

## Wound Assessment using a Smartphone-based Application: Imitomeasure in Electric Burns

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### Abstract

Wound dimensions can be measured using various methods, including photographs, comparisons, rulers, or grids. Modern smartphones, equipped with high-quality cameras, are now more accessible and affordable, offering new opportunities in medical applications. Specialized smartphone apps have contributed numerous benefits in healthcare, particularly for wound measurement. One such app, Imitomeasure, has been developed specifically to measure wound dimensions without direct contact. This non-contact approach reduces the risk of infection compared to traditional methods using rulers or tape. Studies assessing the effectiveness of Imitomeasure have shown it to be highly effective for measuring wound dimensions. In this research, the wound size on the scalp was measured using the Imitomeasure app on a smartphone.

**Keywords:** Imitomeasure application, electric burns, wound dimension, measurement

### INTRODUCTION

Newer smartphones have high quality affordable cameras making them ideal for various healthcare applications. Smartphone-based applications, like Imitomeasure, are found to be valuable for assessing patient wounds. These apps offer a non-contact method, reducing the risk of infection spread compared to traditional physical methods

like rulers or measuring tapes. In this case report, an electrical burn wound on a patient’s scalp was assessed using the Imitomeasure application.

### MATERIALS AND METHODS

Informed written consent was obtained from the patient, and permission for this study was taken from the departmental ethics committee.

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The patient was an 8-year-old boy presenting with electrical burns that caused scalp ulceration. He had no known comorbidities at the time of admission, and daily wound care was provided. The initial treatment involved hydrotherapy with normal saline, followed by the application of Silver Solution and Superoxidised Aqua Gel. Collagen sheets were then applied to the wound, with further packing done with negative pressure wound therapy. Continuous regulated oxygen therapy was administered in conjunction with negative pressure wound therapy. The patient's wound was assessed using the Imitomeasure app.

This study was conducted on an Android phone with the free Imitomeasure app from the Play Store.

### The app installation process involves the following steps:

1. Search for "Imitomeasure" in the Apple or Google Play Store and the app is installed.
2. The app provides two modes: Calibration mode and Manual mode.
3. For Calibration mode, print the calibration markers available in the app, and use this printout when taking pictures.
4. For Manual mode, select the area where the wound is located, then capture photos of the wound.
5. After taking the photo, outline the wound and click "Measure" to calculate the wound area.

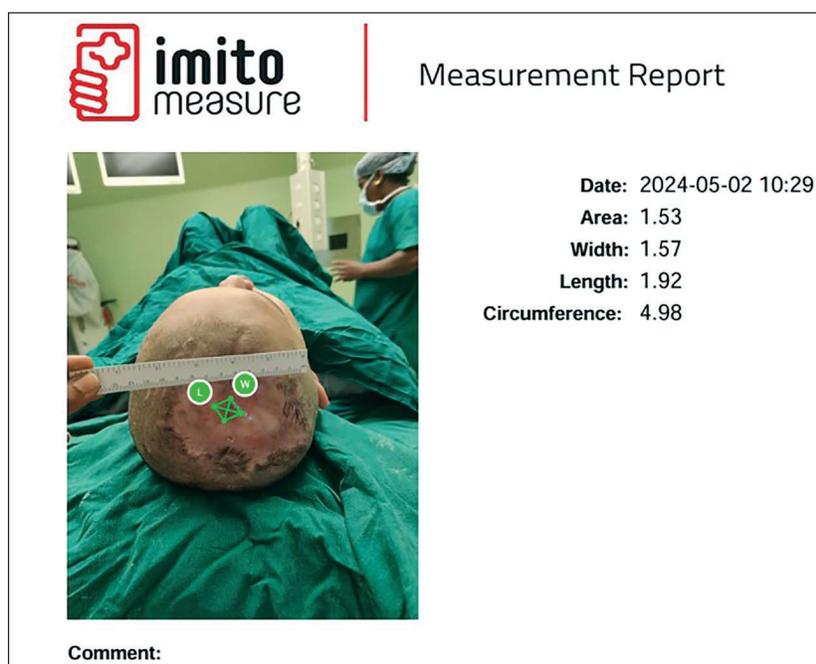


Fig. 1: Figure showing area, width, length and circumference of a burns wound over scalp region using Imitomeasure app

## RESULTS

The Imitomeasure application provides nearly accurate wound dimensions without touching the wound, and can be used to monitor the progression of the wound condition from the start of treatment throughout the healing process.

## DISCUSSION

Assessing wound parameters, such as wound dimensions, is essential for tracking wound healing progress. Various dressing materials and techniques

are used to enhance healing, and the effectiveness of these methods can be evaluated by observing changes in wound size. Regularly measuring wound dimensions provides insight into whether the wound is healing (seen as a decrease in size) or worsening (seen as an increase in size).

Traditionally, clinicians measure wound dimensions with rulers or measuring tapes, but these methods risk contaminating the wound. A non-contact method for measuring wound dimensions would thus be advantageous. Imitomeasure is an affordable and highly effective mobile application which by just using the smartphone cameras accurately measures wound dimensions without direct contact.

In this study, the wound of a patient with a burn injury on the scalp region was assessed using the Imitomeasure app, with results showing high accuracy. Confirming this accuracy through larger-scale studies could support the universal adoption of this application as a valuable tool for monitoring wound healing.

## CONCLUSION

In this study, the wound of a patient with electric burn injury on the scalp was assessed using the Imitomeasure application. Larger studies using this application are required to further validate its benefits and reliability, establishing it as a valuable tool for wound monitoring.

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