

Evaluation of Wound Measurements Utilizing a Smartphone App - Imitomeasure for Wound Analysis

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Abstract

Various methods exist for measuring wound dimensions, including photography, comparison, ruler, or graph techniques. With the advancement of current-generation smartphones equipped with high-quality built-in cameras, accessibility to such technology has become more widespread and affordable. Leveraging specific applications developed for these smartphones has provided numerous advantages in the medical field. One such software, Imitomeasure, has been designed to measure wound dimensions without direct contact with the wound site. Unlike traditional clinical measurements involving rulers or tape, Imitomeasure offers a non-contact approach, reducing the risk of infection transmission to the patient. The efficacy of Imitomeasure has been evaluated, revealing its effectiveness in wound dimension assessment. In this investigation, the dimensions of bedsores located over bilateral greater trochanteric regions and presacral region of a patient who was bed-ridden due to Parkinson disease were assessed using the Imitomeasure application on a smartphone.

Keywords: imitomeasure application; wound dimension; measurement

Introduction

In recent years, smartphones have become equipped with higher-quality cameras, many of which are now quite affordable. The utilization of smartphone-based applications in healthcare offers the advantage of portability, allowing them to be easily transported to various locations. Software applications like Imitomeasure have proven highly beneficial for assessing patient wounds. Their non-contact nature reduces the risk of infection transmission to patients, a concern inherent in physical measurement methods such as rulers or inch tapes [1]. In this case report, the assessment of bedsores located over bilateral greater trochanteric regions and presacral region of a patient who was bed-ridden due to Parkinson disease was conducted using the Imitomeasure application.

Materials and Methods

Written informed consent was obtained from the patient, and approval was granted by the departmental ethical committee to conduct this study.

A 65-year-old male presented with bedsores located over bilateral greater trochanteric regions and presacral region of a patient who was bed-ridden due to Parkinson disease. The patient was admitted, and daily dressing changes were performed. Initially, hydrodissection with normal saline was performed, followed by the application of silver sulfadiazine cream and hydrogel. Collagen sheets were applied to the wound, followed by Urgotol sheets. The wound was then packed with gauze, pads, and Opsite, and negative pressure wound therapy was initiated along with continuous regulated oxygen therapy. Assessment of the wounds over the left greater trochanteric region (Figure 1), right greater trochanteric region (Figure 2), and presacral region (Figure 3), were conducted using the Imitomeasure [2] application on an iPhone 14 Plus, utilizing the free download available from the Apple Store.

The installation process for the application involved the following steps:

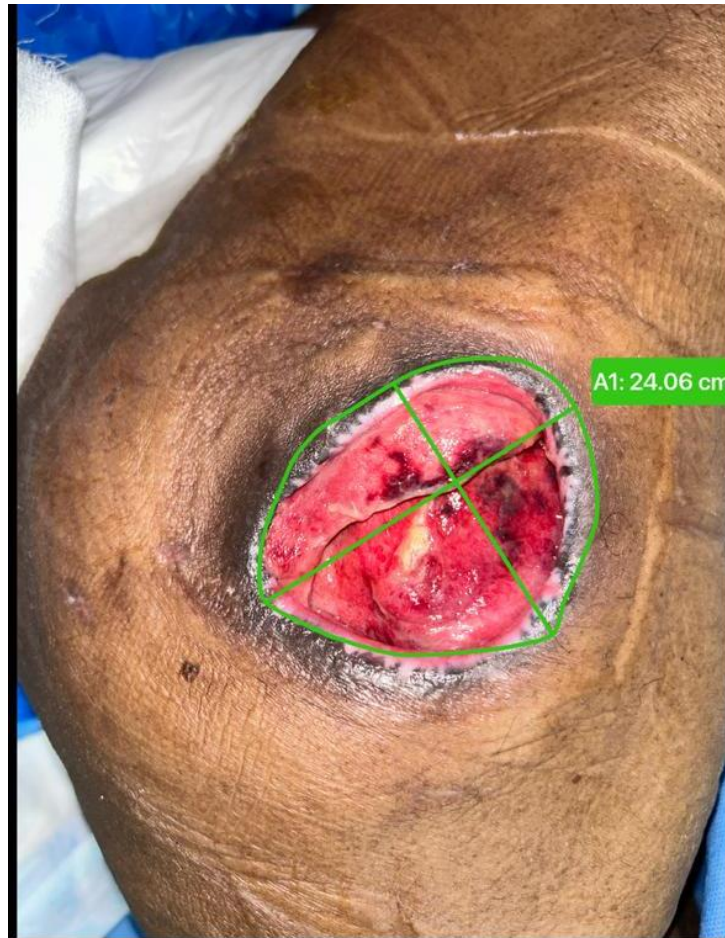
1. Search for “Imito measure” on the Apple store/Play store and install the application.
2. The application offers two modes: Calibration mode and manual mode.
3. Calibration markers provided in the application need to be printed out for use during the calibration process.
4. If using the manual method, select the area containing the wound, capture photos of the wound.
5. After taking the photo, outline the wound, click “measure”, and the area of the wound will be determined.



• A1

Area	7.04 cm ²
Circumference	9.69 cm
Length	3.37 cm

Figure 1: Figure showing measurement of area and circumference of a bedsore wound over left greater trochanteric region using Imitomeasure software



• A1

Area	24.06 cm ²
Circumference	17.92 cm
Length	6.43 cm

Figure 2: Figure showing measurement of area and circumference of a bedsore wound over right greater trochanteric region using Imitimeasure software



• A1

Area	4.92 cm ²
Circumference	8.16 cm
Length	2.96 cm

Figure 3: Figure showing measurement of area and circumference of a bedsore wound over presacral region using Imitomeasure software

Results

It has been found that the Imitomeasure application offers nearly precise measurements of wound dimensions without direct contact, making it suitable for serial monitoring of wound progression.

Discussion

Evaluating wound parameters, such as wound dimensions, plays a crucial role in comprehending wound progression. Numerous dressing materials and methods are under investigation to enhance wound healing. However, the effectiveness of these methods can be gauged by observing wound healing outcomes. A valuable approach for assessing wound status involves serially monitoring wound dimensions using photography [3,4] to track healing or deterioration, evident through reductions or increases in wound dimensions, respectively. Clinically, wound dimensions are typically measured using a ruler or tape measure, yet these techniques pose a risk of wound contamination. Therefore, a non-contact method for measuring wound dimensions would be advantageous. Imitomeasure software has emerged as an affordable and highly efficient mobile application, utilizing smartphone cameras to accurately measure wound dimensions [5]. In this study, the Imitomeasure application was

employed to assess pressure sores over left greater trochanteric region (Figure 1), right greater trochanteric region (Figure 2), and presacral region (Figure 3), yielding accurate results. The application's precision could be further validated through a large-scale study, potentially enabling its widespread use as a valuable tool for monitoring wound status.

Conclusion

This study assessed three wounds in a patient with Parkinson's disease. Conducting larger studies utilizing this application can help confirm its benefits and reliability.

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