

Role of integrating prehabilitation with the Enhanced Recovery After Surgery (ERAS) protocol in Hartmann's procedure

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Abstract

Presentation

A seventy-year-old woman with significant comorbidities presented with a three-month history of bowel movements from her Hartmann's procedure (HP) rectal stump, which was performed years earlier, despite having a colostomy.

Diagnosis

An abdominal computed tomography (CT) scan revealed a fistula from the ileocecal region to the rectal stump.

Treatment

Due to anticipated poor surgical results from comorbidities, an endoscopic over-the-scope clip (OTSC) was applied to the ileocecal fistula. This procedure failed, necessitating a total colectomy and end ileostomy. The patient encountered complications from pre-existing conditions post-surgery and ultimately passed away from these health issues.

Discussion

HP involves significant risks, including mortality. The Enhanced Recovery After Surgery (ERAS) guidelines aim to reduce postoperative complications through a multidisciplinary approach. However, they lack measures to enhance overall functional capacity, including cardiopulmonary efficiency and muscle strengthening. Incorporating prehabilitation strategies into the ERAS protocol is crucial for improving outcomes for less fit patients.

Introduction

Hartmann's procedure (HP) is a colorectal surgery (CRS) that involves resection of the sigmoid colon and/or rectum, formation of a colostomy, and creation of a rectal stump^{3,5}. It is performed in planned situations and emergencies due to bowel obstruction or perforation from diverticulitis (21%), cancer (19%), or other factors (16%)^{3,5}.

Surgical complications include issues such as anastomosis leak (13%), bowel infections (3-10%), ileus (20%), bowel obstruction (5-13%), hernias (20%), cardiopulmonary problems (11%), haemorrhage (5%), and deep vein thrombosis (DVT) (1%), raising morbidity and mortality among CRS patients compared to other surgeries^{3,5,7}.

The ERAS guidelines (2018) are routinely followed for elective CRS patients to optimise postoperative care^{3,5}. When properly implemented, measures such as prehabilitation⁶ can significantly enhance the ERAS protocol, reducing complications and mortality in high-risk patients⁷.

Case presentation

A 70-year-old female presented after passing bowel movements through an ileocecal fistula to the Hartmann's rectal stump, which was performed twenty years ago for perforated diverticulitis. She also had a stoma re-siting due to a persistent mucocutaneous enteric fistula six years ago.

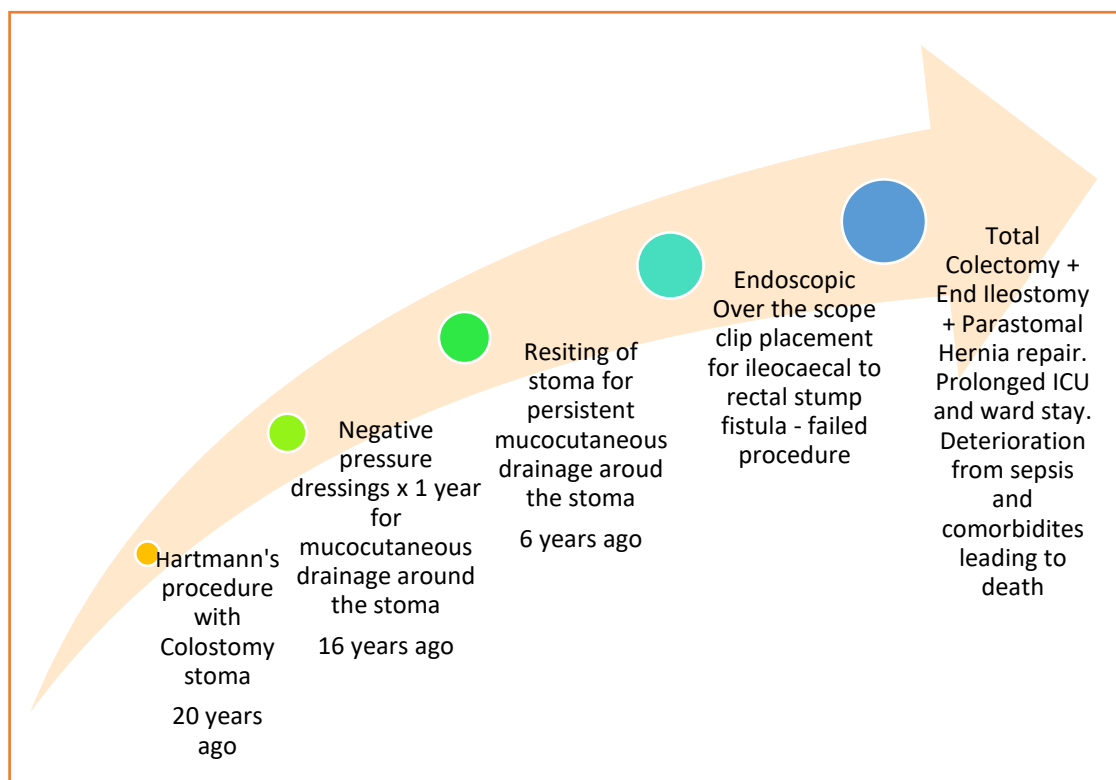


Figure 1: Patient's Surgical Journey

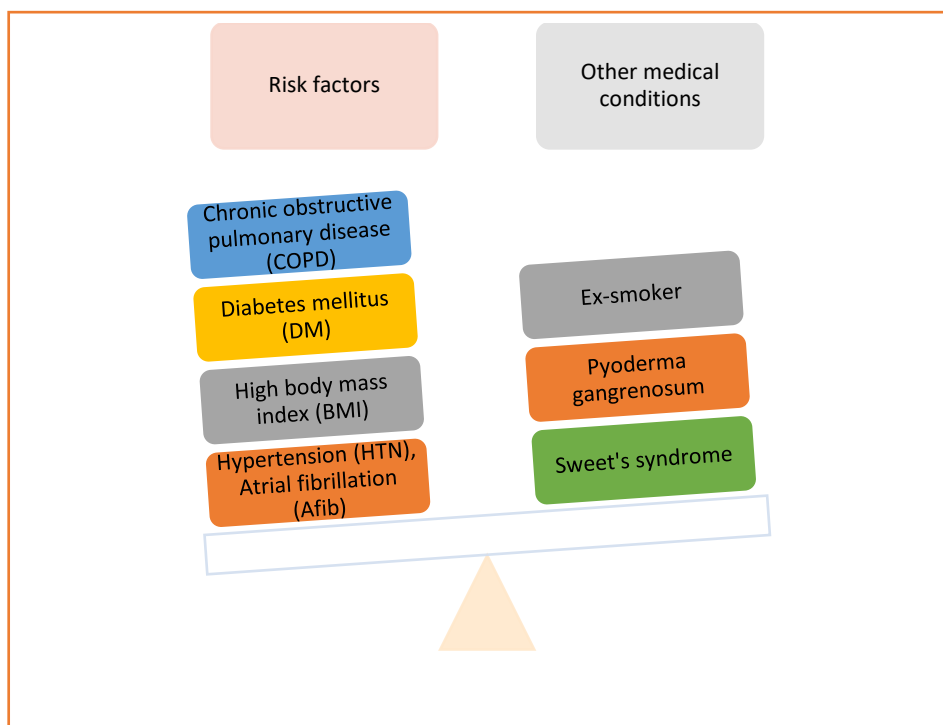


Figure 2: Patient's co-morbidities

Given the patient's comorbidities and prognosis, she was classified as high-risk for total colectomy and end ileostomy⁴. Therefore, she was managed conservatively with bowel rest, total parenteral nutrition, and octreotide injections to minimise per rectal stump secretions.

Due to the potential for surgical mortality, a multidisciplinary team (MDT) discussion led to the deployment of an endoscopic OTSC¹ over the ileocecal fistula; however, this procedure failed, consistent with studies showing OTSC often do not succeed for chronic fistulas due to inadequate grasp on fibrotic tissue, especially those larger than 12mm to 15mm in diameter¹.

Following the OTSC failure, a high-risk total colectomy with end ileostomy was performed as a final measure. Perioperatively, despite MDT input and a modified ERAS protocol⁵, she developed wound dehiscence, similar to her previous surgery, and persistent enterocutaneous discharge, even with prolonged negative pressure wound therapy. She deteriorated after an extended hospital stay and ultimately died.

Discussion

Post-operative CRS complications occur in about 30% of cases, with reoperation risk due to wound issues (20%) and anastomotic leaks (18%)^{4,5}. Other risks include infections, prolonged ileus (5%-20%), parastomal or incisional hernias (13%-20%), and wound dehiscence worsened by nausea or vomiting^{3,4,5}.

Risk factors include older age, existing health issues, male gender, BMI > 30, smoking, COPD, DM, HTN, low albumin, operation time > 2.0 hours, emergency open surgery, in-theatre blood loss over 300 ml, and DVT^{3,4,5}.

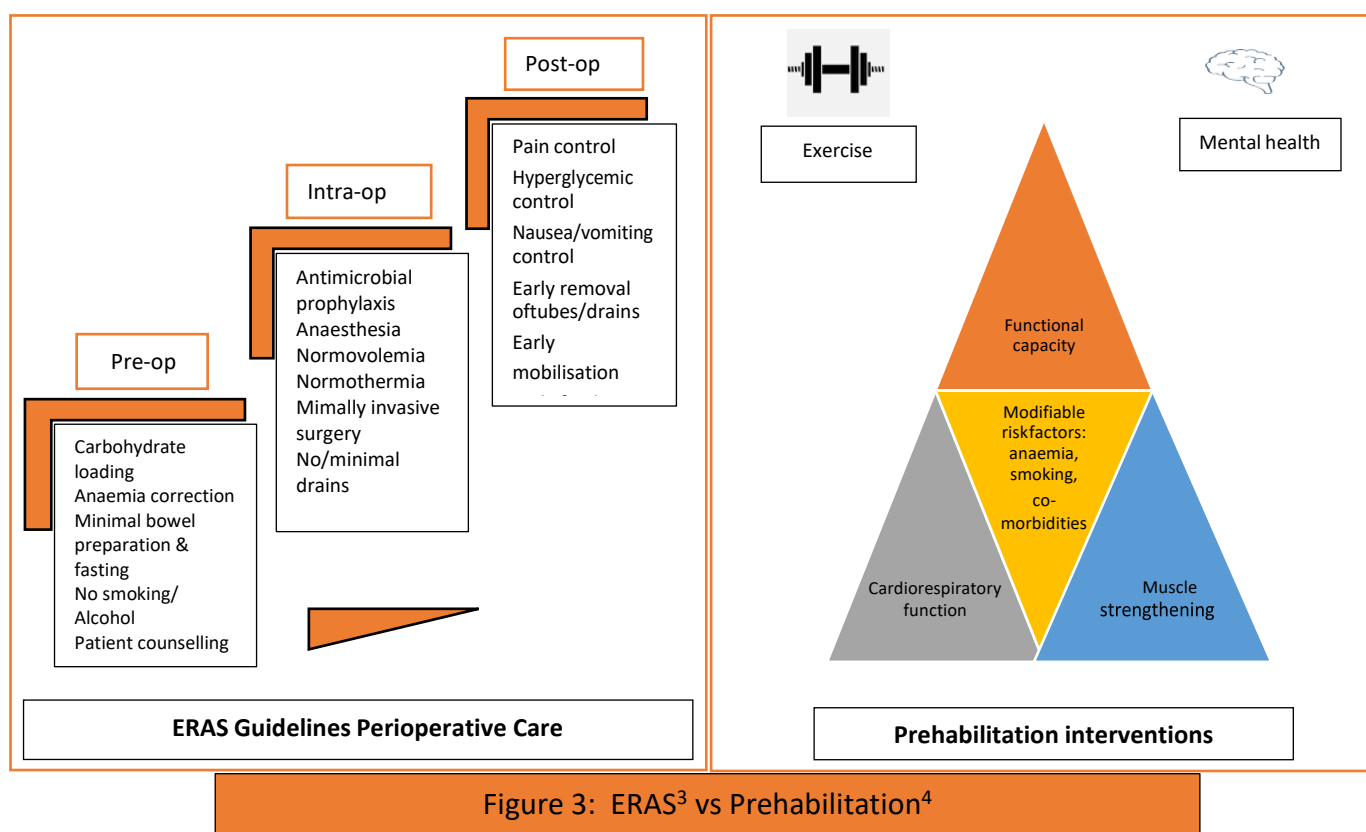


Figure 3: ERAS³ vs Prehabilitation⁴

Inspired by Henrik Kehlet's fast-track surgery, the ERAS guidelines aim to reduce morbidity and mortality rates by 40% through minimal preoperative fasting, preventing hypothermia, ensuring adequate pain management, and encouraging early diet and mobility on surgery day^{3,5}. These strategies address hyperglycemia, anaemia, nausea, and vomiting risk factors^{3,5}.

Patients undergoing CRS are typically elderly with multiple comorbidities that raise postoperative complication risks^{3,5,7}. While ERAS protocols support recovery, they do not eliminate complications in high-risk individuals, as they overlook preoperative cardiopulmonary function and muscle strength, essential for postoperative recovery⁷.

Prehabilitation seeks to enhance patients' preoperative functional reserves by targeting hyperglycaemia, anaemia, smoking, and sarcopenia⁷. This strategy enhances comprehensive care for CRS patients, emphasising mental health and physical stamina, and may reduce complications such as wound dehiscence, infections, and hernias^{5,7}.

Pre-op	Intra-op	Post -op
Sugar control	Anti-microbials	Pain control
Nutrition / carbohydrate loading	Skin preparation	Prevention of nausea and vomiting
Life style modification: - weight loss - smoking cessation - alcohol abstinence	MIS techniques Normothermia Euolemia	Early removal of drains Early mobilisation
Anaemia correction Prehabilitation: - cardiorespiratory conditioning - muscle strengthening	Optimal anaesthesia	Early return to light diet DVT prophylaxis Microbiome - limit antibiotics - probiotics

Table 1: Novel approach- ERAS³ + Prehabilitation⁴ protocol

Protocols that integrate prehabilitation and ERAS guidelines to address surgical risks and improve CRS patients' recovery must be developed to enhance future practice^{4,7}.

Declarations of Conflicts of Interests:

None declared.

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