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REVIEW OF MANAGEMENT OF SMALL BOWEL OBSTRUCTION

General Surgery

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ABSTRACT

A major surgical emergency that is frequently found in the emergency unit is small bowel obstruction (SBO). The management of small bowel obstruction in adults was examined using systematic keyword searches in the Pubmed, Cochrane, and Google Scholar databases. The timely use of CT scans can have an impact on clinical outcomes in the management of SBO. Treatment for small bowel obstruction includes both surgical and non-surgical methods. SBO management is evolving along with the development of evidence-based guidelines and SBO management continues to change. Review will help Surgeons in treating SBO patients.

KEYWORDS

Small bowel obstruction, operative and non-operative management, Adhesions, Surgery, Laparoscopy, Advance cancer.

INTRODUCTION

Small bowel obstruction is a surgical emergency occur when a functional or mechanical blockade impairs the passage of intestinal contents like chyme, and air, resulting in fluid and gas accumulation [1, 2]. Small intestine blockage commonly causes constipation, nausea, vomiting, and stomach pain. Patients may discharge gas, faeces, and even diarrhoea in the early stages of the obstruction. These signs should not be used to rule out SBO [3]. Prior abdominal surgery and a history of constipation are two factors in the past that have the highest risk of being SBO [4, 5]. The incidence of SBO is decreased by moderate exercise which will help in speed up the transit of chyme, faeces, and gas inside the intestines [6, 7]. In the United States, there are 579 to 654 SBOs per 100,000 persons each year [8]. In adults, adhesions are the most common cause, and this can lead to mucosal ischemia, necrosis, and perforation. Prior abdominal surgery, family history of inflammatory bowel illness, personal history of neoplasia, femoral and inguinal hernias, or gastrointestinal motility issues are few of the known risk factors that can lead to the development of an SBO [9].

In recent years, the management of small intestinal obstruction has improved, leading to better treatment outcomes for small bowel obstruction in the general population [10]. Diagnostic tools like Computed tomography (CT) scan and use of water-soluble contrast led to a more tailored approach and to a reduction of immediate operations. Computed tomography (CT) detects different etiologies of bowel obstruction [11]. Water-soluble contrast can accurately predict completeness of obstruction and support conservative treatment in clinical practice [12]. Regardless of age, a literature review suggests a 72-hour safe-time rule for the duration of initial non-operative therapy [13, 14]. Patients with diabetes were reported to suffer from a 7.5% incidence of acute renal injury and 4.8% risk of myocardial infarction if the operation was delayed more than 24 h [15].

METHODS

In order to review evidence, synopses, and guidelines on the management of small bowel obstruction in November 2022, systematic searches of the Pubmed, Cochrane Collaboration, and Google Scholar databases were conducted using the keywords. Authors independently reviewed papers and gathered literature data. Additionally, pertinent citations from the publications that were found were included in the review. The journal's impact factor, citation report, or h-index of published articles was not taken into consideration by the authors as inclusion or exclusion criteria. The retrieved papers were reviewed for potential inclusion in our study, first for titles and/or abstracts, then for the article itself; publications without an English language abstract or with low interest in the relevant topics were not taken into consideration. Additionally, a manual search was used to exclude duplicate records that came from the same set of authors. The papers were rated for evidence strength whenever available using the Oxford CEBM 2011 system.

Management of Small Bowel Obstruction

Today, conservative methods successfully treat more than 70% of minor intestinal blockages, minimizing the risks associated with potentially difficult surgical procedures [16]. Emergency surgery is necessary when SBO provide obvious clinical or CT signs of ischemia, perforation, or peritonitis [17]. Patients with uncomplicated obstruction may be treated conservatively. Conservative treatment (NOM) includes fluid and electrolyte replenishment, intestinal decompression, and bowel rest. Patients can be successfully handled with NOM in the absence of strangulation, a history of chronic vomiting, or CT scan findings of free fluid, mesenteric oedema, small bowel faeces, and devascularized intestine [18]. To prevent delirium, functional decline, and problems brought on by starvation and malnutrition in frail older patients, non-operative therapy must also involve the correction of electrolyte imbalances and nutritional supplementation [19, 20, 21]. Complete SBO treatment should not be delayed, as this can increase morbidity and mortality significantly, as well as the number of bowel resections. Despite its high failure rate, the nasogastric tube is nonetheless useful in the conservative treatment of small intestinal obstruction to immediately ease symptoms and prevent aspiration [11]. Nasogastric tubes have allegedly been outperformed by triple-lumen long tubes in terms of failure [22]. Small intestinal obstruction surgery using laparoscopy has been offered as a therapy option that may lessen postoperative morbidity; however this minimally invasive method is not appropriate for all patients and comes with its own set of complications [23, 24]. Young patients with small intestinal blockage in the abdomen who has not undergone surgery must be treated surgically within 24 hours of arrival, following resuscitation and nasogastric decompression.

Management of Adhesive Small Bowel Obstruction (ASBO)

The most frequent cause of small bowel blockage is adhesions [25]. An extremely common surgical emergency that can result in substantial morbidity and possibly occasional fatality is adhesive small bowel obstruction (ASBO). Such intestinal blockages are generally caused by adhesions left over from prior abdominal surgeries. Developing hemodynamic instability after initial stabilization, peritoneal signs on physical examination, bowel ischemia, necrosis, and/or perforation on imaging, development of fever, tachycardia, feculent nasogastric drain, and failure of non-operative management on the fourth day of post-admission day after the onset of symptoms are the criteria for operative management in patients with postoperative adhesive bowel obstruction. A history of prior episodes of bowel obstruction by adhesions or CT imaging excluding alternative bowel obstruction causes are two main ways to confirm the adhesive aetiology of bowel obstruction without using any invasive procedures.

About 70–90% of ASBO patients respond well to non-operative care [26, 27]. If there are no symptoms of peritonitis, strangulation, or intestinal ischemia, non-operative treatment should always be explored on patients with adhesive small bowel obstruction [28]. The

two hallmarks of non-operative therapy are nasogastric tube decompression and nil per os. [29].

Laprotomy Vs Laproscopy In Management of ASBO

The conventional treatment for adhesive small intestinal blockage has been surgery involving abdominal exploration through laparotomy. This procedure carries a high risk of morbidity, a high potential for bowel damage, and may dramatically lower post-operative quality of life [30]. In individuals receiving surgery for ASBO, laparoscopic surgery may reduce morbidity. Less extensive adhesion (re)formation, an earlier return to bowel function, decreased post-operative pain, a shorter hospital stay, decreased risk of morbidity, in-hospital mortality, and reduced surgical infections are some potential advantages of laparoscopy [31, 32, 33]. Two previous laparotomies, an appendectomy as the preceding operation, no prior median laparotomies, and a single adhesive band are all indicators of a successful laparoscopic treatment of ASBO [34]. With the use of an adhesion barrier made of hyaluronate carboxymethylcellulose, ASBO in paediatric patients was significantly reduced [35].

In laparoscopic surgery for ASBO, the risk of intestinal damage appears to be increased. In fact, according to some authors, bowel damage occurred in 6.3% to 26.9% of patients who underwent laparoscopic adhesiolysis for ASBO [36, 37, 38]. Bowel resections were shown to be substantially more common in laparoscopic surgery in a recent population-based study. In contrast to open surgeries, laparoscopic procedures had a 53.5 against a 43.4% incidence of bowel resection [39]. Extreme complications including enterotomies and a delayed identification of perforations are more likely to occur during laparoscopy in an abdomen with several complicated adhesions, highly inflated loops of bowel, and other abnormalities [40, 41]. In patients with adhesive occlusions, gastrografin swallow is efficient at predicting the need for surgery. Additionally, it shortens the hospital stay and decreases the overall requirement for surgery [42].

Management of Malignant Bowel Obstruction (MBO)

MBO is a serious side effect of advanced cancer [43]. Management of MBO should be multi- and inter-disciplinary. Despite the possibility of using a percutaneous decompressing jejunostomy as a palliative measure, non-operative care has a significant failure rate in MBO [44]. Surgery offers only minimal to no benefit in cases of peritoneal carcinomatosis. It will result in significant morbidity, prolonged hospitalization, and frequently irreversible re-obstruction [45, 46]. Oral osmotic laxatives should be avoided in cases of total MBO but should be taken into consideration for managing impaired bowel movements due to partial bowel obstruction [47]. Drugs like anticholinergics (hyoscine butylbromide), steroids for the treatment of acute discomfort, nasogastric tubes for temporary decompression in acute MBO, and endoscopic or percutaneous gastrostomy tubes are employed in the management of gastric decompression are all non-surgical treatments for MBO.

CONCLUSIONS

Clinical outcomes in the management of SBO can be influenced by the timely use of CT scans. Surgeons should be aware that a tiny bowel obstruction can be treated non-operatively with the right diagnosis. If surgery is necessary, a laparoscopic technique can be advantageous for patients who have little peri-operative morbidity. Nevertheless, there is a high possibility of conversion to an open laparotomy, thus caution must be exercised to prevent intestinal injury. As evidence-based guidelines progresses, SBO management continues to change. The recommendations in this evaluation can be used by surgeons to treat SBO patients.

REFERENCES:

[1]. Catena, F., De Simone, B., Coccolini, F., Di Saverio, S., Sartelli, M., & Ansaloni, L. (2019). Bowel obstruction: a narrative review for all physicians. World Journal of Emergency Surgery, 14(1), 1-8.

[2]. Jackson, P., & Cruz, M. V. (2018). Intestinal obstruction: evaluation and management. American family physician, 98(6), 362-367.

[3]. Long, B., Robertson, J., & Koyfman, A. (2019). Emergency medicine evaluation and management of small bowel obstruction: evidence-based recommendations. The Journal of Emergency Medicine, 56(2), 166-176.

[4]. Taylor, M. R., & Lalani, N. (2013). Adult small bowel obstruction. Academic Emergency Medicine, 20(6), 527-544.

[5]. Long, B., Robertson, J., & Koyfman, A. (2019). Emergency medicine evaluation and management of small bowel obstruction: evidence-based recommendations. The Journal of Emergency Medicine, 56(2), 166-176.

[6]. De Oliveira, E. P., & Burini, R. C. (2009). The impact of physical exercise on the gastrointestinal tract. Current Opinion in Clinical Nutrition & Metabolic Care, 12(5), 533-538.

[7]. Casey, E., Mistry, D. J., & MacKnight, J. M. (2005). Training room management of medical conditions: sports gastroenterology. Clinics in sports medicine, 24(3), 525-540.

[8]. A. Kelly. (2018). Evidence-based Emergency Imaging: Optimizing Diagnostic Imaging of Patients in the Emergency Care Setting, Springer International Publishing, Washington, NJ, USA.

[9]. Miller, G., Boman, J., Shrier, I., & Gordon, P. H. (2000). Etiology of small bowel obstruction. The American Journal of Surgery, 180(1), 33-36.

[10]. Zielinski, M. D., & Bannon, M. P. (2011). Current management of small bowel obstruction. Advances in surgery, 45(1), 1-29.

[11]. Di Saverio, S., Coccolini, F., Galati, M., Smerieri, N., Biffl, W. L., Ansaloni, L., ... & Catena, F. (2013). 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 journal of emergency surgery, 8(1), 1-14.

[12]. Abbas, S., Bissett, I. P., & Parry, B. R. (2007). Oral water soluble contrast for the management of adhesive small bowel obstruction. Cochrane database of systematic reviews, (3).

[13]. Loftus, T., Moore, F., VanZant, E., Bala, T., Brakenridge, S., Croft, C., ... & Jordan, J. (2015). A protocol for the management of adhesive small bowel obstruction. The journal of trauma and acute care surgery, 78(1), 13.

[14]. Mehvar, R., & Brocks, D. R. (2001). Stereospecific pharmacokinetics and pharmacodynamics of beta-adrenergic blockers in humans.

[15]. Karamanos, E., Dulchavsky, S., Beale, E., Inaba, K., & Demetriades, D. (2016). Diabetes mellitus in patients presenting with adhesive small bowel obstruction: delaying surgical intervention results in worse outcomes. World journal of surgery, 40(4), 863-869.

[16]. Loftus, T., Moore, F., VanZant, E., Bala, T., Brakenridge, S., Croft, C., ... & Jordan, J. (2015). A protocol for the management of adhesive small bowel obstruction. The journal of trauma and acute care surgery, 78(1), 13.

[17]. Hucl, T. (2013). Acute GI obstruction. Best practice & research Clinical gastroenterology, 27(5), 691-707.

[18]. Catena, F., Di Saverio, S., Kelly, M. D., Biffl, W. L., Ansaloni, L., Mandalà, V., ... & Jeekel, J. (2011). Bologna guidelines for diagnosis and management of adhesive small bowel obstruction (ASBO): 2010 evidence-based guidelines of the World Society of Emergency Surgery. World Journal of Emergency Surgery, 6(1), 1-24.

[19]. Foster, N. M., McGory, M. L., Zingmond, D. S., & Ko, C. Y. (2006). Small bowel obstruction: a population-based appraisal. Journal of the American College of Surgeons, 203(2), 170-176.

[20]. Hu, W. H., Cajas-Monson, L. C., Eisenstein, S., Parry, L., Cosman, B., & Ramamoorthy, S. (2015). Preoperative malnutrition assessments as predictors of postoperative mortality and morbidity in colorectal cancer: an analysis of ACS-NSQIP. Nutrition journal, 14(1), 1-6.

[21]. Thomas, M. N., Kufeldt, J., Kisser, U., Hornung, H. M., Hoffmann, J., Andraschko, M., ... & Rittler, P. (2016). Effects of malnutrition on complication rates, length of hospital stay, and revenue in elective surgical patients in the G-DRG-system. Nutrition, 32(2), 249-254.

[22]. Chen, X. L., Ji, F., Lin, Q., Chen, Y. P., Lin, J. J., Ye, F., ... & Wu, Y. J. (2012). A prospective randomized trial of transnasal ileus tube vs nasogastric tube for adhesive small bowel obstruction. World journal of gastroenterology: WJG, 18(16), 1968.

[23]. Behman, R., Nathens, A. B., Byrne, J. P., Mason, S., Hong, N. L., & Karanicolas, P. J. (2017). Laparoscopic surgery for adhesive small bowel obstruction is associated with a higher risk of bowel injury: a population-based analysis of 8584 patients. Annals of Surgery, 266(3), 489-498.

[24]. Sajid, M. S., Khawaja, A. H., Sains, P., Singh, K. K., & Baig, M. K. (2016). A systematic review comparing laparoscopic vs open adhesiolysis in patients with adhesional small bowel obstruction. The American Journal of Surgery, 212(1), 138-150.

[25]. Ten Broek, R. P., Issa, Y., van Santbrink, E. J., Bouvy, N. D., Kruitwagen, R. F., Jeekel, J., ... & van Goor, H. (2013). Burden of adhesions in abdominal and pelvic surgery: systematic review and met-analysis. Bmj, 347.

[26]. Fazel, M. Z., Jamieson, R. W., & Watson, C. J. E. (2009). Long-term follow-up of the use of the Jones' intestinal tube in adhesive small bowel obstruction. The Annals of The Royal College of Surgeons of England, 91(1), 50-54.

[27]. Schraufnagel, D., Rajaee, S., & Millham, F. H. (2013). How many sunsets? Timing of surgery in adhesive small bowel obstruction: a study of the Nationwide Inpatient Sample. Journal of Trauma and Acute Care Surgery, 74(1), 181-189.

[28]. Fevang, B. T., Jensen, D., Svanes, K., & Viste, A. (2002). Early operation or conservative management of patients with small bowel obstruction?. European Journal of Surgery, 168(8-9), 475-481.

[29]. Ten Broek, R. P., Krielen, P., Di Saverio, S., Coccolini, F., Biffl, W. L., Ansaloni, L., ... & van Goor, H. (2018). 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 Journal of Emergency Surgery, 13(1), 1-13.

[30]. Fevang, B. T. S., Fevang, J., Lie, S. A., Søreide, O., Svanes, K., & Viste, A. (2004). Long-term prognosis after operation for adhesive small bowel obstruction. Annals of surgery, 240(2), 193.

[31]. Nordin, A., & Freedman, J. (2016). Laparoscopic versus open surgical management of small bowel obstruction: an analysis of clinical outcomes. Surgical endoscopy, 30(10), 4454-4463.

[32]. Szomstein, S., Menzo, E. L., Simpfendorfer, C., Zundel, N., & Rosenthal, R. J. (2006). Laparoscopic lysis of adhesions. World journal of surgery, 30(4), 535-540.

[33]. Hackenberg, T., Mentula, P., Leppäniemi, A., & Sallinen, V. (2017). Laparoscopic versus open surgery for acute adhesive small-bowel obstruction: a propensity score–matched analysis. Scandinavian Journal of Surgery, 106(1), 28-33.

[34]. Farinella, E., Cirocchi, R., La Mura, F., Morelli, U., Cattorini, L., Delmonaco, P., ... & Sciannameo, F. (2009). Feasibility of laparoscopy for small bowel obstruction. World Journal of Emergency Surgery, 4(1), 1-9.

[35]. Inoue, M., Uchida, K., Otake, K., Nagano, Y., Ide, S., Hashimoto, K., ... & Kusunoki, M. (2013). Efficacy of Seprafilm for preventing adhesive bowel obstruction and cost–benefit analysis in pediatric patients undergoing laparotomy. Journal of Pediatric Surgery, 48(7), 1528-1534.

[36]. Grafen, F. C., Neuhaus, V., Schöb, O., & Turina, M. (2010). Management of acute small bowel obstruction from intestinal adhesions: indications for laparoscopic surgery in a community teaching hospital. Langenbeck's archives of surgery, 395(1), 57-63.

[37]. Wullstein, C., & Gross, E. (2003). Laparoscopic compared with conventional treatment of acute adhesive small bowel obstruction. Journal of British Surgery, 90(9), 1147-1151.

[38]. Johnson, K. N., Chapital, A. B., Harold, K. L., Merritt, M. V., & Johnson, D. J. (2012). Laparoscopic management of acute small bowel obstruction: evaluating the need for resection. Journal of Trauma and Acute Care Surgery, 72(1), 25-31.

[39]. Behman, R., Nathens, A. B., Byrne, J. P., Mason, S., Hong, N. L., & Karanicolas, P. J. (2017). Laparoscopic surgery for adhesive small bowel obstruction is associated with a higher risk of bowel injury: a population-based analysis of 8584 patients. Annals of Surgery, 266(3), 489-498.

[40]. Strik, C., Stommel, M. W., Ten Broek, R. P., & van Goor, H. (2015). Adhesiolysis in patients undergoing a repeat median laparotomy. Diseases of the Colon & Rectum,

58(8), 792-798.
[41]. ten Broek, R. P. G., Strik, C., & van Goor, H. (2014). Preoperative nomogram to predict risk of bowel injury during adhesiolysis. Journal of British Surgery, 101(6), 720-727.
[42]. Branco, B. C., Barmparas, G., Schnüriger, B., Inaba, K., Chan, L. S., & Demetriades, D. (2010). Systematic review and meta-analysis of the diagnostic and therapeutic role of water-soluble contrast agent in adhesive small bowel obstruction. Journal of British Surgery, 97(4), 470-478.)
[43]. Anthony, T., Baron, T., Mercadante, S., Green, S., Chi, D., Cunningham, J., ... & Krouse, R. S. (2007). Report of the clinical protocol committee: development of randomized trials for malignant bowel obstruction. Journal of pain and symptom management, 34(1), S49-S59.
[44]. Kim, Y. J., Yoon, C. J., Seong, N. J., Kang, S. G., An, S. W., & Woo, Y. N. (2013). Safety and efficacy of radiological percutaneous jejunostomy for decompression of malignant small bowel obstruction. European radiology, 23(10), 2747-2753.
[45]. Blair, S. L., Chu, D. Z., & Schwarz, R. E. (2001). Outcome of palliative operations for malignant bowel obstruction in patients with peritoneal carcinomatosis from nongynecological cancer. Annals of surgical oncology, 8(8), 632-637.
[46]. Olson, T. J. P., Pinkerton, C., Brasel, K. J., & Schwarze, M. L. (2014). Palliative surgery for malignant bowel obstruction from carcinomatosis: a systematic review. JAMA surgery, 149(4), 383-392.
[47]. Madariaga, A., Lau, J., Ghoshal, A., Dzierżanowski, T., Larkin, P., Sobocki, J., ... & Lheureux, S. (2022). MASCC multidisciplinary evidence-based recommendations for the management of malignant bowel obstruction in advanced cancer. Supportive Care in Cancer, 30(6), 4711-4728.