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Original Articles

Thresholds for Clinically Significant Tooth-Size Discrepancy

Toshiya Endo[a], Kenji Uchikura[b], Katsuyuki Ishida[c], Isao Shundo[c], Kosuke Sakaeda[d], and Shohachi Shimooka[e]

Abstract

Objective: To determine an appropriate threshold for clinically significant tooth-size discrepancy using both a Bolton standard deviation (SD) definition and a millimetric definition.

Materials and Methods: Mesiodistal tooth widths were measured in 250 pretreatment dental casts of patients with Class I, Class II, and Class III malocclusions. The anterior and overall ratios and the required amount of maxillary and mandibular corrections were calculated. The casts were divided into small, normal, and large groups according to the anterior and overall ratios categorized by the Bolton SD definition, and into small, normal, and large groups according to the required amount of maxillary and mandibular corrections expressed in millimeters.

Results: The small and large anterior ratio groups which fell under the category of the 2 SD threshold did not always need maxillary or mandibular corrections greater than 2 mm, while the small and large overall ratio groups always needed maxillary and mandibular corrections greater than 2 mm. The small and large maxillary correction groups in the 2 mm threshold category did not always have anterior or overall ratios greater than 2 SDs from the Bolton mean. However, the small and large mandibular correction groups always had anterior ratios greater than 2 SDs and did not always have overall ratios greater than 2 SDs.

Conclusions: The tooth-size discrepancies could be better expressed in terms of both percentage and actual amount of millimeters required for correction. The ratios outside 2 SDs from the Bolton mean and the discrepancies requiring more than 2 mm of maxillary and/or mandibular corrections are recommendable as the appropriate thresholds for clinical significance.

Keywords: Tooth-size discrepancy, Anterior ratio, Overall ratio, Maxillary correction, Mandibular correction

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[a] Professor and Chairman, Orthodontic Dentistry, The Nippon Dental University Niigata Hospital, Niigata, Japan

[b] Private practice, Kanoya, Japan

[c] Assistant Professor, Orthodontic Dentistry, The Nippon Dental University Niigata Hospital, Niigata, Japan

[d] Private practice, Kawasaki, Japan

[e] Professor and Chairman, Department of Pediatric Dentistry, The Nippon Dental University School of Life Dentistry at Niigata, Niigata, Japan

Corresponding author: Dr Toshiya Endo, Professor and Chairman, Orthodontic Dentistry, The Nippon Dental University Niigata Hospital, 1-8 Hamaura-cho, Chuo-ku, Niigata 951-8580, Japan (endoto@ngt.ndu.ac.jp)