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Case Report

Theruptor Novo dressing for an infected diabetic foot ulcer: a case study

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ABSTRACT

In diabetes mellitus (DM) patients with peripheral neuropathy, the diabetic foot infection (DFI) often begins with a small wound that patients may not easily detect and then progresses to a more complex wound. Diabetic foot ulcer (DFU) is estimated to occur in approximately in 25% of individuals with diabetes in India. The bacterial infection is one of the important cause for the chronicity of DFU and are accountable for the high medical costs as well as affecting patients' quality of life significantly**.** Preventing DFU secondary infections is an important function of wound dressing. There are many wound dressings available for DFU, and choosing the right dressing is one of the important parameter in the management and ultimately preventing the limb amputation. In this case, the patient presented with non-healing infected DFU and we used Theruptor Novo dressings for the wound management. The Theruptor Novo dressing was efficient in exudate management and preventing secondary infection which helped in accelerated DFU healing.

Keywords: Diabetes mellitus, Diabetic foot ulcer, Theruptor Novo

INTRODUCTION

One of the worst global health crises of the century is diabetes, which is the ninth major cause of death worldwide and caused 1.6 million deaths in 2019.[1] The prevalence of diabetes is 8.9% among the Indian population, resulting in an estimated 1 million deaths each year due to diabetes.[2] The world health organization defines diabetic foot (DF) as "the state of infection, ulceration, and/or destruction of the deep tissues, associated with neurological abnormalities and various degrees of peripheral vascular disease in the lower limbs of patients with DM.[3]"

Even minor trauma can lead to the development of non-healing ulcers in diabetic patients who have impaired protective sensation and altered pain response. In DM patients with peripheral neuropathy, the DFI often begins with a small wound that patients may not easily detect and then progresses to a more complex wound. Simultaneous disturbance in local microcirculation, arteriosclerotic stenosis, along with decreased immunity, and persistent wound infection are risk factors that lead to non-healing wound, resulting in a refractory/ chronic diabetic foot ulcer (DFU), which may lead to amputation causing great discomfort and pain to patients.[4]

DFU is estimated to occur in approximately in 25% of individuals with diabetes in India.[5] As much as 20% of DF patients have amputations, and DFU amputations are responsible for 27.3% of all amputations, which accounts for 56.5% of non-traumatic amputations.[6] In DF patients, the fear of amputation is often a greater concern than foot infection, end-stage renal disease and death.[7] The bacterial infection is one of the important cause for the chronicity of DFU and are accountable for the high medical costs as well as affecting patients' quality of life significantly.[5,8] Preventing DFU secondary infections is an important function of wound dressing. There are plethora of wound dressings available for DFU, and choosing the right dressing is one of the important parameter in management and ultimately preventing limb

amputation. This case report describes usage of Theruptor Novo (Healthium, India) dressing in a DM patient with infected DFU.

CASE REPORT

The elderly male patient presented with infected wound over dorso lateral aspect of foot due to an infected bursa which can happen because of prolonged cross-legged sitting. He developed bursa over dorso lateral aspect of foot with complaints of swelling, pain and difficulty in crossed sitting. Later, he developed non-healing wound because of the bursitis which is present since 3 weeks. The patient is a known case of DM with well controlled blood sugars and is on medication. On examination, the wound of size 10 cm^2 (measured using AveryDot and DeepLabel app) had signs of infection with slough and exposed ligaments (lateral ligament complex) and fifth metatarsal (Figure 1). The patient had moderate peripheral arterial disease (PAD) for which the vascular surgeon was consulted and was advised to continue the wound treatment and look for improvement before any surgically intervention can be considered. During the first 2 weeks of treatment, he underwent wound debridement under local anaesthesia (LA) and wound dressing was done using Theruptor Novo once every three days (Figure 2). By the end of 2nd week, there were no signs of infection and healthy granulation tissue had started growing. Over the next 8 weeks, the patient was followed up every week and wound dressing was done using Theruptor Novo after thorough saline wash. By end of 10th week of treatment, the wound gradually improved with healthy granulation tissue without any slough along with good epithelisation (Figure 3).

Figure 1: Infected wound of size 10 cm^2.

Figure 2: Wound dressing with Theruptor Novo.

Figure 3: Wound with granulation and epithelisation.

DISCUSSION

Diabetic foot ulcers can be neuropathic ulcers (neuropathy) or neuro-ischaemic ulcers (neuropathy and ischaemia). Patients with diabetes having neuropathy, injury and ulceration are often undetected by the patient until late - making the wound management a difficult task. Whereas, in DM patients, PAD can lead to both ulceration and impaired wound healing.[9] In this case, the patient had moderate PAD, for which vascular surgeon was consulted. The vascular surgeon advised to continue the routine wound treatment before any surgical intervention can be considered. We followed the routine wound care management using Theruptor Novo for wound dressing, the DFU started improving with healthy granulation tissue within 2 weeks.

The plantar surface of the foot is where neuropathic ulcers are most common, whereas the margins of the foot, above the toe joints, the tips of the toes, or under the toenails are the common site for ischaemic ulcers.[10] In this case, the wound was present over the dorso lateral aspect of foot. The management of wound infection, exudate, and pain are the main factors when it comes to wound-healing challenges in DFUs.[11] Wound management should address each of the factor, if possible with a wound dressing that can manage one or more factors to accelerate the wound healing process as well as improve the quality of life of the patient. In this case, the wound dressing was done using Theruptor Novo, which was able to manage the exudate and also prevented the secondary infections because of its unique 'physical mechanism of kill' antimicrobial action.[12] Prevention of secondary infections is important because the use of systemic or local antimicrobial therapy in these patients can enhance the risk of development of multidrug-resistant bacteria strains. In our case, by the end of 10th week of treatment, the wound gradually improved with healthy granulation tissue without secondary infections and there was significant reduction in the wound size compared to the initial size.

CONCLUSION

Diabetic foot ulcers are major health issue and account for morbidity, mortality and financial burden. Patients with good blood glucose control can still develop DFU because of unnoticed trauma. The Theruptor Novo dressing was efficient in exudate management and preventing secondary infection which helped in accelerated DFU healing.

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