Nursing Experience of Perioperative Intestinal Stent Placement in a Patient with Sigmoid Colon Cancer Complicated by Complete Intestinal Obstruction: A Case Report

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Date: 2023-09-27T00:00:00+00:00

Abstract

This article summarizes the nursing experience of one case of sigmoid colon cancer complicated by closed-loop complete intestinal obstruction treated with endoscopic stent placement combined with surgical therapy. Through preoperative assessment, bowel preparation, and psychological care, close postoperative monitoring of vital signs, and adjuvant treatment with characteristic traditional Chinese medicine techniques, the patient achieved good postoperative recovery without complications. For patients with sigmoid colon cancer complicated by complete intestinal obstruction, initial intestinal stent placement to relieve obstruction, followed by preoperative bowel preparation to facilitate one-stage surgery, combined with perioperative nursing interventions, effectively reduces complications, alleviates patient suffering, and yields relatively significant clinical outcomes.

Full Text

Nursing Experience of Intestinal Stent Implantation in the Perioperative Management of a Patient with Sigmoid Colon Carcinoma Complicated by Complete Intestinal Obstruction

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Abstract

This paper summarizes the nursing experience in managing a patient with sigmoid colon carcinoma presenting with closed-loop complete intestinal obstruction who underwent colonoscopic stent implantation combined with surgical treatment. Through comprehensive preoperative assessment, intestinal preparation, and psychological care, coupled with close postoperative monitoring of vital signs and adjunctive Traditional Chinese Medicine therapies, the patient achieved excellent recovery without complications. For patients with sigmoid colon carcinoma complicated by complete intestinal obstruction, initial placement of an intestinal stent to relieve obstruction followed by preoperative intestinal preparation creates favorable conditions for single-stage surgery. Integrated perioperative nursing care effectively reduces complications, alleviates patient suffering, and yields significant clinical outcomes.

Keywords: sigmoid colon carcinoma; intestinal obstruction; intestinal stent; intestinal preparation; perioperative care

Introduction

Colon cancer is a common malignant tumor with increasing incidence and mortality rates. As most colon cancers are advanced infiltrating carcinomas, left-sided colon cancer in particular often causes luminal narrowing and secondary acute intestinal obstruction. If obstruction progression is not promptly controlled, patients may develop closed-loop complete intestinal obstruction, which can lead to colonic perforation, necrosis, and septic shock, posing a serious threat to life [1-3]. The conventional treatment for left-sided colon cancer with complete intestinal obstruction has been emergency surgery combining obstruction relief with tumor resection and colostomy. This approach carries complication and mortality rates exceeding 40% and 15%, respectively [4], and requires subsequent surgery for stoma reversal, resulting in substantial trauma, high surgical risk, and significant patient distress. Temporary colonic stent placement under DSA guidance can relieve obstruction, provide favorable conditions for optimizing surgical timing, enable adequate intestinal preparation for radical surgery, and create opportunities for minimally invasive laparoscopic procedures [5-6]. This report details the nursing experience in managing a recent case in our department involving a patient with sigmoid colon carcinoma complicated by complete intestinal obstruction who underwent perioperative intestinal stent placement followed by single-stage laparoscopic radical sigmoidectomy.

Case Report

Patient Information

The patient was a 68-year-old male who developed periumbilical pain on July 11, 2023, after consuming oily and indigestible foods. The pain was characterized as distending and persistent, with intermittent colicky episodes, no radiation, ac-

companied by nausea without vomiting, and cessation of bowel movements with decreased flatus. Symptoms did not improve significantly after local massage and hot compresses. The patient sought care at a nearby hospital and experienced slight relief after oral traditional Chinese medicine, with only intermittent minimal flatus passage. However, abdominal distension and pain persisted, eventually progressing to complete cessation of flatus and bowel movements. On July 18, 2023, the patient presented to our hospital. Abdominal plain film revealed dilated bowel loops with air-fluid levels, suggesting intestinal obstruction, and the patient was admitted for systematic treatment.

Medical History

The patient had a 30-year history of hypertension (maximum 180/90 mmHg) well-controlled with amlodipine, type 2 diabetes mellitus for over 7 years well-controlled with metformin, a history of cerebral infarction requiring hospitalization 7 years prior with good recovery and no significant sequelae, and laparoscopic hernia repair for inguinal hernia 5 years prior with good recovery.

Physical Examination

Vital signs: temperature 36.3°C, pulse 97 beats/min, respiration 17 breaths/min, blood pressure 169/97 mmHg. General appearance: alert but weak spirit, dull complexion, sitting upright, voluntary position. Speech and breathing: clear voice, normal speech, shortness of breath. Tongue and pulse: red tongue with dry yellow coating, wiry and slippery pulse. The abdomen was distended with surgical scars visible at the umbilicus and bilateral lower abdomen. Abdominal tension was increased without palpable masses. Periumbilical tenderness was positive, rebound tenderness negative, no muscular rigidity. Liver and spleen were not palpable below the costal margin, Murphy' s sign negative. Percussion revealed tympanic sound, no renal percussion tenderness, shifting dullness negative. Bowel sounds were weak at 1-2 times/min, with occasional audible borborygmi and high-pitched bowel sounds, no vascular bruits.

Preliminary Diagnosis

Traditional Chinese Medicine diagnosis: Intestinal blockage (intestinal excess heat syndrome). **Western medicine diagnosis:** Intestinal obstruction; Type 2 diabetes mellitus; Hypertension grade 3, high-risk group; Old cerebral infarction.

Initial Treatment and Nursing

After admission, the patient received fasting, fluid resuscitation, and electrolyte imbalance correction, with comprehensive laboratory testing and psychological care. Tumor marker examination revealed CEA 7.61 ng/ml. As the patient had developed complete closed-loop intestinal obstruction preventing oral bowel preparation, glycerin enema was administered rectally before colonoscopy.

Endoscopic examination revealed a circumferential cauliflower-like mass 23 cm from the anal verge, friable and prone to bleeding with poor elasticity, causing complete obstruction and luminal narrowing, highly suggestive of sigmoid colon malignancy. Multiple biopsies (5 pieces) were obtained.

Temporary Intestinal Stent Placement and Surgical Treatment

The patient exhibited signs of closed-loop complete intestinal obstruction. To urgently relieve obstruction and reduce intraluminal pressure, DSA-guided colonoscopic colonic stent placement was performed on July 20 in the catheterization laboratory (see Figure 1 [Figure 1: see original paper]). Immediately post-procedure, large volumes of fecal water and masses were evacuated, with resolution of intestinal obstruction and disappearance of abdominal distension and pain. The diet was advanced to residue-free liquid diet with laxatives and oral enteral nutrition support. Abdominal and pelvic contrast-enhanced MRI confirmed sigmoid colon malignancy without significant improvement. After adequate oral bowel cleansing preparation, complete colonoscopy revealed sigmoid colon tumor with stenosis post-stenting, ileocecal valve erythema, multiple colonic diverticula, and multiple colonic polyps. Pathology from biopsy confirmed sigmoid colon adenocarcinoma. Following thorough preoperative intestinal and psychological preparation, laparoscopic-assisted radical sigmoidectomy with adhesiolysis was successfully performed under general anesthesia on July 27, 2023. Postoperative management included parenteral nutrition support, anti-infection therapy, fluid resuscitation, and adjunctive Traditional Chinese Medicine treatment to regulate qi, unblock bowels, and tonify qi to strengthen spleen and stomach function. The patient recovered well with gradual restoration of bowel function, tolerated oral intake without discomfort, and was discharged cured at 2 weeks postoperatively.

Intestinal Stent Implantation Procedure

[Figure 1: see original paper] Intestinal Stent

The patient was placed in left lateral decubitus position. After digital rectal examination and intestinal lubrication, colonoscopy was performed. In the absence of adequate bowel preparation, repeated irrigation and suction were required for gradual visualization. Examination at 23 cm revealed a circumferential cauliflower-like mass that was friable and prone to bleeding, with severe luminal narrowing preventing scope passage. A guidewire-equipped angiographic catheter was advanced to the tumor crevice; after gentle attempts, the guidewire successfully traversed the stenotic segment. Under DSA guidance, the guidewire was observed to pass smoothly through the tumor narrowing. The angiographic catheter was advanced over the guidewire and contrast injection confirmed proper positioning beyond the stenosis. The catheter was then withdrawn, and the intestinal stent was advanced over the guidewire across the tumor stenosis. Under DSA monitoring, the stent (120 mm length, 20 mm diameter) was gradually deployed, demonstrating good distal expansion. After

deployment, endoscopic visualization confirmed stent position, the outer sheath was withdrawn, and biopsy forceps were used to adjust stent position appropriately. The stent was well-fixed and successfully dilated the lumen, with immediate evacuation of large volumes of fecal water and masses, achieving obstruction relief.

Perioperative Nursing Care

Preoperative Nursing

Preoperative Assessment: Comprehensive evaluation of the patient' s general condition was performed with thorough preoperative preparation, including correction of water and electrolyte imbalances, targeted management of hypoalbuminemia and acid-base disturbances, and improvement of major organ function. Blood pressure and glucose monitoring and control were emphasized to ensure surgical safety.

Psychological Nursing: Patients with acute onset disease lack psychological preparation for pain and surgical treatment, and both patients and families experience significant anxiety. Effective communication with patients and families before surgery was conducted to understand the patient' s condition, educational background, economic status, and family situation, as well as psychological problems and needs. Patient guidance included education on the importance of optimism for disease outcomes and reasonable methods for negative emotion release, thereby improving negative emotions and enhancing rehabilitation cooperation. Psychological support and encouragement were provided according to the patient' s psychological characteristics.

Nutritional Support: Targeted nutritional support, including enteral and parenteral nutrition, was provided based on the patient' s general condition and nutritional assessment to improve nutritional status.

Intestinal Preparation: Preoperative intestinal stent placement relieved obstruction, allowing oral lactulose solution for gentle purgation with observation of abdominal signs and bowel movements. One day before surgery, polyethylene glycol electrolyte powder was administered for thorough bowel preparation. Complete intestinal cleansing prevents fecal accumulation, reduces intraoperative and postoperative distension, decreases intestinal bacterial load, minimizes surgical wound and residual fecal contamination, effectively avoids colostomy, and accelerates wound healing [7-8].

Postoperative Nursing

General Nursing: The patient was placed in a single-room monitoring ward with appropriate temperature and humidity to create a comfortable environment, minimize postoperative agitation, and reduce stress responses [9]. A semi-reclining position with 30° head elevation was maintained, with assistance for turning and back patting.

Condition Monitoring: Vital signs and mental status were closely observed, with accurate 24-hour intake and output recording. Abdominal signs, bowel movements, and flatus were monitored, with attention to bloody stools.

Pain Management: Pain assessment was performed with observation of location, characteristics, and duration. During coughing and expectoration, abdominal wound pressure was applied to prevent increased intra-abdominal pressure and wound tension that could exacerbate pain. Comfortable positioning was assisted, and relaxation techniques such as music therapy were used for distraction. Traditional Chinese Medicine therapies including intradermal needling and auricular seed embedding were administered as prescribed to reduce pain and increase comfort. Pain management facilitated early ambulation, promoted postoperative recovery, and reduced hospital stay [10].

Drainage Tube Care: High-quality maintenance of drainage effectiveness was ensured with tube squeezing every half-hour initially to prevent clot blockage. Drainage bags were positioned no higher than bed level when supine and no higher than perineal level when sitting, standing, or walking to maintain effective siphon drainage, with attention to aseptic care of connections. Drainage bags were replaced on schedule using aseptic technique to prevent retrograde infection from drainage fluid backflow. If drainage volume suddenly decreased with patient-reported abdominal distension and fever, tube blockage or dislodgement was investigated.

Gastric and Urinary Catheter Care: Gastric and urinary catheters were maintained patent with effective negative pressure suction for the gastric tube. Tubes were secured properly to prevent twisting, compression, or dislodgement. Daily oral and perineal care were provided, and patients were assisted with effective bladder function training.

Postoperative Dietary Care: Nutritional status was promptly assessed postoperatively with parenteral nutrition therapy as prescribed. Based on flatus passage, bowel sound recovery, and abdominal signs, low-fiber warm liquid diet was introduced with small, frequent meals, gradually transitioning to diabetic semi-solid diet and diabetic low-fat regular diet.

Complication Monitoring and Nursing: Common complications include intestinal perforation, post-stenting intestinal necrosis, stent migration, postoperative bleeding, anastomotic leakage, atelectasis, and pulmonary infection.
Intestinal perforation and post-stenting necrosis: Postoperative abdominal signs were closely monitored for tenderness, rebound tenderness, and abdominal wall rigidity, with attention to patient-reported abdominal pain and stool characteristics [11]. **Stent migration:** Related to inappropriate stent selection or subsequent patient management, requiring fluoroscopic evaluation and periodic colonoscopic re-examination. **Postoperative bleeding:** Heart rate and blood pressure changes were monitored with prompt physician notification of abnormalities. **Anastomotic leakage:** The most serious complication after colon cancer surgery refers to tissue incompleteness at the intestinal anastomosis

forming a leak. Causes include patient factors (diabetes, malnutrition, immunodeficiency, long-term steroid use, large tumors) and surgical factors (excessive anastomotic tension, poor blood supply). **Atelectasis and pulmonary infection:** Resulting from prolonged general anesthesia, poor respiratory function, or surgical pneumoperitoneum affecting ventilation. Emphasis was placed on early postoperative voluntary coughing, expectoration, and deep breathing exercises for respiratory rehabilitation.

With rapid upgrades in medical imaging equipment and continuous improvement in diagnostic techniques, intestinal stent placement for obstructive colon cancer demonstrates high success rates, immediate effectiveness, and minimal patient suffering. This approach not only provides palliative obstruction relief for advanced cancer patients without surgical options but also serves as a temporary preoperative bridge, converting emergency surgery to elective procedures, reducing surgical difficulty and risk, and decreasing postoperative complication rates [12].

Conventional nursing models have traditionally focused on primary disease management with insufficient attention to emotional improvement. This case demonstrates the importance of personalized perioperative nursing care, particularly for patients with sigmoid colon carcinoma complicated by complete intestinal obstruction. Perioperative nursing interventions with preoperative temporary intestinal stent placement effectively relieve obstruction and enable thorough bowel preparation, reducing patient anxiety while avoiding major traumatic surgery and minimizing adverse reactions during bowel cleansing. During postoperative recovery, enhanced nursing staff initiative with active patient communication and clear disclosure of surgical outcomes reduced psychological burden. Proactive discussion with attending physicians regarding potential complications enabled predictive nursing measures and personalized care planning [13], reducing suffering, increasing comfort, and addressing factors affecting perioperative outcomes to provide better prognostic support and improve patient satisfaction.

Patient Consent: Publication of this case report was approved by the patient' s family.

Conflict of Interest Statement: The authors declare no conflicts of interest.

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Note: Figure translations are in progress. See original paper for figures.