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RESEARCH ARTICLE

Endoscopic Stenting Followed by Laparoscopic Resection in Malignant Colonic Obstruction: Oncological Safety of the Bridge-to-Surgery Approach

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ABSTRACT

Aim: The aim of this retrospective cohort study was to evaluate the perioperative and long-term oncological outcomes of patients with malignant colonic obstruction who underwent self-expandable metallic stent (SEMS) implantation as a bridge to surgery (BTS), followed by elective laparoscopic colectomy.

Method: One-hundred two consecutive patients initially managed with a SEMS implantation as a BTS constituted a modified intention-to-treat cohort and were retrospectively analyzed. Ninety-five of these patients (the per-protocol cohort) went on to undergo a resection with curative intent between 2013 and 2023 at a tertiary referral center. Clinical demographics, operative findings, pathological results, postoperative complications, and survival outcomes for all participants were systematically recorded. The primary endpoints were overall survival, laparoscopic completion rate, and R0 resection rate. Secondary endpoints included postoperative morbidity, anastomotic leakage, recurrence, distant metastasis, disease-free survival, metastasis-free survival, and stent-to-surgery interval. Median follow-up values were calculated using the reverse Kaplan-Meier method.

Results: Stent placement was technically successful in all (95/95) patients in the operative (per-protocol) cohort. The mean interval between SEMS placement and surgery was 10±3 days. Laparoscopic resection was completed in 84.2% of these patients, whereas 15.8% required a conversion to open surgery. The mean operative time was 148±32 minutes, and intraoperative complications occurred in 4.2% of cases. An adequate lymphadenectomy count (≥12 nodes) was achieved in over 90% of patients, with a median lymph node yield of 21. The R0 resection rate was 93.7%. Postoperative complications, including anastomotic leakage, occurred in approximately 40% of patients, including both laparoscopic and open surgery cases. No 30-day mortality was observed. During the reverse Kaplan-Meier median follow-up period of 31.8 months, recurrence occurred in 28.4% of cases, and distant metastasis in 21.0%. The 3-year OS rate was 76%, with no significant difference between laparoscopic and open surgery procedures ($p>0.05$). Kaplan-Meier curves with number-at-risk tables support these findings.

Conclusion: Endoscopic stenting, followed by elective laparoscopic colectomy, represents a feasible and clinically sound BTS strategy for malignant colonic obstruction. This approach provides acceptable perioperative outcomes, enables high rates of minimally invasive resection, and does not appear to negatively influence medium-term oncological outcomes in appropriately selected patients. Further prospective studies are needed to refine the patient selection process and validate the long-term oncologic safety of this approach.

Keywords: Malignant colonic obstruction, self-expandable metallic stent, bridge to surgery, laparoscopic colectomy, oncological outcomes, minimally invasive colon surgery

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Introduction

Malignant colonic obstruction is a life-threatening condition occuring in 7%-15% of patients with colorectal cancer that frequently necessitates urgent decompression to restore bowel function and stabilize the patient.[1,2] Endoscopic self-expandable metallic stent (SEMS) implantation as a bridge to surgery (BTS) has been proposed as an alternative to emergency colectomy, allowing for short-term physiological optimization, the completion of oncologic staging, and planned minimally invasive resection.[3-5] Despite these advantages, the long-term oncologic consequences of SEMS placement remain debated. Concerns include tumor manipulation, microperforation, and subclinical dissemination, all of which may influence recurrence patterns and survival but are incompletely characterized in current evidence.[6,7]

Although several meta-analyses and multicenter studies have assessed SEMS implantation as a BTS strategy, the existing literature is limited by substantial methodological heterogeneity. Prior studies frequently differ in their definitions of technical and clinical success, apply inconsistent criteria for stent failure, and vary widely in follow-up duration and endpoint reporting.[8-10] In addition, most available cohorts combine open and laparoscopic resections, lack a standardized operative technique, or do not employ Enhanced Recovery After Surgery (ERAS) pathways, limiting their comparability and generalizability. Importantly, few real-world consecutive series examine long-term survival outcomes after BTS followed by uniform laparoscopic oncologic colectomy within an intention-to-treat framework in a high-volume center. This leaves a persistent knowledge gap about the true long-term oncologic impact of SEMS implantation as a BTS when applied in modern minimally invasive colorectal surgery.

To address this gap, we designed a study centered on a single, testable primary hypothesis: SEMS placement as a BTS does not adversely affect long-term oncologic outcomes in patients undergoing standardized laparoscopic colectomy for malignant colonic obstruction. Secondary hypotheses were prespecified to evaluate whether SEMS placement as a BTS promotes high laparoscopic completion rates, maintains acceptable R0 resection rates and lymph node yields, and is associated with perioperative outcomes comparable to contemporary minimally invasive colorectal surgery benchmarks.

Accordingly, the aim of this retrospective consecutive cohort study was to evaluate the technical success, perioperative outcomes, and long-term oncologic results of SEMS placement as a BTS followed by standardized laparoscopic colectomy in patients with malignant colonic obstruction treated at a high-volume tertiary referral center. This endpoint-driven approach allows a focused assessment of both short- and long-term outcomes within a modern surgical framework.

Materials and Methods

Study Design and Setting

This retrospective cohort study was conducted at a high-volume tertiary referral center between January 2013 and December 2023. The study was designed to evaluate perioperative and long-term oncologic outcomes in patients with malignant colonic obstruction initially managed with SEMS placement as a BTS.

Although this study is retrospective in design, clinical and procedural data were derived from routinely maintained institutional databases and electronic medical records.

This study was approved by the Scientific Research Ethics Committee of Erzurum Faculty of Medicine, Health Sciences University (decision no: BAEK 2025/03-159, meeting no: 03, decision no: 159, date: 11.03.2025), and was conducted in accordance with the principles of the Declaration of Helsinki.

Study Population and Intention-to-Treat Framework

During the study period, 102 consecutive patients with acute malignant colonic obstruction were evaluated for SEMS placement with curative intent. Primary analysis was performed using a modified intention-to-treat (mITT) approach. All 102 patients (designated the mITT cohort) were initially managed with SEMS placement as a BTS and were included in the primary analytical framework, including those who experienced SEMS failure and required urgent surgery. These patients were considered outcomes of the BTS strategy rather than exclusions. SEMS failure was defined as technical failure, clinical failure, or the need for emergency surgery following stent placement.

Seven patients were deemed unsuitable for curative intent surgery due to metastatic progression detected after initial staging, a deterioration in performance status, or an inability to proceed with oncologic resection. These patients were retained in the mITT cohort but excluded from per-protocol analysis. Ninety-five patients for whom SEMS placement was successful and who subsequently underwent elective minimally invasive colectomy with curative intent were designated the per-protocol cohort and included in the per-protocol analysis. A consolidated flow diagram illustrating screening, SEMS placement outcomes, and analytic cohorts is provided.

Eligibility Criteria

All patients presented with histologically confirmed adenocarcinoma of the colon, with radiologic or endoscopic evidence of a malignant large-bowel obstruction and no overt perforation at presentation. Exclusion criteria for the per-protocol cohort included benign obstruction, synchronous obstructing lesions, perforation at presentation, primary emergency resection without a prior SEMS implantation attempt, and an inability to undergo elective surgery. Distant metastasis was excluded by contrast-enhanced

thoracoabdominal computed tomography (CT), supplemented by magnetic resonance imaging or positron emission tomography-CT when indicated.

Preprocedural Evaluation

Before SEMS placement, all patients underwent standardized staging with a contrast-enhanced thoracoabdominal CT. Cases with radiologic uncertainty regarding resectability were discussed by a multidisciplinary tumor board. Only patients confirmed to have a potentially curable disease proceeded along the BTS pathway.

SEMS Placement Technique

The placement of the SEMS was performed by experienced interventional endoscopists using a standardized protocol. Procedures were conducted under combined endoscopic and fluoroscopic guidance using either a through-the-scope or over-the-wire technique with hydrophilic guidewires. Nitinol colonic stents from approved commercial manufacturers were selected according to stricture length and colonic anatomy. Balloon dilation was not performed in any case.

All procedures were conducted under intravenous midazolam-fentanyl sedation, with a single preprocedural intravenous dose of cefazolin (1 g). Technical success was defined as accurate stent deployment fully covering the stricture with immediate expansion, whereas clinical success required a resolution of obstructive symptoms and restoration of bowel function within 48 hours of placement. All stent-related adverse events, including perforation, migration, re-obstruction, and procedure-related pain, were recorded.

Surgical Procedure

Following clinical stabilization, patients underwent restaging and optimization before elective surgery. Colectomy was scheduled after a median interval of approximately 10 days, depending on clinical response. Laparoscopic resections followed a standardized oncologic protocol, which included the high ligation of relevant vascular pedicles, complete mesocolic excision, and routine splenic flexure mobilization for left-sided tumors. Anastomosis was performed using intracorporeal or extracorporeal techniques at the attending surgeon's discretion.

Indocyanine green fluorescence angiography was selectively used to assess anastomotic perfusion. Conversion to open surgery was recorded whenever laparotomy was required due to a technical difficulty or intraoperative instability. Diverting stoma creation was based on predefined institutional criteria, including high-risk anastomosis, questionable perfusion, and substantial local inflammation.

Perioperative and Postoperative Care

Perioperative management followed a standardized ERAS protocol. Preoperative measures included carbohydrate loading, venous thromboembolism prophylaxis, and antibiotic prophylaxis. Intraoperative care emphasized goal-directed fluid therapy, normothermia, and opioid-sparing analgesia. Postoperatively, early mobilization, early oral intake, and multimodal pain control were encouraged. Institutional ERAS adherence during the study period was approximately 80%.

Postoperative complications were graded according to the Clavien-Dindo classification system, and anastomotic leakage was defined based on International Study Group of Rectal Cancer criteria. Thirty-day morbidity, readmission, and mortality were systematically recorded.

Pathological Assessment

Resected specimens were examined according to standardized colorectal cancer pathology protocols. Evaluation included an assessment of mesocolic plane quality, lymphovascular and perineural invasion, and tumor budding; the inking of resection margins; and lymph node harvest, with a target of at least 12 nodes. Pathologic staging was performed according to American Joint Committee on Cancer Tumor, Node, Metastasis, 8th edition, classification.

Follow-Up and Outcome Definitions

Patients were followed every 3 months for the first 2 years, every 6 months until the 5-year timepoint, and annually thereafter. Surveillance included clinical examination, serum carcinoembryonic antigen measurement, and a contrast-enhanced thoracoabdominal CT in accordance with National Comprehensive Cancer Network and Japanese Society for Cancer of the Colon and Rectum guidelines. Recurrence was defined as a radiologically confirmed local or distant relapse validated by a multidisciplinary review.

Although the study period began in 2013, the implementation only after 2018 of a fully standardized electronic documentation protocol for long-term oncologic follow-up accounts for the maximum observed follow-up duration of 44 months seen in the current dataset.

Statistical Analysis

Statistical analyses were performed using SPSS for Windows, version 28.0 (IBM Corp., Armonk, NY, USA). Continuous variables were tested for normality using the Shapiro-Wilk test and reported as mean ± standard deviation or median [interquartile range (IQR)], as appropriate. Categorical variables were expressed as frequencies and percentages.

The primary endpoint analyzed was overall survival (OS). For time-to-event analyses, OS was calculated from the date of SEMS placement in the mITT cohort and from the date of colectomy in the per-protocol cohort. Secondary endpoints included disease-free survival (DFS), metastasis-free survival (MFS), perioperative outcomes, and pathological results.

Survival curves were generated using the Kaplan-Meier method with log-rank testing, and numbers at risk were

displayed. Variables with p<0.10 in univariate analyses were entered into multivariable Cox proportional hazards models after a verification of proportional hazards assumptions using Martingale residuals. Sensitivity analyses comparing the two cohorts were performed to assess robustness. A competing risks framework was considered but deemed unnecessary owing to the low incidence of death without recurrence.

Results

Study Population and Flow

Of the 102 consecutive patients initially managed with SEMS placement as a BTS strategy, 95 experienced successful SEMS placement and subsequently underwent elective surgery with curative intent. Seven patients experienced SEMS failure or required urgent surgery but were retained in the primary (mITT) analysis as outcomes of the BTS strategy. The distribution of postoperative complications and oncologic events is illustrated in Figures 1-3. Patient inclusion, SEMS placement outcomes, and analytic cohorts are summarized in the study flow diagram.

Patients who experienced SEMS failure or required urgent surgery were followed for OS from the date of SEMS placement and censored at last follow-up or death, in accordance with the mITT framework.

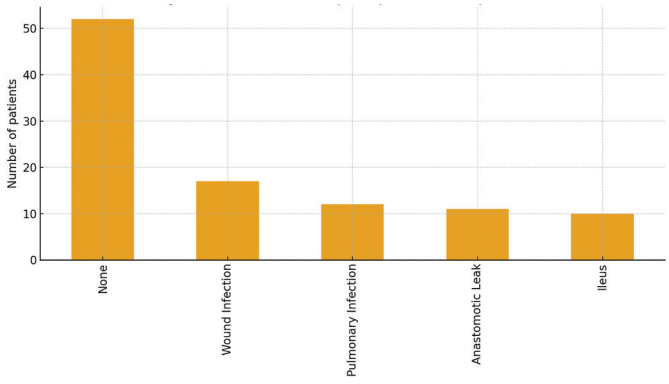

Figure 1. Distribution of postoperative complications after self-expandable metallic stent implantation as a bridge to surgery (n=95)

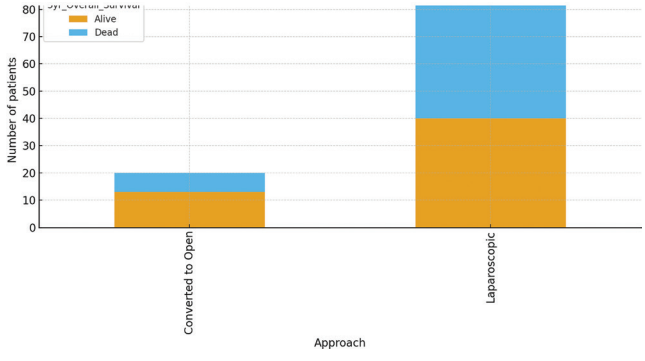

Figure 2. Overall survival by surgical approach following self-expandable metallic stent implantation as a bridge to surgery

Baseline Characteristics

Baseline demographic and clinical characteristics of the per-protocol cohort are summarized in Table 1-2. The mean age in the per-protocol cohort was 62.1±13.9 years, and most patients in this cohort were male. American Society of Anesthesiologists classifications reflected a population with moderate perioperative risk, and tumor locations were distributed across the right, transverse, left, and sigmoid colonic segments.

All patients in the per-protocol cohort underwent technically successful SEMS placement. The mean interval between stent insertion and definitive surgery was 10±3 days, which was consistent with the predefined BTS protocol. The most frequently used stent types were WallFlex and Niti-S. No stent-related perforation was observed in this cohort.

Primary Endpoint: OS

The primary endpoint of this study was OS. In the mITT cohort, OS was calculated from the date of SEMS placement, whereas in the per-protocol cohort, OS was calculated from the date of colectomy. Overall survival according to surgical approach is presented in Figure 2. Using a reverse-Kaplan-Meier methodology, the median follow-up duration was calculated to be 31.8 months (IQR: 17.2-44.3). During follow-up, 7 deaths were recorded. The estimated 3-year OS rate in the mITT cohort was 76%, as shown in Figure 4A.

When stratified by operative approach, OS estimates were within the range reported in contemporary series, with no statistically significant difference between patients who underwent a laparoscopic colectomy and those who required a conversion to open surgery [Figure 4B; hazard ratio (HR)]: 1.12, 95% CI: 0.68-1.84; p=0.64).

OS estimates in the mITT cohort (n=102) were similar in magnitude to those observed in the per-protocol cohort (n=95). Sensitivity analyses that included SEMS failures and patients who required emergency surgery did not materially alter OS estimates (HR: 1.08, 95% CI: 0.66-1.77; p=0.72). Detailed results are provided in Supplementary Table.

Table 1. Baseline characteristics of study population (n=95)

Variable	Value
Age (y)	62.1±13.9
Sex (M/F)	63/32
ASA classification I/II/III/IV	2/33/41/19
Tumor location	Right colon: 28 (29.4%), transverse: 14 (14.7%), left colon: 28 (29.4%), sigmoid: 25 (26.3%)

ASA: American Society of Anesthesiologists

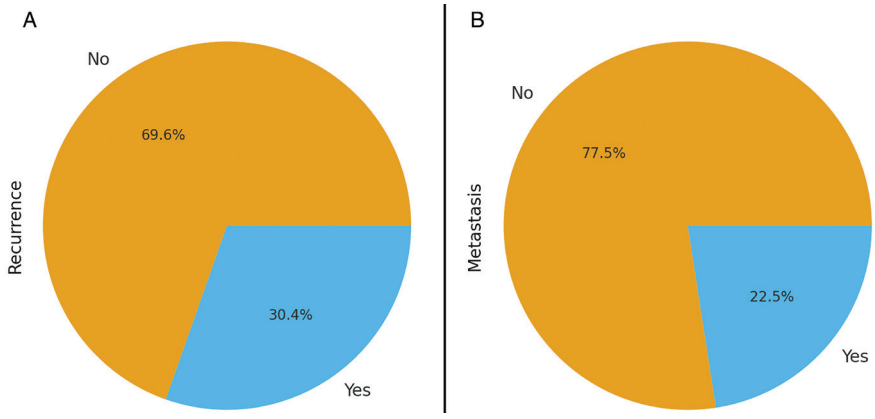

Figure 3. A) Recurrence patterns following self-expandable metallic stent implantation as a bridge to surgery, B) distant metastasis following self-expandable metallic stent implantation as a bridge to surgery

Secondary Endpoints

DFS

The estimated 3-year DFS rate was 68%, corresponding to 27 recurrence events (28.4%) during follow-up. The Kaplan-Meier curve for DFS, with accompanying number-at-risk tables, is shown in Figure 5A. Operative approach was not significantly associated with DFS (HR: 1.15, 95% CI: 0.71-1.89; p=0.58), and sensitivity analysis incorporating SEMS failures yielded comparable results.

MFS

MFS demonstrated a gradual decline over time, with an estimated 3-year MFS rate of 79%, based on 20 distant metastasis events (21%). The corresponding Kaplan-Meier curve is presented in Figure 5B, and the distribution of recurrence and metastasis patterns is summarized in Figure 3A and B. No statistically significant association between operative approach and MFS was observed.

Operative and Pathological Outcomes

Operative outcomes are summarized in Table 3. Laparoscopic colectomy was completed in 84.2% of patients, whereas 15.8% required a conversion to open surgery. Pathologic findings demonstrating adequate lymphadenectomy counts and high R0 resection rates consistent with accepted oncologic benchmarks are presented in Table 4.

Postoperative Morbidity and Adverse Events

Postoperative morbidity is illustrated in Figure 1. Anastomotic leakage occurred infrequently and without an apparent difference between surgical approaches. Major complications were uncommon, and no deaths occurred within 30 days of surgery.

Discussion

The primary endpoint of this study was OS following SEMS placement as a BTS. In the present cohort, the estimated 3-year OS rate was 76%, and survival estimates appeared

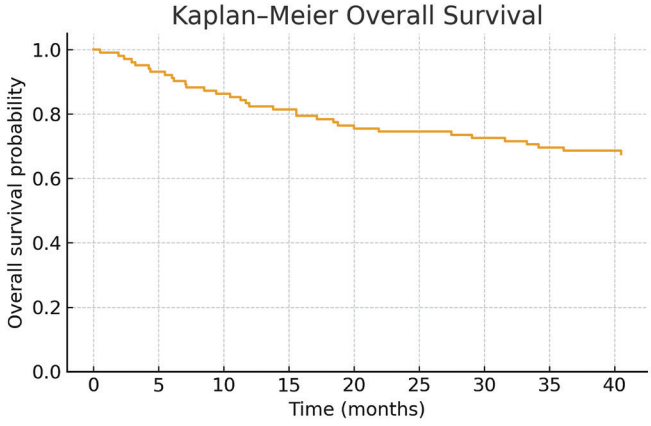

Figure 4A. Kaplan-Meier overall survival curve after self-expandable metallic stent implantation as a bridge to surgery

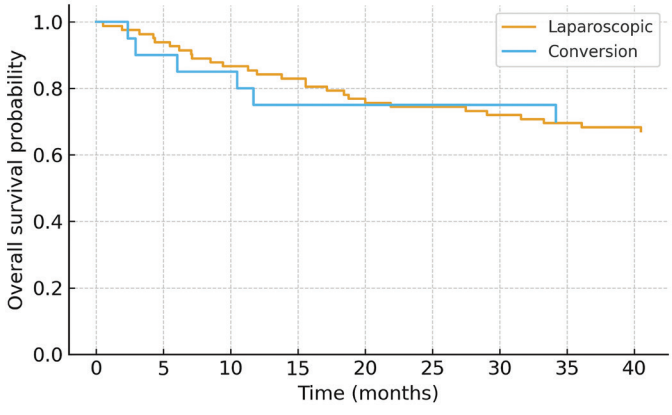

Figure 4B. Kaplan-Meier overall survival, stratified by operative approach

comparable between patients who underwent laparoscopic surgery and those who required a conversion to open surgery. Within the limitations of a retrospective design, these findings suggest that long-term survival outcomes observed after SEMS implantation as a BTS fall within ranges reported in contemporary series. Similar survival patterns have been described in several observational cohorts evaluating this BTS strategy,[11-15] although randomized trials and meta-analyses have reported more heterogeneous results, particularly in settings with higher perforation rates.[16-19]

DFS and MFS curves demonstrated recurrence and distant metastasis patterns broadly consistent with those reported for resectable stage II-III colon cancers. Although approximately one-third of patients experienced a recurrence during follow-up, this proportion is comparable to rates described in previous studies assessing decompression-first strategies.[20-22] Importantly, the present analysis does not aim to establish an oncologic equivalence between SEMS implantation and emergency surgery. Experimental and clinical concerns regarding stent-related microperforation, subclinical transmural injury, and potential tumor dissemination have been described in pathological and imaging-based studies.[23-25] Although such adverse oncologic effects were not observed in this cohort, the limited number of events and absence of a control group in the present study preclude definitive conclusions.

Perioperative outcomes were generally favorable, with high rates of laparoscopic completion and an acceptable morbidity—findings that are in line with reports from high-volume centers and that highlight the improved feasibility of minimally invasive surgery following decompression with SEMS.[26,27] The absence of stent-related perforation in this series warrants cautious interpretation and should not be regarded as evidence of universal safety. Perforation has consistently been identified as a key adverse prognostic factor associated with early recurrence and reduced survival,[16,17,24] and reported rates vary considerably across institutions. These observations underscore the importance of operator experience, stent

Table 2. Treatment characteristics

Variable	Value
Neoadjuvant therapy	0%
Adjuvant therapy	62%
Stoma creation	9%
Interval between stent and surgery (days)	10±3
Stent brand/type	WallFlex, Niti-S
Perforation	0

Table 3. Perioperative outcomes

Variable	Value
Laparoscopic completion	84.2%
Conversion to open surgery	15.8%
Operative time (min)	148±32
Intraoperative complications	4.2%
Length of hospital stay (days)	6 (IQR: 4-8)

IQR: Interquartile range

Table 4. Oncologic outcomes

Variable	Value
R0 resection	93.7%
Lymph nodes retrieved	21 (IQR: 17-29)
Recurrence rate	28.4%
Metastasis rate	21.0%
3-year overall survival rate	76%
3-year disease-free survival rate	68%

IQR: Interquartile range

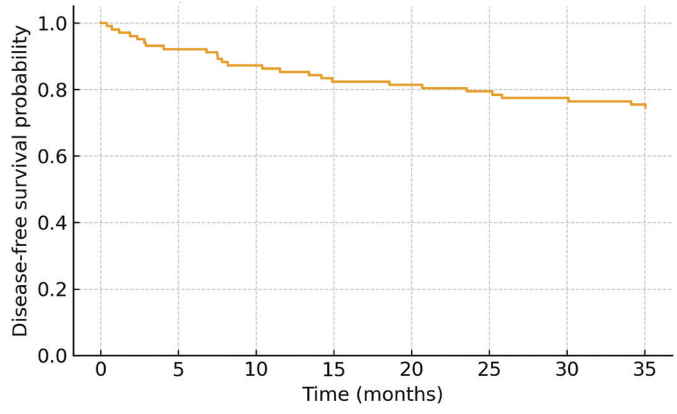

Figure 5A. Kaplan-Meier disease-free survival following self-expandable metallic stent implantation as a bridge to surgery

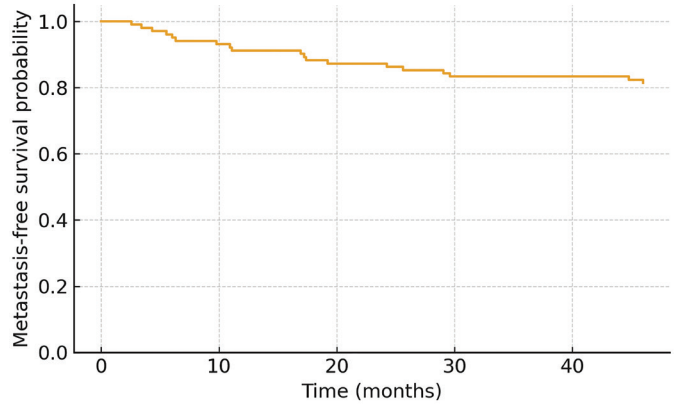

Figure 5B. Kaplan-Meier metastasis-free survival following self-expandable metallic stent implantation as a bridge to surgery

selection, and careful patient selection when implementing a BTS strategy.

Several methodological limitations should be considered when interpreting the present results. The retrospective design of this study introduces the potential for selection bias, as eligibility for SEMS implantation as a BTS strategy depends on clinical stability, tumor characteristics, endoscopist availability, and institutional practice patterns. Information bias may also arise from the incomplete capture of postoperative complications and oncologic events managed at outside institutions. In addition, residual confounding related to tumor biology, perioperative optimization, adjuvant treatment strategies, and surgeon experience cannot be fully accounted for in an observational framework. The relatively small number of survival events further limits the study's statistical power and increases the risk of a type-II error. Accordingly, these findings should be interpreted with caution.

Several sources of bias inherent to the study design should be explicitly acknowledged. Selection bias is possible, as candidacy for SEMS placement was determined by clinical stability, tumor characteristics, and institutional expertise, potentially favoring patients with more favorable baseline profiles. In addition, the interval between stent placement and elective surgery introduces the possibility of immortal time bias, as patients must survive and remain clinically stable during this period to undergo definitive resection.

The prolonged inclusion period, spanning from 2013 to 2023, raises a concern about calendar period bias, as advancements in perioperative care, imaging, stent technology, surgical techniques, and systemic therapies may have influenced outcomes over time. Furthermore, the evolution of surgeon experience during the study period may have contributed to improved technical performance and perioperative outcomes in later years. Finally, despite multivariable adjustment, residual confounding related to unmeasured factors—such as tumor biology, frailty, and nuances of adjuvant treatment—cannot be fully excluded in a retrospective observational framework. These sources of bias should be considered when interpreting these results.

A further methodological consideration relates to the application of an intention-to-treat framework in a retrospective BTS cohort. Although an mITT approach was adopted, patients who experienced SEMS failure represent a clinically distinct subgroup with different perioperative trajectories. Nevertheless, sensitivity analyses incorporating SEMS failures and urgent surgeries did not materially alter survival estimates, suggesting an internal consistency within the observed results. In the absence of a control group and a fully randomized intention-to-treat design, these findings should be regarded as hypothesis-generating rather than confirmatory.

Survival analyses in BTS cohorts are inherently prone to immortal time biases related to the interval between decompression and definitive surgery. To mitigate this issue, OS in the mITT analysis was calculated from the date of SEMS placement rather than the date of colectomy.

Nevertheless, residual bias cannot be fully excluded in a retrospective design, and these findings should be interpreted as hypothesis-generating.

Despite these limitations, this study offers clinically relevant insights. In experienced centers with established endoscopic and surgical expertise, SEMS placement may facilitate a controlled transition from acute obstruction to elective oncologic resection, enabling physiologic optimization, the completion of staging, and high rates of minimally invasive surgery. Though these potential advantages may contribute to favorable perioperative recovery, the oncologic neutrality of SEMS implantation cannot be assumed and should be evaluated on an individual basis. Future prospective studies with standardized reporting of stent-related events, a uniform pathological assessment, an incorporation of molecular tumor characteristics, and long-term follow-up are required to better define the role of SEMS implantation as a BTS strategy in contemporary colorectal cancer management.

Ethics

Ethics Committee Approval: This study followed the Declaration of Helsinki in principle, and all patient data were treated strictly according to the rules of privacy in the institutions involved. Ethical approval was obtained from Scientific Research Ethics Committee of Erzurum Faculty of Medicine with decision no: BAEK 2025/03-159, date: 11.03.2025.

Informed Consent: Retrospective study.

Footnotes

Authorship Contributions

Surgical and Medical Practices: D.Ö., M.T., Concept: D.Ö., M.T., Design: D.Ö., M.T., Data Collection or Processing: D.Ö., M.T., Analysis or Interpretation: D.Ö., M.T., Literature Search: D.Ö., M.T., Writing: D.Ö., M.T.

Conflict of Interest: The authors report there are no competing interests to declare.

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Supplementary Table: https://d2v96fxpocvxx.cloudfront.net/688d2d00-d207-464d-89b6-73f393f4f50c/content-images/46085f53-14c4-45e0-80e8-014a20f9957b.pdf

REFERENCES

1. Demarest K, Lavu H, Collins E, Batra V. Comprehensive diagnosis and management of malignant bowel obstruction: a review. J Pain Palliat Care Pharmacother. 2023;37:91-105.
2. van Hooft JE, Veld JV, Arnold D, Beets-Tan RGH, Everett S, Götz M, van Halsema EE, Hill J, Manes G, Meisner S, Rodrigues-Pinto E, Sabbagh C, Vandervoort J, Tanis PJ, Vanbiervliet G, Arezzo A. Self-expandable metal stents for obstructing colonic and extracolonic cancer: European Society of Gastrointestinal Endoscopy (ESGE) Guideline - Update 2020. Endoscopy. 2020;52:389-407.
3. McHugh FT, Ryan ÉJ, Ryan OK, Tan J, Boland PA, Whelan MC, Kelly ME, McNamara D, Neary PC, O'Riordan JM, Kavanagh DO. Management strategies for malignant left-sided colonic obstruction: a systematic review and network meta-analysis of randomized controlled trials and propensity score matching studies. Dis Colon Rectum. 2024;67:878-894.
4. Murakami T, Isayama H, Ikeda S, Hanabata N, Enomoto T, Kuwai T, Ushigome M, Ebi M, Ohtsuka H, Endo S, Saito S, Ohki T, Yamamoto R, Kayahara T, Matsumoto S, Sasaki Y, Saida Y. A new self-expandable metallic stent with low axial force and a high axial force zero-border shows a very low perforation rate in malignant colorectal obstruction: a Japanese multicenter prospective study. J Clin Med. 2024;13:5102.
5. Arezzo A, Forcignanò E, Bonino MA, Balagué C, Targarona E, Borghi F, Giraudo G, Ghezzo L, Passera R, Morino M; collaborative ESCO study group. Long-term oncologic results after stenting as a bridge to surgery versus emergency surgery for malignant left-sided colonic obstruction: a multicenter randomized controlled trial (ESCO Trial). Ann Surg. 2020;272:703-708.
6. Suzuki H, Tsujinaka S, Sato Y, Miura T, Shibata C. Oncologic impact of colonic stents for obstructive left-sided colon cancer. World J Clin Oncol. 2023;14:1-12.
7. Park S, Lee JY, Hong SW, Hwang SW, Park SH, Yang DH, Ye BD, Myung SJ, Yang SK, Byeon JS. Influence of endoscopists' expertise level on clinical outcomes after bridge-to-surgery stenting in obstructive colorectal cancer. J Gastroenterol Hepatol. 2023;38:2152-2159.
8. Tao Y, Li GB, Zhang HY, Cao K, Wang ZJ, Han JG. Current practice for the treatment of obstructive left-sided colon cancer in China: a nationwide cross-sectional survey. Surg Today. 2023;53:459-469.
9. Ma W, Zhang JC, Luo K, Wang L, Zhang C, Cai B, Jiang H. Self-expanding metal stents versus decompression tubes as a bridge to surgery for patients with obstruction caused by colorectal cancer: a systematic review and meta-analysis. World J Emerg Surg. 2023;18:46.
10. Kanaka S, Yamada T, Matsuda A, Uehara K, Shinji S, Yokoyama Y, Takahashi G, Iwai T, Takeda K, Kuriyama S, Miyasaka T, Yoshida H. Short-term and three-year long-term outcomes of laparoscopic surgery versus open surgery for obstructive colorectal cancer following self-expandable metallic stent placement: a meta-analysis. Surg Endosc. 2024;38:5514-5527.
11. Son JT, Kim YB, Kim HO, Min C, Park Y, Lee SR, Jung KU, Kim H. Short- and long-term outcomes of subtotal/total colectomy in the management of obstructive left colon cancer. Ann Coloproctol. 2023;39:260-266.
12. Kim GH, Shin JH, Zeng CH, Park JH. Recent updates in gastrointestinal stent placement from the esophagus to the colon: a radiological perspective. Cardiovasc Intervent Radiol. 2022;45:425-437.
13. Ofluoglu CB, Aydin IC, Altuntas YE, Cetin K, Inan R, Ilhan N, Mulkut F, Kucuk HF. Impact of pelvic floor muscle training on sphincter function and quality-of-life in patients who underwent low anterior resection: a comparative evaluation. North Clin Istanb. 2024;11:336-342.
14. Cirocchi R, Arezzo A, Sapienza P, Crocetti D, Cavaliere D, Solaini L, Ercolani G, Sterpetti AV, Mingoli A, Fiori E. Current status of the self-expandable metal stent as a bridge to surgery versus emergency surgery in colorectal cancer: results from an updated systematic review and meta-analysis of the literature. Medicina (Kaunas). 2021;57:268.
15. Kim DH, Lee HH. Colon stenting as a bridge to surgery in obstructive colorectal cancer management. Clin Endosc. 2024;57:424-433.
16. Cardoso PM, Rodrigues-Pinto E. Self-expandable metal stents for obstructing colon cancer and extracolonic cancer: a review of latest evidence. Cancers. 2024;17:87.
17. Huang Y, Liao F, Chen H, Shu X. ASO author reflections: self-expanding metal stents for right-sided colonic cancer obstruction. Ann Surg Oncol. 2024;31:3242-3243.
18. Ali FS, Gandam MR, Hussain MR, Mualla N, Khuwaja S, Sundararajan N, Siddiqui SI, Naqvi S, DaVee RT, Thosani N. Self-expanding metal stents for the treatment of malignant colon obstruction from extra-colonic malignancy versus intra-colonic malignancy: a systematic review and meta-analysis. Surg Endosc. 2023;37:4179-4192.
19. Khoo MSQ, Koh FH, Sivarajah SS, Ho LM, Aw DK, Chong CX, Foo FJ, Tan WJ. Colonic stenting: is the bridge to surgery worth its cost? A cost-effectiveness analysis at a single Asian institution. Ann Coloproctol. 2024;40:555-563
20. Khomvilai S, Pattarajierapan S. Comparison of long-term outcomes of colonic stenting as a "bridge to surgery" and emergency surgery in patients with left-sided malignant colonic obstruction. Ann Coloproctol. 2023;39:17-26.
21. Sun Q, Zhang X, You J, Pang Y, Luo Z, Liu Y, Chen Y, Sun Y, Zhuang Z, Li Z, Yu A, Yao T, He M, Liu X, Zhang Y, Xiong Y, Ren Y, Xie J. Comparative effectiveness of colonic stenting alone and with neoadjuvant chemotherapy for patients with left-sided obstructive colon cancer: a meta-analysis. Int J Surg. 2025;111:7168-7180.
22. Kossenas K, Kouzeiha RA, Moutzouri O, Georgopoulos F. Impact of laparoscopic and open surgery on stoma formation and postoperative outcomes in elderly patients with obstructive colorectal cancer following self-expandable metallic stent placement: a systematic review and meta-analysis. Updates Surg. 2025;77:963-973.
23. Russo S, Conigliaro R, Coppini F, Dell'Aquila E, Grande G, Pigò F, Mangiafico S, Lupo M, Marocchi M, Bertani H, Cocca S. Acute left-sided malignant colonic obstruction: Is there a role for endoscopic stenting? World J Clin Oncol. 2023;14:190-197.
24. Shiraishi T, Tominaga T, Nonaka T, Takamura Y, Oishi K, Hashimoto S, Noda K, Ono R, Hisanaga M, Fukuda A, Moriyama M, Uchida F, Motoyama K, Kunizaki M, Matsumoto K. Impact of the log odds of positive lymph nodes on the prognosis in pathological stage 3 patients with obstructive colorectal cancer treated with colonic stents: a retrospective multicenter study in Japan. Surg Today. 2025;55:1552-1561.
25. Delgado-Plasencia L, Boluda-Aparicio A, Marrero-Marrero P, Salido-Ruíz E, Torres-Monzón E, Peñalver-Alcaraz C, Phillbrick C, Jiménez-Sosa A. Impact of self-expandable metallic prosthesis on lymph node dissemination in obstructive left-sided colorectal cancer. Surg Endosc. 2025;39:3224-3235.
26. Mäder M, Kalt F, Schneider M, Kron P, Ramser M, Lopez-Lopez V, Biondo S, Faucheron JL, Yoshiyuki S, von der Groeben M, Novak A, Teufelberger G, Lehmann K, Eshmuminov D. Self-expandable metallic stent as bridge to surgery vs. emergency resection in obstructive right-sided colon cancer: a systematic review and meta-analysis. Langenbecks Arch Surg. 2023;408:265.
27. Neri B, Citterio N, Schiavone SC, Biasutto D, Rea R, Martino M, Di Matteo FM. Malignant bowel occlusion: an update on current available treatments. Cancers (Basel). 2025;17:1522.