Case Report

Perforated diverticulitis leading to Fournier’s gangrene

Henry K. Watter*, Ho Nam Choi, Suresh Munugani

Hervey Bay Hospital, Hervey Bay, Queensland, Australia

Received: 25 September 2022
Revised: 14 October 2022
Accepted: 18 October 2022

*Correspondence:
Dr. Henry K. Watter,
E-mail: hkwatter@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

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.

**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

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.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Klarenbeek BR, De Korte N, Van der Peet DL, Cuesta MA. Review of current classifications for diverticular disease and a translation into clinical practice. Int J Colorectal Dis. 2012;27:207-14.
2. Tang LM, Su YJ, Lai YC. The evaluation of microbiology and prognosis of Fournier's gangrene in past five years. Springerplus. 2015;4:14.
3. Tenório CEL, Lima SVC, Albuquerque AV, Cavalcanti MP, Teles F. Risk factors for mortality in Fournier's gangrene in a general hospital: use of simplified fournier gangrene severe index score (SFGSI). Int Braz J Urol. 2018;44:95-101.
4. Oguz A, Gümüş M, Turkoğlu A, Bozdağ Z, Ülger BV, Ağaçayak E, Böyük A. Fournier's Gangrene: A Summary of 10 Years of Clinical Experience. Int Surg. 2015;100:934-41.
5. Neeki MM, Dong F, Au C, Toy J, Khoshab N, Lee C et al. Evaluating the Laboratory Risk Indicator to Differentiate Cellulitis from Necrotizing Fasciitis in the Emergency Department. West J Emerg Med. 2017;18:684-9.
6. Chernyadyev SA, Ufimtseva MA, Vishnevskaya IF. Fournier's Gangrene: Literature Review and Clinical Cases. Urol Int. 2018;101:91-7.
7. Parkin CJ, Acland G, Ilie V, Clayton S, Merei J, Latif E. Sigmoid diverticulitis leading to Fournier's gangrene. ANZ J Surg. 2021;91:E123-5.
8. Kearney DE, Harney S, O'Brien E, McCourt M. An unusual presentation of Fournier's gangrene. Ir J Med Sci. 2011;180:573-4.
9. Kumar D, Cortés-Penfield NW, El-Haddad H, Musher DM. Bowel Perforation Resulting in Necrotizing Soft-Tissue Infection of the Abdomen, Flank, and Lower Extremities. Surg Infect (Larchmt). 2018;19:467-472.

Cite this article as: Watter HK, Choi HN, Munugani S. Perforated diverticulitis leading to Fournier’s gangrene. Int Surg J 2022;9:1884-6.