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A Hostile Abdomen: A Case Report

Mariana González-Villegas[1,2], Lucia Villegas-Coronado[1,2]*, Jorge Eduardo Flores-Godínez[3], María Fernanda Vega-Robles[1,2], Kimberly Oney Bojorquez-Osuna[1,2]

***Corresponding author:**
Lucia Villegas Coronado, M.D.
Guerrero y Huisaguay S/N
Colonia Bella Vista, Obregón
85130, Sonora, México
E-mail: luciavillegas1210@gmail.com

[1]General Surgery Program, Autonomous University of Sinaloa, Culiacán, Mexico
[2]Surgical Unit, General Regional Hospital No. 1, Mexican Social Security Institute Obregon, Mexico
[3]Pathology Unit, General Regional Hospital No. 1, Mexican Social Security Institute, Obregon, Mexico

Abbreviations:
CT: computed tomography;
MRI: magnetic resonance imaging;
VAC: vacuum-assisted closure.

ABSTRACT

Introduction: A hostile abdomen presents a challenging surgical scenario characterized by scarring, fibrosis, and adhesions within the abdominal cavity, complicating surgical intervention and increasing the risk of complications. This condition arises from multiple factors, including previous abdominal surgeries, trauma, or chronic inflammatory diseases.
Case report: In this case, a 24-year-old female patient initially presented with fever and abdominal discomfort, later developing severe abdominal pain and vomiting. Despite suspicion of acute abdomen, initial computed tomography showed no abnormalities, leading to exploratory laparotomy. Although no perforations were initially found, the patient's deteriorating condition prompted further investigation. Subsequent surgeries revealed perforations, dehiscence of the anastomosis, and firm adhesions, indicating a hostile abdomen. Histopathological examination confirmed moderate Crohn's disease activity. Treatment with immunomodulatory agents was initiated, but the patient's condition deteriorated, resulting in peristomal dermatitis and eventual death from a nosocomial infection six month later.
Conclusions: Managing a hostile abdomen requires comprehensive planning and collaboration among healthcare professionals to address its complexities and prevent complications. Early recognition, appropriate treatment, and ongoing research into surgical techniques are essential for improving outcomes in patients with this challenging condition.
Key words: hostile abdomen, Crohn's disease, anastomosis, surgery

INTRODUCTION

A hostile abdomen refers to a challenging surgical scenario where the abdominal cavity exhibits characteristics such as scarring, fibrosis, and adhesions, making surgical intervention difficult and risky (1). This condition arises from various factors, including multiple abdominal surgeries, severe abdominal trauma, or chronic inflammatory diseases affecting the abdominal organs. The consequences of a hostile abdomen can be significant, leading to prolonged surgical times, increased risk of complications such as inadvertent organ injury, and higher morbidity and mortality rates for patients undergoing abdominal procedures (2).

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The prevalence of a hostile abdomen varies depending on the underlying causes, but it is estimated to be relatively common in patients with a history of multiple abdominal surgeries or chronic inflammatory conditions such as Crohn's disease (3). The management of a hostile abdomen often requires a multidisciplinary approach involving surgeons, gastroenterologists, and other specialists. Treatment strategies may include meticulous surgical planning, the use of advanced surgical techniques such as adhesiolysis, and postoperative care aimed at preventing complications and promoting healing (4). Despite the challenges posed by a hostile abdomen, early recognition and appropriate management can help improve patient outcomes and reduce the risk of surgical complications.

CASE REPORT

A 24-year-old female patient with no chronic-degenerative history or previous surgical history reported onset of fever exceeding 38°C and general discomfort, prompting her to seek medical attention. Dengue was suspected, and treatment was initiated. Two days later, she developed generalized abdominal pain, myalgias, chills, and vomiting. She was sent to the emergency department, where examination revealed sensitivity to superficial and deep abdominal palpation with signs of peritoneal irritation. Laboratory tests were ordered upon admission to the emergency department: hemoglobin 10.4 g/dL, hematocrit 30.8 %, mean corpuscular volume 87.8 fL, platelets 73,000 /mm³, leukocytes 52,000 /mm³, fasting glucose 46 mg/dL, urea 151 mg/dL, creatinine 4.2 mg/dL, sodium 129 mEq/L, potassium 3 mEq/L, calcium 6.3 mg/dL, phosphorus 4.4 mg/dL, magnesium 1.6 mg/dL, total bilirubin 2.3 mg/dL, direct bilirubin 1.5 mg/dL, aspartate aminotransferase 93 U/L, alanine aminotransferase 51 U/L, albumin 2.5 g/dL, alkaline phosphatase 61 U/L, lactate dehydrogenase 345 U/L, prothrombin time 13.8 seconds, international normalized ratio 1.21, and activated partial thromboplastin time 36.6 seconds. With suspicion of acute abdomen, a computed tomography (CT) scan was requested, which did not reveal free fluid or free air in the cavity.

Since exploratory laparoscopy was not available, a decision was made to perform an exploratory laparotomy, and a systematic review found no free fluid or perforations. Due to the patient's poor general condition, she was admitted to the intensive care unit. After four days without clinical improvement, another abdominal CT scan was requested (*fig. 1*), revealing free fluid in the cavity and signs of peritoneal irritation reappeared. Therefore, she underwent a second surgical intervention where three perforations were found at 90, 110, and 130 centimeters from the Treitz angle (*fig. 2*); resection of the jejunum and end-to-end manual anastomosis using the Connell-Mayo technique were performed, and the surgical specimen was sent for pathological examination.

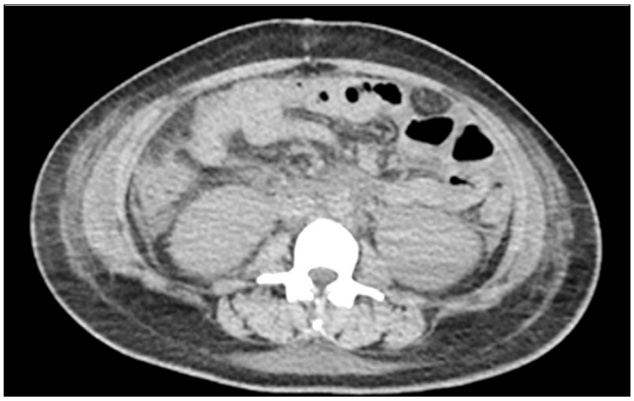

Figure 1 - Abdominal computed tomography scan

Three days after the last surgical event, intestinal discharge was observed through the surgical wound, prompting another exploratory laparotomy where dehiscence of the anastomosis at 130 centimeters from the Treitz angle, abundant intestinal fluid, and Zulckhe III adhesions were found. Thus, another end-to-end anastomosis was performed. Four days later, the patient's general condition remained poor, leading to another surgery where firm adhesions to the intestine with a contaminated cavity were found, prompting

Figure 2 - Surgical intervention where three perforations were found at 90, 110, and 130 centimeters from the Treitz angle

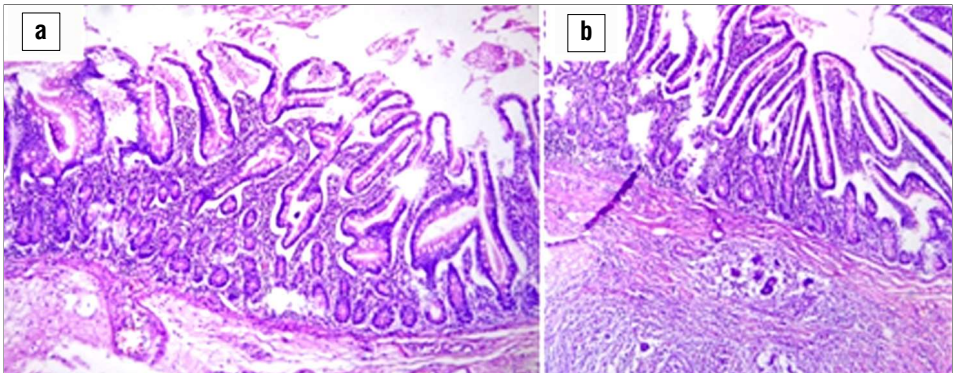

Figure 3 - The histopathological findings indicated the presence of chronic inflammation in the bowel, which was consistent with Crohn's disease showing moderate activity (a, b)

treatment as an open abdomen, with vacuum-assisted closure (VAC) therapy along with enteric fistula and jejunostomy. Here, the case was treated as hostile abdomen as the patient's condition deteriorated, leading to the development of complications such as anastomotic dehiscence and firm adhesions.

Histopathological results revealed chronic inflammatory bowel disease consistent with Crohn's disease with moderate activity (*fig. 3*). Treatment was initiated with adalimumab, prednisone, and azathioprine every 15 days. After a few days, the patient developed peristomal dermatitis, so a Rivera condom was placed due to the patient's torpid evolution and nutritional status (*fig. 4*). Unfortunately, the patient died six months later due to a nosocomial infection.

DISCUSSION

The case presented illustrates the challenges and complexities associated with managing a hostile abdomen, a condition characterized by extensive scarring, fibrosis, and adhesions within the abdominal cavity. The patient, a young female with no prior surgical history, initially presented with symptoms suggestive of a systemic illness, which later progressed to severe abdominal pain and signs of peritoneal irritation. Despite the absence of free fluid or perforations in initial imaging studies, subsequent surgical exploration revealed multiple perforations in the jejunum, necessitating resection and anastomosis.

Figure 4 - Hostile abdomen

Occasionally, surgeons encounter patients with a notable disruption of normal abdominal anatomy, characterized by fragile, intricately scarred intestines fused into a cohesive mass, often complicated by enteric fistulas (5). This surgical scenario is labeled a hostile abdomen. The hostile abdomen can arise from various causes, including inflammatory conditions such as perforating Crohn's disease, chronic fibrosis stemming from external beam radiation therapy, sequelae of anastomotic leaks, traumatic injury, or adhesive disease following previous surgeries (2). Complications associated with a hostile abdomen, such as chronic bowel obstruction, anastomotic leaks, or enteroatmospheric fistulas, may also necessitate surgical repair (1,6,7). Furthermore, exploration may be warranted in cases of traumatic or spontaneous perforations of viscera.

A hostile abdomen requires a multidisciplinary approach and careful consideration of the patient's overall condition (2). Before embarking on surgery for a hostile abdomen, meticulous planning is needed. This involves a comprehensive review of the patient's medical history, including previous surgeries and any associated complications (8). Additionally, thorough examination of imaging studies, such as CT scans or MRI, helps in understanding the extent of adhesions and identifying potential anatomical challenges. Advanced surgical techniques play a crucial role in managing a hostile abdomen. Surgeons may employ innovative approaches like adhesiolysis, which involves carefully dissecting and separating scar tissue from surrounding structures. In some cases, minimally

invasive procedures such as laparoscopy or robotic-assisted surgery offer a less invasive option, reducing postoperative pain and speeding up recovery. In instances of severe trauma or peritonitis, adhering to the principles of damage control surgery is essential. This approach involves initially stabilizing the patient's condition with temporary abdominal closure to control contamination and physiological derangements. Subsequent definitive surgery is performed once the patient's condition improves and is deemed stable. Following surgery, close postoperative monitoring is necessary to detect and manage any complications promptly. This includes monitoring for signs of infection, such as fever or elevated white blood cell count, as well as assessing wound healing and bowel function. Early intervention is crucial to prevent the progression of complications and improve patient outcomes (2).

Managing a hostile abdomen often requires a multidisciplinary approach involving various healthcare professionals. Surgeons work closely with gastroenterologists, nutritionists, wound care specialists, and critical care teams to address the complex needs of these patients comprehensively. Collaborative decision-making ensures that all aspects of patient care are adequately addressed. While managing a hostile abdomen is challenging, efforts should also focus on prevention. This includes minimizing the number of unnecessary abdominal surgeries and optimizing perioperative care to reduce the risk of postoperative complications. Additionally, early identification and treatment of conditions predisposing to abdominal adhesions, such as peritonitis or inflammatory bowel disease, can help prevent their development.

In this case, despite surgical intervention and attempts at closure, the patient's condition continued to deteriorate, leading to the development of peristomal dermatitis and ultimately succumbing to a nosocomial infection. The histopathological findings confirmed the presence of chronic inflammatory bowel disease, consistent with Crohn's disease, further complicating the management of the patient's condition. Treatment with immunomodulatory agents was initiated, but unfortunately, the patient's underlying inflammatory condition, coupled with the challenges posed by the hostile abdomen, contributed to a poor prognosis.

This case underscores the importance of early recognition and appropriate management of a hostile abdomen to mitigate the risk of complications and improve patient outcomes. Further research and advancements in surgical techniques may help address the unique challenges posed by this complex surgical scenario.

CONCLUSION

In conclusion, managing a hostile abdomen presents significant challenges due to extensive scarring, fibrosis, and adhesions within the abdominal cavity. Despite meticulous surgical planning and advanced techniques, the case highlights the complexity of these cases and the need for a multidisciplinary approach. Early recognition, appropriate management, and preventive measures are crucial for improving outcomes in patients with hostile abdomen. Further research and advancements in surgical techniques are warranted to address the unique challenges posed by this complex condition and improve patient care.

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Conflicts of interest and source of funding

None.

Ethical statement

Written informed consent was obtained from the patient of this case report.

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