Gastrointest Interv 2014; 3:75–79

Contents lists available at ScienceDirect

Gastrointestinal Intervention

journal homepage: www.gi-intervention.org

Review Article

Palliative self-expandable metallic stent placement for colorectal obstruction caused by an extracolonic malignancy

Shuntaro Yoshida,[1,2] Hiroyuki Isayama,[2,*] Kazuhiko Koike[2]

A B S T R A C T

Endoscopic stenting with a self-expandable metallic stent (SEMS) is widely accepted for the management of malignant colorectal obstruction (MCRO). This procedure is effective for both palliative purposes and as a bridge to surgery. MCRO can arise from colorectal cancer (CRC) or advanced extracolonic malignancy (ECM), including gastric, pancreatobiliary, small bowel, endometrial gynecologic, or urinary malignancies. In patients with an ECM, the pathogenesis of obstruction is different from that of CRC and is caused by direct tumor invasion into the lumen or extrinsic compression at an advanced stage. These differences and the advanced clinical condition can influence the clinical results. Endoscopic colonic stenting for ECM has lower technical and clinical success rates than for CRC. Appropriate patient selection and technical issues are key to improved outcomes. In the near future, a prospective clinical trial should evaluate the efficacy and safety of SEMS placement for MCRO caused by ECM.

Keywords: colorectal cancer, colorectal obstruction, extracolonic malignancy, self-expandable metallic stent

Introduction

Acute colorectal obstruction causes symptoms such as nausea, vomiting, abdominal pain, distention, and altered bowel habits, and results in bowel dilation and fluid retention. Perfusion to the intestine can be compromised, leading to necrosis, dehydration, or perforation—complications that increase the mortality rate. Malignancy is the most common cause of colorectal obstruction, causing 90% of cases.[1] Malignant colorectal obstruction (MCRO) generally requires rapid bowel decompression, such as emergency surgery, which is associated with high mortality and morbidity.[2,3]

Since its introduction for treating MCRO in 1991,[4] endoscopic stenting with self-expandable metallic stents (SEMSs) has become widely accepted for the palliative management of malignant colonic obstruction and as a bridge to surgery.[5–8] Given its low invasiveness, this procedure is an option, along with bypass surgery or colostomy, for patients with unresectable colonic obstructions.[9]

MCRO can also occur in patients with an extracolonic malignancy (ECM), such as gastric, pancreatobiliary, urogenital, and gynecologic malignancies.[10,11] Accumulated evidence has shown that SEMS placement is an acceptable alternative to surgery for managing MCRO caused by colorectal cancer (CRC). Although the obstructions in CRC are caused by intraluminal growth, those in ECM occur as a result of peritoneal dissemination, direct invasion from an organ near the colon into the lumen, or extrinsic compression. The tumor fixes the stricture site, which loses its flexibility. In addition, intestinal peristalsis can be blocked by adhesions after a previous operation, radiation, or carcinomatosis from the primary lesion. These conditions make it difficult to insert a colonoscope, to traverse the stricture, and to insert the SEMS. In comparison with CRC, bowel obstruction caused by ECM tends to cause a complex stricture, potentially at more than one location. Therefore, accessing or traversing a stricture caused by ECM is more difficult than for those resulting from CRC.

Emergency surgery performed on acutely ill patients with large-bowel obstruction due to malignancy, which includes bypasses, resection, and colostomy, has a 16–23% morbidity rate and a 5–20% mortality rate.[12–14] Palliative surgery for MCRO caused by ECM is also associated with significant morbidity.[15,16] Even with successful surgery, many patients require a colostomy or ileostomy. The stoma has significant morbidity and reduces the quality of life over the short- and long-term.[17] Given the low invasiveness of SEMS placement, it is an effective alternative for resolving MCRO caused by ECM.

Until 2000, few patients with colorectal obstruction due to ECM had undergone SEMS placement for palliation.[14,18] In most of these early studies, colonic obstruction from ECM was included in malignant colonic obstruction and was not distinguished from that of

[1] Department of Endoscopy and Endoscopic Surgery, Graduate School of Medicine, The University of Tokyo, Tokyo, Japan
[2] Department of Gastroenterology, Graduate School of Medicine, The University of Tokyo, Tokyo, Japan
Received 17 September 2014; Accepted 19 September 2014
* Corresponding author. Department of Gastroenterology, Graduate School of Medicine, The University of Tokyo, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8655, Japan.
E-mail address: isayama-tky@umin.ac.jp (H. Isayama).

2213-1795/$ – see front matter
http://dx.doi.org/10.1016/j.gii.2014.09.006

CRC. Recently, more articles on this specific procedure have been published with advances in endoscopic techniques and SEMS technology.[10,19–33] Ten years have passed since a pooled analysis reported that the technical failure rate was higher in patients with ECM versus primary CRC[5]; to date, the availability and safety of this procedure have not been determined sufficiently.

This paper reviews the treatment for MCRO caused by ECM, with emphasis on SEMS placement.

Indications and practical considerations

As with CRC, SEMS placement is contraindicated in patients with enteral ischemia, suspected or impending perforation, multiple small-bowel site involvement, other synchronous colonic obstruction, or intra-abdominal abscess/perforation.

Typically, acute colonic obstruction is symptomatic. Abdominal x-rays show a dilated colon and colonoscopy shows an obstruction caused by an intra- or extraluminal lesion. To evaluate the cause and location of the obstruction, computed tomography (CT) with/without a contrast agent, colonoscopy, and barium enema or enema with water-soluble contrast material could be performed. Kim et al[32] reported that CT combined with a barium enema was useful for evaluating the number and length of strictures. Magnetic resonance imaging is also useful for ruling out a fistula between the intestine and uterus or bladder.

The obstruction with an ECM often involves the left colon or rectum (Table 1). Although it can be more difficult to insert a SEMS for an obstruction proximal to the splenic flexure,[34] recent articles report the effectiveness and safety of SEMS placement for a proximal obstruction in ECM.[26,30,33] Improvements in endoscopy, guidewires, and stents have increased the indications for treating proximal obstructions of the colon caused by an ECM.

Although multiple strictures typically rule out SEMS placement, some authors have reported simultaneous SEMS placement at two different obstruction sites.[10,22,26,32] Kim et al[30] reported better clinical outcomes for SEMS placement for patients with one or two obstructions versus multiple obstructions. After a careful preprocedural examination, including high-resolution CT, barium, or water-soluble enema images, we think one can insert a SEMS for one or two obstructions.

The etiology of ECM includes metastases and carcinomatosis from gastrointestinal, pancreatobiliary, urogenital, and gynecological malignancies. It is not clear whether it includes recurrent CRC. Some authors report SEMS placement for EMC that includes recurrent CRC.[19,35] It seems reasonable to include it when CT identifies disseminated or recurrent CRC as the cause of the obstruction resulting from extraluminal compression. Kim et al[30] found that SEMS placement was less effective than emergency surgery for palliation of colorectal obstruction in patients with advanced gastric cancer, although there are differences based on the primary disease, dominant pattern of obstruction (e.g., extrinsic compression, adhesion, or tumor infiltration), or location of obstruction (e.g., upper abdominal cavity or pelvic cavity).

In some cases, MCRO due to ECM did not improve after colonic stenting. Those patients had multiple stenoses, intestinal stenosis, impaired bowel movement, or impaired digestive tract motility due to an omental cake. The patient and tumor status should be evaluated carefully before deciding to stent a MCRO due to ECM.

SEMS placement procedures

There are two main techniques for SEMS placement for colorectal obstruction: radiological placement under fluoroscopic guidance only and combined endoscopic/fluoroscopic placement.[36] When using endoscopic/fluoroscopic placement, if the system cannot pass through the working channel of the endoscope, the endoscope must be removed after the guidewire is placed and SEMS insertion is performed under fluoroscopic guidance. If desired, the endoscope can be reintroduced into the colon beside the stent catheter to visualize the precise position of the stent. Although there are no prospective or controlled data, the available data appear to show no difference in the success rates of the two SEMS placement techniques for ECM (Table 1). Difficulty with SEMS placement for colorectal obstruction results from the impossibility of either negotiating the entire stricture with a guidewire or passing the long, tortuous colon. In some cases, direct visualization and stability of stent insertion with an endoscope might be more helpful.

The endoscopic/fluoroscopic placement procedure is as follows. A wide working channel endoscope is introduced to the obstruction

Table 1 Self-expandable Metallic Stent (SEMS) Placement for an Extracolonic Malignancy (ECM)

Author	Year[Ref]	Patients (*n*)	Covered	Including gastric cancer (%)	Including carcinomatosis	CT, MRI, or contrast enema	Endoscopic/fluoroscopic placement	TS (%)	CS (%)
Miyayama et al	2000[19]	8	Uncovered and covered	Y (25)	Y	Y	N	100	88
Law et al	2000[35]	11	Uncovered	Y (45)	Y	N	Y	100	100
Carter et al	2002[21]	2	Uncovered	N	N	Y	Y	100	100
Pothuri et al	2004[10]	6	Uncovered	N	NA	Y	Y	100	67
Watson et al	2005[22]	13	Uncovered	Y (8)	NA	N	N	85	62
Sherazi et al	2006[23]	1	Uncovered	N	Y	Y	N	100	100
Caceres et al	2008[24]	35	Uncovered	N	NA	Y	Y	77	51
Baraza et al	2008[25]	7	Uncovered and covered	Y (14)	NA	NA	Y	85	57
Shin et al	2008[26]	39	Uncovered and covered	Y (79)	Y	Y	Y	87	82
Keswani et al	2009[27]	15	Uncovered	Y (7)	Y	Y	Y	67	20
Trompetas et al	2010[28]	12	NA	N	Y	NA	N	42	25
Yoon et al	2011[29]	114	Uncovered and covered	Y (72)	Y	Y	Y	81	84
Kim et al	2012[30]	111	Uncovered and covered	Y (100)	Y	Y	Y	74	54
Keranen et al	2012[31]	24	Uncovered	Y (17)	Y	Y	Y	96	65
Kim et al	2013[32]	20	Uncovered and covered	Y (70)	Y	Y	Y	90	85
Moon et al	2014[33]	44	Uncovered	Y (59)	Y	Y	Y	93	77

CT, computed tomography; MRI, magnetic resonance imaging; N, no; NA, not available; TS, technical success; CS, clinical success; Y, yes.