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Comparison between metallic stent and transanal decompression tube for malignant large-bowel obstruction

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ABSTRACT

Background: The short-term safety and efficacy of a self-expandable metallic colonic stent (SEMS) insertion followed by elective surgery, “bridge to surgery (BTS)”, for malignant large-bowel obstruction (MLBO) have been well described comparing with emergency surgery. The aim of this study was to compare short-term outcomes of endoscopic decompression using a SEMS versus a transanal decompression tube (TDT).

Materials and methods: From January 2005 to November 2014, a total of 101 patients with MLBO underwent surgery at our single institution were retrospectively identified. Among them, 73 patients who underwent preoperative complete insertion of a decompression device (TDT, $n = 45$; SEMS, $n = 28$) were finally included in this study. Six patients with incomplete insertion of a decompression device (TDT, $n = 5$; SEMS, $n = 1$) were also excluded. The primary endpoints of this study were the postoperative morbidity and mortality rates. The secondary endpoints were decompression-related outcomes. Additionally, propensity score matched (PSM) analysis was conducted in short-term outcomes between the groups.

Results: The SEMS group had significantly higher proportion of right-sided tumor and bigger tumor size compared with those of the TDT group. The SEMS group had a significantly higher proportion of patients who underwent laparoscopic surgery, and consequently, a longer surgical duration than did the TDT group. Higher rates of insertion failure and perforation were recognized in the TDT group than in the SEMS group (10.0% versus 3.6% and 8.9% versus 0.0%, respectively), although these differences were not statistically significant ($P = 0.406$ and 0.291 , respectively). The two groups showed similar occurrences of anastomotic leakage, bowel obstruction, overall complications, and mortality. Compared with the TDT group, the SEMS group had a significantly lower rate of surgical site infection (24.4% versus 3.6%, respectively; $P = 0.023$ and $P = 0.025$ after PSM) and a shorter length of hospital stay (median, 21 d [interquartile range, 18–29 d] versus 38 d [interquartile range,

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28-45 d], respectively; $P = 0.015$ and $P = 0.003$ after PSM). Solid food intake after decompression and preoperative temporary discharge occurred only in the SEMS group.

Conclusions: Preoperative SEMS insertion for MLBO is effective with at least equivalent short-term outcomes and superior preoperative quality of life compared with decompression using TDT.

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Introduction

A recent review reported that 7%-29% of patients with colorectal cancer present with an emergent obstruction at the time of diagnosis, which in turn accounts for 85% of colonic emergencies.¹⁻³ Historically, malignant large-bowel obstruction (MLBO) has been managed as a life-threatening operative emergency, with morbidity rates of 30%-60% and mortality rates of 7%-22%.^{2,4,5} These high morbidity and mortality rates after urgent surgery for MLBO are attributed to patients' poor general condition caused by factors such as dehydration, electrolyte imbalances, and concomitant diseases as well as by a poor intestinal condition caused by edema, dilatation, and decreased blood circulation, all of which may contribute to anastomotic failure.^{2,4} Therefore, two-stage surgery (creation of a decompressing colostomy with or without tumor resection followed by delayed anastomosis) is traditionally recommended.⁶ However, colostomy impairs patients' quality of life, and only 60% of patients who undergo Hartmann's procedure also undergo colostomy closure.⁷

Placement of a self-expandable metallic colonic stent (SEMS) is now considered a preferable alternative intervention for decompression of MLBO. A considerable number of meta-analyses have shown more favorable short-term outcomes of SEMS insertion followed by surgery (i.e., "bridge to surgery," [BTS]) than of emergency surgery alone in terms of morbidity, stoma creation, primary anastomosis, and length of postoperative hospital stay (LOS).⁸⁻¹⁰ The BTS strategy can prevent high-risk emergency surgery and may allow for elective one-stage radical surgery after full preoperative staging, screening for synchronous proximal lesions, and appropriate bowel preparation.¹¹⁻¹³

Another endoscopic decompression technique, placement of a transanal decompression tube (TDT), also helps to avoid two-stage surgery for MLBO. Although TDT is not commonly used in Western countries, preoperative decompression using TDT followed by one-stage surgery has been a principal strategy for management of MLBO in Japan.¹⁴⁻¹⁸ However, a paradigm shift toward the use of a BTS strategy involving SEMS placement, instead of TDT insertion followed by surgery, has been emerging since the establishment of insurance coverage for SEMS insertion. In contrast to the abundant evidence of the greater effectiveness of BTS than of emergency surgery for MLBO, little evidence is available on preoperative decompression using a TDT.^{19,20} The aim of this retrospective study was to compare the short-term outcomes of preoperative endoscopic decompression between SEMS and TDT insertion.

Materials and methods

Study population

From January 2005 to November 2014, a total of 1224 patients with colorectal cancer underwent surgery in the Department of Surgery of Nippon Medical School Chiba Hokusoh Hospital. Among them, a total of 101 (8.25%) patients with MLBO were retrospectively identified. MLBO was diagnosed if the patient exhibited the following characteristic symptoms and findings on admission: (1) clinical symptoms of abdominal pain, fullness, vomiting, and constipation; (2) Computed tomography scan findings of dilatation of the small and large bowel due to an obstructive colorectal tumor without intestinal perforation; and (3) endoscopic findings of an obstructive primary colorectal tumor. In our institution, preoperative decompression is generally attempted for all patients with MLBO. When the national insurance began to cover SEMS insertion for patients with MLBO in January 2012, we changed our decompression device from a TDT to a SEMS. Of the 101 patients with MLBO, six who underwent emergency surgery without any preoperative decompression and 16 who underwent elective surgery after preoperative decompression with a transanal drainage tube were excluded. Six patients with incomplete insertion of a decompression device (TDT, $n = 5$; SEMS, $n = 1$) were also excluded. Finally, 73 patients with who underwent complete device insertion (TDT, $n = 45$; SEMS, $n = 28$) were included in this study (Figure).

The patients' demographic baseline and surgical variables were retrospectively collected. All endoscopic decompression procedures and surgeries were performed by board-certified

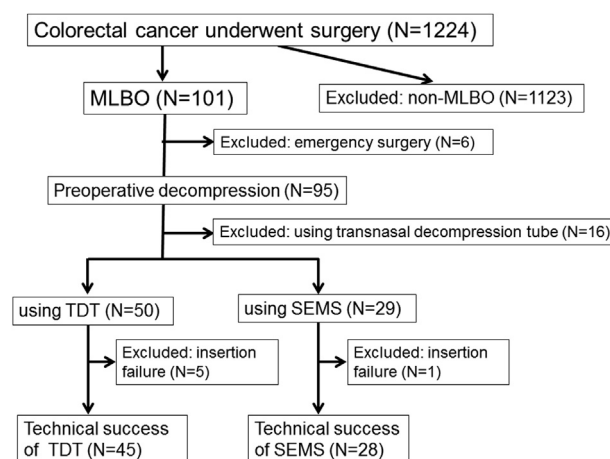


Figure – Flow diagram of patients.

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