

(SD2021-212) A tool to assess and monitor wound health -

Tech ID: 32597 / UC Case 2021-Z08-1

ABSTRACT

Researchers from UC San Diego have developed a patent-pending device that solves all these major limitations. It is a quick, inexpensive, non-radiative, non-invasive, point-of-care imaging modality. The inventors created a fast, point-of-care imaging technique that can image deep within soft tissues. This technique can be used to monitor. wound health over long periods of time. This ultrasound imaging technology is poised to become a medical imaging tool to measure, and visualize wound size, progression, tunneling, and skin graft integration or rejection.

TECHNOLOGY DESCRIPTION

Background. Existing wound care practices use visual cues that are largely superficial in nature. The visual nature of the exams makes them very subjective and there is extensive inhomogeneity in wound evaluations between different healthcare professionals. Imaging is an indispensable tool to see what the eye cannot. Current techniques are limited to image a few millimeters deep into wounded tissue, thus visual examination is limited to the skin surface whereas wounds can exacerbate from deep within soft tissues.

Researchers from UC San Diego have developed a device that solves all these major limitations. It is a quick, inexpensive, non-radiative, non-invasive, point-of-care imaging modality. The inventors created a fast, point-of-care imaging technique that can image deep within soft tissues. This technique can be used to monitor. wound health over long periods of time. This ultrasound imaging technology is poised to become a medical imaging tool to measure, and visualize wound size, progression, tunneling, and skin graft integration or rejection.

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OTHER INFORMATION

KEYWORDS

Tissue regeneration and wound sizing, Skin grafts, Point of care ultrasound imaging, Chronic wound care, wound healing, wound prediction, optoacoustic imaging, neovascularization, angiogenesis, healing time, early diagnosis

CATEGORIZED AS

- **Imaging**
 - Medical
- **Medical**
 - Diagnostics
 - Disease: Dermatology

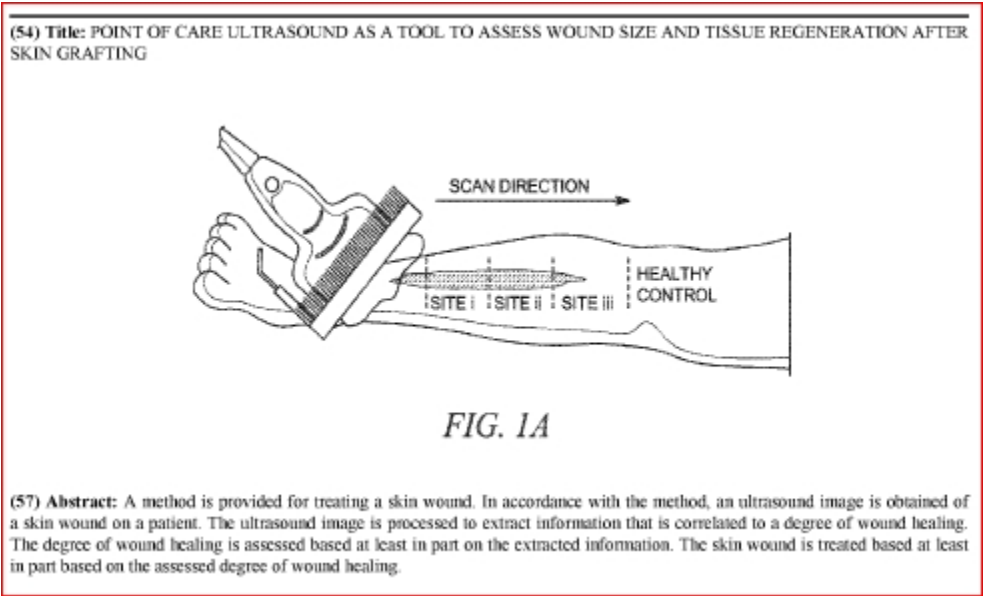
RELATED CASES

2021-Z08-1

The US patent application is available online:

<https://patents.google.com/patent/WO2022155416A1/en?q=WO+2022%2f155416>

A method for treating a skin wound, comprising: obtaining an ultrasound image of a skin wound on a patient; processing the ultrasound image to extract information that is correlated to a degree of wound healing; assessing the degree of wound healing based at least in part on the extracted information; and treating the skin wound based at least in part based on the assessed degree of wound healing.



APPLICATIONS

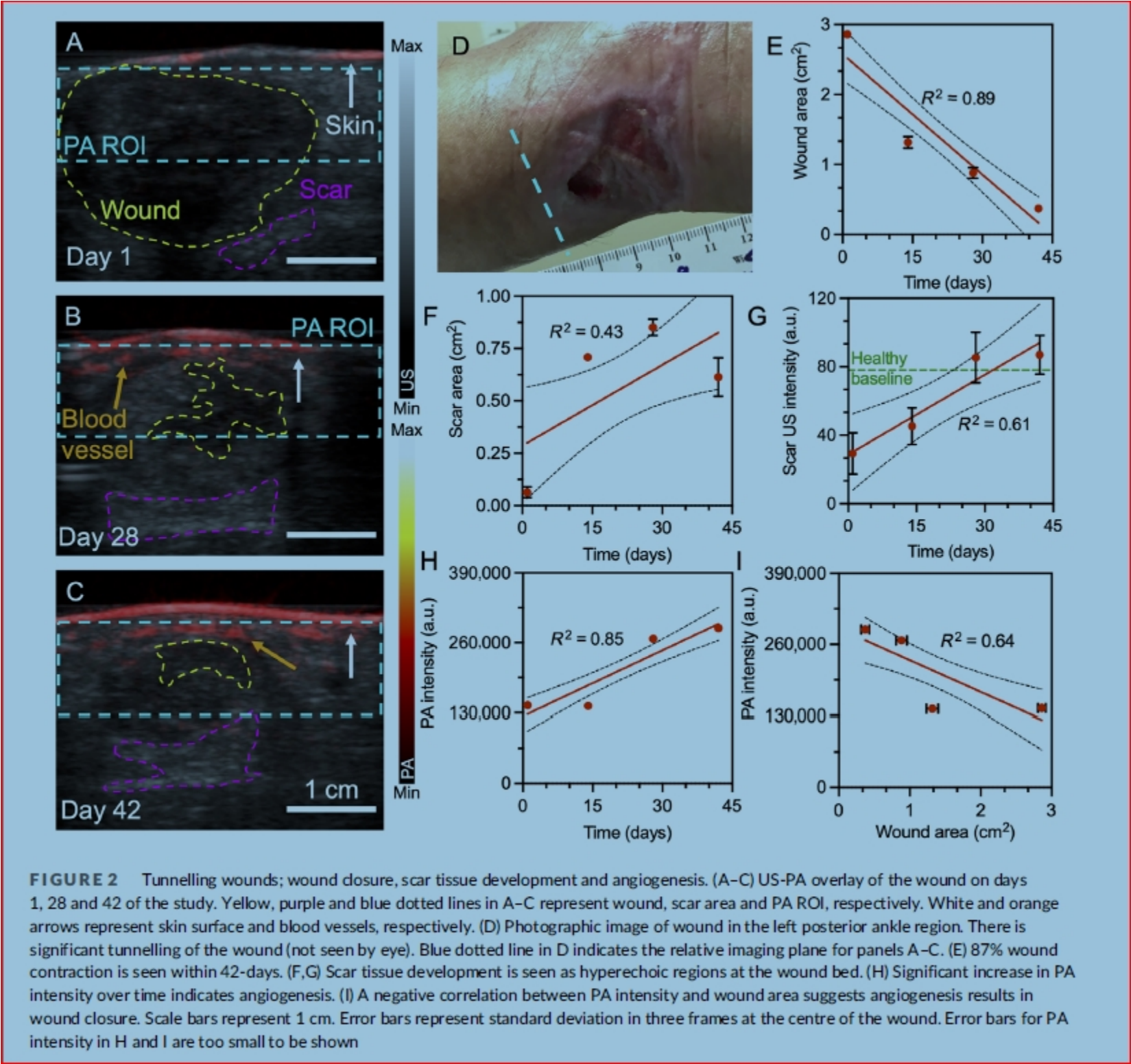
ADVANTAGES

Conventional wound care practices use visual cues to assess and monitor wound health.

Ultrasound imaging is a valuable tool to study skin graft integration used for chronic wound treatment. ultrasound imaging is a remarkable tool to monitor wound size, skin graft integration, soft tissue loss, and regeneration both before and after skin grafting.

STATE OF DEVELOPMENT

Photoacoustic imaging is similar to ultrasound but uses light as an excitation source to produce pressure waves. It has already shown promise in visualizing ulcers and neovascularization in mice, which is key for wound healing and skin graft integration. Our future work will look to incorporate photoacoustic imaging to monitor neovascularization in human subjects.



INTELLECTUAL PROPERTY INFO

UC San Diego is protecting US patent rights

<https://patents.google.com/patent/US20240074735A1/en?q=18%2f261%2c524>)

and is looking for companies interested in commercializing this technology.

US patent rights are available for licensing.

RELATED MATERIALS

► Mantri Y, Mishra A, Anderson CA, Jokerst JV. Photoacoustic imaging to monitor outcomes during hyperbaric oxygen therapy: validation in a small cohort and case study in a bilateral chronic ischemic wound. *Biomed Opt Express*. 2022 Oct 10;13(11):5683-5694. - 10/10/2022

► Mantri, Yash, et al. "Photoacoustic Monitoring of Angiogenesis Predicts Response to Therapy in Healing Wounds." *Wound Repair and Regeneration*, vol. 30, no. 2, 2022, pp. 258–67, <https://doi.org/10.1111/wrr.12992>. - 01/12/2022

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