



# Emergency Self- Expanding Metal Stenting for Malignant Colonic Obstruction: An Opportunity for Operation in a More Favorable Condition

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## ABSTRACT

**Introduction:** Lower gastrointestinal system tumors represent a major source of morbidity and mortality. Bowel obstruction is a common complication in advanced colorectal cancer.

**Case Report:** An 86-year-old male patient who was admitted to the emergency department with clinical complaints of ileus showed multiple air-fluid levels in an abdominal X-ray film. Computed tomography scans revealed an obstructing malignant mass in the sigmoid colon region. For immediate relief of obstruction, a self-expanding metal stent was placed by colonoscopy. Recovery from abdominal discomfort, flatulence, and vomiting was achieved shortly after stenting. With appropriate treatment and preoperative investigations, the patient was referred to undergo elective colectomy.

**Conclusion:** In elderly and critically ill patients, endoscopic stenting may be an effective treatment for malignant large bowel obstruction. It may also be used as a bridge to surgery in more favorable conditions.

**Keywords:** Colorectal cancer, acute obstruction, stenting

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## Introduction

In advanced colorectal carcinoma (CRC), luminal obstruction is a common and distressing outcome. The management of patients with obstruction due to CRC who are not fit for surgery is associated with considerable problems. Although urgent surgery may be the primary treatment for obstruction, it is now recognized that some elderly patients who have a poor general condition and who are unfit for surgery may require alternative approaches to relieve unendurable symptoms. Well-organized and timely management using multimodal techniques should be considered for the optimal care of these cases. Until recently, the medical care options available for bowel obstruction consisted of nasogastric tube insertion, correction of electrolyte abnormalities, and administration of intravenous fluids as well as emergent surgery for unresponsive cases. Recently, endoscopic treatments to palliate colonic obstruction have also been developed, but there is no standard approach to date. Relieving the obstruction as early as possible is the ultimate, most timely, cost-effective, and patient-centered approach to manage such cases (1).

## Case Report

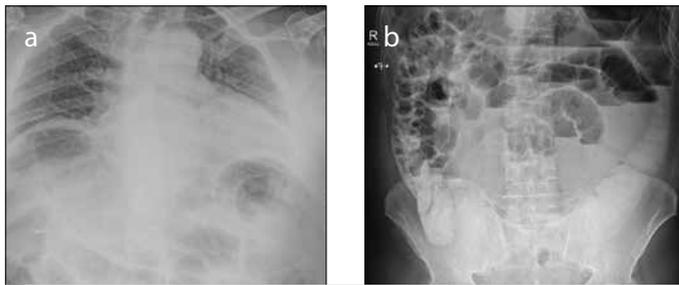
An 86-year-old male patient was admitted to the emergency department with complaints of vomiting, flatulence, abdominal discomfort, and an inability to defecate for at least a week. The patient seemed toxic and unwell with tachycardia and hypotension. He had a remote history of intracranial tumor at the age of 66 years, and it was under control thereafter. Abdominal distension with severe discomfort was observed in physical examination. An emergency chest X-ray showed an enlarged cardiothoracic index, significant ectasia in the aorta, interstitial parenchymal changes, and left-sided pleural effusion (Figure 1a). A plain abdominal X-ray showed multiple air-fluid levels and bowel distension (Figure 1b). Laboratory tests showed the following: leucocyte level  $13.6 \times 10^3/\mu\text{L}$  (normal value:  $3.8-10 \times 10^3/\mu\text{L}$ ), hemoglobin level 15 g/dL (normal value: 13–17.5 g/dL), platelet count

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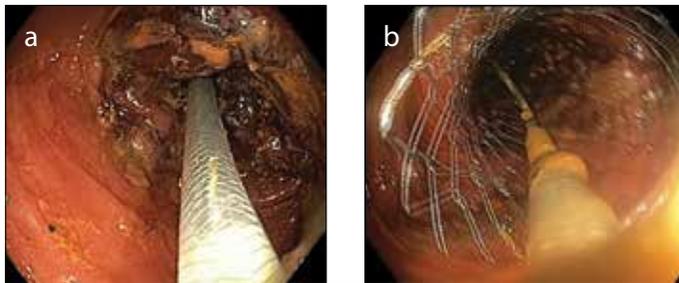
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**FIGURE 1.** a, b. Emergency chest X-ray showing an enlarged cardiothoracic index, significant ectasia in the aorta, interstitial parenchymal changes, and an obliterated left costophrenic angle. The abdomen was distended due to bowel obstruction with diaphragmatic elevation (a). Abdominal X-ray with multiple air-fluid levels in the colonic obstruction area (b)



**FIGURE 2.** a, b. Malignant mass lesion obstructing the large bowel before stenting (a). Self-expandable metal stent (SEMS) in the same session of colonoscopy relieving the obstructed large bowel (b)

200×10<sup>3</sup>/μL (normal value: 150–400×10<sup>3</sup>/μL), glucose level 117 mg/dL (normal value: 70–100 mg/dL), blood urea level 102 mg/dL (normal value: 17–49 mg/dL), creatinine level 1.5 mg/dL (normal value: 0.8–1.3 mg/dL), alanine aminotransferase level 18 IU/L (normal value: 12–63 U/L), and aspartate aminotransferase level 19 IU/L (normal value: 10–37 U/L). A cardiology consultation for tachycardia revealed atrial fibrillation, excluding severe heart failure, valvular heart disease, and coronary artery disease. Treatment consisting of digoxin, diltiazem, and low-molecular-weight heparin was started to slow down the high heart rate. Computed tomography scans of the abdomen revealed a suspected malignant mass in the sigmoid region. There was no evidence of metastasis in the lymph nodes or other distant areas. Colonoscopy performed quickly on the same day revealed a malignant mass, inducing severe obstruction in the sigmoid colon (Figure 2a). An enteral self-expandable metal stent (WallFlex Colonic Stent; Boston Scientific, Natick, MA, USA) was replaced as the first-line modality for palliative care (Figure 2b). Biopsies performed during the procedure revealed adenocarcinoma with moderate differentiation. During the follow-up in the intensive care unit, recovery from abdominal discomfort, flatulence, and vomiting was quickly achieved. Three days later, a second colonoscopy through the stent for the right side of the colon revealed no other focus of malignancy. On the seventh day of admission, the patient was transferred to the general surgery department for laparoscopic colectomy. After colectomy, he was discharged with no serious complication, and his well-being continued after 3 months of the outpatient follow-up period. Written informed consent was obtained from the patient who participated in the case.

## Discussion

Many proximal gastrointestinal system obstructions can be managed mainly by single-stage resection-anastomosis surgery without any bowel preparation or stoma formation. However, emergency resections for left-sided colonic obstructions are associated with high morbidity and mortality rates. Distal colonic lesions are especially considered to be more prone to complications due to the relatively larger amount of retained fecal material and the altered metabolism. Although the optimal treatment of colorectal cancer causing luminal obstruction is still achieved by surgery, which is planned after a staging assessment, up to 30% of cases initially present to emergency departments without adequate clinical evaluation and staging information (2). In these patients, traditional emergency resection may proceed with no initial detailed work-up, despite the fact that patients might have other preoperative comorbidities and complications. Emergency surgery, for decompression in especially elderly patients, on an unprepared basis, was already shown to carry important rates of morbidity (32–64%) and risks of mortality (15–34%) (3, 4). In these patients, the replacement of the colorectal self-expandable metal stent (SEMS) can be a good option as a remedy of acute obstruction or as a bridge to surgery. This also allows time for preoperative clinical assessment and time for those patients with additional complicating conditions to improve. In our case, after SEMS placement, we observed a quick improvement in the patient's general condition and this provided us enough time to decrease the disease burden with an increasing tendency to operation.

When SEMS is used as a bridge to surgery, the reported success rates for one-stage elective operation might be as high as 60–85% (5–7). Primary anastomosis rates were also reported to be higher after elective surgery when than after emergency surgery. The hospitalization period was significantly shorter in the elective surgery group after SEMS insertion, while on the other hand, colostomy rates were higher in the emergency surgery group without stenting (8). In a recent meta-analysis, the bridging approach with SEMS to acute colonic obstructions was reported to have a shorter hospitalization period, lower needs of stoma formation, and fewer clinical complications (9). In our patient, we could stabilize the preoperative metabolic and cardiac status, which we believe suggests that this approach could contribute to increasing the operative success rate and to decreasing the probable complications as well as the hospital stay period.

Although many studies have reported SEMS insertion as a better choice than traditional emergency surgery, some studies have resulted in conflicting data. Some major complications, such as luminal perforation, stent migration, reobstruction, bleeding, and fracture of the stent, may be seen after stenting. For the risk factors causing a failure of SEMS insertion, a study identified multiple SEMS application as the main risk factor for clinical and surgical failure. Either before or after the procedure, stricture dilation is discouraged due to an increased risk of perforation. There is a significantly lower technical success rate in patients with carcinomatosis compared with patients without carcinomatosis. Chemotherapy during stenting might induce stent-related complications, in particular, perforations and bleeding (8, 10). Therefore, patients considered for SEMS application as a bridge to elective surgery should be decided carefully and selected on a clinical basis. Because various types of stents occur, each with unique features, in terms of material, design, radial

force, flexibility, and availability, the selection of an appropriate stent for a specific case is highly important. In particular, the experience of the clinician is an important issue to determine patients who have a high surgical risk, incurable colorectal cancer, or extracolonic malignancy and to resolve the obstruction possibly without multiple applications. In appropriate cases, it is now generally accepted that the use of colonic stenting has proven to be a successful method for the relief of symptoms due to large bowel obstruction.

## Conclusion

Colonic stenting can be performed for the emergency management of malignant large bowel obstruction as a palliative therapy as well as a bridge to surgery. This approach might increase the success rate of surgery and decrease the complication rate. Although endoscopic stenting is considered to be non-invasive and safe, to have a high the success rate and low risk of complications, the specific features and characteristics of SEMS should be familiar to the endoscopist.

**Informed Consent:** Written informed consent was obtained from patient who participated in this study.

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