A Novel Stereoscopic Optical System for Quantification of Treatment Responses of Atrophic Acne Scars to Various Treatment Modalities by Dr. FARES SALAMEH | Dr. AMIR KOREN |
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BACKGROUND Acne scarring is an unfortunate long-term complication that can affect up to 95% of patients, although multiple tools for grading acne scars have been developed, only few accurate objective methodologies were able to evaluate minor or major changes post treatment.

OBJECTIVE This pilot study aimed to evaluate the validity, accuracy and feasibility of a new stereoscopic optical and high-resolution three-dimensional (3D) imaging system, for objectively measuring the cumulative changes in acne scar depth following a single treatment.

METHODS The validity of the new imaging system was assessed by using 10 rectangular surfaces made by 3D printers, the surface of each rectangular included 20 rounded depressions simulating different depth and diameters of atrophic scars. The cumulative depth and diameter of the depression at the surface of the rectangular surfaces was measured using the 3D imaging system and correlated against the actual known depth and diameter of the depressions. The feasibility and accuracy of the system were assessed by monitoring the cumulative scar depth changes in ten acne scar patients after various treatment interventions. Qualitative Scarring Grading score (QSGS) and the Self-assessment Clinical Acne-Related Scars (SCARS) questionnaire were also assessed before and 12 weeks after the intervention in order to correlate objective measurement to subjective accepted evaluations.

RESULTS The Pearson’s correlation coefficient obtained by comparing actual depth and actual diameter with those from the 3D imaging was 0.861 and 0.97 (p < 0.0001) respectively. Clinically; the Imaging system was much more sensitive and informative in
monitoring scar depth improvements compared to subjective scales such as the QSGS and SCARS.

**DISCUSSION** The new stereoscopic optical system offers a valid, accurate and practical objective method for assessing cumulative scar depth and monitoring treatment response.

**CONCLUSION** This pilot study demonstrates superiority of the optical imaging system over semi-quantitative objective scales in terms of sensitivity and accuracy.