

Case Report

An Unusual Complication of Self-Expandable Metal Stent Placement in Malignant Sigmoid Obstruction

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Keywords

Self-expandable metal stent · Endoscopy · Colorectal obstruction · Complication

Abstract

Self-expandable metal stent (SEMS) for malignant colorectal obstruction is widely used as a bridge to elective surgery or palliative treatment. However, with the increasing use of SEMS for treatment, complication rates associated with stents have been raised as a concern. We experienced a rare migration-related complication that a stent partially migrated out of the anus with an incarceration. A 62-year-old man was admitted with sigmoid malignant obstruction. Due to multiple metastases, he refused to undergo colostomy, and an uncovered SEMS was placed. Subsequently, he started chemotherapy. Seven months after placement, the stent migrated into the rectum. After unsuccessful attempts to extract the stent, he sought our assistance. We observed that half of the stent was outside the anus, and a 15 mm lump of mucosa was embedded in the proximal end of the stent. After several attempts, we successfully removed the SEMS. Stent incarceration following migration is not a common occurrence, but it serves as a reminder that clinicians need to be more vigilant about complications that may arise after stent implantation. We describe this unusual complication and share our experience about the removal of the stent.

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Introduction

Approximately 8–13% of patients with advanced colon cancer present with an obstruction of the large bowel, and the left side colon is the most common site of obstruction [1]. Acute colorectal obstruction is a medical emergency that necessitates immediate

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management. Treatment options consist of surgical and nonsurgical decompression [2]. Endoscopic placement of SEMS has become an effective alternative to emergency surgery in patients with acute obstruction [3]. As a “bridge to surgery” or a palliative treatment, it avoids colostomy and improves the quality of life in many patients [4]. However, with the increasing utilization of self-expandable metal stents (SEMSs) for medical treatment, there has been a growing concern regarding the potential complications associated with SEMS placement. These complications include stent migration, secondary obstruction, and perforation [5, 6]. According to the report, the early complications after stent placement include pain, perforation and bleeding, and late complications include stent migration and reobstruction [5]. With regard to migration, the relatively high incidence makes it inevitable to be paid much closer attention [7]. Interestingly, even with stent migration, most patients remain asymptomatic, and further intervention is unnecessary [5]. However, we had a patient who underwent SEMS placement for obstructing distal sigmoid colon adenocarcinoma, and incredibly, the stent was incarcerated in the distal rectum due to migration. Additionally, the CARE Checklist has been completed by the authors for this case report and attached as online supplementary material (for all online suppl. material, see <https://doi.org/10.1159/000533615>).

Case Report

A 62-year-old man was admitted with an acute large bowel obstruction. He presented with abdominal pain, vomiting, and distended abdomen. There was obvious tenderness, but no rebound tenderness. Abdominal CT confirmed the presence of a malignant obstructing stricture in the distal sigmoid colon. The patient was offered laparotomy for a defunctioning colostomy or endoscopic decompression using an SEMS. He refused to undergo temporary colostomy but accepted insertion of an SEMS. Therefore, an uncovered WallFlex colonic stent (Boston Scientific, Denver, CO, USA) was placed successfully at the site of the tumor stricture (Fig. 1a–c). After stent insertion, the patient presented clinical relief of obstructive symptoms and commenced chemotherapy.

Because of multiple metastases, the patient ultimately did not undergo surgery. After approximately 7 months of stent placement and undergoing eight cycles of chemotherapy, the patient experienced mild tenesmus for 3 days. In the 12 h prior to admission, there was a noticeable worsening of the symptoms. Additionally, 6 h before admission, the patient inadvertently touched the protrusion of the stent outside the anus. After multiple failed attempts to extract the migrated stent on his own, the patient was readmitted for stent removal. During digital rectal examination, we found half of the stent was outside the anus and a patch of mucosa was embedded in the stent (Fig. 1d). Colonoscopy showed easy passage of the colonoscope through the tumor site and the proximal end of the stent, with edematous mucosa embedded (15 mm in diameter) (Fig. 2a). To avoid greater structural damage caused by cutting the mucosa from the external of the stent through a knife, we decided to remove the edematous mucosa through the internal of the stent with a snare. However, the high tension of the embedded mucosa made them difficult to trap. Therefore, we switched to remove the mucosa by using heated rat-tooth forceps (Fig. 2b). After repeated excision of part of the mucosa, the remaining mucosa automatically detached from the stent. Clockwise torsion movement was then applied by hand. Finally, the SEMS was successfully removed. Following the extraction of the stent, some broken wires were found at the proximal end, without muscularis injury on the wound surface (Fig. 2c–d). Four days later, the colonoscopy showed ulceration without perforation (Fig. 3). During a week of follow-up, the patient expressed satisfaction with the treatment and experienced no particular discomfort.

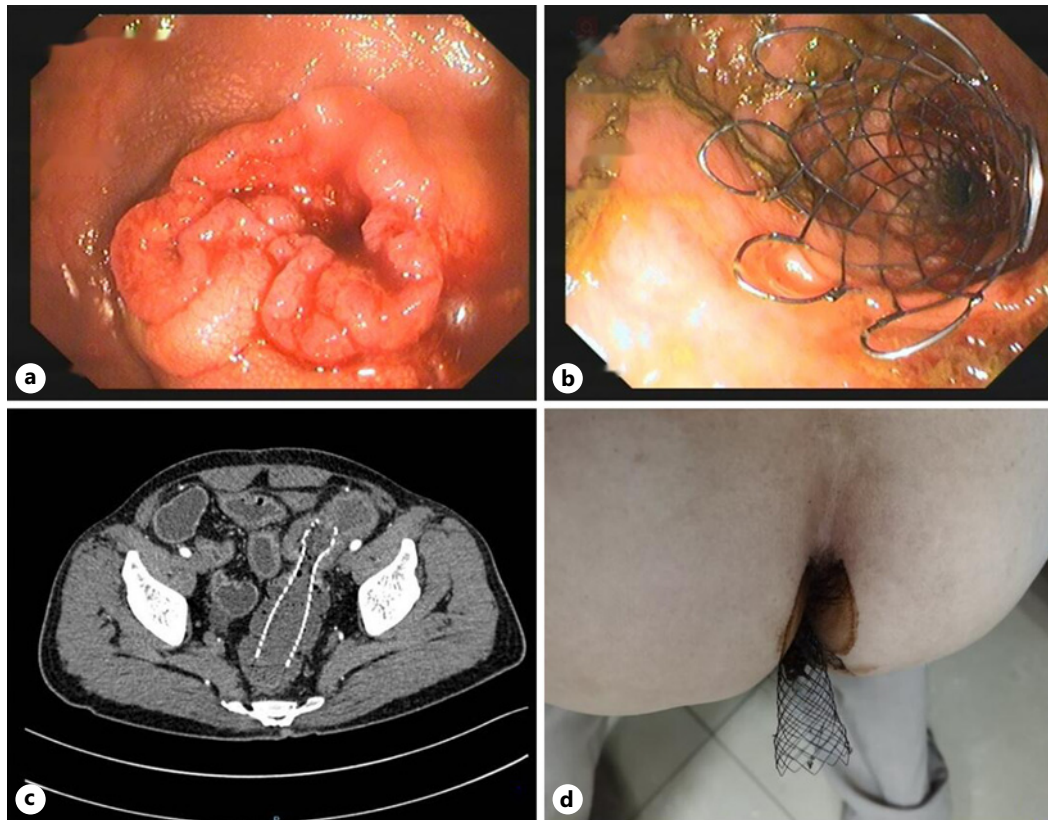


Fig. 1. **a** An obstructing distal sigmoid colon adenocarcinoma was found by the colonoscopy. **b** The uncovered self-expandable metal stent was placed. **c** Abdominal CT obtained 24 h after stent deployment. **d** Half of the stent was outside the anus.

Discussion

Stents have been used for more than three decades to treat colonic malignancies either as a bridge to surgery or a palliative treatment [8]. The immediate benefit of SEMS placement is well established. In this case, the patient also experienced immediate relief of obstructive symptoms after stent insertion. Using stents to treat obstructing colorectal cancer avoids emergency surgery, reduces emergency surgery-related morbidity and mortality rates, and facilitates the decompression of an acute obstruction [9]. In large multicenter series of over 500 patients, SEMS has already been shown to be effective for the treatment of large bowel obstructions, with technical and clinical success rates exceeding 90% [10]. A comprehensive meta-analysis published by Allievi et al. [11] revealed no difference in the mortality rate between the SEMS group and the emergency surgery group. Furthermore, the postoperative complication rate, the stoma rate, and the incidence of wound infection were reduced when stents were used as a bridge to surgery. Based on these findings, SEMS for malignant colorectal obstruction as a bridge to elective surgery or as a palliative treatment is widely utilized [12].

Following the European Society of Gastrointestinal Endoscopy guideline in 2014, SEMS placement is recommended for palliative purposes for colonic obstructions [13]. In this case, due to multiple metastases, the patient underwent a palliative procedure, and the stent migrated after 7 months. The rate of stent migration has been reported to be between 4% and 10% [5], and its occurrence has been related to different factors. One of

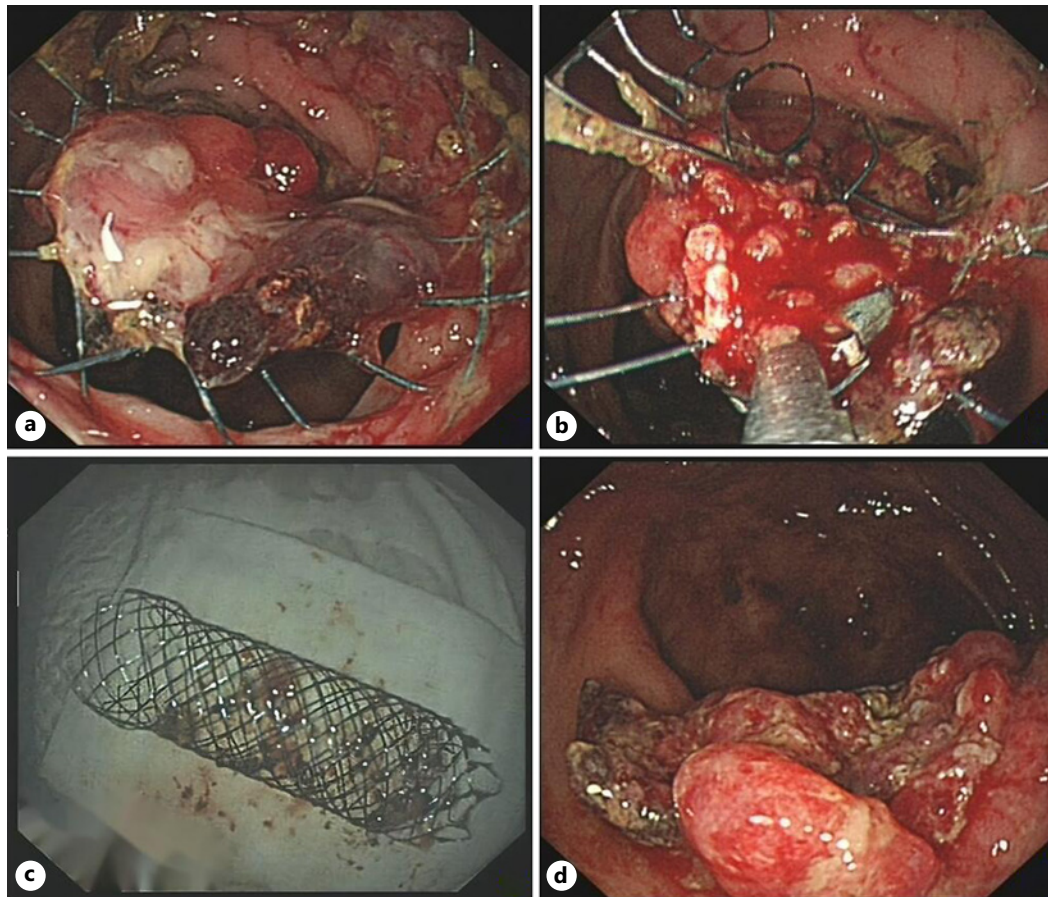


Fig. 2. **a** Colonoscopy through the internal of the stent showed a lump of edematous congestive mucosa was embedded in the proximal end of the stent. **b** Embedded mucosa was removed by means of hot rat-tooth forceps. **c** The removed stent with some broken wires at the proximal end. **d** Wounds left by endoscopic removal of the stent.

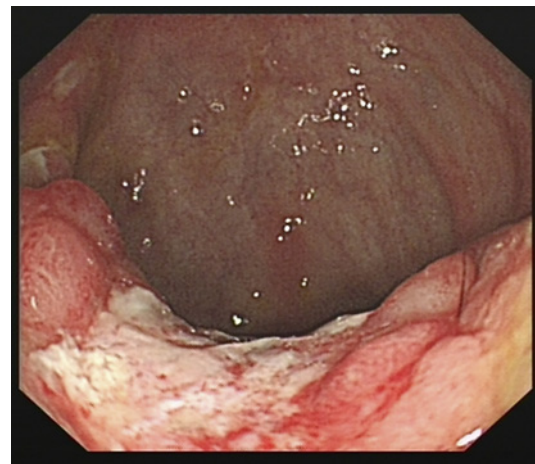


Fig. 3. Ulceration of the mucosa was found by colonoscopy follow-up 4 days later.

the main reasons is technical factors such as inadequate expansion and the smaller the stent diameter. Another important factor that has been cited is the use of radiation therapy or chemotherapy [6]. Colorectal stent combined with chemotherapy as a first-line treatment seems to be a valid option in advanced colorectal cancer patients with malignant colorectal obstruction [14]. In comparison with emergency surgery, colonic stenting allows chemotherapy to be initiated earlier, which has been proven to improve quality of life more than delayed chemotherapy administration [15]. However, chemotherapy is an important cause of stent migration.

In this case, migration occurrence is likely secondary to chemotherapy-induced reduction in tumor size and peristalsis. Some distally migrated colorectal stents are passed per rectum without removal, and the migrated stents that did not cause any symptoms were managed conservatively [7]. In this case, the stent may have been migrated into the rectum for a period of time, and the absence of symptoms in the early stage caused the patient to ignore it. As time goes by, rectal irritation and tenesmus made the patient notice the stent and forced him to remove it. However, the improper dragging by the patient and the broken wires at the proximal end of the stent have eventually resulted in mucosal embeddedness and failure to remove the stent. We first decided to remove the stent with a snare, but the high tension of the embedded mucosa made them difficult to trap. Then, we switched to remove the mucosa by means of heated rat-tooth forceps. Finally, the SEMS was successfully removed. However, in this case, it is difficult to determine the reason of the wire fracture, which may be related to the duration of stent placement or the patient's poor dragging technique.

In cases of SEMS dislocation, although transanal protrusion as observed in this particular case is quite remarkable, it is essential to address the additional morbidity associated with patient self-manipulation. Therefore, comprehensive patient education and information play a crucial role. Patients should be provided with clear instructions regarding their condition, the purpose of the implanted SEMS, and the potential risks associated with self-manipulation. This includes explaining the underlying colorectal obstruction and the temporary relief provided by the SEMS. Emphasis should be placed on the importance of not manipulating or removing the stent without medical supervision, as it may lead to complications such as dislocation, perforation, bleeding, or infection. Patients should be encouraged to seek immediate medical assistance if any concerns arise. Regular follow-up appointments should be stressed to monitor the condition and ensure the proper functioning of the SEMS. Written materials or visual aids can supplement the verbal discussion to enhance patient understanding, and healthcare providers should be readily available to address any questions or concerns that patients may have.

In conclusion, SEMS has been increasingly used for the management of malignant colorectal obstruction. However, we should pay more attention to the complications associated with its use. To the best of our knowledge, this is the first case to describe the removal of a migrated and incarcerated colorectal stent. It does provide valuable experience, highlighting the need for clinicians to be more aware of the occurrence of migration after stent implantation and the importance of patient education and information. In cases where rectal irritation of unknown cause is present, stent migration should be considered.

Statement of Ethics

Written informed consent was obtained from the patient for publication of this case report and any accompanying images. Ethical approval is not required for this study in accordance with local or national guidelines.

Conflict of Interest Statement

The authors declare that they have no conflict of interest.

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Author Contributions

Qingjie Kang and Zhengqiang Wei designed and drafted the case presentation. Denghua Hu and Guangxu Wen performed the data collection. All authors have approved the final submitted manuscript.

Data Availability Statement

All data generated or analyzed during this study are included in this article and its online supplementary material. Further inquiries can be directed to the corresponding author.

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