

Utilisation of red deer umbilical cord lining stem cells in the restoration of skin elasticity: case series

Despite its significance, playing a crucial role in both wound healing and wound bed preparation, periwound care is sometimes neglected. The breakdown of periwound tissue intensifies pain and stalls the closure of wounds. To reduce the chances of wound development declination, it is essential to identify symptoms and risk factors as soon as possible. In this case series, the authors present the results of using red deer umbilical cord lining stem cells on a range of wounds.

The Harikrishna Periwound Skin Classification 2015 (HPSC) is a good clinical instrument for assessing the state of health of the wound bed and its periwound skin. On the HPSC scale of 0 to 5, Class 0 represents normal skin, Class 1 represents fibrous tissue or tissue otherwise at risk, Class 2 represents wounds with exudate and Classes 3 and 4 represent inflamed wounds without and with infection, respectively.

Class 2 exudative wounds are further subdivided into Class 2A, Class 2B and Class 2C, based on the primary cause of the wounds: desiccation, maceration and allergies. Wounds having abnormal cells, such as precancerous wounds, active carcinomas or subcutaneous emphysema, fall under a different category called Class 5 (Nair et al, 2020).

This case series centres around the use of

the gel product, Sollagen™, from the diabetic periwound skin care range, which employs a unique cellular technology platform derived from red deer-derived mesenchymal stem cells, primarily aimed at human mesenchymal stem cell exosomes and will promote wound healing. Extracellular vesicles (EVs) released by cells have been discovered as important participants in intercellular processes of communication (Théry et al, 2002). Given their action in a variety of disease categories, including immune-related illnesses and tissue regeneration, exosomes are an EV subgroup that is therapeutically important (Björge, 2018). There have been limited observations that exosomes produced from human mesenchymal stem cells (hMSC) can enhance healing of cutaneous wounds by regulating inflammation, proliferation and/or matrix remodelling (Björge et al, 2018).



Harikrishna KR Nair

Professor and Head of the Wound Care Unit, Department of Internal Medicine, Hospital Kuala Lumpur, Malaysia;

Millie XH Lee

MBBS, Medical Officer, Wound Care Unit, Hospital Kajang, Postgrad Diploma in Wound Care Management, Lincoln University Collage

Muhammad Afzanizam AK

Medical Assistant Wound Care Unit, HKL

Key words

- Periwound care
- Mesenchymal stem cells
- Red deer

Case study 1. Harikrishna Periwound Skin Classification 2015 (HSPC) – CLASS 2B.

A 30-year-old Malay female with left diabetic foot ulcer post wound debridement and ray amputation of the fourth and fifth toes. Periwound shows callous formation with macerated edges and dry surrounding skin.

Day 0



Day 56



Declarations

The authors have no conflict of interest.

Case study 2. HSPC 2015 – Class 1.

A 57-year-old Malay male with right lower limb necrotising fasciitis with underlying diabetes mellitus and hypertension. Periwound skin was fibrous with advancing and dry edges.

Day 0



Day 84



Case study 3. HSPC 2015 – Class 2A.

A 67-year-old Malay male with chronic venous ulcer on medial right lower limb with underlying diabetic mellitus and hypertension. Periwound skin shows severe maceration from the exudative wound and dry surrounding skin.

Day 0



Day 12



Case study 4 HSPC 2015 – Class 2B.

A 42-year-old Malay female with left plantar diabetic foot ulcer. Periwound skin shows severe maceration with exudative centre. Surrounding skin are very dry with severe flaking of the skin.

Day 0



Day 67



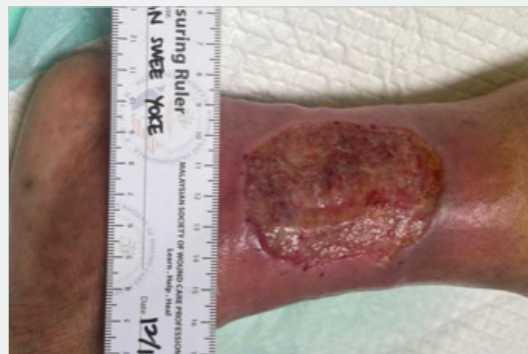
Case study 5. HSPC 2015 – Class 3.

A 66-year-old Chinese female with chronic venous ulcer over the left lower limb at the medial side with underlying diabetic mellitus and hypertension. Periwound skin is inflamed with no sign of infection.

Day 0



Day 45



Methodology

Patients were selected via convenient sampling that fulfilled the criteria for the suggested protocol for the usage of the product, from patients that attended as outpatients at the Hospital Kuala Lumpur Wound Clinic from August 2023 to January 2024, including five patients who had underlying diabetes with chronic wounds.

At the time of recruitment, every wound was evaluated using both the HPSC technique to categorise the periwound skin and the TIMES framework (Tissue, Infection or Inflammation, Moisture balance and Edges of the wound or Epithelial advancement; Nair, 2017).

Each wound was washed with distilled water and debrided if necessary. In accordance with the wound evaluation, an advanced dressing was utilised. Subsequently, the periwound area was protected with a generous amount of gel during each visit to the wound clinic. All patients with plantar wounds were also treated with offloading shoes.

Conclusion

According to this study, using Sollagen Diabetic periwound skin care enhances wound healing along with periwound hydration. Expanded recruitment of patients and a broader spectrum of wounds, such as pressure injuries, surgical wounds and vasculopathic ulcers, are areas that require further studies. So far, it has shown to be a beneficial and safe addition to standard wound care therapies for our diabetic foot patients. ●

References

- Nair HKR, Chong SS, Othman AM (2020) Validation of Harikrishna Periwound Skin Classification for wound assessment. *J Wound Care* 29(Sup4): S44–S48. doi.org/10.12968/jowc.2020.29.sup4.s44
- Nair HKR (2017) *Compendium of Wound Care Dressings and Other Modalities*. 4th edn. Malaysian Society of Wounds Care Professionals, Kuala Lumpur
- Théry C, Zitvogel L, Amigorena S (2002). Exosomes: composition, biogenesis and function. *Nat Rev Immunol* 2: 569–79. doi.org/10.1038/nri855
- Björg IM, Kim SY, Mano JF et al (2018). Extracellular vesicles, exosomes and shedding vesicles in regenerative medicine – a new paradigm for tissue repair. *Biomaterials Science* 6(1): 60–78. <https://doi.org/10.1039/c7bm00479f>