Goals and Objectives

Tracking wound size is an important part of treatment. Because initial wound size affects apparent healing rates, the surface area (S) to perimeter (P) ratio (S/P) is useful to document healing. Changes in S/P provide a quantitative index of movement of a healing wounds margin toward the center. To measure via computerized–planimetry, a wounds margin can be outlined on a computer screen and its perimeter and enclosed area automatically determined by readily affordable software*. Because wounds are evaluated by different caregivers and measurement–time is a consideration, it is important to have an estimate of accuracy, reliability and measurement–time with which S and S/P can be routinely determined.

Purpose

To determine accuracy, reliability and measurement–time of S and S/P when images recorded by digital photography were measured by 4th year student nurses.

Methods

Six images of various complexities having areas known to within ±0.1cm² were measured by 20 students during two sessions one week apart. Images included; an ellipse (84cm²), two traced venous–ulcers (87cm²), a pressure–ulcer (82cm²), plantar–ulcer (6.5cm²) and venous–ulcer (41cm²). Area error was determined as the percentage difference between known and planimetry measured areas. Reliability was assessed from coefficient of variations (CV%) calculated from standard deviations (sd) of differences between the two measurement sessions.

Results

Area error (mean±sd) ranged from −3.8±7.0% to +2.4±2.2%. CV% was 0.85 to 8.45% for areas and 0.89 to 6.04% for S/P. The smallest wound (plantar) had the largest variance mainly due to variability in defining its margin. Average wound measurement–time was 81.0±10.5 seconds.

Discussion / Conclusion

Results suggest that simple computer–based planimetry of digital images can provide rapid, accurate and reliable estimates of wound area and S/P ratios.

*www.bimeco.org
• Leg Ulcers
• Local Wound Bed
• Pressure Ulcers
• Research Stream

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