International Journal of Community Medicine and Public Health
Rahimuddin NO et al. Int J Community Med Public Health. 2021 Nov;8(11):5510-5515
http://www.ijcmph.com
pISSN 2394-6032 | eISSN 2394-6040

DOI: https://dx.doi.org/10.18203/2394-6040.ijcmph20214044

Review Article

Large bowel obstruction in palliative care: overview, management, and monitoring

Noora O. Rahimuddin[1]*, Fatma A. Al-Fodari[2], Laila M. Yatimi[3], Ahmed M. Alsaffar[4], Basmah K. Kadir[5], Tariq H. Alrazhi[3], Waleed A. Alzaylaee[6], Mohammad S. Almarri[2], Sameer S. Alshelahi[7], Mohammad A. Almuhaiteeb[7], Hamad A. Alhamad[8]

[1]Department of General Surgery, King Fahad General Hospital, Jeddah, Saudi Arabia
[2]Department of General Surgery, Al-Adan Hospital, Hadiya, Kuwait
[3]College of Medicine, King Khalid University, Abha, Saudi Arabia
[4]College of Medicine, Gdansk Medical University, Gdansk, Poland
[5]College of Medicine, Umm Al-Qura University, Mecca, Saudi Arabia
[6]College of Medicine, King Abdulaziz University, Jeddah, Saudi Arabia
[7]Department of Ophthalmology, Ibn Sina Hospital, Kuwait City, Kuwait
[8]Department of General Surgery, King Hamad University Hospital, Muharraq, Bahrain

Received: 18 September 2021
Accepted: 29 September 2021

***Correspondence:**
Dr. Noora O. Rahimuddin,
E-mail: noora_rahimuddinn@hotmail.com

ABSTRACT

Patients with pelvic and abdominal cancers usually present with bowel obstruction, especially peritoneal, colorectal, and pancreatic carcinomatosis. A poor prognosis has been reported for patients that suffer from gastrointestinal bowel obstruction secondary to later stage carcinomatosis, although maximal treatment approaches might have been administered. In this context, these patients are suggested to survive for only a few weeks to months, and parenteral nutrition did not enhance the outcomes in these situations. Medical treatment includes the administration of corticosteroids, opioids, anticholinergics, octreotide, and anti-emetics, while surgical outcomes might be more efficacious with more favorable clinical outcomes. However, these operations have been reported with multiple complications that might worsen the prognosis. Stent application is another non-surgical modality with fewer adverse events. Nevertheless, evidence regarding its superiority over the surgical approaches is conflicting among the different studies in the literature. Accordingly, further investigations are still needed for adequate validation.

Keywords: Palliative care, Bowel obstruction, Management, Evaluation, Prognosis

INTRODUCTION

Patients with pelvic and abdominal cancers usually present with bowel obstruction, especially peritoneal, colorectal, and pancreatic carcinomatosis. Around 7-29% of patients with colorectal cancer, the initial presentation is acute large bowel obstruction.[1] The latter has been estimated to be a common etiology for surgical emergencies. Besides, it was previously estimated that a mean duration of 13.1 months has been estimated for the time of onset of an operable malignant obstruction and the diagnosis of cancer.[2] Elderly patients with multiple comorbidities are the most commonly affected, and usually present at the late severe stages of the disease.[3]

Furthermore, it has been estimated that bowel obstruction is more frequently observed in patients being palliatively treated for colon and gynecological cancers (with estimated prevalence rates of 4-24%, and 5-42%, respectively), the condition can also still be observed in

patients that are being treated from lung, gastric, melanoma, breast, pancreatic, and biliary cancers.[4] Additionally, Benign etiologies are more common than malignant ones to cause bowel obstruction, and such causes might include volvulus adhesions, intussusception, and fibrosis, which might result from chemotherapy or radiotherapy during the intraabdominal management of the different conditions.[5,6] Bowel obstruction might also occur secondary to constipation, diabetic neuropathy, and other iatrogenic causes as the frequent administration of anticholinergic medications and opioids. These causes might result in functional or mechanical bowel obstruction through intestinal slow down or induction of complete stenosis. Functional obstruction is attributed to the presence of tumor obliteration, celiac-plexus obstruction, paraneoplastic neuropathy, or paraneoplastic pseudo-obstruction, which might affect the celiac, mesenteric, or enteric plexuses. Diabetes mellitus might also be a common cause of chronic pseudo-obstruction.[7]

A poor prognosis has been reported for patients that suffer from gastrointestinal bowel obstruction secondary to later stage carcinomatosis, although maximal treatment approaches might have been administered. In this context, these patients are suggested to survive for only a few weeks to months, and parenteral nutrition did not enhance the outcomes in these situations.[8,9] In the present literature review, we aim to provide an overview of large bowel obstruction in palliative care together with the current management and monitoring approaches based on evidence from the current studies in the literature.

METHODS

This literature review is based on an extensive literature search in Medline, Cochrane, and EMBASE databases on 05 August 2021 using the medical subject headings (MeSH) or a combination of all possible related terms. Papers discussing the large bowel obstruction in palliative care were screened for relevant information, with no limitation on date, language, age of participants, or publication type.

DISCUSSION

Many mechanisms have been proposed among studies in the literature for developing bowel obstruction in palliative care. Initial extensive bowel distensions due to gas secretions within the bowel, followed by the excessive secretions of fluids, leading to a vicious cycle of bowel distensions. This will significantly lead to the increased release of vasoactive peptides and increased bowel inflammation, which will lead to significant damage to the underlying mucosa.[10] Nausea, vomiting, cramping, pain, and bloating might be the clinical presentation during this phase. The severity, duration, and frequency of symptoms are hugely variable based on the severity and region of obstruction. For instance, in patients suffering from large bowel obstruction, late frequent diarrhea is the usual manifestation as a result of the underlying bacterial overgrowth, while in small intestinal obstruction, the symptoms appear earlier with associated nausea, vomiting, and cramping. Two types of pain might be associated with bowel obstruction. One type is continuous and occurs due to the underlying etiology, while the other is intermittent and occurs following dietary intake. Feculent vomit might also be a manifestation in patients with large bowel obstruction compared to the biliary in gastric and small intestinal obstructions. Stool and flatus might also be absent in cases suffering from complete obstruction.[11]

Estimates show that gastrointestinal obstruction is a common condition in patients undergoing palliative care, especially for carcinomatosis. For instance, it has been estimated that around 4% and 25% of patients with ovarian carcinoma, and colorectal cancer, respectively, suffer from a large bowel obstruction. Moreover, a prevalence rate of bowel obstruction of might be up to 42% in patients suffering from ovarian carcinomas, and these patients are at significantly high risk of mortality. However, it should be noted that small bowel obstruction has been estimated to be significantly more common than large bowel obstruction.[12,13] Bowel obstruction can be observed to be multiple or single, complete or partial, as a result of benign or malignant etiologies, and can affect the different parts of the gastrointestinal tract, including the rectum and esophagus.

Diagnosis and evaluation

It is widely accepted that bowel obstruction is not an emergent case as patients are usually evaluated and managed in the presence of multidisciplinary personnel that was present to achieve palliative care of the patient's underlying condition. Adequate evaluation of the patient's conditions and the severity of obstruction and relevant parameters are the main and most important steps in achieving proper management of these patients. Blood investigations might also aid in the diagnosis and evaluation of the underlying case and the relevant severity. For instance, liver enzymes, albumin, complete blood count, C-reactive protein, and lactate dehydrogenase levels might add to the prognostic approaches following the initial management of these patients and warn against the potential development of a serious disease. Besides, conducting frequent radiographs might help in the proper assessment of the patient's condition, help with detecting fluid-air levels, and decide whether constipation or obstruction is present. However, it has been previously indicated that most of these approaches are of limited values.[7] Previous studies have also demonstrated that the administration of amidotrizoate (gastrografin) might aid the diagnostic value of radiographs and can potentially help in partial obstruction reversal.[14-16] Nevertheless, this approach has been reported with cases of small bowel obstruction with little evidence regarding cases with large bowel obstruction. Besides, it has been recommended that barium should not be used in such cases. To adequately establish a proper diagnosis, computed tomography has been suggested as the best modality for this purpose. It can

help in deciding whether the obstruction is true or false, and in determining the level and place of the obstruction, the severity, the frequency, and the underlying etiology of this obstruction.[17-20] Enema and colonoscopy can also be used with validated efficacies, however, they are not always available at the different healthcare centers. After establishing the diagnosis of obstruction, the management plan should be adequately discussed with the patients and their families to decide what is best and achieve favorable outcomes. The different treatment plans for patients with obstruction are discussed in the following section.

Management

Clinical manifestations as pain, nausea, and vomiting should be observed and assessed. For instance, adequate administration of fluids through intravenous routes and proper correction of electrolytes is essential to achieve this and enhance the outcomes. Using a nasogastric tube might also be useful to relieve and decompress underlying nausea and vomiting, or inhibiting the oral administration of anything by the managed patients. In general, it is acceptable that choosing the appropriate treatment plan is hugely dependant on the severity of the condition (whether it is complicated or not), the type of the obstruction, the patient's preference, and the expected prognosis. Surgical approaches can still be offered to patients that are being treated with palliative care in certain conditions, including no symptomatic resolution within 2-3 days following the administration of conservative treatment, only one site is obstructed, and the patient is in a suitable physical condition.[21] Besides, the chances even increase in patients suffering from benign obstruction because studies have demonstrated that the outcomes are more favorable with these patients.[7,8,14,22,23] Figure 1 summarizes the approaches that should be done when managing patients with large bowel obstruction.

Diagnostic tools	Computed tomography with endovenous and rectal contrast
Right colectomy + loop ileostomy	Proximal colonic obstruction in the presence of risk factors
Left colectomy + primary anastomosis	Distal colonic obstruction in selected patients
Subtotal colectomy	Distal colonic obstruction in selected patients with proximal colonic lesions
Hartmann's procedures	Distal colonic obstruction in the presence of high-risk factors, other options of treatment not available, lack of surgeon's experience in colorectal emergency surgery
Left colectomy + primary anastomosis + loop ileostomy	Distal colonic obstruction in the presence of high-risk factors
Stent as a bridge to surgery	Distal colonic obstruction in presence of high-risk factors or lack of surgeon's experience in colorectal emergency surgery
Definitive stents	Patients with limited overall survival

Figure 1: Summary of the management steps of large bowel obstruction.[24]

The current management modalities of large bowel obstruction include stent placement, surgical interventions, and medical management. Based on the current evidence from studies in the literature, some factors might predict the poor outcomes of performing surgical interventions for patients suffering from a palliative large bowel obstruction. These include advanced stages of the underlying etiology, multifactorial obstruction, peritoneal carcinomatosis, large ascites, leukocytosis, and hypoalbuminemia.[25,26] Although stent placement has been validated as an acceptable and efficacious non-surgical modality for the management of large bowel obstruction, it has been associated with fewer than 30 days of prognostic favorable outcomes and reduced effectiveness. Furthermore, it has been demonstrated that the presence of peritoneal carcinomatosis and frequent stenotic regions are absolute contraindications for stent placement approaches.[27] In such cases, it has been demonstrated that the installation of a nasogastric tube to suck excess fluid and intravenous fluid administration for these cases have been recommended as favorable conservative approaches to manage these cases. However, it should be noted that such procedures would not reduce the frequency or severity of the underlying condition, although it might induce mild symptomatic relief, in patients with poor prognostic outcomes. Besides, frequently using tubes and intravenous management might prolong the period of hospital stay and reduce the quality of life for the affected patients. According to the European association for palliative care and the National comprehensive cancer network, corticosteroids, opioids, anticholinergics, octreotide, and anti-emetics should be used as the first-line modalities in the management of large bowel obstruction patients with no complications and mild disease severity, while suctioning by nasogastric tubes should be approached when resistance to the medical treatment modalities was observed.[28-30] Moreover, the main aim of using these drugs is to reduce bowel secretions, peri-tumoral edema, and peristaltic movements. Using metoclopramide was also suggested because the drug can lead to significant pro-motility actions with direct inhibition of the central chemoreceptor triggers.[4,31] This is due to the drug has serotonin agonist and dopamine antagonist characteristics. However, it should be noted that present evidence only supports the administration of metoclopramide for cases with small intestinal bowel obstruction and patients that do not suffer from acute severe pain.

The reason behind using somatostatin analogs in these situations would be because they can significantly reduce gastric motility, intestinal movements, and secretions. In

2012, the SALTO study has demonstrated the significant effects of using octreotide in patients suffering from intestinal obstruction that is owing to peritoneal carcinomatosis and showed that favorable outcomes were associated in patients that received this drug modality, and the effects were marked among patients with moderate and severe conditions.[32] This was furtherly indicated by other investigations that showed that patients with malignant bowel obstruction were associated with a significant reduction in gastrointestinal symptoms following the administration of the medical treatment modalities, including opioids, octreotide, and corticosteroids.[33-37] The dosage for the medical treatment plans has been adequately demonstrated and discussed elsewhere.[13,38-40]

In a previous meta-analysis, Cennamo et al reported that 46.8%, and 65.2% of patients in the surgery and stent groups, respectively, required primary anastomosis.[41] Moreover, another meta-analysis by Zhang et al indicated that the complications rate was significantly lower in patients with the stent group than the surgery one.[42] On the other hand, Tan et al reported that both treatment groups were associated with similar complications and mortality rates, and although the rates of stomas formation were lower in the stent group, no significant differences were noticed when permanent stomas were considered.[43] Cirocchi et al also conducted a meta-analysis of randomized controlled trials and reported that both treatment modalities did not significantly differ in terms of overall complications and mortality rates.[44]

Besides, the clinical success rates were notably higher in the emergency surgery group as compared to the stenting one. In a systemic review, Frago et al reported that evidence regarding favoring one of the management modalities over the other is conflicting among studies in the literature, and therefore, clinicians should approach the appropriate treatment plans based on the patients' conditions and evaluation of each case.[24] This was also supported by another systematic review by Watt et al.[45]

CONCLUSION

Medical treatment includes the administration of corticosteroids, opioids, anticholinergics, octreotide, and anti-emetics, while surgical outcomes might be more efficacious with more favorable clinical outcomes. However, these operations have been reported with multiple complications that might worsen the prognosis. Stent application is another non-surgical modality with fewer adverse events. Nevertheless, evidence regarding its superiority over the surgical approaches is conflicting among the different studies in the literature. Accordingly, further investigations are still needed for adequate validation.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Kim JS, Hur H, Min BS, Sohn SK, Cho CH, Kim NK. Oncologic outcomes of self-expanding metallic stent insertion as a bridge to surgery in the management of left-sided colon cancer obstruction: comparison with nonobstructing elective surgery. World J Surg. 2009;33(6):1281-6.
2. DeBernardo R. Surgical management of malignant bowel obstruction: strategies toward palliation of patients with advanced cancer. Curr Oncol Rep. 2009;11(4):287-92.
3. Runkel NS, Hinz U, Lehnert T, Buhr HJ, Herfarth C. Improved outcome after emergency surgery for cancer of the large intestine. Br J Surg. 1998;85(9):1260-5.
4. Hanks G, Cherny NI, Christakis NA, Kaasa S. Oxford textbook of palliative medicine. Oxford university press. 2011.
5. Ellershaw J, Ward C. Care of the dying patient: the last hours or days of life. BMJ (Clinical research ed). 2003;326(7379):30-4.
6. Wenrich MD, Curtis JR, Shannon SE, Carline JD, Ambrozy DM, Ramsey PG. Communicating with dying patients within the spectrum of medical care from terminal diagnosis to death. Arch Int Med. 2001;161(6):868-74.
7. Soriano A, Davis MP. Malignant bowel obstruction: individualized treatment near the end of life. Cleveland Clinic J Med. 2011;78(3):197-206.
8. Kolomainen DF, Barton DP. Surgical management of bowel obstruction in gynaecological malignancies. Current opinion in supportive and palliative care. 2011;5(1):55-9.
9. Chakraborty A, Selby D, Gardiner K, Myers J, Moravan V, Wright F. Malignant bowel obstruction: natural history of a heterogeneous patient population followed prospectively over two years. J Pain Symptom Management. 2011;41(2):412-20.
10. Ripamonti CI, Easson AM, Gerdes H. Management of malignant bowel obstruction. Eur J Cancer (Oxford, England: 1990). 2008;44(8):1105-15.
11. Mohammed A, Ghanem H, Saify A. Gastrointestinal obstruction in palliative care: A review. Forum Clin Oncol. 2015;6:1-5.
12. Tuca A, Guell E, Martinez-Losada E, Codorniu N. Malignant bowel obstruction in advanced cancer patients: epidemiology, management, and factors influencing spontaneous resolution. Cancer management and research. 2012;4:159-69.
13. Ripamonti C, Bruera E. Palliative management of malignant bowel obstruction. Int J Gynecol Cancer. 2002;12(2):135-43.
14. Roeland E, von Gunten CF. Current concepts in malignant bowel obstruction management. Curr Oncol Rep. 2009;11(4):298-303.
15. Mercadante S, Ferrera P, Villari P, Marrazzo A. Aggressive pharmacological treatment for reversing malignant bowel obstruction. J Pain Symptom Management. 2004;28(4):412-6.

16. Winner M, Mooney SJ, Hershman DL. Management and outcomes of bowel obstruction in patients with stage IV colon cancer: a population-based cohort study. Dis Colon Rectum. 2013;56(7):834-43.
17. White SI, Abdool SI, Frenkiel B, Braun WV. Management of malignant left-sided large bowel obstruction: a comparison between colonic stents and surgery. ANZ J Surg. 2011;81(4):257-60.
18. Jaffe T, Thompson WM. Large-Bowel Obstruction in the Adult: Classic Radiographic and CT Findings, Etiology, and Mimics. Radiology. 2015;275(3):651-63.
19. Godfrey EM, Addley HC, Shaw AS. The use of computed tomography in the detection and characterisation of large bowel obstruction. N Zealand Med J. 2009;122(1305):57-73.
20. Beattie GC, Peters RT, Guy S, Mendelson RM. Computed tomography in the assessment of suspected large bowel obstruction. ANZ J Surg. 2007;77(3):160-5.
21. Hsu J, Sevak S. Management of Malignant Large-Bowel Obstruction. Dis Colon Rectum. 2019;62(9):1028-30.
22. Doyle D, Hanks GW, Mac Donald N. Oxford textbook of palliative medicine. Oxford University Press. 1999.
23. Foo CC, Poon JT, Law WL. Self-expanding metallic stents for acute left-sided large-bowel obstruction: a review of 130 patients. Colorectal Dis. 2011;13(5):549-54.
24. Frago R, Ramirez E, Millan M, Kreisler E, del Valle E, Biondo S. Current management of acute malignant large bowel obstruction: a systematic review. Am J Surg. 2014;207(1):127-38.
25. Badgwell BD, Contreras C, Askew R, Krouse R, Feig B, Cormier JN. Radiographic and clinical factors associated with improved outcomes in advanced cancer patients with bowel obstruction. J Palliative Med. 2011;14(9):990-6.
26. Badgwell BD, Smith K, Liu P, Bruera E, Curley SA, Cormier JN. Indicators of surgery and survival in oncology inpatients requiring surgical evaluation for palliation. Support Care Cancer. 2009;17(6):727-34.
27. Centeno C, Robinson C, Noguera-Tejedor A, Arantzamendi M, Echarri F, Pereira J. Palliative care and the arts: vehicles to introduce medical students to patient-centred decision-making and the art of caring. BMC Med Educ. 2017;17(1):257.
28. Ripamonti C, Twycross R, Baines M. Clinical-practice recommendations for the management of bowel obstruction in patients with end-stage cancer. Support Care Cancer. 2001;9(4):223-33.
29. Pfister DG, Ang KK, Brizel DM, et al. Head and neck cancers, version 2.2013. Featured updates to the NCCN guidelines. J Nat Comprehens Cancer Network. 2013;11(8):917-23.
30. Thieu H, Bach Dat B, Nam NH. Antibiotic resistance of Helicobacter pylori infection in a children's hospital in Vietnam: prevalence and associated factors. Minerva Medica. 2020;111(5):498-501.
31. Glare PA, Sinclair CT. Palliative medicine review: prognostication. J Palliative Med. 2008;11(1):84-103.
32. Laval G, Rousselot H, Toussaint-Martel S, et al. SALTO: a randomized, multicenter study assessing octreotide LAR in inoperable bowel obstruction. Bull du cancer. 2012;99(2):1-9.
33. Mystakidou K, Befon S, Liossi C, Vlachos L. Comparison of the efficacy and safety of tropisetron, metoclopramide, and chlorpromazine in the treatment of emesis associated with far advanced cancer. Cancer. 1998;83(6):1214-23.
34. Davis MP, Hallerberg G. A systematic review of the treatment of nausea and/or vomiting in cancer unrelated to chemotherapy or radiation. J Pain Symptom Management. 2010;39(4):756-67.
35. Murakami H, Matsumoto H, Nakamura M, Hirai T, Yamaguchi Y. Octreotide acetate-steroid combination therapy for malignant gastrointestinal obstruction. Anticancer Res. 2013;33(12):5557-60.
36. Feuer DJ, Broadley KE. Corticosteroids for the resolution of malignant bowel obstruction in advanced gynaecological and gastrointestinal cancer. Cochrane Database Systemat Rev. 2000;2000(2):CD001219.
37. Nguyen TM, Huan VT, Reda A. Clinical features and outcomes of neonatal dengue at the Children's Hospital 1, Ho Chi Minh, Vietnam. J Clin Virol. 2021;138:104758.
38. Thaker DA, Stafford B, Gaffney L. Palliative Management of Malignant Bowel Obstruction in Terminally Ill Patient. Indian J Palliative Care. 2010;16:97-100.
39. Franke AJ, Iqbal A, Starr JS, Nair RM, GeorgeJr TJ. Management of Malignant Bowel Obstruction Associated With GI Cancers. J Oncol Pract. 2017;13(7):426-34.
40. Ye GY, Cui Z, Chen L, Zhong M. Colonic stenting vs emergent surgery for acute left-sided malignant colonic obstruction: a systematic review and meta-analysis. World J Gastroenterol. 2012;18(39):5608-15.
41. Cennamo V, Luigiano C, Coccolini F. Meta-analysis of randomized trials comparing endoscopic stenting and surgical decompression for colorectal cancer obstruction. Int J Colorectal Dis. 2013;28(6):855-63.
42. Zhang Y, Shi J, Shi B, Song CY, Xie WF, Chen YX. Self-expanding metallic stent as a bridge to surgery versus emergency surgery for obstructive colorectal cancer: a meta-analysis. Surg Endosc. 2012;26(1):110-9.
43. Tan CJ, Dasari BV, Gardiner K. Systematic review and meta-analysis of randomized clinical trials of self-expanding metallic stents as a bridge to surgery versus emergency surgery for malignant left-sided large bowel obstruction. Br J Surg. 2012;99(4):469-76.
44. Cirocchi R, Farinella E, Trastulli S. Safety and efficacy of endoscopic colonic stenting as a bridge to surgery in the management of intestinal obstruction

due to left colon and rectal cancer: a systematic review and meta-analysis. Surg Oncol. 2013;22(1):14-21.
45. Watt AM, Faragher IG, Griffin TT, Rieger NA, Maddern GJ. Self-expanding metallic stents for relieving malignant colorectal obstruction: a systematic review. Ann Surg. 2007;246(1):24-30.

Cite this article as: Rahimuddin NO, Al-Fodari FA, Yatimi LM, Alsaffar AM, Kadir BK, Alrazhi TH, et al. Large bowel obstruction in palliative care: overview, management, and monitoring. Int J Community Med Public Health 2021;8:5510-5.