

Flaminal® and NPWT Treatment in the Management of a Dehisced Midline Laparotomy Wound

Introduction

Diverticular disease encompasses a range of clinical symptoms and complications that can occur with colonic diverticula, in particular bleeding and acute diverticulitis. Diverticula are small balloon-like pouches that protrude from the intestine and are harmless unless they become inflamed, infected or perforated (this is known as diverticulitis and can result in a blockage within the colon or small intestine). A narrowing of the colon is known as a stricture which can sometimes result in a complete blockage of the bowel⁽¹⁾.

This case study describes the management of a 62-year-old lady who underwent an emergency diagnostic laparotomy and Hartmann's procedure, removal of a piece of large bowel, for acute large bowel obstruction secondary to diverticular stricture – low anterior rectum resection with formation of end colostomy.

The wound had been left partially open for abdominal decompression, requiring daily dressings in the post-operative phase. Wound issues were reported approximately 2 weeks following surgery, with noted complications of wound dehiscence, purulent exudate and a sloughy wound bed – a referral to the wound care Clinical Nurse Specialist (CNS) was not completed at this point of care as it was being managed by the surgical team; dressed with a hydrofibre wick packing and a simple secondary dressing. The wound swabs proved positive for *Pseudomonas aeruginosa* and a course of IV targeted spectra antibiotics were commenced, although this was not just for the wound infection;

as she was generally unwell before the culture results so this was administered in ICU before being seen by the CNS. Nine days later, despite a sloughy wound bed, Negative Pressure Wound Therapy (NPWT) was commenced by the surgical team, and the patient was subsequently discharged home two days later and was referred onto the CNS.

Method

The wound care CNS reviewed the patient in an out-patient clinic setting, two days post discharge, and was presented with a highly exuding dehisced midline laparotomy, which was near the colostomy. The wound measured 10cm x 4cm x 4cm, undermining by 3-4cm at 6 o'clock and 8cm at 8 o'clock with 40% slough noted at the wound bed, which was adhered to the suturing material – the consultant surgeon's preference was NPWT due to the risk of an incisional hernia. The aims of wound management were to achieve autolytic debridement of the devitalised tissue, thus reducing the wound bioburden, exudate management and to ultimately achieve healing by secondary intention using NPWT.

Flaminal® Forte, an enzyme alginogel®, was introduced onto the wound bed in conjunction with NPWT. Flaminal® Forte was selected for its antimicrobial protection properties and its ability to facilitate debridement of devitalised tissue. Flaminal® Forte had loosened the previously adhered slough that had attached to the suturing material and enabled some sharp debridement along with suture removal.

The inclusion of NPWT was also implemented – this particular system helps to promote healing by delivering negative pressure to the wound bed and surrounding tissue.

The highlighted wound management regime continued for a further three and a half weeks and then NPWT was discontinued and Flaminal® Hydro primary dressing with a silicone foam border was introduced until wound closure was achieved approximately 7 weeks later.

Result

The wound management plan, from the introduction of Flaminal®, continued for a period of eleven weeks in total, with alternative day dressing changes taking place, at which point healing was achieved. During this period, debridement of

devitalised tissue had been accomplished and there were no episodes of infection throughout the treatment trajectory, facilitating the uninterrupted application of NPWT and so eliminating the risk of the occurrence of an incisional hernia. The pain free element of dressing changes and eventual full wound closure lead to improved quality of life for the patient.

Discussion

The precise prevalence of diverticulitis is unknown, as approximately 80-85% of those affected remain asymptomatic⁽²⁾. Diverticulitis may be associated with serious or life-threatening complications such as, intra-abdominal abscesses, perforation of the colon wall and peritonitis, stricture and fistula formation and intestinal obstruction⁽³⁾. Between 15% to 25% of acute diverticulitis patients will need an emergency laparotomy⁽⁴⁾. Emergency surgery is a risk factor for surgical site infection (SSI) because of many strong risk factors for SSI such as contaminated and dirty wounds, prolonged duration of the operation and patient comorbidities.⁽⁵⁾

Conclusion

This case study demonstrates the effectiveness of Flaminal® as an antimicrobial protection agent and in assisting wound debridement, noticeable after only four applications, and closure by secondary intention. It also highlights that Flaminal® can be utilised in conjunction with NPWT without obstructing the therapy delivery. In addition, Flaminal® also had a purpose of forming a protective layer between the newly formed granulation tissue and NPWT foam dressing filler. Dressing changes were pain free, well accepted by the patient and atraumatic.

References

- Colorectal Surgery Associates (2023) <https://csakc.com/conditions/diverticular-disease/diverticular-stricture/> accessed July 2023
- Bugiantella, W., Rondelli, F., Longaroni, M. et al. (2015) Left colon acute diverticulitis: an update on diagnosis, treatment and prevention. *International Journal of Surgery* 13, 157-164.
- National Institute for Health and Care Excellence (2023) Diverticulitis Disease. <https://cks.nice.org.uk/topics/diverticular-disease/management/acute-diverticulitis>
- Schein M, Paladugn R. Diverticulitis. In: Holzheimer RG, Mannick JA, editors. *Surgical Treatment: Evidence-Based and Problem-Oriented*. Munich: Zuckschwerdt; 2001. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK6986/>
- De Simone, B., Sartelli, M., Coccolini, F. et al. Intraoperative surgical site infection control and prevention: a position paper and future addendum to WSES intra-abdominal infections guidelines. *World J Emerg Surg* 15, 10 (2020). <https://>

