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A case of simultaneous abdominal wall reconstruction and creation of diverting ostomy in a ventral hernia with loss of domain

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ABSTRACT

INTRODUCTION: Diverting ostomies are traditionally used as a bridge to primary resection in patients with an obstructing mass, or severe inflammatory bowel disease [1]. In some cases, severe infections or non-healing wounds can be better managed after the diversion of fecal material away from the area [2]. In this case report, we discuss a patient who underwent a diverting loop colostomy placement through a ventral hernia defect with primary repair of the hernia in one procedure.

PRESENTATION OF CASE: A 67-year-old female presented with a large, stage four sacral decubitus ulcer and an incarcerated ventral hernia. She was taken to the operating room for a transverse loop diverting colostomy through a large, pre-existing ventral hernia. The ostomy site was passed through the ventral defect at the midline. The remainder of the ventral hernia was closed primarily, and the initial incision was stapled closed. At post-operative day 11, the ostomy remained functional and intact, with no hernia recurrence, and significantly improved healing of the ulcer was seen.

DISCUSSION: The large ventral hernia presented a significant obstacle during pre-operative planning. It was decided that a midline stoma was to be created simultaneously with an abdominal wall reconstruction, as any other site to bring up the ostomy would have been too far laterally.

CONCLUSION: The patient was discharged in stable condition. This case presents a novel and viable method for the creation of an ostomy in patients with large ventral hernias. Further study regarding long-term outcomes may be beneficial in establishing utility.

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1. Introduction

The rehabilitation of our patients is the common goal shared amongst physicians in every specialty. With each day we as health providers strive to improve our medical techniques to promote quicker healing in our patients with fewer complications. As such we must strive to expand and invent better methods for obtaining this common goal. Ventral hernias have become an increasingly common complication of abdominal surgery ranging from 2% to 20% with a wide range of variations from one series to another [3]. These hernias can be asymptomatic, but can also cause severe complications, such as necrosis of the small bowel. Separately, sacral ulcers are another common complication seen in hospitals. These wounds are seen with immobile or poorly perfusing patients that

can become infected and progress to cellulitis, abscess formation, and even osteomyelitis [4]. These wounds require regular dressing changes to keep the site clean but can be a big challenge for caregivers due to the ulcer's proximity to the anus where feces can easily contaminate the sacral ulcer [1,2]. Newer methods have been created to help cut down contamination and improve healing in chronic wounds. One of these modalities when wound care has failed is the use of a diverting ostomy [5]. The patient in this report was suffering from a chronic stage IV sacral decubitus ulcer which was worsening despite wound care. She was also found to have a large incarcerated ventral hernia defect. Given this finding, we approached this patient with the interest of treating the ventral hernial defect but also using the defect to create a diverting transverse loop colostomy.

The work presented in this case report has been reported in line with the SCARE criteria [6].

2. Presentation of case

A 67-year-old female admitted for medical management after the incidental discovery of leukocytosis at an out-patient lab. Gen-

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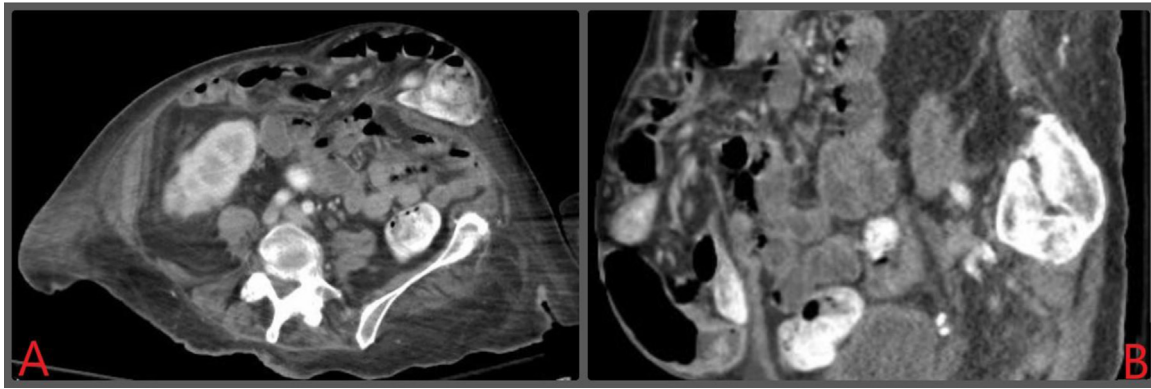


Fig. 1. A. Axial CT image of the ventral hernia defect. B. Sagittal CT image of the ventral hernia defect.

eral surgery was subsequently consulted for the evaluation of a sacral decubitus ulcer. On physical exam, the patient is bed-bound and an abdominal exam was significant for a large, midline, ventral hernia superior to the umbilicus. The sacral decubitus pressure injury was unstageable, measuring 2 × 2 cm with foul-smelling, mixed bloody and purulent material, induration, and erythema extending 4–6 cm beyond the borders of the ulcer.

The patient underwent a sharp excisional debridement of the infected ulcer, with the total area of debridement measuring 16 × 11.5 × 4.5 cm. The remaining tissue was noted to be immediately adjacent to the rectum, and during a rectal exam under anesthesia, there appeared to be communication between the ulcer and the rectum. A fecal management system (FMS) was subsequently placed to divert stool from the area temporarily and allow for wound healing.

On post debridement day four, the FMS was noted to have feculent material leaking around the system, and medical management to maintain loose stools was ineffective. Consent was obtained for a diverting colostomy to aid in the healing of the large decubitus ulcer. A computerized tomography (CT) scan of the abdomen and pelvis with intravenous (IV) contrast was performed to evaluate the ventral hernia location and plan for colostomy placement (Fig. 1). The patient subsequently underwent an exploratory laparotomy with a diverting ostomy, primary closure of the ventral hernia, and skin flap creation.

The patient was laid supine and intubated under general anesthesia. The abdomen was then prepped and draped. A midline incision was made alongside the hernia, and the hernia sac was isolated then entered. Portions of the small bowel and colon appeared to be incarcerated and therefore, were released and separated. Before proceeding with the ostomy creation, the bowel was investigated for twisting due to this manual manipulation. The ostomy site was determined to be passed through the ventral defect at the midline, rather than attempt to do so laterally and bypass the hernia. The remainder of the hernia defect was closed primarily with 0 Ethilon suture. A skin flap was excised from the remaining skin in the ventral hernia repair, and the skin closed using staples. A circular incision was made at the predetermined location, and the transverse colon was elevated to the skin surface. Stay sutures were placed along the fascial junction and the ostomy was brooked with 3–0 silk as well as chromic sutures. The patient tolerated the procedure well, was then extubated and sent to the PACU in stable condition.

A post-operation physical exam was performed at 4 h and noted moderate tenderness at the incision site with minimal blood-tinged drainage from the ostomy and no flatus noted. The stoma was pink with minimal, blood-tinged, feculent output. The midline incision was clean, dry, and intact, with no signs of infection or inflammation. The patient was followed daily during their hospital

admission and discharged on postoperative day 11 with instructions for ostomy care at a long-term assisted care center, with plans for follow up at the surgical clinic as an outpatient.

3. Discussion

In this case, we present a patient with a stage 4 sacral pressure ulcer managed with a diverting loop ostomy and ventral hernia repair in one operation. The transverse loop colostomy was created through the ventral hernial defect. Benefits of the transverse loop colostomy in terms of diverting stool away from the sacral ulcer are as follows: decrease in wound contamination/infection, allow health providers to adequately clean the wound site, as well as allow for decreased amounts of ostomy output. Although a short portion of the colon lies proximal to the transverse ostomy, an increase in water and nutrient absorption will occur, thereby reducing the risk of dehydration [7]. Many patients who underwent colostomy as an adjunct method for promoting pressure ulcer healing believed their quality of life improved as a result [8]. In this case, the patient was already bed-bound with a non-healing ulcer and so, quality of life would not be significantly decreased by the creation of an ostomy. Little to no research has been published that addressed both a ventral hernia repair and a diverting ostomy for the promotion of concurrent sacral ulcer healing. Although these conditions can be managed separately, many patients have multiple comorbidities and often require surgery. Dual surgeries, such as this one, can potentially cut down on hospital cost and post-operative complications. Further research and long-term follow-up would be the next step in establishing whether this combination is indeed a viable option, or if separate management of these conditions would be more in the patients' best interest.

Declaration of Competing Interest

The authors report no declarations of interest.

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Ethical approval

Documented on-site in the patient's chart and available upon request.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author contribution

Benjamin Yglesias, MD – Writing and Proofing.
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Brandon Zarnoth, MSIII – Writing of original draft.
Thomas Kerestes, MD – Conceptualization, Design, Guidance, Case, Proofing.

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