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Case report of combined surgical oncologic and bariatric procedures

Salaam Sadi^a, Paul H. Sugarbaker^{b,*}, Timothy Shope^c^a Department of Surgery, MedStar Washington Hospital Center, Washington, DC, USA^b Center for Gastrointestinal Malignancies, MedStar Washington Hospital Center, Washington, DC, USA^c Section on Bariatric Surgery, MedStar Washington Hospital Center, Washington, DC, USA

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ABSTRACT

INTRODUCTION: Morbidly obese patients may require a laparotomy to resect a malignancy. In some patients the cancer resection can be combined with the bariatric procedure to concomitantly treat both diseases.

PRESENTATION OF CASE: A morbidly obese patient with peritoneal metastases from an appendiceal mucinous neoplasm was evaluated and definitively treated with Cytoreductive surgery and hyperthermic intraperitoneal chemotherapy (HIPEC), at the same time the patient was treated for morbid obesity with sleeve gastrectomy and removal of a previous laparoscopic adjustable gastric banding (LAGB).

DISCUSSION: The clinical features and treatments of a cancer patient who underwent a combined surgical oncologic and bariatric procedure is presented. A second-look cytoreductive surgery with hyperthermic intraperitoneal chemotherapy (HIPEC) preceded a sleeve gastrectomy. At the time of surgical exploration the prognosis from an oncologic perspective was acceptable. The near total gastric resection was performed without complications.

CONCLUSIONS: With short term follow-up, this patient's outcome was favorable suggesting that surgical oncologic and bariatric procedures can be combined. Further, clinical investigations are indicated in this common clinical setting.

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1. Introduction

Morbid obesity is an established risk factor for many types of malignancies [1]. Irrespective of the type of cancer, these patients may require surgical resection; with appropriate intervention the prognosis of these obese patients from an oncologic perspective may be favorable. However, allowing the morbid obesity to persist jeopardizes the long term well-being of the patient with regard to comorbid conditions, early mortality and quality of life. It may be possible, in carefully selected patients, to honor the best principles in oncologic surgery and in bariatric surgery at the same intervention [2,3]. One way to do this is to combine a potentially curative cancer resection with a sleeve gastrectomy. In this manuscript we present a patient managed at an academic institution who had a second-look surgery for perforated appendiceal cancer with a sleeve gastrectomy for morbid obesity. The selection factors for combined oncologic and bariatric procedures are discussed. To these authors' knowledge, this is the first report of a sleeve gastrectomy performed concomitantly with a definitive oncologic procedure. This manuscript was constructed in compli-

ance with consensus-based surgical case report guidelines (SCARE) [4]. This case report is registered as first-in-man study on the www.researchregistry.com website with UIN 4155.

2. Patient presentation

The patient is a 46 year old female who presented initially to an emergency room with an increasing right-sided abdominal pain, CT scan showed probable appendicitis and she underwent laparoscopic converted to open appendectomy and then right colectomy. Pathology revealed two lesions outside the appendix with epithelial cells within mucus. Appendix showed grade 1 adenocarcinoma pT4N0M1a. Appendix was 7 × 4 × 2 cm in size.

The patient was evaluated at our institution and thought to be a candidate for a second-look surgery plus hyperthermic intraperitoneal chemotherapy (HIPEC).

The patient has a past medical history significant for morbid obesity Body Mass Index (BMI) 52.2 kg/m² with hypertension and non-insulin dependent diabetes mellitus. Her family history was negative. Her past surgical history was significant for laparoscopic adjustable gastric banding (LAGB) 5 years before presentation and tubal ligation 18 years prior to presentation. She had initially lost 57 kg (approximately 60% excess weight loss) after LAGB, but her bariatric provider moved from the rural town and she didn't have long term follow-up. Her band had been overly inflated to the point

* Corresponding author at: MedStar Washington Hospital Center, 106 Irving St., NW, Suite 3900, Washington, DC 20010, USA.

E-mail address: Paul.Sugarbaker@medstar.net (P.H. Sugarbaker).

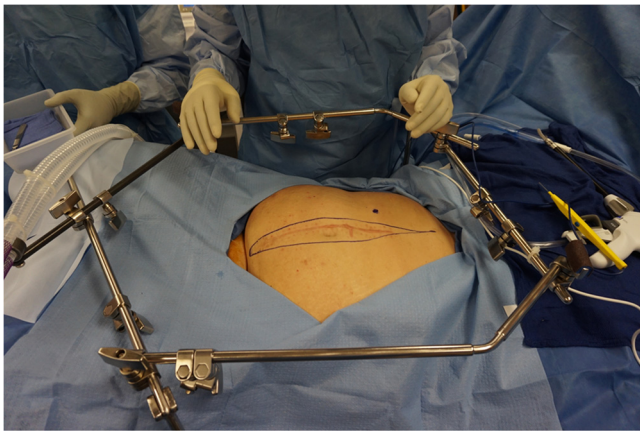


Fig. 1. A self-retaining retractor is positioned prior to making the midline abdominal incision.

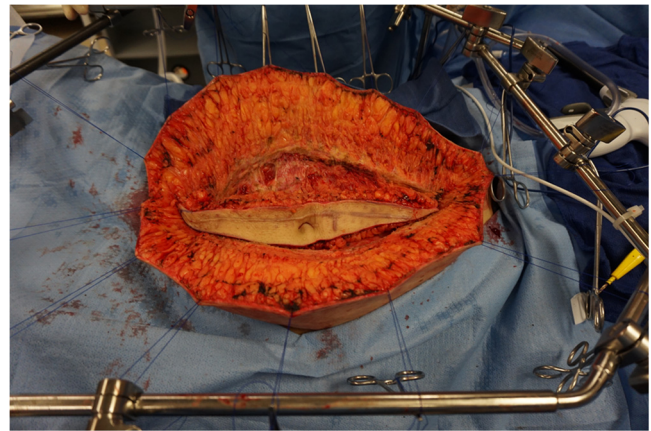


Fig. 2. Through a long midline abdominal incision with resection of the old scar and umbilicus, the abdomen was opened. Initial exposure was maintained using skin traction sutures fixed to a self-retaining retractor.

where she had developed maladaptive eating behaviors, would vomit when she tried to eat appropriate, protein dense foods and ultimately regained most of what she lost. On presentation to the office her weight was 151 kg. Current medications included lisinopril and glyburide. At the request of the surgical oncology team, the patient was evaluated by bariatric surgery team.

Upon evaluation her height was 172.7 cm, weight was 151 kg, with a BMI of 52.2 kg/m². She met NIH criteria for surgical weight loss. There was additional concern that the presence of foreign body might pose a physical barrier to HIPEC and should be removed.

Because the patient had initially done well with a purely restrictive procedure, she requested conversion to a sleeve gastrectomy, rather than a malabsorptive procedure. Because of the theoretical increased risk of creating multiple staple lines and anastomoses in a patient with known malignancy undergoing a concomitant major surgical procedure, with the use of HIPEC, and given that she had already her ileocecal valve and right colon removed, we agreed that the sleeve gastrectomy was a reasonable approach. She received appropriate, albeit expedited, pre-operative nutritional and psychological evaluation and counseling prior to surgery.

The patient was taken to surgery for cytoreductive second-look surgery with HIPEC by an experienced peritoneal surface malignancy team (Fig. 1). The procedure included exploratory laparotomy, greater omentectomy, pelvic peritonectomy, hysterectomy and bilateral salpingo-oophorectomy, and HIPEC [5]. A 1/3 dose reduction in intraperitoneal mitomycin C and doxorubicin was used.

Before cytoreductive surgery with HIPEC, the bariatric surgery team performed the removal of the gastric band and port. After HIPEC was administered, sleeve gastrectomy was performed by an experienced bariatric surgery team without incident using SEAM-GUARD (W. L. Gore & Associates, Inc., Medical Products Division Flagstaff, AZ) buttressed stapler (Ethicon Echelon Flex™ GST System) for the sleeve gastrectomy over 36 Fr. Maloney Tapered Esophageal Bougie (Teleflex Incorporated TFX, The Pilling® Brand). The combined procedure required 8 h (Figs. 2 and 3).

The patient did well postoperatively and was discharged home 5 days after surgery. There were no postoperative adverse events and her weight loss is progressing, 3 months after surgery she had lost 27 kg. Weight is 124 kg from 151 kg preoperatively and BMI is 41.5 kg/m².

from BMI 52.2 kg/m² (Approximately 32% excess weight loss three months postoperatively). Follow-up CT to assess the status of the appendiceal malignancy will be performed every 6 months for 3 years and then yearly for a total of 5 years.



Fig. 3. The sleeve gastrectomy was performed over a 36 bougie in the absence of any contamination of the operative field.

3. Discussion

3.1. Sequencing of a combined oncologic and bariatric intervention

To our knowledge, this is the first report of a surgical oncologic (second-look surgery with HIPEC) and bariatric (sleeve gastrectomy) procedures combined at a single intervention. Cancer cells seeding from the cancer resection to the operative site for the bariatric procedure is a major concern. Proper sequencing of the several steps of the intervention was necessary to achieve an optimal short-term and long-term favorable outcome. After the surgical exploration the failed gastric band and its port were removed. No cancer in the resection site of the circumferential inflatable device was seen. Following this the cytoreductive surgery was performed and all biopsies taken. After the oncologic procedures, HIPEC was used in an attempt to rid the abdomen and pelvis of any mucinous cancer cells. The HIPEC should be administered prior to the stapling of the stomach to minimize the possibility of tumor cell entrapment within the gastric staple line [6]. This prophylactic use of HIPEC to minimize tumor entrapment within a reconstruction should be a standardized part of a combined procedure in which peritoneal metastases could develop at a later time.

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