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Case Series

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Theruptor Novo in Diabetic Foot Ulcer Care: Clinical Outcomes from Three Case Studies

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Abstract

Diabetic foot ulcers (DFUs) are a major global health concern, often leading to infection, hospitalization, and in severe cases, limb amputation. This case series explores the clinical outcomes of using Theruptor Novo, an advanced wound dressing, in the management of DFUs in three patients. Each patient presented with chronic wounds of varying sizes and severities, all of which showed consistent and progressive healing following treatment with Theruptor Novo. The dressing demonstrated significant reductions in wound size, promoted healthy granulation tissue formation, and effectively prevented infection without signs of adverse reactions. Notably, no redness, exudate, or swelling was observed during follow-ups, and patients reported reduced pain and high satisfaction with the treatment. These findings suggest that Theruptor Novo is a promising and patient-friendly option for DFU care.

Keywords: ***Advanced wound dressing, antimicrobial dressing, Diabetic foot infection, Diabetic foot ulcer, Granulation tissue, Theruptor Novo, Wound healing.***

Introduction

Diabetic foot ulcers (DFUs) impact approximately 18.6 million individuals worldwide each year, with nearly 34% of those with type 1 or type 2 diabetes developing such ulcers during their lifetime [1,2]. DFUs may result from various underlying factors, including neuropathy, ischemia, venous hypertension, limited joint mobility, trauma, and abnormal biomechanical pressure [3].

Around half of those with a DFU also suffer from peripheral artery disease in the lower limbs. Approximately 50% of these ulcers become infected, with up to 20% requiring hospitalization. In cases of moderate to severe infections, 15-20% may ultimately lead to the amputation of the affected limb. The elderly are particularly vulnerable to foot ulcers and are more prone to complications [4,5].

Diabetic foot infections (DFIs) represent a significant healthcare burden, leading to pain, decreased physical and psychological well-being, increased medical visits, the need for wound care, prolonged antibiotic treatment, and frequently, surgical intervention. DFIs are among the leading causes of diabetes-related hospital admissions and amputations [6]. Typically, these infections begin with a breach in the skin barrier—often from an ulcer or injury-and can progress from superficial soft tissue infections to deeper, more severe infections if not promptly treated [5,6].

This report presents three case studies highlighting the effective management of DFUs using Theruptor Novo wound dressing (Healthium Medtech, India).

Case Report

Case 1

An 80-year-old female patient with a medical history of pre-diabetes and hypertension presented with three chronic wounds located on the dorso-lateral aspect of the foot. She was treated with Theruptor Novo wound dressing. At the initial visit, the first wound measured 5 × 3 cm, which gradually decreased to 4 × 2.8 cm (visit 3), 3 × 2.5 cm (visit 4), and finally 2 × 2.5 cm by visit 5 (**Figure 1a**). The second wound, initially 3 × 4 cm, reduced to 2.5 × 2.9 cm (visit 3) and 2.5 × 2.6 cm (visit 5) (**Figure 1b**). The third wound, measuring 3.4 × 2 cm at baseline, shrank to 1.8 × 1.5 cm by the fifth visit (**Figure 1c**).

Figure 1a: Progress of first wound measuring 5 × 3 cm at presentation, which reduced to 2 × 2.5 cm by visit 5.

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Figure 1b: Progress of first wound measuring 3 × 4 cm at presentation, which reduced to 2.5 × 2.6 cm by visit 5.

Figure 1c: Progress of first wound measuring 3.4 × 2 cm at presentation, which reduced to 1.8 × 1.5 cm by visit 5.

Case 2

A 50-year-old male with a history of Type 2 diabetes mellitus, hypertension, and active smoking presented with a chronic wound on the left lower extremity. Physical examination findings were unremarkable. He was managed with Theruptor Novo wound dressing. At presentation, the wound measured 3.5 × 2 cm which reduced to 2.7 × 1.2 cm by third visit and 2 × 1 cm by the fifth visit (**Figure 2**). There were no clinical signs of infection, edema, or discharge, and wound healing occurred progressively over time.

Figure 2: Wound size measuring 3.5 × 2 cm at presentation which reduced to 2 × 1 cm by the fifth visit

Case 3

A 62-year-old male diabetic patient presented with a chronic wound on the left medial aspect of the ankle. His vital signs and physical examination findings remained within normal limits across all visits. He was managed with Theruptor Novo wound dressing. At the initial presentation, the wound measured 2.6 × 3.4 cm, reducing to 1.9 × 2.7 cm by the third visit and 1.3 × 2.3 cm by the fifth visit (**Figure 3**).

Figure 3: Wound size measuring 2.6 × 3.4 cm at presentation which reduced to 1.3 × 2.3 cm by the fifth visit

Throughout the treatment period with Theruptor Novo, the wounds demonstrated a progressive increase in healthy granulation tissue. There were no signs of infection, redness, edema, or exudate. The patients also reported gradual pain reduction and expressed high satisfaction with the dressing by the final visit. These outcomes highlighted not only the clinical effectiveness of the product but also its comfort and acceptability from the patient's perspective.

Discussion

The diagnosis of a DFI primarily relies on clinical signs of local inflammation. Effective management typically involves surgical debridement, proper wound care, targeted antibiotic therapy, and addressing metabolic issues. If left untreated, it can escalate to deeper infections, gangrene, and even limb loss [4,7].

Wound dressings are pivotal in DFU management. An ideal dressing should suit the wound's characteristics-such as location, moisture level, and inflammation-and support healing by providing insulation, facilitating gas exchange, draining excess fluid, and promoting autolytic debridement. It must be non-toxic, non-allergenic, and prevent secondary infections without damaging surrounding tissue [4,8].

Maintaining a moist wound environment is essential, as it enhances cell migration, tissue regeneration, and natural debridement, while minimizing the risk of further damage [3]. Advanced dressings like Theruptor Novo help achieve these outcomes. Theruptor Novo is a non-adherent dressing with a unique 3D-knitted fabric structure. It efficiently manages exudate, supports re-epithelialization, and allows for gas exchange while maintaining moisture balance. It provides antimicrobial protection via physical kill mechanism, and does not leach into the wound-unlike silver-impregnated dressings-which reduces the risk of toxicity or microbial resistance [9].

In vitro studies have demonstrated Theruptor Novo's broad-spectrum antimicrobial efficacy, with sustained activity lasting from 1 minute to 28 days-an important feature for ongoing wound protection. The dressing has shown consistent promotion of granulation tissue formation and epithelialization, with effective exudate control [10,11].

Moreover, due to its non-leaching antimicrobial mechanism, there is minimal risk of developing antibiotic resistance. Unlike conventional antimicrobial agents, it does not rely on drug release, which can diminish over time. In a case report by Kale et al., both the patients with DFU exhibited encouraging signs of wound healing with reduction in wound size and without any signs of infection [12].

Theruptor Novo uses Dimethyl Tetradecyl (3-(trimethoxysilyl) propyl) Ammonium Chloride (DTAC) for its antimicrobial action. This approach physically disrupts microbial cells, reducing the need for silver-based products and lowering the risk of cytotoxicity or allergic reactions [7,8].

The dressing also facilitates gaseous exchange, maintains optimal moisture levels, and is adaptable for both acute and chronic wounds, with dressing changes typically required every 1-3 days based on exudate levels. In all presented cases, Theruptor Novo effectively prevented infection and promoted accelerated wound healing [13]. Theruptor Novo dressing was able to prevent wound infection throughout the wound management, which, in turn, helped in accelerated diabetic foot ulcer healing.

Conclusion

This case series highlights the clinical effectiveness of Theruptor Novo wound dressing in the management of chronic diabetic foot ulcers. Across all three cases, patients exhibited progressive wound healing, marked by reduction in wound size, healthy granulation tissue formation, absence of infection, and high patient satisfaction. Given its efficacy in promoting wound healing and preventing infection without adverse reactions, Theruptor Novo appears to be a safe, patient-friendly, and effective option for managing DFUs. Further large-scale clinical studies are warranted to validate these findings and explore its broader applications in chronic wound care.

Declarations

Author Declaration

The author has no conflicts of interest to declare

Funding Statement

None

Data availability

All relevant data supporting the findings of this case report are included within the article.

Consent to participate

Written informed consent was obtained from the patient for participation in this case report.

Ethical Clearance

NA

References

[1] Armstrong DG, Boulton AJM, Bus SA. Diabetic Foot Ulcers and Their Recurrence. N Engl J Med. 2017 Jun 15;376(24):2367–75.

[2] Zhang Y, Lazzarini PA, McPhail SM, van Netten JJ, Armstrong DG, Pacella RE. Global Disability Burdens of Diabetes-Related Lower-Extremity Complications in 1990 and 2016. Diabetes Care. 2020 May;43(5):964–74.

[3] Lavery LA, Suludere MA, Attinger CE, Malone M, Kang GE, Crisologo PA, et al. WHS (Wound Healing Society) guidelines update: Diabetic foot ulcer treatment guidelines. Wound Repair Regen. 2024;32(1):34–46.

[4] Armstrong DG, Tan TW, Boulton AJM, Bus SA. Diabetic Foot Ulcers. JAMA [Internet]. 2023 Jul 3 [cited 2025 Apr 4];330(1):62–75. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10723802/

[5] Noor S, Zubair M, Ahmad J. Diabetic foot ulcer--A review on pathophysiology, classification and microbial etiology. Diabetes Metab Syndr. 2015;9(3):192–9.

[6] Noor S, Khan RU, Ahmad J. Understanding Diabetic Foot Infection and its Management. Diabetes & Metabolic Syndrome: Clinical Research & Reviews [Internet]. 2017

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Apr 1 [cited 2024 Sep 23];11(2):149–56. Available from: https://www.sciencedirect.com/science/article/pii/S1871402116301291

[7] Bader MS. Diabetic Foot Infection. afp [Internet]. 2008 Jul 1 [cited 2025 Apr 4];78(1):71–9. Available from: https://www.aafp.org/pubs/afp/issues/2008/0701/p71.html

[8] Jiang P, Li Q, Luo Y, Luo F, Che Q, Lu Z, et al. Current status and progress in research on dressing management for diabetic foot ulcer. Front Endocrinol (Lausanne) [Internet]. 2023 Aug 17 [cited 2025 Apr 4];14:1221705. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10470649/

[9] Gupta R, Murthy KS, Bhagavan KR, Moharana AK, Rodrigues M, Ts D. Antimicrobial properties of Theruptor 3D-hydrocellular wound dressing: Anin vitrostudy. International Journal of Surgery Open [Internet]. 2022 Sep [cited 2025 Jun 10]; 46:100528. Available from: https://journals.lww.com/ijsopen/fulltext/2022/46000/antimicrobial_properties_of_theruptor.7.aspx

[10] Pavan B. Theruptor novo: wound dressing for diabetic foot ulcer. International Surgery Journal [Internet]. 2023 Nov 10 [cited 2025 Jun 10];10(12):2010–2. Available from: https://www.ijsurgery.com/index.php/isj/article/view/10046

[11] Ray R, Sarkar R, Gupta S, Halder T. Trushield NXT Non Adherent Wound Dressing versus Standard of Care Dressing among Women Undergoing Obstetric and Gynaecological Surgeries: A Randomised Clinical Study. JCDR [Internet]. 2022 [cited 2025 Jun 10]; Available from: https://www.jcdr.net//article_fulltext.asp?issn=0973-709x&year=2022&volume=16&issue=12&page=QC27&issn=0973-709x&id=17350

[12] Kale SM. Theruptor Novo, a novel wound dressing in the management of infected diabetic foot ulcer: two case reports. International Journal of Advances in Medicine [Internet]. 2024 [cited 2025 Jun 10];11(1):43–6. Available from: https://www.ijmedicine.com/index.php/ijam/article/view/3958

[13] Sampath J. Superficial Partial Thickness Burns Treated using Theruptor Novo, a Novel Antimicrobial Dressing: A Case Report. JCDR [Internet]. 2024 [cited 2025 Jun 10]; Available from: https://www.jcdr.net/article_fulltext.asp?issn=0973-709x&year=2024&month=August&volume=18&issue=8&page=PD01-PD02&id=19715