

# Application of the Self-Expandable Metallic Stent for Palliation of Obstructing Rectosigmoid Cancer: Report of A Case

Lee-Won Chong, Cheuk-Kay Sun\*, and Kuo-Ching Yang\*

Division of Gastroenterology, Department of Internal Medicine,  
Shin Kong Wu Ho-Su Memorial Hospital, Taipei, Taiwan

\*School of Medicine, Taipei Medical University, Taipei, Taiwan

## Abstract

Eight to 29 % of colorectal carcinoma present with obstruction. The traditional treatment of neoplastic colonic obstruction usually includes emergency surgery even on poor-risk patients, and the creation of a stoma is usually inevitable. We report a case of advanced rectosigmoid cancer with regional lymphadenopathy and multiple liver metastasis treated conservatively with endoscopic placement of a self-expandable metallic stent (SEMS) for colonic obstruction. We believe that SEMS placement is a safe, effective method for palliative treatment of neoplastic colorectal obstruction, obviating the need for colostomy. ( J Intern Med Taiwan 2002;13:293-299 )

Key Words : Colon and rectal carcinoma, Obstruction, Metallic stent

## Introduction

The annual incidence of colorectal carcinoma in Taiwan has increased significantly in the past 10 years, probably due to changes in life style and dietary habits and the improvements in screening and diagnosis. In 2000, colorectal carcinoma was the third leading cause of death from cancer for both males and females in Taiwan 1. Between 8 % and 29% of colorectal carcinomas present with obstruction. Curative resection is not feasible in more than 25 % of these patients due to extensive local tumor infiltration, distant metastasis, or severe comorbid disease<sup>2, 3</sup>. Palliative colostomy to resolve bowel decompression is an alternative treatment but is associated with considerable morbidity and mortality mainly due to the poor general condition of the patient and insufficient preoperative colonic preparation<sup>4, 5</sup>. Following their success in esophageal and biliary tract obstruction, stenting has been applied in obstructing colorectal cancer. The use of colonic stents for palliation of colonic obstruction was first described by Dohmoto in 1991<sup>6</sup> and the technique has been found to be effective in relieving colonic obstruction, both as a palliative

treatment for unresectable tumors 7 and as a temporary measure for subsequent elective surgery 8.

To our knowledge, the application of metallic stent in relieving colonic obstruction is not widely used in Taiwan. Here, we report a case of an obstructing rectosigmoid cancer with regional lymphadenopathy and multiple liver metastasis, successfully treated with endoscopic placement of an expandable metallic stent. The clinical course, the technique for insertion of the stent, and the outcome of the procedure are described.

#### Case Report

A 72-year-old woman presented to our gastroenterology outpatient department in July 2002 with a six-month history of alternating constipation and diarrhea. She also experienced small caliber

stool and colicky intermittent lower abdominal pain. There was also a 4-kg weight loss in one month. Neither melena nor hematochezia was noted.

Physical examination revealed unremarkable findings except for hyperactive bowel sound. A hemogram and a blood chemistry showed normal findings. Fecal occult blood testing was strongly positive. Carcinoembryonic antigen level was 41.16 ng/ml ( normal value < 5 ng/ml ). A plain film of the abdomen showed bowel dilatation. Colonoscopy revealed a huge tumor obstructing the lumen 8 cm from the anal verge. Biopsy showed an adenocarcinoma. Abdominal and pelvic CT scan revealed an annular mass at the rectosigmoid colon with transerosal invasion, regional lymphadenopathy and multiple li-ver metastasis.

Palliative colostomy was recommended first but the patient refused surgical intervention. However, she agreed to undergo colonic stenting as an alternative to colostomy.

She was then admitted and a limited LGI series using water soluble contrast medium was done, demonstrating a 7-cm long annular stricture at the rectosigmoid colon with partial obstruction to retrograde flow ( Fig. 1 ). After an informed consent was obtained, the patient underwent colonic stenting using both endoscopic and fluoroscopic guidance. One day before colonic stenting, a cleansing enema was given to evacuate the distal bowel. The patient was put on the fluoroscopic table in the left lateral decubitus position. Mild conscious sedation and analgesia was done with 2.5 mg midazolam and 25 mg meperidine. Pulse rate and oxygen saturation were monitored continuously. A two-channel endoscope ( GIF-2T200; Olympus Corporation, Tokyo, Japan ) with a 3.2 mm working channel was advanced until the level of the obstruction was reached. An ERCP catheter (Tandem XL. LAT No 3570; Boston Scientific, Watertown, Massachusetts ) preloaded with a 0.035 inch x 450 cm flexible guidewire ( Jagwire; Boston Scientific, Watertown, Massachusetts) was then introduced via the working channel and passed across the lesion under fluoroscopic guidance. After the obstructing lesion was crossed, a small amount of contrast

medium was injected to accurately define the length of the stricture. The catheter was then withdrawn while the guidewire was kept in place. With the endoscope in place, a 90 x 20 mm self-expandable wallstent and its delivery system ( Wallstent Enteral Endoprosthesis with the Unistep Delivery System; Boston Scientific Ireland Ltd.) were then introduced over the guidewire through the endoscope beyond the proximal end of the stricture ( Fig. 2 ). The metallic stent was then deployed to the desired position (the proximal and distal ends of the stent rested one centimeter proximal and distal to the stricture) under both fluoroscopic and endoscopic guidance ( Fig. 3 ). After stent deployment, the endoscope was not advanced across the stent for fear of either dislodging the stent or damaging the scope with the sharp barbs present at the both ends of the stent. Immediate bowel decompression was noted with passage of copious amount of watery stool. The procedure was well-tolerated and no evidence of perforation was found on fluoroscopy. An abdominal film taken 24 hours later demonstrated partial expansion of the stent and regression of bowel dilatation ( Fig. 4 ). Full stent expansion was observed 3 weeks later by radiologic follow-up ( Fig. 5 ). Anorectal pain and mild rectal bleeding occurred after the procedure, subsiding a few days later. Fecal impaction was also noted in the first 3 weeks after stenting. It was managed successfully with the combination of laxatives, enema and dietary modification (low residual diet). The patient subsequently underwent palliative chemotherapy. Five months after application of stent, the patient showed no signs of bowel obstruction.

#### Discussion

Despite increased effort in the detection of early colorectal cancer, advanced disease presenting with acute obstruction still accounts for approximately eight to 29 percent of all colorectal cancers 3. Traditionally, treatment options include emergency decompressing colostomy or resection with or without anastomosis. However, the poor general condition of the patients and the lack of intestinal preparation lead to high morbidity and mortality rates ( 16% and 5 % respectively ) in these patients 3-5. In addition to surgery, a number of non-surgical techniques have been used to relieve malignant colonic obstruction, including balloon dilation, cryotherapy, electrocoagulation, photodynamic therapy and laser photocoagulation 9. However, despite these techniques giving promising results, they usually need to be repeated to maintain luminal patency because reocclusion time is short. In contrast, colonic stenting provides a method for rapid decompression that can last for a longer period of time 10.

Colonic stenting was first described by Dohmoto in 1991 where plastic stents were used 6. Subsequent studies from Europe, Japan and the USA showed that colonic stenting is an effective treatment in managing colonic obstruction 7-8,11-15 , with a mean success rate of 94 % ( range 64 to 100% ) 16.

In the earlier studies, plastic stents were used to relieve colonic obstruction; but they

were abandoned later due to rigidity, causing problems ( e.g. perforation ) in the tortuous rectosigmoid. Following their success in treating esophageal and biliary strictures, self-expandable metallic stents ( SEMS ) have been used to manage colonic obstruction. Recent studies showed that SEMS give greater success than plastic stents 13,17. In our case, a colonic Wallstent - a metallic stent with strong radial force and high flexibility which enable the stent to expand slowly, obviating the need for balloon dilation - was used to relieve the obstruction.

Most of the SEMS reported in large studies were performed by interventional radiologists under fluoroscopic guidance 7-8,12. However, a recent review by Harris et al. showed that complication and failure rates were higher when fluoroscopic guidance was used alone 16. Simultaneous endoscopic assistance may increase success rates and enable SEMS placement in more proximal lesions.

SEMS is employed as a palliative method for unresectable tumors or as a temporary measure for subsequent elective surgery. SEMS were used as a bridge to surgery in 69% and for palliation in 31 % of the cases 16. As a bridge to surgery, stenting provides time for a complete preoperative evaluation and correction of the poor general condition of the patients, allows for a mechanical bowel preparation, and may obviate the need for staged surgical intervention with stoma creation or one-stage surgery with on-table lavage. In the palliative setting, the use of SEMS avoids the creation of stoma in patients with advanced disease in whom life expectancy is limited.

Despite the benefits of colonic stenting, complications of stent placement are common in many reports. The more serious complications are stent migration ( 0-44% ), stent obstruction ( 0-33% ) and colonic perforation ( 0-15% ) 16. No complication has occurred in our case after 5 months of follow-up. Several predisposing factors for stent migration have been reported, including inappropriate stent selection ( e.g. too small or too short ) and poor technique (e.g. stent placed too distal to the lesion). Stents placed in the rectosigmoid junction and stents used for benign strictures or strictures secondary to extrinsic tumor compression are also prone to migrate 20. Stent obstruction by tumor ingrowth is reasonably common but usually can be managed by further stenting, laser therapy and the use of covered stents. The covered stent is designed to prevent tumor ingrowth and thus provides for longer luminal patency. However, a higher migration rate ( up to 40% of cases ) was observed when a covered stent was used 19. Colonic perforation usually occurs during the insertion of the guidewire, especially when fluoroscopic guidance is used alone. Experience from previous studies showed that balloon dilation performed before stent placement give greater perforation rates 14,15. In our case, we adopted endoscopic guidance for the introduction of the guidewire in addition to fluoroscopic control. Moreover, we did not perform balloon dilation before stent implantation. Minor complications of colonic stenting include minor rectal bleeding ( 0-100% ),

transient anorectal pain ( 5-10% ), temporary incontinence ( 11% ), fecal impaction (8%) and tenesmus 16. Tenesmus is a potential complication in patients with low rectal tumors wherein the lower end of a bridging stent may irritate the anal sphincter. Therefore, stent implantation is not advised in these patients; balloon dilation or laser recanalization would probably offer better palliation if colostomy is to be avoided. Our patient experienced mild rectal bleeding and transient anorectal pain after the procedure, but these were successfully managed with medication and supportive treatment. Fecal impaction was also noted in our case in the first 3 weeks of stenting. This improved with the use of laxatives and low residual diet and resolved after spontaneous full expansion of the stent.

Binkert et al 11 reported considerable cost benefit in treating patients with SEMS compared with surgery, with a cost reduction of 19.7% and 28.8% in the palliative group and preoperative treatment group respectively. This result is due to shorter hospitalization and lower complication rates in patients receiving SEMS. Successful application of SEMS in our case avoided the creation of palliative colostomy.

In conclusion, SEMS placement is a safe and effective method for the relief of colonic obstruction, obviating the need for palliative colostomy. However, this is our first experience with SEMS and the follow-up period is short. More cases should be reviewed in the future to assess the value of stenting in treating colonic obstruction. In addition, future development in equipment designed specifically for the task of SEMS insertion should continue to make this technique easier and safer.

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自動擴張金屬支架之置放對阻塞性大腸直腸癌之姑息治療：一病例報告

張麗文 孫灼基\* 楊國卿\*

新光吳火獅紀念醫院 胃腸肝膽科

\*台北醫學大學 醫學系

摘 要

約有百分之八至百分之廿九的大腸直腸癌病患以腸阻塞為臨床表現。對此類身體狀況不良的腸癌併腸阻塞之病患，傳統治療為緊急減壓手術，因此腸造口之建立常是無可避免的。我們報告一位阻塞性大腸直腸癌併局部淋巴結及多發性肝轉移之病患，以內視鏡置放自動擴張金屬支架作為姑息療法，避免了腸造口之建立。我們相信自動擴張金屬支架置放術對惡性大腸直腸阻塞是一種安全、有效的治療方法，可免去姑息性腸造口術的必要。



Fig.1. LGI series demonstrating a 7-cm long annular stricture at the rectosigmoid colon with partial obstruction to retrograde flow

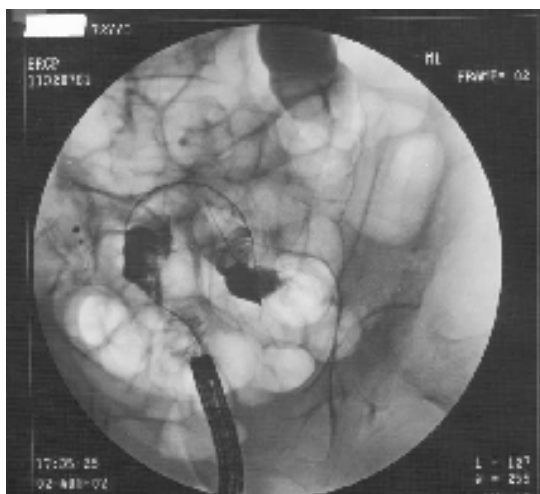


Fig.2. The guidewire is inserted through the working channel of the scope and pass across the lesion

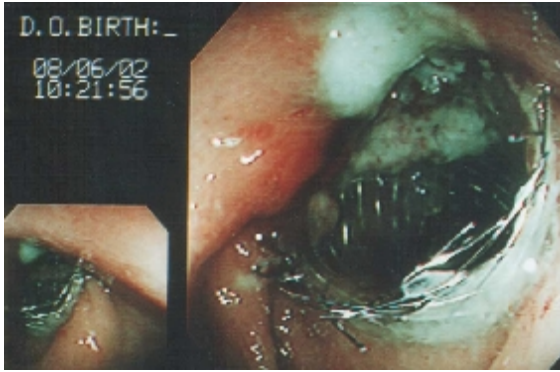


Fig.3. Colonic stent in place, relieving obstruction



Fig.4. Abdominal film taken 24 hours after stenting, demonstrating partial expansion of the stent





Fig.5. Abdominal film taken 3 weeks after stenting, showing full expansion of the stent