

**ORIGINAL RESEARCH**

**Evaluation And Management Of Small Bowel Obstruction: An Original Research**

**<sup>1</sup>Dr. Mohinder Kumar, <sup>2</sup>Dr. Shubham Pawar, <sup>3</sup>Dr. Abhai Singh Bhadwal, <sup>4</sup>Dr. Manu Saini**

<sup>1</sup>Assistant Professor, <sup>2</sup>DNB, <sup>3</sup>MBBS, <sup>4</sup>Registrar, Department of General Surgery, Government Medical College, Kathua, Jammu and Kashmir, India

**Corresponding author**

**Dr. Mohinder Kumar**

Assistant Professor, Department of General Surgery, Government Medical College, Kathua, Jammu and Kashmir, India

**Email:** [drmohinder17@gmail.com](mailto:drmohinder17@gmail.com)

Received: 16 October, 2022

Accepted: 20 November, 2022

**ABSTRACT**

**Aim:** The purpose of the present research was to evaluate and assess the management of various cases of small bowel obstruction.

**Methodology:** Eighty cases of small bowel obstruction observed in this study presented with common symptoms of abdominal distension, absence of flatus and/or faeces.

**Results:** Abdominal tenderness was the commonest finding during per abdomen examination. Adhesion was the commonest aetiology observed in this study followed by obstructed hernia. General trend of reporting to the hospital was observed to be on the third day of onset. Higher incidence of small bowel obstruction was observed in cases in sixth decade of life. There was predominance among the males and in cases belonging to lower socio-economic class.

**Conclusion:** Adhesions and hernias are the most common causes of obstruction as well as of bowel ischemia, necrosis, and perforation.

**Keywords Bowel:** Diagnosis, Distension, Duodenum, Obstruction, Surgery.

**INTRODUCTION**

Small bowel obstruction (SBO) is a common surgical emergency, accounting for almost 50% of all emergency laparotomies with significant in-hospital morbidity and costs. 1-4 Most patients with SBO have undergone previous abdominal operations (80%) 5, 6, with adhesions as the single most common cause (60–75%) of SBO.1,7 However, SBO also occurs in patients who had no prior abdominal surgery, referred to as a virgin abdomen. In the past decade, a paradigm shift in the treatment of SBO in patients with previous abdominal surgery has been implemented. Today, the majority of small bowel obstructions are managed non-operatively, treatment comprising bowel decompression, water-soluble contrast agents, and fluid resuscitation. Non-operative management has been found safe and efficacious in 70% of SBOs caused by adhesions (ASBO).8 Many authors, however, suggest that surgical exploration is still mandatory in the case of SBO in the virgin abdomen(SBO-VA), based on the assumption that SBO-VA is usually caused by other etiology's than adhesions, such as malignancy, internal hernia, and bezoars as the most prominent causes.9,10 On the other hand, recent studies suggest a high incidence of adhesions also in patients with SBO-VA.6,11

The origin of adhesions in the virgin abdomen can be congenital, or the results of (unrecognized) abdominal inflammation in the patients' history.<sup>12</sup> The observation that most SBO-VA are caused by adhesions could have important implications for treatment, signifying that guidelines on the management of ASBO might also apply to the majority of patients with SBO-VA. The fundamental concerns about intestinal obstruction are its effect on whole body fluid/electrolyte balances and the mechanical effect that increased pressure has on intestinal perfusion. Proximal to the point of obstruction, the intestinal tract dilates as it fills with intestinal secretions and swallowed air.<sup>13</sup> Failure of intestinal contents to pass through the intestinal tract leads to a cessation of flatus and bowel movements. Intestinal obstruction can be broadly differentiated into small bowel and large bowel obstruction. Fluid loss from emesis, bowel edema, and loss of absorptive capacity leads to dehydration. Emesis leads to loss of gastric potassium, hydrogen, and chloride ions, and significant dehydration stimulates renal proximal tubule reabsorption of bicarbonate and loss of chloride, perpetuating the metabolic alkalosis.<sup>14</sup> In addition to derangements in fluid and electrolyte balance, intestinal stasis leads to overgrowth of intestinal flora, which may lead to the development of feculent emesis. Additionally, overgrowth of intestinal flora in the small bowel leads to bacterial translocation across the bowel wall.<sup>15</sup> Ongoing dilation of the intestine increases luminal pressures. When luminal pressures exceed venous pressures, loss of venous drainage causes increasing edema and hyperemia of the bowel. This may eventually lead to compromised arterial flow to the bowel, causing ischemia, necrosis, and perforation. A closed-loop obstruction, in which a section of bowel is obstructed proximally and distally, may undergo this process rapidly, with few presenting symptoms. Intestinal volvulus, the prototypical closed-loop obstruction, causes torsion of arterial inflow and venous drainage, and is a surgical emergency. Adhesions resulting from prior abdominal surgery are the predominant cause of small bowel obstruction, accounting for approximately 60 percent of cases.<sup>16</sup> Lower abdominal surgeries, including appendectomies, colorectal surgery, gynecologic procedures, and hernia repairs, confer a greater risk of adhesive small bowel obstruction. Less common causes of obstruction include intestinal intussusceptions, volvulus, intra-abdominal abscesses, gallstones, and foreign bodies. The development of metabolic acidosis, especially in a patient with an increasing serum lactate level, may signal bowel ischemia.

### **AIM OF THE PRESENT STUDY**

The purpose of the present research was to evaluate and assess the management of various cases of small bowel obstruction.

### **METHODOLOGY**

After prior approval from the Institutional Ethics Committee (IEC). A prospective observational study of eighty cases which were admitted with small bowel obstruction was performed. Eighty cases of small bowel obstruction observed in this study presented with common symptoms of abdominal distension, absence of flatus and/or faeces.

### **RESULTS**

Twenty (25%) cases were in the sixth decade of life. Preponderance of males over females was observed with fifty-five (68.75%) male cases. Fifty-two (65%) cases were from lower socio-economic strata. The commonest cause was adhesion followed by hernia which were observed in thirty-three (41.25%) and twenty (25%) of the presenting cases. Thirty-eight (47.5%) cases and twenty-two (27.5%) cases reported to the hospital on the third day and second day respectively. Degree of abdominal distension was moderate in twenty-five (31.25%) cases and mild in twenty-three (28.75%) cases. High pitched or abnormal bowel sounds were heard in twenty-seven (33.75%) cases. Radiologic investigations revealed

multiple fluid levels or gas shadows in fifty-five (68.75%) cases. Sonologic investigations revealed small bowel obstruction in twenty-five (31.25%) cases. Sixty (75%) cases were cured successfully without any complications. (Table 1)

**Table 1: Data recorded in the present research**

Variables	Percentage occurrence (maximum cases)
Age	25% (60-70 years)
Gender	68.75% (men)
Socio-economic strata	65%-lower socioeconomic strata
Causes of SBO	Adhesion (41.25%) Hernia (25%)
Degree of abdominal distention	Mild – 28.75% Moderate-31.25%
Radiological results	Fluid level/gas shadow (68.75%) SBO-31.25%
Prognosis	No complications-75%

## DISCUSSION

Acute mechanical bowel obstruction is a common surgical emergency and a frequently encountered problem in abdominal surgery.<sup>17</sup> It constitutes a major cause of morbidity and financial expenditure in hospitals around the world and a significant cause of admissions to emergency surgical departments.<sup>18,19</sup> Intestinal obstruction belongs to highly severe conditions, requiring a quick and correct diagnosis as well as immediate, rational and effective therapy.<sup>20</sup> Surgeons are concerned about bowel obstruction cases because strangulation, causing bowel ischemia, necrosis and perforation might be involved, and it is often difficult to distinguish simple obstruction from strangulation. Accurate early recognition of intestinal strangulation in patients with mechanical bowel obstruction is important to decide on emergency surgery or to allow safe non-operative management of carefully selected patients.<sup>21</sup> Although close and careful clinical evaluation, in conjunction with laboratory and radiologic studies, is essential for the decision of proper management of patients with acute mechanical bowel obstruction, a preoperative diagnosis of bowel strangulation cannot be made or excluded reliably by any known parameter, combinations of parameters, or experienced by clinical judgement. Mechanical bowel obstruction is an old and common surgical emergency. A remarkably high incidence was observed among cases belonging to the lower socio-economic strata. The cases reported to the hospital usually on the third day after development of symptoms. It was observed that prognosis and management among cases which reported earlier was better due to minimal chances of gut injury or strangulation. Degree of abdominal distension has a direct relation with the duration and intensity of the symptom. Abdominal tenderness was observed in thirty-seven cases and eleven cases revealed visible peristalsis. Both mild and moderate distensions were observed. Confirmation of small bowel obstruction was by radiologic and sonologic investigations. Presence of peristalsis helps to differentiate small bowel obstruction from a paralytic ileus.<sup>22</sup> Management of intestinal obstruction is directed at correcting physiologic derangements caused by the obstruction, bowel rest, and removing the source of obstruction.<sup>23</sup>

## CONCLUSION

Adhesions and hernias are the most common causes of obstruction as well as of bowel ischemia, necrosis, and perforation. A large number of these patients can be safely and effectively nonoperatively treated, particularly those with adhesive obstruction, a substantial portion requires immediate operation.

**REFERENCES**

1. Ten Broek RP, Issa Y, van Santbrink EJ, et al. Burden of adhesions in abdominal and pelvic surgery: systematic review and met-analysis. *Bmj*. 2013;347:f5588.
2. Gore RM, Silvers RI, Thakrar KH, Wenzke DR, Mehta UK, Newmark GM, et al. Bowel obstruction. *Radiol Clin North Am*. 2015;53(6):1225–40.
3. Lower AM, Hawthorn RJ, Clark D, Boyd JH, Finlayson AR, Knight AD, et al. Adhesion-related readmissions following gynaecological laparoscopy or laparotomy in Scotland: an epidemiological study of 24 046 patients. *Hum Reprod*. 2004;19(8):1877–85.
4. NELA Project Team. Sixth Patient Report of the National Emergency Laparotomy Audit. London: RCoA; 2020.
5. Mullan CP, Siewert B, Eisenberg RL. Small bowel obstruction. *AJR Am J Roentgenol*. 2012;198(2):W105–17.
6. Beardsley C, Furtado R, Mosse C, Gananadha S, Fergusson J, Jeans P, et al. Small bowel obstruction in the virgin abdomen: the need for a mandatory laparotomy explored. *Am J Surg*. 2014;208(2):243–8.
7. Menzies D, Ellis H. Intestinal obstruction from adhesions--how big is the problem? *Ann R Coll Surg Engl*. 1990;72(1):60–3.
8. Ten Broek RPG, Krielen P, Di Saverio S, et al. Bologna guidelines for diagnosis and management of adhesive small bowel obstruction (ASBO): 2017 update of the evidence-based guidelines from the world society of emergency surgery ASBO working group. *World J Emerg Surg*. 2018;13(1):24.
9. Zielinski MD, Bannon MP. Current management of small bowel obstruction. *Adv Surg*. 2011;45(1):1–29.
10. McCloy C, Brown TC, Bolton JS, Bowen J, Fuhrman G. The etiology of intestinal obstruction in patients without prior laparotomy or hernia. *Am Surg*. 1998;64:19–22 discussion 22.
11. Ng YY, Ngu JC, Wong AS. Small bowel obstruction in the virgin abdomen: time to challenge surgical dogma with evidence. *ANZ J Surg*. 2018;88(1-2): 91–4.
12. Duron JJ. Postoperative intraperitoneal adhesion pathophysiology. *Colorectal Dis*. 2007;9(Suppl 2):14–24.
13. Wright HK, O'Brien JJ, Tilson MD. Water absorption in experimental closed segment obstruction of the ileum in man. *Am J Surg*. 1971;121(1):96-99.
14. Wangenstein OH. Understanding the bowel obstruction problem. *Am J Surg*. 1978;135(2):131-149.
15. Rana SV, Bhardwaj SB. Small intestinal bacterial overgrowth. *Scand J Gastroenterol*. 2008;43(9):1030-1037.
16. Shelton BK. Intestinal obstruction. *AACN Clin Issues*. 1999;10(4):478-91.
17. Mucha P Jr. Small intestinal obstruction. *Surg Clin North Am*. 1987;67:597-620.
18. Miller G, Boman J, Shrier I, Gordon PH. Etiology of small bowel obstruction. *Am J Surg*. 2000;180:33-6.
19. Miller G, Boman J, Shrier I, Gordon PH. Natural history of patients with adhesive small bowel obstruction. *Br J Surg*. 2000;87:1240-7.
20. Dite P, Lata J, Novotny I. Intestinal obstruction and perforation--the role of the gastroenterologist. *Dig Dis*. 2003; 21:63-7.
21. Richards WO, Williams LF Jr. Obstruction of the large and small intestine. *Surg Clin North Am*. 1988;68:355-76.
22. Frager DH, Baer JW. Distinction between postoperative ileus and mechanical small bowel obstruction: value of CT compared with clinical and other radiographic findings. *AJR Am J Roentgenol*. 1995;164(4):891-4.

23. Markogiannakis H. Acute mechanical bowel obstruction: Clinical presentation, etiology, management and outcome. *World J Gastroenterol.* 2007;13(3):432-7.