Successful argon plasma coagulation treatment for self-expandable metal stent obstruction in colorectal cancer

Teruaki Inoue

Department of Internal Medicine, Fujinomiya City General Hospital, Fujinomiya-shi, Japan

Abstract

Self-expandable metal stents (SEMS) have often been used to treat malignant colorectal obstruction. But SEMS obstruction occurs due to the ingrowth of colorectal cancer. We report a case in which treatment with argon plasma coagulation (APC) was effective for SEMS obstruction. An 89-year-old man was admitted to our hospital for obstructive colorectal cancer. A SEMS was inserted and it improved malignant colorectal obstruction. Computed tomography scans demonstrated liver and lung metastases. His clinical cancer staging was IVb and he wished to receive palliative care. Two months later, SEMS obstruction occurred due to ingrowth of colorectal cancer. Treatment other than stent-in-stent SEMS insertion was considered because SEMS obstruction occurred in a short period of time. APC treatment was chosen and it improved the obstruction. The duration of stent patency was 62 days. APC is an option but it needs further studies to assess the safety of APC.

INTRODUCTION

Recently, self-expandable metal stents (SEMS) have often been used to treat malignant colorectal obstruction, but SEMS obstruction occurs due to the ingrowth of colorectal cancer. When SEMS obstruction occurs, stent-in-stent SEMS insertion is effective [1]. However, re-obstruction sometimes occurs in a short period of time. We report a case in which treatment with argon plasma coagulation (APC) was effective for SEMS obstruction.

CASE REPORT

An 89-year-old man was referred to our hospital for abdominal pain and vomiting. He had no significant medical history. Computed tomography (CT) scans showed bowel obstruction and endoscopy revealed transverse colon cancer (Fig. 1A). He was diagnosed with obstructive colorectal cancer. To improve bowel obstruction, he was treated with a 22 mm × 100 mm uncovered SEMS (Niti-s, Taewoong Medical, Seoul, South Korea) and bowel obstruction improved (Figs 1B and 2). Biopsy revealed mucinous adenocarcinoma. CT scans demonstrated liver and lung metastases. His clinical cancer staging was IVb and he wished to receive palliative care. Two months later, he was returned to our hospital for abdominal pain and vomiting. CT scans demonstrated bowel obstruction again and SEMS obstruction was suspected (Fig. 3A and B). He was admitted to our hospital and fasting improved symptoms due to the partial obstruction. On the sixth hospital day, he received colonoscopy and it revealed SEMS obstruction by ingrowth of colorectal cancer (Fig. 4A). Gastrografin could pass through as it was a partial obstruction. Treatment other than stent-in-stent SEMS insertion was considered because SEMS obstruction occurred in a short period of time. APC was chosen to treat the obstruction. The device was a FiAPC probe (Bowa-Electronic Gmbh & Co KG, Germany). The tumor causing the obstruction was removed by APC cauterization (Fig. 4B). To prevent colonic perforation, cauterization was performed to the depth where SEMS was exposed. Through APC cauterization, the obstruction was relieved to the extent that the oral colon was visible (Fig. 4C). Improvement of obstruction was confirmed in abdominal X-rays (Fig. 5). After APC cauterization, the patient had no complication such as bleeding and perforation. On the seventh hospital day, he started oral intake and had no recurrent symptoms. On the 20th hospital
Figure 2. Abdominal X-ray. SEMS was placed beyond the stenosis.

day, he was discharged from the hospital. For 62 days after APC, there was no SEMS obstruction.

DISCUSSION

Bowel obstruction often occurs due to malignant colorectal cancer. When malignant colorectal obstruction occurs, it is treated with SEMS, transanal ileus tube and colostomy. Although SEMS insertion is an effective treatment, there are complications such as perforation, stent obstruction and migration. SEMS obstruction leads to abdominal pain and vomiting, and prevents patients from undergoing chemotherapy. Therefore, SEMS obstruction should be relieved as soon as possible. Secondary stent-in-stent SEMS insertion is effective for the obstruction. Yoon et al. reported that secondary stent-in-stent SEMS insertion was attempted in 36 cases and successfully placed in 27 cases with a median stent patency of 170 days [2]. However, Kwon et al. reported that peritoneal carcinomatosis was a risk factor for early SEMS obstruction [3]. Therefore, in patients with peritoneal carcinomatosis, early stent obstruction may occur and treatments other than stent-in-stent SEMS insertion should be considered.

APC is a non-contact high-frequency coagulation technique, which uses argon gas. It is effective for treatment of many gastrointestinal diseases, such as gastrointestinal bleeding and precancerous lesions [4]. APC is also used for treating malignant gastrointestinal obstruction. Kofoed et al. reported that APC was a safe treatment for obstruction by gastro-oesophageal adenocarcinoma [5]. Although our patient had no obvious peritoneal carcinomatosis, stent patency time was short at 82 days. Because there was a risk that stent re-obstruction occurred in a short period of time, we chose APC treatment. Stent patency time was 62 days and comparable to first SEMS patency.

Complications of APC include rectovaginal fistula, pneumato
sis intestinalis and perforation. Colonic perforation by APC, which is a rare complication, has been reported [6, 7] and we should be cautious about it. Norton et al. reported that APC-induced injury correlated with duration of burn, power setting and total energy delivery [8]. However, to remove tumor with APC, a certain level of power setting and duration of burn is required. To prevent perforation, we propose a method for APC cauterization based on the exposure of metallic stent. When cauterization extends

Figure 3. Abdominal plain CT scans, axial view (A) and coronal view (B). CT scans showed dilation of the colon and small intestine, and SEMS obstruction was suspected.

Figure 4. Lower gastrointestinal endoscopy. SEMS obstruction by ingrowth of colorectal cancer was confirmed (A). The tumor was removed by APC cauterization (B). The obstruction was relieved to the extent that the oral colon was visible (C).
deep into the tumor, the risk of perforation may increase. Therefore, we remove only the tumor that has grown in the stent, such that cauterization is performed to the depth where SEMS is exposed.

The advantage of APC treatment is that it can be a preventive treatment even if the patient has no symptoms or stent obstruction is partial. Moreover, when the partial obstruction occurs again after treatment, we can repeatedly treat it with APC. However, there are few reports of this, and the average patency period after treatment is unknown. On the other hand, APC treatment is not suitable for patients who have complete stent occlusion. If complete bowel obstruction is present, stool will flow to the anal side when the obstruction is released, which may make additional APC cauterization difficult. Therefore, if patient has complete SEMS obstruction, stent-in-stent SEMS or ileus tube insertion is preferred.

In conclusion, APC may be an effective treatment for SEMS obstruction. If SEMS obstruction is partial, APC will be a treatment option. APC treatment is effective but needs further studies to assess the safety of the above treatment.

ACKNOWLEDGEMENTS

None.

CONFLICT OF INTEREST STATEMENT

No conflicts of interest.

FUNDING

There were no sources of funding.

ETHICAL APPROVAL

No approval is required.

CONSENT

Written informed consent was obtained from the patient.

GUARANTOR

Teruaki Inoue is the guarantor of this article.

REFERENCES