Assessment of Peri-Implant Tissue Thickness in the Anterior Zone Using Ultrasonography and Colorvue Biotype Probe: An Exploratory Clinical Study

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Abstract text
Objective: The aim of this exploratory diagnostic accuracy study was to compare quantitative ultrasonographic measurements with qualitative assessment using the Colorvue Biotype Probe for evaluating peri-implant soft tissue thickness in the anterior region. A secondary objective was to explore potential discrepancies between clinical phenotype assessment and objectively measured tissue thickness based on established biological thresholds.
Materials & Methods: This diagnostic accuracy study included eight anterior single-implant sites in eight patients (4 males, 4 females; mean age 54.25 ± 6.34) treated at the Department of Periodontology, Dokuz Eylul University. Examinations were performed one year after prosthetic loading. Vertical peri-implant mucosal thickness was measured 1 mm apical to the gingival margin using a high-frequency ultrasonographic device (LOGIQ P9, GE Healthcare, WI, USA). The peri-implant soft tissue phenotype was clinically categorized (thin, medium, thick, very thick) using the Colorvue Biotype Probe by a calibrated examiner.
Results: The sample comprised 1 central incisor, 5 lateral incisors, and 2 canines. Clinically, 87.5% (n = 7) of sites were classified as “very thick” and 12.5% (n = 1) as “thick.” The mean ultrasonographic soft tissue thickness was 1.18 ± 0.06 mm (min-max: 1.10–1.26 mm), with a mean of 1.19 mm for “very thick” sites and 1.12 mm for the “thick” site. Mean alveolar bone thickness was 0.38 mm and the mean width of keratinized mucosa was 5.62 mm.
Conclusion: Peri-implant soft tissue thickness is a key determinant of esthetic and functional outcomes around anterior implants. The Colorvue Biotype Probe appears to be a simple, reproducible, non-invasive, and chairside-friendly tool for clinical assessment of peri-implant tissue phenotype, and may support surgical and prosthetic decision-making. Larger, adequately powered studies are needed to validate its diagnostic accuracy and define clinically relevant thresholds for peri-implant tissue thickness.

General
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4. I confirm my interest in applying for a travel grant. Please note that the travel grant is available only to EAO Student Members. If you are not yet a member, we can adjust your status accordingly afterward: Yes