

Wound Care Using 0.9% Cadexomer Iodine as a Primary Dressing in a Grade II Diabetic Ulcer: A Case Study

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Abstract: Diabetic ulcers are wounds that arise as a complication of microangiopathy and macroangiopathy. Peripheral neuropathy leads to a loss of sensation in the distal areas of the feet. This study aims to evaluate wound care using modern dressing with 0.9% Cadexomer Iodine in a Grade II diabetic foot ulcer with the nursing problem of impaired tissue integrity. The research method used was a case study, conducted at the Griya Afiat Makassar independent wound care clinic on October 14th, 16th, and 18th, 2024. The diabetic ulcer wound was assessed and monitored for healing progress using the Bates-Jensen Wound Assessment Tool (BWAT). Wound progression was also documented using an Android camera to visually compare the condition from the initial treatment to the final visit. The results of this study, based on wound care implementation three times a week, showed noticeable changes. These changes were observed in both the appearance and size of the wound across the three visits. On the first visit, granulation tissue covered 75% of the wound and epithelial tissue 25%, with a wound depth of 2.4 cm and dimensions of 1.5 × 0.9 cm. On the second visit, granulation increased to 80% and epithelial tissue decreased to 20%, with a depth of 2.2 cm and size of 1.3 × 0.7 cm. On the third visit, granulation further improved to 85% and epithelial tissue to 15%, with a wound depth of 1.6 cm and dimensions of 1 × 0.4 cm. Based on the wound care performed using modern dressing with 0.9% Cadexomer Iodine, it can be concluded that Cadexomer Iodine 0.9% is effective in promoting the healing of diabetic ulcers.

Keywords: Diabetic Ulcer, Modern Dressing, Cadexomer Iodine

INTRODUCTION

According to the World Health Organization (WHO), diabetes mellitus ranks as the sixth leading cause of death globally.(1) It is estimated that approximately 1.3 million deaths occur each year due to diabetes, with 4% of these deaths happening in individuals under the age of 70. The rising prevalence of diabetes mellitus has contributed to an increase in related complications. One of the most common chronic complications is diabetic ulcers—chronic wounds on the lower extremities typically caused by impaired blood flow (macroangiopathy and microangiopathy) and peripheral nerve damage (peripheral neuropathy), which leads to loss of sensation in the distal part of the foot. At the national level, data from the 2023 Indonesian Health Survey show that South Sulawesi ranks seventh in terms of diabetes mellitus prevalence based on physician diagnosis, with a total of 29,481 reported cases.(2) In the city of Makassar specifically, secondary data from the Griya Afiat Wound Care Clinic indicate that 15 diabetes mellitus patients received wound care between January and October 2024. This data reflects the need for effective wound management for individuals with diabetes at the local level. It is known that patients with diabetes

mellitus have approximately a 15% risk of developing foot ulcers. These wounds are often difficult to heal and, if not properly managed, may result in amputation.(3)

Modern wound care for infected wounds can involve the use of antimicrobial dressings—dressings that contain active antimicrobial agents designed to combat infection by killing bacteria or inhibiting the proliferation of microorganisms. Several types of antimicrobial agents used in wound care include silver ions and 0.9% cadexomer iodine.(4) Cadexomer iodine, also available in powder form as Iodosorb powder, is a topical preparation containing cadexomer with 0.9% iodine. Iodosorb acts as an antiseptic and is non-cytotoxic, with a slow-release mechanism.

METHODS

The research method employed was a case study, conducted at the Griya Afiat Makassar independent wound care clinic on October 14th, 16th, and 18th, 2024. The diabetic foot ulcer was measured and used as an indicator of healing progress using the Bates-Jensen Wound Assessment Tool (BWAT). Wound progression was documented using an Android camera to visually compare the condition from the initial treatment to the final stage.

Wound care was performed using the Modern Wound Dressing method, starting with cleansing the wound using bottled water and antiseptic soap. The dressing process was carried out in two stages: the primary dressing involved the application of 0.9% Cadexomer Iodine to the surface and depth of the wound, along with epithelial ointment on the wound edges; the secondary dressing used sterile gauze secured with Softban Synthetic. Wound healing was evaluated periodically using the BWAT (Bates-Jensen Wound Assessment Tool) instrument.

RESULT AND DISCUSSION

Case

Mr. Y, a 58-year-old man, presented with a wound on his right foot, specifically between the ring toe and the little toe. The wound originated from a nail puncture and had previously been treated at a hospital. The wound appeared to be a cavity (sinus tract) measuring 1.5×0.9 cm with a depth of 2.4 cm. It exhibited 75% granulation tissue, 25% epithelialization, yellowish/brownish exudate, and a mild odor. Maceration was present at the wound edges, and bone was palpable within the wound. He has a 20-year history of diabetes mellitus, along with hypertension and high cholesterol. Despite his condition, the patient's dietary habits remained uncontrolled, with frequent consumption of rice and sugary foods. His sleep pattern was also disrupted due to frequent late nights. The patient performed daily activities independently, although limited and aided by a walking stick.

Physical examination showed stable vital signs with a blood pressure of 130/90 mmHg, random blood glucose level (RBG) of 368 mg/dL, heart rate of 81 beats per minute, respiratory rate of 20 breaths per minute, and body temperature of 36.3°C. The wound on the right foot showed granulation, epithelialization, and exudate. Other assessments indicated that the patient was in generally good condition, with personal hygiene maintained despite some limitations in physical activity.

Result

Table 1. Score BWAT day1-day 3

Mr. Y	Days	Score
	1	34
	2	30
	3	29

Based on Table 01 and the BWAT (Bates-Jensen Wound Assessment Tool) scores, Mr. Y's BWAT score decreased from 34 (first treatment) to 29 (third treatment), with an average score of 31 and a range of 5 points. This decrease indicates an improvement in the wound condition following the wound care intervention.

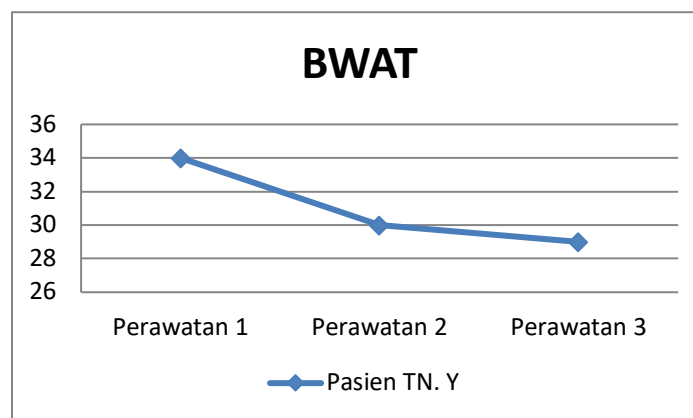


Figure 1. BWAT Score Reduction Over Three Treatments

Based on the photographic wound documentation, a significant improvement was observed in Mr. Y's wound condition. Initially, the wound showed 75% granulation, 25% epithelialization, and yellowish to brownish exudate on the old dressing, with a wound size of 1.5×0.9 cm and a depth (sinus tract) of 2.4 cm. Maceration was noted at the wound edges along with a mild odor. By the final observation, the wound had progressed to 85% granulation and 15% epithelialization, with a reduced size of 1×0.4 cm and a sinus depth of 1.6 cm. Maceration at the wound edges and a mild odor were still present.

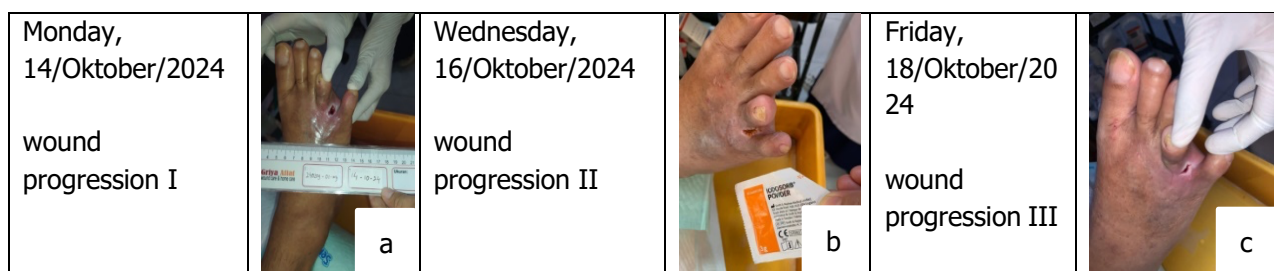


Figure 1: First treatment – wound size measured 1.5×0.9 cm with a sinus depth of 2.4 cm (a). During the second wound care session, the wound size decreased to 1.3×0.7 cm with a sinus depth of 2.2 cm (b), accompanied by

mild exudate, 80% granulation, and 15% epithelialization. On the third visit, granulation reached 85%, epithelialization 15%, with a wound size of 1 × 0.4 cm and sinus depth of 1.6 cm (c).

DISCUSSION

Based on the assessment, Mr. Y, a 58-year-old male patient, presented to the Griya Afiat Independent Practice on January 3, 2024, with a complaint of a wound located between the ring toe and little toe of his right foot. The current assessment was conducted by the researcher. The wound showed 75% granulation, 25% epithelialization, and mild yellowish to brownish exudate on the old dressing. The wound appeared to be cavity-like (GOA), with palpable bone inside the tract. The wound measured 1.5 cm in length, 0.9 cm in width, and had a depth of 2.4 cm. Maceration was observed along the wound edges, with a mild odor. The patient reported a history of a nail puncture wound that had previously been treated at Yapika Hospital. Monitoring over three wound care visits revealed a consistent history of hyperglycemia, with blood glucose levels recorded at 380 mg/dL during the first visit and 329 mg/dL during the third visit. This condition indicates poor glycemic control, which may impair the wound healing process.(6)

Wound care provided to Mr. Y, a client with a diabetic ulcer, resulted in a nursing diagnosis of impaired tissue integrity related to peripheral neuropathy, as evidenced by skin layer damage, pain, and redness (D.0129). Tissue or skin integrity damage occurs due to frequent exposure to temperature extremes, chemicals, pressure trauma, and radiation, and is referred to as a wound.(7) To prevent local wound infection, it is necessary to perform thorough wound cleansing using antiseptics, debridement of necrotic tissue, and application of topical dressings containing antimicrobial agents.(8)

Therefore, the Modern Dressing wound care method was applied, as it is a wound healing technique that can accelerate the healing process and contains antimicrobial agents capable of inhibiting bacterial growth. The primary dressing used was Cadexomer Iodine, applied three times a week to reduce biofilm and promote ulcer healing.(9-10) Cadexomer Iodine functions by delivering iodine that can penetrate microbial cell walls and disrupt protein and nucleic acid structure and synthesis. Cadexomer Iodine dressings are used as a topical therapy for chronic exudative wounds, such as venous leg ulcers, foot ulcers, and pressure ulcers. For dosage and application, the powder is sprinkled onto the wound surface to match the wound shape, forming a layer approximately 3 mm thick. The wound is then fully covered with a secondary dressing. Iodosorb should be replaced when it becomes saturated with wound exudate and all iodine has been released (indicated by fading of its color), typically changed 2–3 times per week, or daily in cases of heavy exudate.(11-12)

The results of the wound care intervention using modern dressing with Cadexomer Iodine (Iodosorb) showed wound progression in Mr. Y, observed as follows: during the first treatment on November 14, 2024, the wound measured 1.5 cm in length, 0.9 cm in width, with a depth/sinus tract of 2.4 cm. On the second day (November 16, 2024), the wound size had reduced to 1.3 cm × 0.7 cm, with a depth of 2.2 cm. On the third day of treatment (November 18, 2024), the wound measured 1.0 cm × 0.4 cm, with a depth of 1.6 cm.(13)

In a study conducted in 2021, researchers performed a systematic review and meta-analysis of clinical trials to evaluate the effectiveness of cadexomer iodine in chronic wounds. The findings demonstrated that cadexomer iodine significantly reduced exudate, necrotic tissue, and infection rates in chronic wounds. Based on the present case study, it can be concluded that the use of Cadexomer Iodine (Iodosorb) in diabetic foot ulcers is highly effective in reducing biofilm and accelerating the wound healing process, as evidenced by the reduction in wound size. Assessment over the three treatment sessions

revealed a consistent increase in the patient's blood glucose levels. This hyperglycemic condition had a direct negative impact on the wound healing process. Elevated blood glucose levels can impair tissue regeneration mechanisms, reduce the effectiveness of the immune response, and increase the risk of wound infection. Therefore, glycemic control is a crucial factor in the success of wound care.(14,15)

This case study also highlights a patient with poor adherence to dietary and lifestyle recommendations, which resulted in suboptimal metabolic control. To enhance treatment effectiveness, health education was provided, emphasizing the importance of proper nutrition and understanding of therapy. This intervention is expected to encourage behavioral changes that support the wound healing process. (16) However, this case study was limited by cultural factors and the patient's level of understanding.

CONCLUSION

Cadexomer Iodine 0.9% is one of the recommended primary dressings used in diabetic ulcer cases. Evidence from this case study shows that the use of Cadexomer Iodine (Iodosorb) in diabetic foot ulcers is highly effective in reducing biofilm and accelerating the healing process, as demonstrated by the changes in wound size. However, the study was conducted over only three visits within one week, which is considered a very short period to evaluate the long-term effectiveness of wound care. Additionally, there was a limitation in the variety of evaluation instruments used.

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REFERENCES

1. Ramadani AP, Ekayanti AK, Putra FM, Pendidikan S, Dokter P, Kedokteran F. Karakteristik Pasien Diabetes Mellitus Tipe 2 dengan Ulkus Diabetik dan Non Ulkus Diabetik di Rumah Sakit Ibnu Sina Makassar Tahun 2019 - 2021. *J Pendidik Tambusai*. 2024;8:10901.
2. Kementerian Kesehatan. *Survei Kesehatan Indonesia (SKI)*. Lap Temat Ski 2023. 2023;965.
3. Bahri K, Fajar K, Intan Asri Nurani, Rizki Hidayat. Integrating Zinc Cream-Chitosan and Cadexomer Iodine for Treating Infections in Diabetic Foot Ulcers: A Case Report. *Java Nurs J*. 2024;2(2):116–23.
4. Made N, Dwi N, Arya G, Arisudhana B, Artana IW, Putu S, et al. Penderita Diabetic Foot Ulcer Di Praktik Mandiri Perawatan Luka Dahlia A Comparison Of Cadexomer Iodine And Silver On The Healing Of Diabetic Foot Ulcers At The Dahlia Clinic menjadi infeksi yang disebabkan kadar Bali silver dapat membunuh bakteri gram po. 2022;10(2):128–41.
5. Aminah E, Naziyah. ANALISIS ASUHAN KEPERAWATAN INTERVENSI CADEXOMER IODINE POWDER DAN ZINC CREAM UNTUK BIOFILM PADA PASIEN NY. E & NY. D DIAGNOSA DIABETIC FOOT ULCER DI WOCARE CENTER BOGOR. *J Kreat Pengabd Kpd Masy*. 2023;6:1071–83.
6. Bergamaschi D. Autophagy Modulation in Endothelial Hyperglycemia-Induced Wound-Healing Impairment. *J Invest Dermatol* [Internet]. 2024;144(5):929–30. Available from: <https://doi.org/10.1016/j.jid.2024.03.005>
7. Putri RN, Hidayat N, Supriadi D, Setiawan H. Perawatan Luka diabetikum Pada Pasien Ulkus Daibetikum: Sebuah Studi Kasus Intervensi Kperawatan. *Indones J Stat Its Appl*. 2023;02(02):64–71.
8. Narla S, Price KN, Sachdeva M, Shah M, Shi V, Hamzavi IH, et al. Proceeding report of the fourth Symposium on Hidradenitis Suppurativa Advances (SHSA) 2019. *J Am Acad Dermatol*. 2020;

9. Tiara Putri R, Dwilestari Puji Utami R. Pengaruh Penerapan Modern Dressing Terhadap Perawatan Luka Infeksi Pada Pasien Post Operasi.
10. Ulcer DF, Luka P. KOMBINASI SINAR INFRAMERAH , CADEXOMER IODINE POWDER , DAN ZINC CREAM PADA DIABETIC FOOT ULCER (DFU): SEBUAH CASE REPORT ¹ Mahasiswa Fakultas Keperawatan , Universitas Padjadjaran ² Departemen Keperawatan Medikal Bedah , Fakultas Keperawatan , Universit. 2024;6:7–17.
11. Mixrova Sebayang S, Burhan A. Comparison of Effectiveness of Hydropobic Cutimed Sorbact Versus Cadexomer Iodine 0.9% on Healing of Diabetic Foot Ulcer: A Randomized Control Trial. *J Wound Res Technol.* 2024;1(1):28–37.
12. Hidayat R, Naziyah N, Husaeynii A. Analisis Asuhan Keperawatan melalui Intervensi Penggunaan Balutan Primer Cadexomer iodine pada Ny. S Dan Tn. S dengan Diagnosa Medis Luka Kaki Diabetikum di Wocare Center Bogor. *J Kreat Pengabd Kpd Masy.* 2023;6(12):5419–50.
13. Woo K, Dowsett C, Costa B, Ebohon S, Woodmansey EJ, Malone M. Efficacy of topical cadexomer iodine treatment in chronic wounds: Systematic review and meta-analysis of comparative clinical trials. *Int Wound J.* 2021;18(5):586–97.
14. Gupta S, Shinde S, Shinde RK. Topical Management of Wound: A Narrative Review of Cadexomer iodine ointment versus Povidone iodine Ointment. 2022;4(14).
15. Musdiaman S, Yusuf S, Afelya TI, Hidayah N. Evaluation of family knowledge in Detecting risk of diabetes foot ulcer In public health center. *Indones Contemp Nurs J.* 2020;4(2):44–51.
16. Ugwu E, Young E, Nkpozi M. Diabetes care knowledge and practice among primary care physicians in Southeast Nigeria: A cross-sectional study. *BMC Fam Pract.* 2020;21(1):1–11.