



Treatment Approach in Malignant Left-Bowel Obstruction Using Self-Expandable Metallic Stent: A Case Series

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Abstract

Endoscopic self-expandable metallic stent (SEMS) decompression in patients with bowel obstruction due to colon carcinoma has been practiced for over two decades now, both in potentially curable cases and metastatic cancer. Using this case series, we aim to review the literature on the subject and to present our initial experience with using this technique as a bridge to single stage surgery, thus minimizing colostomy creation.

We retrospectively reviewed seven cases of bowel obstruction due to left-sided colonic cancer, between March 2020 and March 2021. All patients received SEMS prior to being treated, 7 to 13 days later, using either laparoscopic surgical techniques or open surgery methods. All seven patients underwent single stage surgery, eliminating the need for placing a temporary or permanent stoma, therefore minimizing the hospital stay and increasing the quality of life of the individual.

We concluded that treatment with SEMSs for bowel obstruction in colorectal cancer was safe and well tolerated, resulting in primary anastomosis and restoration of the intestinal passage and low short-term morbidity.

Keywords

bridge to surgery, self-expandable metallic stent (SEMS), colonic cancer, stoma

INTRODUCTION

In the year of 2020, colon cancer had the third highest incidence and ranked second in the highest mortality of all types of cancers, with rates being highest in Europe and North America.¹ Despite the significance of the disease and its most common complication, bowel obstruction, there was still no unified approach on how to treat it. In the presence of malignant bowel obstruction, there were four treat-

ment approaches available: stenting and emergency resection, decompressing stoma and transanal colorectal tube.²

According to the European Society of Gastrointestinal Endoscopy (ESGE), self-expandable metallic stent (SEMS) placement should be used in palliative cases and in cases of increased postoperative mortality risk (patients over the age of 70 years and/or American Society of Anesthesiologists (ASA) score of ≥ 3).³ On the other hand, other studies clearly stated the many short-term advantages of stent plac-

ing to the emergency operative treatment with no significant variation in the long-term survival rates.^{4,5}

Using this case series, we aimed to review the literature on the subject and to present our initial experience using this technique as a bridge to single stage surgery.

CASE REPORTS

A retrospective analysis of seven patients aged 57 to 73 was performed. In the period of one year (March 2020 to March 2021) they underwent SEMS placement in two different hospitals in Bulgaria. All individuals were presented with their therapeutic options and written consent was obtained for the procedure. All patients were diagnosed with carcinoma located in the left colon (between the splenic flexure and 15 cm proximal to the anal margin) and bowel obstruction at the time of the procedure. Obstruction was defined as failure to pass fecal masses of gas or presence of distended bowels confirmed with different imaging techniques. The patients were not eligible in the events of 1) previous surgery in this part of the bowel; 2) perforation of the bowel, and 3) other conditions preventing the patient from being placed under general anesthesia.

Five of the presented cases were potentially curable colonic carcinoma, while the other two had liver metastases. One patient had synchronized cancers with formations both in the left and the right colon. More information on the patients' status is given in **Table 1**.

Table 1. Patients' data

Variables	N = 7
Age (yrs), mean \pm SD	66 \pm 7
Male/Female	4/3
Tumour location,	
Colon sigmoideum	4
Colon descendens	2
Flexura lienalis	1
Liver metastasis	2
Partial resection of the liver performed	1
Small intestine resection performed	1
Regional lymphadenopathy	5
Histological grade	
G1	1
G2	4
G3	2
Ascites	3
Hypertension	3
The time interval to elective operation, mean \pm SD	10 \pm 3

Placement of the SEMS was performed by an experienced endoscopist. The procedure duration was between 10 and 50 minutes. During that time, the patients were under total intravenous anesthesia with propofol and fentanyl, with doses depending on patients' weight and condition. The endoscope used was forward-viewing Olympus GF165 165 cm long. A double lumen Endo-flex sphincterotome 0.035 Fr was placed on the Olympus VisiGlide 2 guidewire before the beginning of the procedure. When the obstruction point was reached, the sphincterotome helped maneuver the guidewire, thus enabling it to surpass the narrowed portion of the bowel (**Fig. 1**). The sphincterotome then followed the guidewire through the cancer and fluoroscopic imaging was used to confirm its proper positioning. The sphincterotome was then removed and the stent (Wallflex, Boston Scientific Corporation, Natick, MA, USA) was introduced through the guidewire and placed under abdominal radiography (**Fig. 2**). Once the stent was fully opened, its position was confirmed with abdominal imaging (**Fig. 3**). The procedure was considered successful once the bowel was decompressed and the clinical signs of ileus state decreased.



Figure 1. Guidewire passing through the tumour.

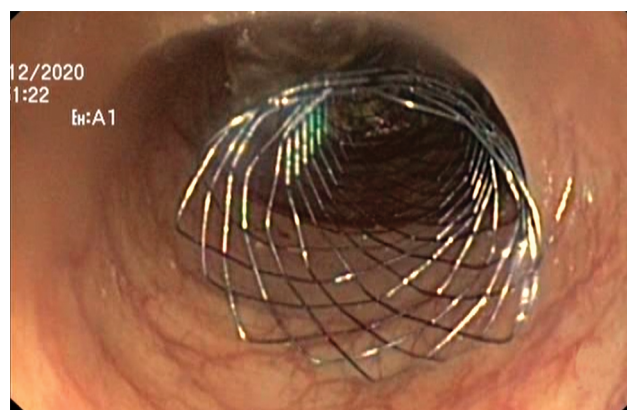


Figure 2. Fully opened SEMS.

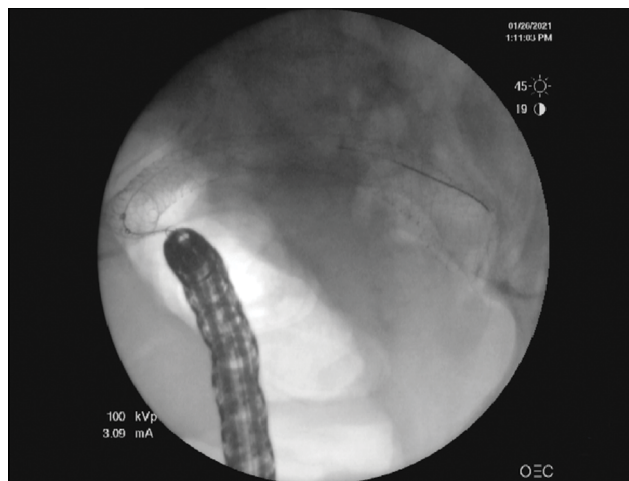


Figure 3. Abdominal radiography confirming the position of the SEMS.

DISCUSSION

The short-term advantages of colon stenting were undeniable. The uncertainty and contrast in opinions originated from the long-term oncological outcomes. The main reason for ESGE's guidelines not recommending SEMS placement in potentially curable patients, was the risk of dissemination of the malignant process through microperforations.³ There was evidence that occurrence of micro perforations was directly related to the amount of experience of the endoscopist. It was stated that specialists who perform therapeutic ERCPs were associated with lower rate of both immediate and microperforations.⁶

There was no immediate perforation of the bowel in the time of the stenting of our patients. However, a complication in one case was acknowledged. After placing the stent and enteral nutrition was resumed, a foreign body lodged between the SEMS and the bowel wall, thus perforating the bowel, resulting in emergency surgery, two days after the stent was placed. Moreover, the recommended amount of time between the SEMS insertion and the operative treatment was still unclear. In the literature, the most preferred interval was 10 days, but the data varies from 1 to 14 days.⁷ In our data, in the other six cases, surgical intervention was performed 7 to 13 days post SEMS insertion with a medium of nine days between the two procedures.

A meta-analysis comparing the outcomes of preoperative colonic stents and emergency surgery for left sided bowel obstruction states that the SEMS group had lower overall morbidity, a higher successful primary anastomosis rate, and lower permanent stoma rate.⁸ In conformity with those statements, our results were successful single stage procedures and no stomas creation. Furthermore, there was no short-term morbidity in all our cases.

Four out of seven surgical treatments were performed laparoscopically. In the other three cases medial laparotomy was performed for the following reasons: Patient 1 – due to synchronized left and right bowel cancers; Patient

2 – partial resection of the small intestine and the liver, and Patient 3 – the previously mentioned foreign body complication.

In comparison to the emergency surgery for left-sided bowel obstruction, the stenting required shorter hospital stay and procedure time.⁹ In our finding even the combined hospital stays of the stent placing and the single stage surgical treatment did not exceed 14 days. All these factors and the shorter recovery time of the individual contributed to the cost-effectiveness of this approach.

CONCLUSIONS

Through a review of the literature and our own experience, we concluded that SEMS insertion in relieving left-sided bowel obstruction, followed by single-stage elective surgery, was a safe procedure that has lower short-term complications, lower stoma creation rates and shows higher primary anastomosis outcomes compared to the emergency surgery. Furthermore, it minimized the hospital stay and the financial cost as a whole. There was uncertainty of the long-term survival rate of these patients, due to the different conclusions of various meta-analyses. The need for expert endoscopist must be taken into account, as it might change the outcome of the procedures. The limitations of our work were that our team have started performing this procedure recently, so we could not make any conclusions about the long-term oncological results as we had yet to perform upcoming follow-ups of the presented group of individuals.

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Conflict of Interest

The authors have declared that no competing interests exist.

Author contributions

N.B. contributed substantially to the conception and design of the study, the acquisition of data, the analysis and interpretation; K.S. and N.B. drafted the manuscript; N.B. and S.S. performed the procedures. N.B., K.S., S.S., K.M., N.S., and D.D. supervised the research and provided final approval of the version to publish.

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Подход к лечению злокачественной непроходимости левой кишки с использованием саморасширяющегося металлического стента: серия случаев

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Резюме

Декомпрессия эндоскопическим саморасширяющимся металлическим стентом (SEMS) у пациентов с кишечной непроходимостью вследствие рака толстой кишки практикуется уже более двух десятилетий как в потенциально излечимых случаях, так и при метастатическом раке. С помощью этой серии случаев мы стремимся проанализировать литературу по этому вопросу и представить наш первоначальный опыт использования этой техники в качестве моста к одноэтапной хирургии, сводя тем самым к минимуму использование колостомии.

Мы ретроспективно рассмотрели семь случаев кишечной непроходимости из-за рака левосторонней толстой кишки в период с марта 2020 по март 2021 года. Всем пациентам была проведена SEMS до лечения, от 7 до 13 позже — лапароскопическая операция или открытая операция. Всем семи пациентам была проведена одноэтапная операция, что позволило исключить необходимость в наложении временной или постоянной стомы, свести к минимуму пребывание в стационаре и улучшить качество жизни пациентов.

Мы пришли к выводу, что лечение с помощью SEMS кишечной непроходимости при колоректальном раке было безопасным и хорошо переносимым, приводило к наложению первичного анастомоза и восстановлению проходимости кишечника и низкой краткосрочной заболеваемости.

Ключевые слова

мост к хирургии, саморасширяющийся металлический стент (SEMS), рак толстой кишки, стома
