The Online
ANGLE ORTHODONTIST
An International Journal of Orthodontics and Dentofacial Orthopedics
79th Anniversary 1930-2009

The Angle Orthodontist: **Vol. 66, No. 2, pp. 111–124.**

Partitioning the components of maxillary tooth displacement by the comparison of data from three cephalometric superimpositions

Sheldon Baumrind, DDS, MS;[a] Yocheved Ben-Bassat, DMD;[c] Luis Alberto Bravo, MD, DDS, MS PhD;[d] Sean Curry, PhD;[e] Edward L. Korn, PhD[f]

[a]Dr. Sheldon Baumrind, Box 0438, Craniofacial Research & Instrumentation Laboratory, Department of Growth and Development, School of Dentistry, University of California, San Francisco, CA 94143. Sheldon Baumrind, Professor Emeritus, University of California, San Francisco, Clinical Professor Of Orthodontics, University of Medicine and Dentistry of New Jersey, Newark, NJ.

[c]Yocheved' Ben-Bassat, Senior Clinical Lecturer, Department of Orthodontics, Hebrew University, Hadassah School of Dental Medicine, Jerusalem, Israel.

[d]Luis Alberto Bravo, Titular Professor of Orthodontics, School of Stomatology, Faculty of Medicine, University of Murcia, Spain.

[e]Sean Curry, formerly Technical Director, Cranio-facial Research Instrumentation Laboratory, University of California, San Francisco, and currently GIS (Geographical Information Systems) Project Manager, Consumer Broadband Group, Pacific Bell, San Ramon, Calif.

[f]Edward L. Korn, Head, Clinical Trials Section, Biometric Research Branch, National Cancer Institute, Bethesda, Maryland

ABSTRACT

Using roentgenographic cephalograms from a sample of subjects with metallic implants, appropriately superimposed tracings were used to distinguish developmental and treatment-associated displacements of the maxillary central incisor and first molar associated with “local” changes within the periodontium from “secondary” changes which reflect sutural and appositional growth at more distant osseous loci.

Tracings were superimposed on anterior cranial base (ACB), on the maxillary implants only (IMP_MAX), and according to the best fit of maxillary anatomic structures without reference to the implants (A_MAX). Using the IMP_MAX superimposition, one could measure total local displacement at any landmark taking into consideration the effects of all appositional and resorptive changes on the superior and anterior surfaces of the palate, whereas using the A_MAX superimposition one could measure local displacement without consideration of surface appositional and resorptive changes. If the second of these measurements were subtracted from the first, the result would be a direct measurement of the effects of surface appositional and resorptive changes as they are expressed at that particular landmark.

This strategy has enabled us to quantify and report the amount of accommodation which occurs at the location of each dental landmark in association with the resorptive and appositional changes which occur through time on the superior and anterior surfaces of the hard palate.

KEY WORDS: Cephalometrics, Metallic implants, Craniofacial growth, Orthopedic and orthodontic tooth movement.

Submitted: November 1994
Accepted: February 1995.
