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A case report on management of synergistic gangrene following an incisional abdominal hernia repair in an immunocompromised obese patient



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ABSTRACT

INTRODUCTION: We present a case on conservative management of salvaging the mesh in an immunocompromised morbidly obese patient, who developed a synergistic gangrene infection following a primary open mesh repair of an incisional hernia.

PRESENTATION OF CASE: Our patient presented with a surgical wound infection, comorbidities were Chronic Lymphoblastic Leukemia (CLL), Body Mass Index (BMI) of 50, hypertension and diet controlled type-2 diabetes. In surgery, wide necrotic wound debridement, early and repetitive wound drainages with the use of a large pore polypropylene mesh and a detailed surgical follow up was required. High dose intravenous broad-spectrum antibiotic treatment and Negative Pressure Wound Therapy (NPWT) was administered in combination with adopting a multidisciplinary approach was key to our success.

DISCUSSION: Stoppa Re et al. compiled a series of 360 ventral hernia mesh repairs reporting an infection rate of 12% that were managed conservatively. However, our selective case is unique within current literature, being the first to illustrate mesh salvage in a morbid obese patient with CLL. Recent modifications in mesh morphology, such as lower density, wide pores, and lighter weight has led to considerable improvements regarding infection avoidance.

CONCLUSION: This case has demonstrated how a planned multidisciplinary action can produce prosperous results in a severely obese immunocompromised patient with an SSI, following an incisional hernia repair.

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1. Introduction

Magill et al. described a study whereby 31% of healthcare-associated infections within hospitalised patients were due to Surgical Site infections (SSIs); infections that occur in a wound created by an invasive surgical procedure. [1] Naturally, this resulted in prolonged ward admission, increase in morbidity and mortality.

Within our case, an immunocompromised morbidly obese patient developed a synergistic gangrene infection following a primary open mesh repair of an incisional hernia. With conservative management, the patient was successfully treated, resulting in the complete healing of the wound infection and the salvaging of the mesh.

2. Presentation of case

A 42-year-old immunocompromised Caucasian male, presented with a post-operative wound infection on 30th October 2014. The patient had undergone an emergency open exploratory laparotomy for abdominal peritonitis in 2012, followed by an elective open abdominal incisional hernia repair on 10th October 2014, with an uneventful outcome. The patient's status was characterised by Chronic Lymphoblastic Leukemia (CLL), Body Mass Index (BMI) of 50, hypertension and diet controlled type-2 diabetes.

An experienced colorectal surgeon had performed an 'Inlay Technique' of polypropylene mesh with extensive undermining of the extra-peritoneal layer in a difficult incisional hernia operation. Large porous mesh of 20 by 20 cm (centimetre) was used, therefore, seroma formation was expected and as such, the high risk of infection may have been anticipated. The post-operative event was uneventful and upon discharge, the patient's condition was deemed satisfactory.

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Fig. 1. Vacuum dressing is used at one stage of management.

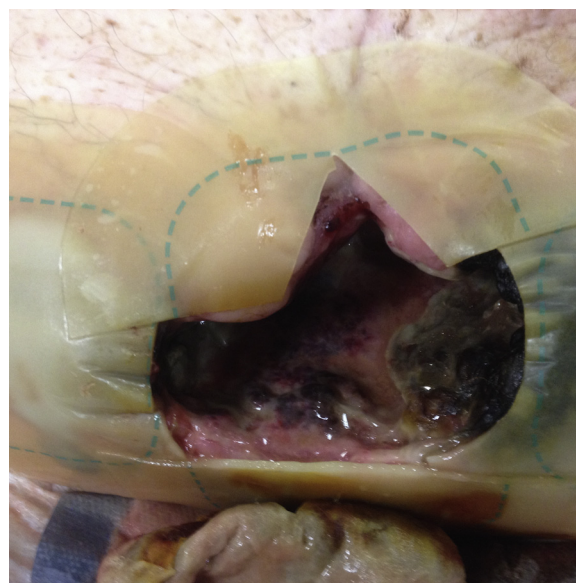


Fig. 2. 1.5 kg of necrotic wound.

Despite being well upon discharge on 10th October 2014, the patient presented with non-specific abdominal pain, lethargy and shivers, 20 days post-surgery. Upon examination, overlying erythematous cellulitis along his recent surgical scar was noted, in addition to white blood cells (WBC) of 31,000 per cubic millilitre (4–10 10⁹/L) and C Reactive Protein (CRP) of 298 milligrams per decilitre (<1.0 mg/dL). He was treated with conservative intravenous antibiotics and open abdominal wall drainage. A small amount of purulent discharge was drained and the wound was left open to heal by secondary intention. The mesh was covered with granulation tissue on the background of infection. He was admitted for 5 days and discharged with a detailed outpatient wound dressing management plan.

The patient re-attended after a further 2 weeks with lower abdominal pain. Intravenous antimicrobial therapy was administered on the recommendation of the microbiology team. Second open abdominal wall drainage revealed an abscess. Vacuum Assisted Closure Therapy (VAC) was used to promote wound healing by removing reactive serous fluid and actively promoting granulation through Negative Pressure Wound Therapy (NPWT) as shown in Fig. 1. Microscopy, culture and sensitivity (MC&S) were a mixed aerobic-anaerobic picture of micro-aerophilic streptococci, acting synergistically with aerobic staphylococci with negative Methicillin-resistant *Staphylococcus aureus* (MRSA) swabs and no antibiotic resistance. The patient was discharged after a week and was given oral antibiotic cover in addition to continuing to have his wound dressed as an outpatient.

Within 15 days, the patient represented with severe abdominal pain and worsening cellulitis. The wound was revisited, revealing a deep-seated infection with necrosis of the abdominal wall flap. In surgery, debridement of 1.5 kg (kilogram) of dead necrotic tissue was excised with drainage to the abdominal wall, illustrated in Figs. 2 and 3. Surgical procedure was revisited within 48 h with no further necrotic tissue found with adequate wound excision in Fig. 4. The mesh was secure and covered in healthy granulation tissue in Fig. 5. NPWT was introduced as an auxiliary therapy for 4 weeks with regular dressing foam change. Throughout the patient's hospital stay, the case was discussed with the microbiology team and high dose intravenous broad-spectrum antibiotic treatment was administered in combination with the surgical approach for synergistic gangrene infection.



Fig. 3. Flap necrosis.

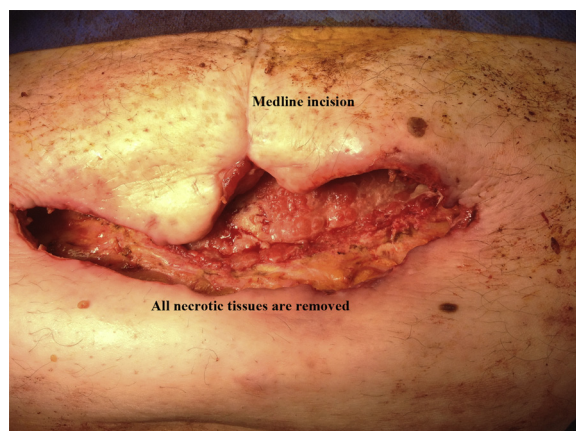


Fig. 4. Clean wound, ready for closure.

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