Comparison of Wallstent and Ultraflex stents for palliation of malignant left-sided colon obstruction: a retrospective, case-matched analysis CME

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Background: Self-expandable metal stents (SEMSs) are accepted palliation for malignant colon obstruction. Outcomes of different stent types is unknown.

Objective: Our purpose was to compare outcomes after palliative placement of the Enteral Wallstent (EW) and the Precision Colonic Ultraflex (PCU) stent.

Design: Retrospective study of all SEMS placement during a 7-year period.

Setting: Tertiary care academic medical center.

Patients: Malignant left-sided colon obstruction in which through-the-scope (TTS) or non-TTS stent placement was possible.

Main Outcome Measurements: Technical and clinical success rates, stent-related complications, reintervention.

Results: Demographics, degree, site, and cause of obstruction were comparable. Technical difficulties were more frequent with EW than PCU (16% vs 9%, *P* not significant), insufficient stent expansion and stent misplacement being most common. Relief of obstruction occurred in all patients when placement was technically successful. Mean follow-up was 93 days (range 7-691 days). Early (<7 days) stent occlusion (6% vs 0%, *P* not significant) and migration (4% vs 0%, *P* not significant) occurred more frequently in the EW group. Self-limited hematochezia was more common with PCU (20% vs 2%, $P = .002$). Delayed complications (perforation, stent occlusion, migration, and erosion) occurred significantly more often in the EW group (38% vs 20%). Reintervention was needed more frequently for EW, endoscopic (40% vs 17%, $P = .01$) and operative (46% vs 26%, $P = .03$).

Conclusions: Enteral Wallstents and Precision Ultraflex Colonic stents adequately relieve colonic obstruction. Stent dysfunction, stent-related complications, and need for reintervention are higher after EW placement. Precision Colonic Ultraflex stents appear better suited for palliation of left-sided malignant colon obstruction. (Gastrointest Endosc 2008;67:478-88.)

Large bowel obstruction is a major complication of primary or recurrent colorectal carcinoma and metastatic disease. Self-expandable metal stents (SEMSs) have become the method of choice for palliative treatment of malignant obstruction of the colon.[1-4] Technical success and colon decompression can be achieved in up to 93% and 91%, respectively.[5] However, the risk of complications such as delayed perforation, stent migration, and reocclusion can be as high as 30%.[6] Improved stent design may minimize these risks.

At least 4 types of SEMSs are currently approved by the Food and Drug Administration (FDA) for use in the colon.[1,2,7] One of these, the Precision Colonic Ultraflex (Boston Scientific, Natick, Mass) (PCU) stent, was specifically designed for large bowel insertion. This nitinol stent features a design intended to be flexible, to resist migration, and to maintain a larger luminal patency for passage of fecal matter. The Enteral Wallstent (Boston Scientific) (EW) is the most commonly used colon stent.[8] It offers

Abbreviations: EW, Enteral Wallstent; FDA, Food and Drug Administration; PCU, Precision Colonic Ultraflex; SEMS, self-expandable metal stent; TTS, through-the-scope.

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a smaller-diameter predeployment delivery system that allows through-the-scope (TTS) delivery for enhanced trackability and mechanical advantage. Although numerous studies have reported relief of colon obstruction with SEMSs, there are no comparative data between types of stents.

We report on our experience in 85 patients comparing EW with PCU stents.

Capsule Summary

What is already known on this topic

- Placement of self-expandable metal stents is the treatment of choice for palliation of malignant colonic obstruction, but the risk of complications, such as delayed perforation, stent migration, and reocclusion, can be high.

What this study adds to our knowledge

- In a retrospective comparison of 85 patients with malignant colonic obstruction, Enteral Wallstents and Precision Colonic Ultraflex stents both relieved colonic obstruction, but stent dysfunction, stent-related complications, and the need for reintervention were higher after Wallstent placement.

PATIENTS AND METHODS

Patients

Patients were retroprospectively identified from a database that tracked all SEMS placement done at Mayo Clinic, Rochester, Minnesota, from April 22, 1999, to June 12, 2006. Analysis of the electronic records of these patients was completed on August 19, 2006. Patients in whom uncovered EW and PCU stents were placed for palliation of malignant obstruction of the left colon were compared (EW, n = 50; PCU, n = 35). Characteristics of the 2 stent types are listed in Table 1 (Fig. 1). Inclusion criteria were palliative intent to treat, inoperable malignant tumor of the left colon, obstructive symptoms, evidence of colon stenosis by radiography, and complete medical record data with (1) follow-up longer than 7 days after insertion, (2) until the stent was removed, (3) or death. All these patients were nonsurgical candidates for curative intent resection because of advanced tumor stage, diffuse metastases, or advanced age with multiple comorbidities. Complete records of endoscopic procedures and clinical follow-up had to be available with adequate description of complications, reintervention, and indications for surgery, if performed.

Patient demographics are shown in Table 2. Diagnoses were based on clinical, laboratory, and radiologic findings. The location of the obstruction was rectosigmoid (n = 62), descending colon (n = 13), splenic flexure (n = 3), and distal transverse colon (n = 7). Only strictures located in the distal half of the transverse colon were included in the study. The etiology of obstruction was primary colon cancer in 35 patients in the EW group and 29 in the PCU group. Metastatic disease was detected at the time of SEMS insertion in 13 (26%) EW patients and 6 (17%) PCU patients. Two patients in the EW group had extraluminal compression, one from an appendiceal cancer and the other from intra-abdominal lymphoma. No patients had undergone previous SEMS placement. Twenty-one patients were found to have complete obstruction demonstrated by the lack of contrast passing proximal to the lesion during a single-contrast, water-soluble contrast enema study; 16 of these patients received the EW.

Endoscopic technique

A therapeutic channel endoscope (Olympus, Center Valley, Pa) was used for SEMS insertion in the EW group. A variety of diagnostic and therapeutic endoscopes (Olympus Corporation) were used in the PCU group. The details of stent placement have been described elsewhere.[7,9] Briefly, the endoscope was passed to the site of the lesion. The stricture was assessed both endoscopically and by injection of water-soluble contrast though ERCP catheters. In all patients, stents were inserted under fluoroscopic guidance (Figs. 2 and 3). SEMS placement was performed by one of several experienced interventional endoscopists. Before November 2003 EWs were used. The PCU stent became available after that time and the type of stent used was then based on endoscopist preference. In this series patients were included for analysis after it was deemed that it would have been technically possible to place either stent on the basis of location of the lesion.

In 7 of the 35 PCU patients (20%), the endoscope could not be passed through the lesion and the stricture was dilated immediately before stent insertion up to 12 mm to facilitate passage of the Ultraflex delivery system. Dilations were carried out with TTS balloon catheters or Savary-Gilliard bougies to a final diameter of 9 to 12 mm. No patients in the EW group required dilation before stent insertion.

A plain abdominal x-ray film was obtained 24 hours after stent insertion to confirm stent expansion and adequate position and to assess relief of obstruction. The patency of the stent was evaluated endoscopically or radiographically (retrograde enema) in patients who had persistent obstructive symptoms or persistent pain. Technical success was defined as deployment of the stent across the entire length of the stricture and full patency of the stent. Colon decompression was defined by resolution of symptoms and radiologic relief of obstruction within 24 hours, confirmed by water-soluble contrast enema study, or radiographic improvement.