 update of the evidence-based guidelines from the world society of emergency surgery ASBO working group. *World J Emerg Surg* 2013 ;8(1):42.
11. Scott FI, Osterman MT, Mahmoud NN, Lewis JD. Secular trends in small-bowel obstruction and adhesiolysis in the United States: 1988-2007. *Am J Surg* 2012; 204: 315-320.
12. Evennett NJ, Petrov MS, Mittal A, Windsor JA. Systematic review and pooled estimates for the diagnostic accuracy of serological markers for intestinal ischemia. *World J Surg* 2009;33: 1374-1383.
13. Obaid KJ. Intestinal Obstruction: Etiology, Correlation between Pre- Operative and Operative Diagnosis. *Int J Public Health Resea Special Issue* 2011:41-49.
14. Qureshi AA, Khan JS. Intestinal Obstruction Changing Etiological Trends . *J Rawalpindi Med Coll* 2008;12(2):78-81.
15. Malik AM, Shah M, Pathan R, Suf K. Pattern of Acute Intestinal Obstruction: Is There a Change in the Underlying Etiology?. *Saudi J Gastroenterol* 2010;16(4): 272-274.

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