

Reproducibility and clinical utility of the 3D stereophotogrammetric (SPG) system for measuring scar height in adults.

Zephanie Tyack¹, Megan Simons^{1,2}, Roy Kimble^{1,3}, Michael Muller^{3,4}, Kason Leung³

1 Centre for Burns and Trauma Research, Child Health Research Centre, Level 4, Foundation Building, Royal Children's Hospital, Herston Rd, Herston, QLD 4029, z.tyack@uq.edu.au, royk@uq.edu.au.

2 Lady Cilento Children's Hospital, 501 Stanley St, South Brisbane, QLD 4101, Megan.Simons@health.qld.gov.au.

3 School of Medicine, The University of Queensland, St Lucia, QLD 4067, kason.leung@uq.net.au.

4 Burns and Trauma Critical Care Research Centre, Royal Brisbane and Women's Hospital, Butterfield St, Herston, QLD 4006, drmjmuller@gmail.com.

Introduction

Scar assessments need to be rigorously tested prior to inclusion in clinical trials to obtain the best evidence regarding scar treatment effectiveness. Three dimensional (3D) technology has been tested for measuring scar surface area and volume but not scar height. This study aimed to evaluate the reproducibility and clinical utility of the 3D SPG, LifeViz system (Quantificare Inc.) with a digital camera and PC-based software.

Methods

Test-retest reliability was evaluated prospectively using an interval of up to one minute, as well as one to two weeks after skin healing. Participants were patients attending Royal Brisbane and Women's Hospital burns outpatient clinic. Reproducibility was analysed using Intraclass Correlation Coefficients (ICC's), standard errors of the mean, Bland Altman limits of agreement and smallest detectable changes.

Results

Participants were 83% male with a mean age of 36 ± 13 years. Immediate test-retest reliability was acceptable (maximum height ICC = 0.84; minimum height ICC = 0.87). One to two week test retest reliability was not acceptable (ICC's <0.66). The system was more reliable for measuring minimum than maximum scar height. Smallest detectable changes indicated the ability to detect changes as small as 1/3 of a millimetre. Clinical utility will be discussed.

Conclusion

The 3D system has acceptable reproducibility using immediate retesting. A lack of stability in scar height over a one to two week period may have influenced the unacceptable results of retesting at one to two weeks. Further studies using a retest interval of less than one-week are advised prior to use in clinical trials.

Key Words

Three-Dimensional methods, outcome measurement, cicatrix, burns

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