



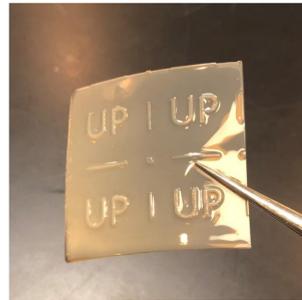
The Global Mission of Wound Care: Using a Human Keratin Hydrogel Matrix to Improve Healing in Refractory Wounds in Zanzibar

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INTRODUCTION

Chronic wounds are a global issue, contributing billions of dollars to healthcare costs annually¹. A significant portion of this comes from diabetic foot ulcers (DFUs), as well as venous leg ulcers (VLUs) which are present in nearly 2% of the population². Advanced wound care products have shown great efficacy in treating these wounds when standard wound care procedures do not suffice. However, storage requirements, lack of training resources, and economic factors can limit access to these effective treatments in some parts of the world.

Human keratin hydrogel matrices (HKHMs) are favorable materials for use in countries with limited resources because they can be shipped and stored at room temperature, have a shelf life over 2 years, and remain effective if not replaced weekly. Here, we demonstrate the effectiveness of HKHM combined with in-person physician training to treat chronic wounds in underserved regions of the world.



Human Keratin Hydrogel Matrix (HKHM)

METHODS

Ten patients with various chronic refractory wounds had wound chronicity validated by no wound progress with 4 week of standard local wound care. Wounds were then treated with HKHM for 8 weeks (average of 4 HKHM applications) as well as local wound care debridement, and dressing changes. Progress was evaluated by weekly wound size measurements.

SIGNIFICANCE

Chronic wounds are a global issue, but many countries don't have access to state-of-the-art wound care training and products. This can lead to unnecessarily high rates of comorbidities such as infection, amputation, and death. Providing access to shelf-stable advanced wound care products along with training can help physicians around the world provide more effective wound care

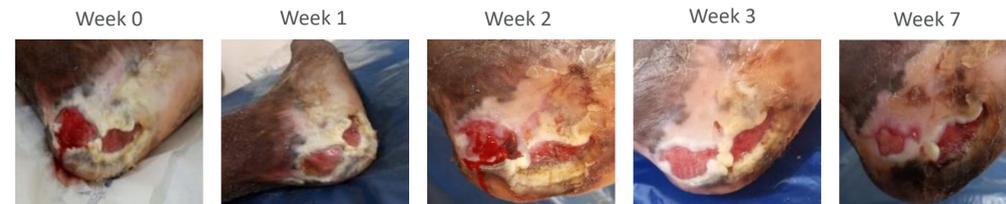


RESULTS

21-Year-Old Female
Diabetes Mellitus
History of multiple amputations
Wound Age: 6 months



58-Year-Old Female
Heel Ulcer
Diabetes Mellitus
History of trauma
Wound Age: 4 years



42-Year-Old Male
Venous Ulcer
Diabetes Mellitus
History of trauma
Wound Age: 4 years



DISCUSSION

In this case series, we show the benefit of HKHM in the treatment of challenging chronic wounds of varying etiologies. While keratin has been demonstrated previously to assist healing³, the present work shows that a novel keratin biomaterial, HKHM, may be efficacious to treat older chronic wounds. Indeed, all wounds showed progress during the treatment period. Notably, these patients received HKHM treatment on average every two weeks, rather than weekly as with other studies of HKHM. Indeed, socioeconomic status is significantly correlated to leg ulceration⁴, and continued efficacy with fewer applications is crucial in areas with reduced access to resources.

Patients also had significant comorbidities and some of the largest wounds. Wound size and comorbidities such as diabetes are well-reported to cause slower wound healing⁵,

In addition to providing product, we also provided in-person training for using HKHM and continued follow-up consultation in-person and remotely for the physicians at KMKM Hospital. These results suggest continued communication in addition to product access combine to improve patient outcomes in chronic wound care.

REFERENCES

1. Sen CK. *Adv Wound Care* 2019; 8(2): p 39-48
2. Margolis DJ et al. *J Am Acad Derm* 2002; 46(3): p 381-386
3. Than MP et al. *J Clin Aesthet Derm* 2012; 5(12): p 31-35
4. Moffat CJ et al. *Br J Dermatol* 2006; 155(2): p 307-312
5. Guo S & DiPietro LA. *J Dent Res* 2010; 89(3): p 219-229

Images depicting representative responses in HKHM treated wounds from the 10 patients evaluated in this study. Wounds had remained open prior to HKHM treatment from 3 months up to 4 years of duration. HKHM treatment resulted in visible re-epithelialization and formation of granulation tissue in the wound bed.