CASE REPORT

Giant pedunculated incisional hernia with severe skin necrosis: a challenging surgical case in a patient with cognitive dysfunction; case report

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ABSTRACT

Background: Incisional hernias are common complications following abdominal surgery, with known risk factors including age, obesity, and suture types. Giant incisional hernias, especially with loss of abdominal domain, present significant challenges for surgical repair, particularly in emergency settings.

Case Presentation: A 50-year-old Pakistani female was presented with mild cognitive dysfunction and a history of multiple cesarean sections, presented with a giant pedunculated incisional hernia associated with severe skin necrosis. The patient’s condition deteriorated rapidly, necessitating urgent surgical intervention. Intraoperatively, a large hernia defect was identified, and despite the complexities posed by skin necrosis and the need for omental resection, successful reduction, and repair were achieved using mesh overlay. Postoperatively, the patient showed satisfactory recovery without respiratory compromise, highlighting the importance of tailored approaches in managing complex incisional hernias, even in challenging clinical scenarios.

Conclusion: The repair of a giant incisional hernia with loss of domain is extremely challenging especially when presenting in emergency settings. Repair without component separation was difficult; however, it was carried out and tolerated by the patient without complications. This reflects the variability in surgical management in patients presenting with giant incisional hernia and emphasizes the importance of taking all patient-related factors and the settings at presentation into consideration.

Keywords: Incisional hernia, abdominal wall hernia, mesh repair, case report.

Introduction

Incisional hernia is a common complication following abdominal surgery, its incidence ranges from 3.8% to 11.5% [1]. While the risk of incisional hernia is about 10% after elective abdominal surgery, it rises to 33% following emergency abdominal surgery [2]. The contents of the ventral hernia might include omentum, pre-peritoneal adipose tissue, small intestine, or colon.

Risk factors for developing an incisional hernia after abdominal surgery include old age, sex, obesity, bowel surgery, suture type, chest infection, abdominal distension, wound infection, and smoking [3]. Ninety percent of the incisional hernias occur within 3 years of the surgery [4]. Loss of domain (LOD) is defined when the ratio of the volume of the hernia sac to the volume of the abdominal cavity is >0.5 [5]. The development of giant incisional hernia has a negative physiological and psychological impact on patients, leading to a poor quality of life [6]. Repair of a giant incisional hernia with loss of abdominal domain remains a surgical challenge, especially when done in an emergency setting.
A case of a 50-year-old Pakistani female patient was presented, not known to have any medical illness except for mild cognitive dysfunction and a history of multiple cesarean sections. The patient presented to the ER with a giant pedunculated incisional hernia with severe skin necrosis.

Case Presentation

A 50-year-old Pakistani female patient with an unknown psychiatric illness affecting her cognitive functions presented to the ER with a giant ventral hernia associated with severe skin necrosis and wound infection. History was not taken from the patient herself as she was unable to express herself and even cannot speak clearly, this was attributed to her undiagnosed psychiatric illness as per her relatives. Upon retrieving history from her relatives, the patient was not known to have any chronic medical illnesses such as diabetes mellitus or hypertension. The surgical history included multiple cesarean sections with the last one being performed 8 years ago. The patient started developing this giant ventral hernia approximately 3 years after the last cesarean section. The skin overlying the hernia started becoming darker in color with an offensive odor roughly 1.5 years before her presentation at the ER.

The patient presented to the ER complaining of severe abdominal pain associated with nausea and vomiting. There was no history of diarrhea or constipation. On examination, the patient was vitally stable and afebrile. The patient looked ill and in severe pain, was obese, and an examination of her abdomen revealed a giant pedunculated ventral hernia. The hernia was causing LOD of the anterior abdominal wall and it was associated with severe skin necrosis and foul smell. In addition, there was pus discharge from a small wound located below the lower side of the hernia, no skin crepitation was noted (Figure 1).

The patient did not have ascites. Laboratory tests showed leukocytosis (WBC 15.78 per ml), a hemoglobin level of (10.3 g/dL) and a high platelets count (563 K/uL). Venous blood gas analysis was unremarkable. X-ray abdomen did not show air-fluid levels. The decision was made to shift the patient urgently to the operating theater without further imaging or delay as she was in severe pain, developing sepsis and the possibility of strangulation or ischemia could not be ruled out.

Intraoperatively, a large horizontal elliptical incision was made encircling the hernia and including the necrotic edges sparing healthy tissue. Debridement of the necrotic and sloughy skin was done and pus was seen discharging from the necrotic skin. Furthermore, the hernia sac was identified and explored which revealed the contents of both small and large bowels. The included loops of small and large bowels were found healthy with no signs of ischemia. Dissection around the hernia defect was done and showed the diameter of the hernia defect which was around 5-7 cm.

An attempt to reduce the contents of the hernia without any resection was unsuccessful. As a result, a large part of the omentum was resected which was followed by a successful reduction of the hernia contents. The hernia defect was approximated with prolene sutures and further reinforced with the placement of a size 30 × 20 cm composite mesh overlay (Figure 2).

Afterward, two drains were placed, one was placed in the peritoneal cavity and one was placed in the subcutaneous tissue to prevent seroma formation. Finally, the layers of the surgical wound were closed regularly without tension and the skin was closed using stapler clips.

Despite that there was no hemodynamic collapse or acidosis, the decision was made to admit the patient to the ICU. This elective measure was undertaken to keep the patient intubated for 1 day and to monitor her ventilatory parameters and abdominal pressure after the operation.

**Figure 1A.** Huge ventral hernia with severe skin necrosis as seen from the left side of the patient. **B.** Hernia from the right side of the patient. **C.** Infected wound beneath the hernia.
Giant pedunculated incisional hernia

massive reduction of the hernia contents. Thereafter, the patient was extubated successfully and then transferred to a normal bed.

As per her postoperative course, the patient was not in pain anymore and her overall physical condition improved. The patient was discharged after 19 days and was followed up in the outpatient clinic 2 weeks after the operation and found that the patient was doing well, tolerating orally, breathing comfortably, and the wound was dry and clean (Figure 3).

Discussion

The cause of ventral incisional hernias is attributed to chronic wound dehiscence resulting in the formation of hernia sac and canal months to years after surgery [7]. It has been suggested that malunion between the sutured edges of aponeurosis happens soon after surgery leading to hernia formation years later [8]. The wound dehiscence starts within the first 5 days following surgery as shown by Mehrabi et al [9]. In addition, numerous patient-related factors can increase the risk of ventral hernia, these include type II diabetes, malnutrition, chronic lung disease, and obesity [10]. In the present patient, obesity was the only identified risk factor.

Moreover, there are perioperative factors such as wound closure, peritoneal closure, and wound infection that have been shown to play an important role in hernia formation [10,11]. In the presented patient, given her cognitive impairment, detailed information regarding the previous cesarean sections she underwent was difficult to retrieve. Furthermore, the type of incision which was made during these surgeries was also not identified given the distorted abdominal wall anatomy caused by this giant hernia. This was important as cesarean sections using midline incisions were found to increase the risk of ventral hernias [12]. Even though usually patients with giant hernia suffer from varying degrees of respiratory function compromised due to anatomical and physiological impairment of the

Figure 2. Operative findings. A. A large part of the omentum that needed to be resected. B. All contents were reduced successfully into the peritoneum. C. Placement of the mesh (overlay).

Figure 3. Pre versus post hernia repair.
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diaphragm, however, presented patient was not showing any signs of respiratory distress [11].

The repair of giant incisional hernias (>10 cm minimum width) represents a challenge for surgeons, this is true because regaining functionality of the abdominal wall requires the closure of these large defects without tension, which is difficult to achieve in some cases [13]. In some cases, special techniques such as the separation of components are required [14]. In the presented patient, despite being presented with loss of domain of the abdominal wall, tension-free repair was achieved with the placement of overlay mesh, without the need for special techniques. This was especially challenging as the repair of this patient was carried out in emergency sitting given that a large part of the skin was resected because of skin necrosis.

List of Abbreviations
- ER: Emergency Room
- g/dL: Grams per deciliter
- ICU: Intensive care unit
- K/uL: Thousands per cubic milliliter
- LOD: Loss of domain

Conflict of interest
The authors declared that there is no conflict of interest regarding the publication of this case report.

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Ethical approval
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References
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