View Abstract

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TITLE: Total Facial Convexity Angle (G-Prn-Pg) Across Malocclusion Classes

ABSTRACT BODY:

Objectives: Quantitative assessment of facial soft-tissue morphology constitutes a fundamental component of orthodontic diagnosis and treatment planning, providing objective information on craniofacial aesthetics and functional characteristics. This study aimed to systematically evaluate variations in the angle of total facial convexity (G-Prn-Pg) among individuals exhibiting Class I, II, and III sagittal malocclusion patterns.

Methods: A total of 30 subjects were included in the study and allocated into three groups according to malocclusion class (Class I, II, and III). Standardized high-resolution right profile photographs were obtained for all participants and calibrated to ensure measurement accuracy. Photogrammetric analysis of the soft-tissue profile was performed using specialized software, and the G-Prn-Pg angle was measured for each individual. Intergroup differences were analyzed using one-way ANOVA followed by post-hoc Tukey tests. Mann-Whitney U tests were conducted to assess potential gender-related variations within each malocclusion group.

Results: The mean value of the angle of total facial convexity (G-Prn-Pg) was 139.81° ± 3.29 in Class I, 134.83° ± 4.37 in Class II, and 144.83° ± 5.64 in Class III. One-way ANOVA demonstrated a statistically significant difference among the malocclusion classes ($F = 12.15$; $p < 0.001$). Post-hoc Tukey analysis revealed a significant difference between Class II and Class III ($p = 0.0001$), while comparisons between Class I and the other groups were close to the threshold of statistical significance. Slight sex-related differences in the G-Prn-Pg angle were observed across malocclusion classes, with mean values of 140.08° in males and 139.74° in females in Class I, 137.32° and 133.18° in Class II, and 142.58° and 147.08° in Class III, respectively. However, these differences were not statistically significant.

Conclusions: The angle of total facial convexity G-Prn-Pg angle represents a useful soft-tissue parameter for distinguishing facial profile characteristics associated with different sagittal malocclusion patterns. Sexual dimorphism appears to have a limited influence on this soft-tissue measurement, indicating that skeletal pattern rather than gender is the primary factor associated with variations in facial convexity.

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