

Case Report

Perforated diverticulitis leading to Fournier's gangrene

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ABSTRACT

Perforated diverticulitis is a rare cause of Fournier's gangrene. Management for these conditions separately is well established, however no clear guidelines exist for operative management when they present in combination. This case provides a suggested management approach for managing the two conditions concurrently, in a peripheral hospital.

Keywords: Diverticulitis, Fournier's gangrene, Necrotising fasciitis, Surgery, Debridement

INTRODUCTION

In western countries, diverticulitis is common and may be complicated by bowel perforation.¹ This case demonstrates how it can progress to a necrotising infection of the abdominal wall and Fournier's gangrene. Given the rarity of these cases, no clear guidelines for management are available. This is one approach.

CASE REPORT

A 55-year-old male presented with increasing abdominal pain and cellulitis to the left flank for one week duration. He had been started on oral antibiotics by his GP for flank cellulitis five days earlier. He denied fevers. Significant background was of diverticular disease, hypertension and a neuromuscular disorder under investigation, for which he took prednisone 10 mg daily.

Examination showed left flank and anterior abdominal wall swelling, tenderness and erythema, tracking down to the scrotum and penis. Abdominal computed tomography (CT) confirmed extensive subcutaneous gas in the abdominal wall and scrotum, associated with thickened sigmoid colon and intraperitoneal free gas. Fluid resuscitation and broad-spectrum antibiotics were initiated in the emergency department.

Emergency laparotomy revealed a perforated sigmoid diverticulitis and extensive, feculent contamination. Sigmoid colectomy and extensive debridement of the abdominal wall and penile/scrotal skin were undertaken, and the patient was laparostomised. The following day, the patient returned to theatre for further washout and debridement. During this procedure, an end colostomy was matured, and the laparotomy was closed. Three days after the initial debridement, the wounds were healthy enough for primary closure of most of the abdominal wall tissue flaps. This left a left hemi scrotal defect with left testis exposed, a circumferential penile defect and a palm-sized left flank defect. A negative pressure dressing was applied to the flank and a saline compress to the genitals. Multiple subsequent returns to theatre revealed predominantly healthy tissue, with only minimal debridement required.

Histology confirmed perforated sigmoid diverticulitis and abdominal wall changes consistent with necrotising fasciitis. There was no evidence of malignancy. Abdominal wall tissue culture showed mixed enteric and anaerobic bacteria.

The patient spent 25 days in the peripheral hospital prior to transfer to a tertiary centre for tissue coverage of the above-mentioned defects. His colostomy worked from day 1 after formation and his sepsis settled appropriately.

The delay in transfer and coverage was due to exacerbation of his neuromuscular disorder, leading to worsening of pre-existing bulbar weakness and difficulty weaning from respiratory support.

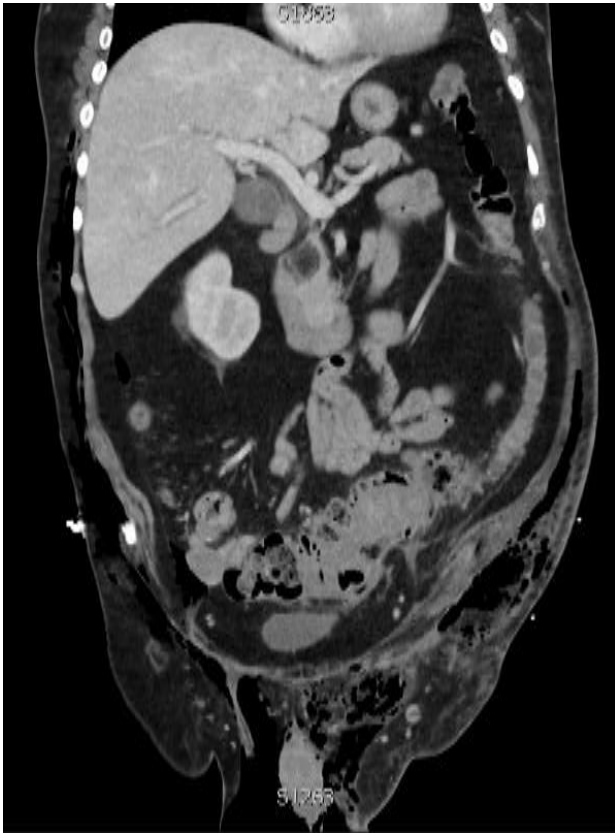


Figure 1: Computed tomography showing sigmoid diverticular disease and associated stranding, intraperitoneal free gas and subcutaneous gas/stranding extending over the abdominal wall into the scrotum.



Figure 2: Penile and scrotal defects following serial debridement, 10 days after initial debridement.



Figure 3: Left flank defect following serial debridement, 10 days after initial debridement.

DISCUSSION

Diverticulitis is very common in western countries and can be complicated by abscesses, perforation, obstruction or fistula formation.¹ Uncomplicated diverticulitis is managed non operatively, however generalised perforation usually requires operative intervention.¹ In the setting of extensive contamination, perforated sigmoid diverticulitis may be safely managed with a Hartmann's procedure.¹

Fournier's gangrene is a necrotising infection of the perineal and genital region. It is rare but reported mortality ranges from 4.9% to 36.6%.² Risk factors include immunosuppression (diabetes, HIV, iatrogenic), obesity, hypertension, alcoholism, obesity and smoking.^{2,3} Patients may present with genital pain, erythema and fever.⁴ Examination may show systemic signs of sepsis with perineal cellulitis and signs of gangrene.⁴ The laboratory risk indicator for necrotising fasciitis (LRINEC) is an emergency department tool which uses white cell count (WCC), C reactive protein (CRP), haemoglobin, creatinine, sodium and glucose to risk stratify for necrotising soft tissue infection.⁵ However, this tool has not been validated for Fournier's gangrene and recent studies have shown poor positive and negative predictive values for necrotising fasciitis.⁵ Clinical judgement remains paramount in diagnosis of Fournier's Gangrene.

The infection is usually polymicrobial (54%); with *Escherichia coli*, *Bacteroides*, *Enterobacter*, *Staphylococcus*, *Enterococcus* and *Pseudomonas* all being commonly cultured.² Mainstays of management are timely surgical debridement, broad spectrum antibiotics and supportive care.⁶ Rapidly progressing necrotising infection usually dictates that the initial surgical management is undertaken in the presenting hospital, if facilities and expertise allow.

In this case, perforated diverticulitis and necrotising infection were managed concurrently with surgical intervention and broad-spectrum antibiotics. Sigmoid colectomy and diverting colostomy prevented ongoing contamination, and aggressive serial debridement of the abdominal wall, perineum and genitals controlled the necrotising infection.

Previous case reports describe Fournier's Gangrene caused by perforated diverticulitis, but to the author's knowledge this case is unique in the literature with its successful management predominantly in a peripheral hospital.⁷⁻⁹

CONCLUSION

Perforated diverticulitis is a rare cause of Fournier's gangrene. Operative management should address the perforated segment of bowel (ideally with resection and diversion) and the necrotising infection (with aggressive serial debridement). Given the urgency of surgical intervention, if facilities and expertise allow, these patients should be managed initially in peripheral hospitals.

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