CASE REPORT

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# Assessment of Pressure Ulcer Dimensions using a Smartphone-Based Application: ImitoMeasure in Wound Assessment

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**ABSTRACT**

Dimensions of wounds can be measured using several methods, such as a photograph, a comparison, a ruler, or a graph. Current generation smartphones have high-quality built-in cameras, and they are easily accessible than before and have become affordable. Making use of certain applications built for these smartphones has helped achieve various benefits in the medical field. A software called Imitomeasure has been developed to measure wound dimensions without touching the wound. This app has the advantage over clinical measurement using a rule or tape, in that it is a non-contact method, hence less chances of spreading infection to that patient. The effectiveness of ImitomMeasure has been assessed, and it is a very effective application in measuring wound dimensions. In this study, the size of the ischial pressure sore wound has been measured using the Imitomeasure application in a smartphone.

**Keywords**

• Imitomeasure • Wound dimension • Measurement

## INTRODUCTION

With the advancement of smartphone technology, high-quality cameras are now commonly available even in affordable models. This development has made smartphone-based applications increasingly valuable in healthcare, especially due to their portability and ease of use in various settings. One such application, *ImitoMeasure*, has shown great effectiveness in wound assessment. Its non-contact approach helps minimize the risk of

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cross-contamination, which can occur with traditional tools like rulers or measuring tapes[1]. In this case report, the *ImitoMeasure* app was used to assess a gluteal pressure ulcer wound.

## MATERIALS AND METHODS

Informed written consent was obtained from the patient, and ethical clearance for this study was granted by the departmental ethics committee. A 34-year-old male presented with a bilateral ischial pressure ulcer. At the time of admission, he had no known comorbidities. He was hospitalized and received daily wound care according to SWCR guidelines[2]. Initial management involved hydrojet debridement using normal saline, followed by the application of nanosilver solution. Subsequently, superoxide solution was applied, after which collagen sheets were placed over the wound. The area was then packed with sterile gauze and pads and covered using an Opsitedressing. In addition, Negative Pressure Wound Therapy (NPWT) was administered alongside. Wound assessment was performed using the *ImitoMeasure* application (*Figure 1*), a smartphone-based tool designed for accurate, non-contact wound measurement[3]. The application was installed free of cost from the Apple App Store and operated on an iPhone 14 Plus.

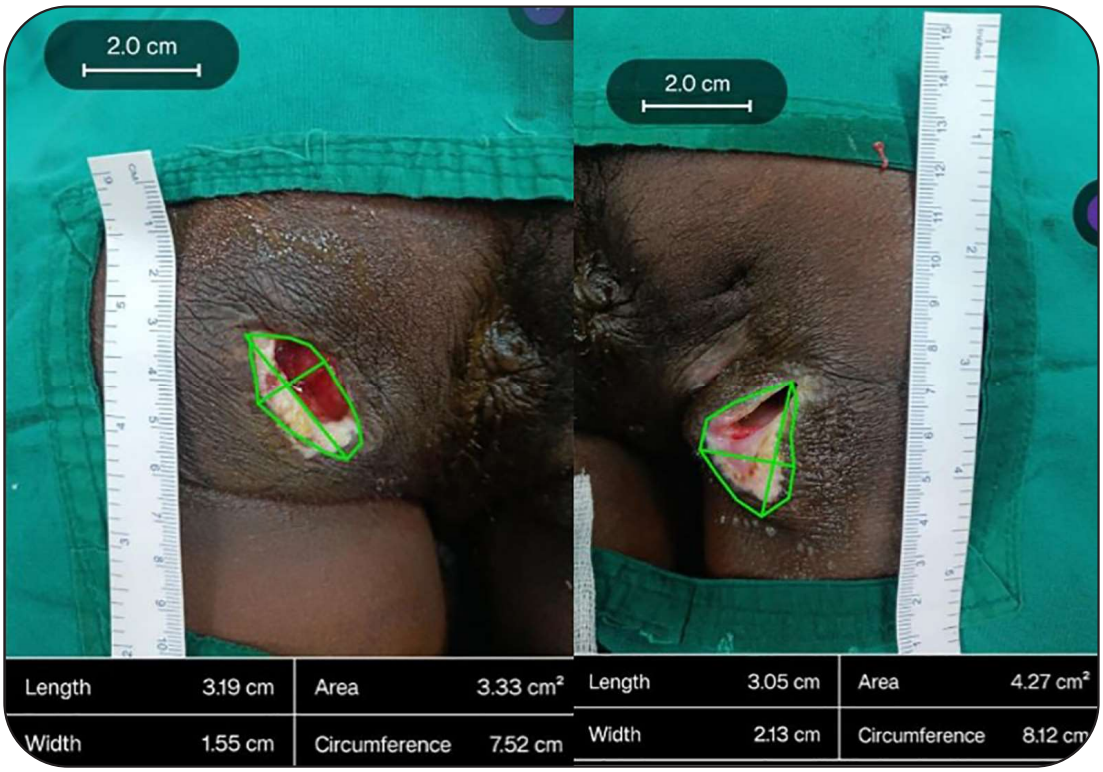


**Figure 1:** Measurement of area and circumference of a pressure ulcer over the gluteal region using ImitoMeasure software

**Steps for installation and usage, Instructions for ImitoMeasure Application:**

1. Search for "ImitoMeasure" on the Apple App Store or Google Play Store and install the application.
2. The app offers two operational modes: *Calibration Mode* and *Manual Mode*.

For *Calibration Mode*, specific calibration markers (available within the app) must be printed and placed near the wound during image capture to ensure accurate measurements.

In *Manual Mode*, the user selects the relevant body part and captures wound images directly through the app for evaluation.

## RESULTS

It has been found that the Imitomeasure application can provide almost accurate wound dimensions without touching the wound, and it can be used to serially monitor the progression of the wound condition.

## DISCUSSION

Various dressing materials and methods are continually explored to enhance wound healing. However, the effectiveness of these methods can only be assessed by evaluating the wound's progression over time. One effective approach to monitor healing is serially measuring the dimensions of the wound, as changes in size, either a reduction or an increase, can indicate whether the wound is improving or worsening.

Traditionally, wound dimensions are measured using tools such as rulers or inch tapes. However, these methods require direct contact with the wound, which can increase the risk of contamination and infection. Therefore, a non-contact method of measuring wound dimensions would offer a distinct advantage in clinical practice.

*ImitoMeasure* is a mobile-based application that utilizes the built-in camera of smartphones to measure wound dimensions accurately, without the need for direct contact. This affordable and effective tool has been shown to provide precise measurements, making it a valuable resource for monitoring wound progression.

In the present study, the *ImitoMeasure* application was used to assess a pressure ulcer wound on the bilateral gluteal region of a patient. The results demonstrated high accuracy in wound measurement.[4,5] For precise wound measurement and documentation in wound treatment, it is an efficient procedures. It is a purely arbitrary tool for measuring wounds[6]

Another free piece of software for the digital assessment of wounds is digital planimetry with image J[7].

Large-scale studies should be conducted to validate the application's reliability and generalizability further, potentially leading to widespread adoption of this tool in clinical settings. Such advancements would offer significant benefits in wound monitoring, reducing the risk of infection and enhancing patient care.

## CONCLUSION

In this study, a pressure ulcer located on the gluteal region of a patient was assessed using the *ImitoMeasure* application. The benefits and reliability of this application can be further substantiated through larger-scale studies, which would help validate its clinical utility and broader applicability.

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