

# THE MANAGEMENT OF A TRAUMATIC FOOT WOUND USING AN ENZYME ALGINOGEL

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## Introduction

Crush injuries constitute a force applied to the tissues caused by the impact of a blunt force. They carry a higher risk of infection than simple lacerations because of the amount of devitalised tissue present. Once the blood supply is compressed, healing is impaired as the immune system's effectiveness is reduced. In traumatic wounds there is the added risk of anaerobic organisms gaining access to the deeper tissues and finding the perfect conditions for their multiplication.<sup>1</sup>

This case study assesses the treatment of a 60 year old woman who had a trauma wound at the top of her left foot after an accident with a ladder whilst putting a Christmas tree away in the loft. She had no relevant medical history, was mobile, living alone, independent, and worked part time.

She was assessed in the emergency department and there was a suspicion that her wound was infected and she may need admission for intravenous antibiotics. She had an x-ray at the minor injuries unit and sharp debridement of the wound by the orthopaedic team in an outpatient clinic. Following a wound swab she was commenced on clarithromycin. Regular analgesia was taken for pain relief and she had just started taking sleeping tablets. The patient was depressed as she felt isolated due to being unable to go out because of her pain and she was unable to wear shoes.

On presentation to the tissue viability nurses the wound had been present for approximately 4 weeks and measured 6 cm by 5 cm at the surface, but nursing staff were unable to determine the depth. Wound exudate levels were low and the wound tissue consisted of 75% necrotic tissue, 5% slough, and 20% granulation tissue. There were no signs of infection or odour.



27/01/15



26/03/15



07/04/15



21/04/15

## References

- 1) Ferguson A (2000) Traumatic wounds. *Trauma.org* 5:10. October 2000. Accessed 3rd August, 2016: <http://www.trauma.org/archive/nurse/wound.html>
- 2) Dearden C, Donnelly J, Donnelly J, Dunlop M (2001) Traumatic wounds: cleansing and dressing. *Nursing Times* 97(28):50-2
- 3) Durante C (2012) An open label noncomparative case series on the efficacy of an enzyme alginogel. *J Wound Care* 21(1): 22-28

## Method

The treatment plan aims were to hydrate the dry necrosis in order to debride the wound and liaise with the orthopaedic team. Flaminal Hydro was commenced, in conjunction with a non-adherent, non-adhesive foam dressing, which was held in place with a bandage.

## Results

The patient was under the care of the tissue viability nurses from 21st January until 21st April for a total of 13 weeks. Dependent on the wound exudate levels the dressing choice varied between Flaminal Hydro and Forte. Both dressings are enzyme alginogels, Flaminal Hydro contains 3% alginate and is indicated for low to moderately exuding wounds, whilst Flaminal Forte contains 5.5% alginate and is indicated for moderate to heavily exuding wounds. The patient was taught to dress the wound herself and both dressings were used until healing.

Throughout the course of treatment the wound remained infection free and pain was reduced allowing the patient to wear slippers, regain her independence, and resume her normal activities. She was able to stop her sleeping tablets and analgesia on week 2. The patient stated "when I went to Hayley I was in a very bad state but as soon as she started treating my wound with Flaminal the results were amazing from day one...Every single day I could see the wound closing and healing, the relief was wonderful. A miracle treatment in my opinion".

## Discussion

Autolytic debridement is the breakdown of the devitalised tissue by the patient's own enzymes and this can be promoted by maintaining a moist environment at the wound bed.<sup>2</sup> Flaminal is an enzyme alginogel which manages the bacterial bioburden of a wound in three ways: the enzyme complex kills bacteria, while the alginate component removes bacteria from the wound bed by debridement, creating a moist wound environment, which stimulates the host's immune system. Only absorbed bacteria are destroyed by the enzyme complex and not the cell walls of human cells within the wound bed.<sup>3</sup>

An open-label case series by Durante (2012) assessed patients with a variety of conditions treated with Flaminal (n=23), including 3 patients with traumatic wounds. The percentage of wounds covered by necrosis and fibrin decreased during the 60-day evaluation period, whereas percentage of wound area covered by granulation and epithelial tissue increased. Pain scores in all groups also decreased over the evaluation period.<sup>3</sup>

## Conclusion

This case study demonstrates the effectiveness of an enzyme alginogel in assisting autolytic debridement, wound healing, and reduction in pain in the treatment of a traumatic foot wound enabling the patient to become independent again.