

Salvaging Limb from Amputation: A Case of Infected DFU with Antimicrobial Activated Carbon Cloth (ACC) Dressing

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ABSTRACT

Diabetic Foot Ulcer (DFU) is a polymicrobial infection and carries high amputation and mortality rate. We present a case of 48 years of male with underlying DM and hypertension on oral medications, was diagnosed with infected right DFU with wet gangrene of right 4th toe, who underwent Ray amputation of right 4th toe followed by multiple wound debridement and subsequently ultrasonic-assisted debridement over right foot in December 2018, as patient refused for below knee amputation. Started ACC dressing since 31/1/19 with wound measurement of 35cm (length) x 24cm (width) from plantar aspect of base of 3rd and 5th toes until 2/3 of sole of foot extend to dorsal medially. Wound was healing well, measured 5cm (length) x 6cm (width) with 100% granulation tissue on 20/6/19. We recommend the use of ACC dressing for effective management of wound.

INTRODUCTION

Among patients with diabetes mellitus, the most common cause of hospitalization is foot related disorders, such as foot ulceration, infection, and gangrene. Among 16 million diabetic patients in United States, there is around 15 to 20% will be hospitalized with a foot complication at some time during the course of their disease.¹ As a result of severe infection or peripheral ischemia, many of them will require amputation within the foot or above the ankle. DFU carries 33 % amputation rate and 12 % mortality.^{1,2}

DFU is a polymicrobial infection and its polymicrobial nature is more evident in higher grades of ulcers.² DFU is associated with systemic complications such as septic shock, diabetic ketoacidosis, hyperglycemic hyperosmolar state, and hyponatremia which can be life threatening if not recognized and treated promptly. Debridement and SSG were the most frequently performed surgical intervention for DFU. The disease is a financial burden to the patient as the average hospital stay is 25 days.

METHODOLOGY

48 years old male patient with underlying DM and hypertension on oral medications was diagnosed with infected right DFU with wet gangrene of right 4th toe in hospital Jerantut. During December 2018, patient underwent Ray amputation of right 4th toe followed by multiple wound debridement and subsequently ultrasonic-assisted debridement over right foot as patient refused for BKA. Initially started with hydrofiber dressing on 28/12/2018, then change to modern antimicrobial foam dressing from 23/1/2019 until 28/1/2019. However due to financial restraint, changed back to hydrofiber dressing for few days before started using ACC dressing since 31/1/19. At baseline (31/1/2019), wound measured at 35cm (Length) x 24cm (width) from plantar aspect of base of 3rd and 5th toes until 2/3 of sole of foot extend to dorsal medially, there was 50% granulation tissue and 50% Slough, very foul smelling with heavy yellowish discharge, periwound skin is heavily macerated. During first 2 weeks, ACC dressing was change every 2 to 3 days, after that was changed every 3 to 4 days, and then once per week after one month.

RESULTS

On 20th June 2019, there was 100% granulation tissue seen with no sign of infection, moderate serous exudate, minimal macerated skin at periwound area, secondary dressing will be changed when it get soaked, without the need to remove ACC dressing.



31/01/2019 (BASELINE)



20/06/2019

DISCUSSION

ACC dressing used in this case study is Zorflex by Chemviron, UK. It contains strong Van-der-Waals forces (electrostatic forces) which can trap and kill bacteria, control excessive discharge and foul-smelling odour. It also can stimulate wound healing and regulate level of matrix metalloproteinases (MMPs), which the level is usually uncontrolled in chronic wounds like DFU, which is one of the main reasons for poor wound healing.³ Besides that, it can be left up to seven days on the wound, which makes it a cost effective wound dressing compared with conventional dressings such as simple gauze dressings, or other modern dressings: hydrocolloid dressing and negative pressure wound therapy.⁴

CONCLUSION

ACC dressing is able to achieve cost effective wound management with its capability to exert antimicrobial and anti-inflammatory properties, as well as stimulate wound healing and achieve good odour control. Additional studies are required to demonstrate its efficacy on other type of wounds.

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