A SYNERGESTIC APPROACH IN MANAGING POSTOPERATIVE WOUNDS ON A PRESSURE INJURY PRONE AREA IN DIABETICS. A CASE SERIES.

Dr. Gerald Lee Jian Ming and Dr. Audrey Teo Ju Yeng
Klinik Kesihatan Sri Aman, Sarawak, Malaysia

awca
ASIAN WOUND CARE ASSOCIATION

AWCA & 7th GLOBAL WOUND CONFERENCE 2025

MALAYSIA

OCT 10 - 12, 2025 · SUNWAY PYRAMID CONVENTION CENTRE · SELANGOR

Introduction

Malaysia is home to a disconcerting estimate of 4.8 million Diabetes Mellitus (DM) patients in 2024.[1] DM is a major independent risk factor for postoperative wound healing disorders due to immune and vascular consequences.[2] The principal goal in this study was to reduce time taken for postoperative wounds over pressure injury (PI) prone areas in our DM patients to heal.

Methodology

We follow two patients who had underwent saucerization of occipital scalp carbuncles. Both postoperative wounds are encompassing the occiput, a PI prone area.[3] Furthermore, these patients had received surgery at the same hospital and postoperative wound care at the same health clinic.

TIMES model was employed to assess wound progress in both our patients.[4] Combination therapy including Retro-tech dressing (RTD) and Nanogen Aktigel were utilized in both cases. Firstly, the wounds were cleaned and bedside mechanical debridement performed. Next, a thin layer of the gel was applied onto the entire wound bed. After allowing the gel to be absorbed for 5-10 minutes, the RTD foam was cut to size and applied directly onto the wound. An outer dressing was applied to secure the RTD foam. Dressings were changed for our patients every 3 days for the first month and longer spacings in between dressings, up to weekly as the study progressed.

Results

Case 1

The first patient Mr. A is a 29-year-old obese class II gentleman with underlying Type 2 Diabetes Mellitus (DM). His HbA1c was 11.6%. Mr. A presented with a gradually enlarging occipital scalp swelling with pus discharge for 1 week. Subsequently, he underwent saucerization and oral antibiotics for 1 week. Both tissue and pus culture & sensitivity grew Staphylococcus aureus. The postoperative wound measured at 6cm(L) x 4cm(W) x 4cm(D) (Figure 1A).

Figure 1A
(Post op day 9, First visit to clinic) 20.02.2025

T : 6cm (L) x 4cm (W) x 4cm (D)
I : Slough and pus present
M: Adequate
E : 2mm undermining over 1 O'Clock direction
S : Healthy

Figure 1B
(Post op day 24)
07.03.2025

T : 6cm (L) x 4cm (W) x 3cm (D), granulation tissue.
I : Slough present
M: Adequate
E : Advancing
S : Healthy

Figure 1C
(Post op day 42)
25.03.2025

T : 3cm (L) x 1.5cm (W) x 0.5cm, epithelializing.
I : No signs of infection
M: Dry
E : Advancing
S : Dry and erythema due to outer dressing

Figure 1D
(Post op day 50)
02.04.2025

T : 1cm (L) x 0.5cm (W) x 0cm (D) epithelializing.
I : No signs of infection
M: Adequate
E : Advancing
S : Dry

Case 2

The second, Mr. B is an 82-year-old gentleman with underlying DM, hypertension and ischaemic heart disease. He also presented with a gradually increasing swelling over his occipital scalp for 1 week with multiple puncta and pus discharge. Mr. B underwent saucerization at the same hospital and oral antibiotics for 1 week. Histopathology reported specimen consistent with abscess. Mr. B's postoperative wound measured 10cm (L) x 13 cm(W) x 3cm(D) (Figure 2A).

Figure 2A
(Post-op Day 3, First visit to clinic)
14.03.2025

T : 10cm (L) x 13cm (W) x 3cm(D)
I : Slough and pus present with suspected biofilm
M: Exudative
E : Undermining 3mm over 11 O'Clock and 1 O'Clock
S : Healthy

Figure 2B
(Post-op Day 27)
07.04.2025

T : 7cm (L) x 10cm (W) x 1cm (D), granulation tissue.
I : Minimal slough present
M: Adequate
E : Rolled edges
S : Healthy

Figure 2C
(Post-op Day 52)
02.05.2025

T : 4.8cm(L) x 6cm (W) x 0cm (D), granulation tissue.
I : No signs of infection
M: Adequate
E : Advancing
S : Healthy

Figure 2D
(Post-op Day 105)
24.06.2025

T : Largest wound 0.9cm (L) x 1cm (W) x 0cm (D), epithelializing.
I : No signs of infection
M: Adequate
E : Advancing
S : Healthy

Discussion

Both cases had presented post-operatively with sloughy wounds at a pressure-injury prone site and multiple underlying co-morbidities. It was essential to prepare their wound beds properly as these wounds were at high risk to become hard-to-heal wounds. Hence, we chose to combine two advanced wound care products, RTD and Nanogen Aktigel. RTD is a highly absorbent antimicrobial polyurethane foam. Methylene blue, Gentian violet and silver are embedded into its foam matrix. The dressing effectively draws exudates from wounds, prevents biofilm formation and has antimicrobial plus antifungal properties.[5,6] Moreover, RTD dressing has been demonstrated to be effective against Staphyloccocus aureus and can generate singlet oxygen which has potential in further aiding wound healing.[7,8] Hence, creating a favourable environment for wound healing to progress. On the other hand, Nanogen Aktigel is a bio-cellulose gel that contains plant stem cells. It incorporates natural acids, nutrients, enzymes, vitamins and anti-oxidants to optimize wound healing.[9,10] The gel form results in quick absorption onto the wound bed and its bacteriostatic properties hastens slough debridement.[11]

The gel and surface-conforming foam were excellent solutions for the irregularly shaped and sized wounds. In addition to the advanced wound dressings, lifestyle modification advice, dietician counselling and weight loss regime were offered to both patients. Mr. A had achieved closure of wound 43 days after starting on the combination RTD and Nanogen Aktigel therapy. Mr. B achieved full closure of his wound 106 days after the combination therapy. Both patients were satisfied with their wound recovery and are continuing their follow-up at the same health care centre.

Conclusion

The synergistic properties of both RTD and Nanogen Aktigel have produced desirable outcomes in wound healing for Mr. A and Mr. B. Demonstrating that these dressings collectively, are effective for postoperative wounds at PI prone area in DM patients, namely over the occiput in these 2 cases. Throughout the study, both patients were comfortable with the dressings applied and did not exhibit any adverse reactions. It is important to address high risk wounds efficiently to prevent hard-to-heal wounds and pressure injuries that could be life-threatening.

Keywords: Diabetes, postoperative, abscess, RTD, Aktigel.

References:

1. International Diabetes Federation. (2025). Malaysia Diabetes Country Report 2000-2050. International Diabetes Federation.
2. Zhang X., Hou A., Cao J., Liu Y., et al. (2022). Association of Diabetes Mellitus With Postoperative Complications and Mortality After Non-Cardiac Surgery: A Meta-Analysis and Systemic Review. Front. Endocrinol. 13:841256.
3. Labib A. and Winters R. (2023). Complex Wound Management. In: StatPearls. Treasure Island (FL): StatPearls Publishing.
4. Wounds UK. (2017). TIMES MODEL of wound bed preparation. Wound Care Today.
5. Keneric Healthcare (n.d.). RTD – Creates An Optimal Environment for Wound Healing.
6. Soza Healthcare. (n.d.). RTD Wound Dressing.
7. Ho SO., Fugii G. and Chiang S. (2017). A Novel Polyurethane Foam Wound Dressing With Silver, Methylene Blue and Gentian Violet. Keneric Healthcare, Irving Texas.
8. Sýkorová M., Moffatt CJ., Stentiford N., Burian EA., et al. (2024). Topical oxygen therapy and singlet oxygen in wound healing: A scoping review. Int Wound J; 21(4): e14846.
9. Muhammad Thaqif and Nair HKR. (2023). M.O.I.S.T. Concept Wound Care With A Staged Protocol Foam Dressing; A Case Report. D-Foot International, APADLP & 5th Global Wound Conference 2023.
10. Leak K. and Johnson S. Going green: using a bio-cellulose membrane for patients with chronic non-healing wounds. Br J Nurs; 24(Sup 20): S60-66.
11. Soza Healthcare. (n.d.). Nanogen Aktiv & Nanogen Aktigel.

GENADYNE

SOZA HEALTHCARE Sdn Bhd

KENERIC HEALTHCARE