University of British Columbia

Craniofacial Differences of Obese and Non-obese Orthodontic Patients

(Dr. Samuel Tam, Dr. Samuel P. Tam, Dr. Siddharth R. Vora
Dr. Benjamin Pliska, Dr. Edwin Yen - - University of British Columbia Graduate Orthodontic Resident)

Introduction: Although childhood obesity has recently seen a plateau in the US and Canada, it still effects 10-20% of children and adolescents. Increasing evidence points to obesity contributing to changes in growth and development, puberty, bone metabolism and tooth movement. For this study, we aim to compare the craniofacial differences of obese and non-obese orthodontic patients between the ages of 6-12 years old, focusing on a younger age cohort than has been studied previously.

Materials and Methods: Height and weight measurements, age, and lateral cephalometric radiographs were gathered from patients before beginning orthodontic treatment at the University of British Columbia. A group of 24 obese orthodontic patients were age, sex and Angle classification of malocclusion matched with normal weight controls. Cephalometric radiographs were annotated and coordinates of landmarks were used to obtain traditional linear and angular measurements. Geometric Morphometric analyses such as Euclidean Distance Matrix Analyses (EDMA), Principle Component analysis and Discriminate function analysis were carried out from radiographs.

Results and Discussion: Morphometric analysis of cephalograms taken from obese and non-obese children reveal subtle but significant differences between groups when assessing select linear and angular measurements. Our data corroborates but does not perfectly match previous studies assessing craniofacial differences between similar cohorts in older populations. Together these data point to a correlation between craniofacial form and physiologic/metabolic phenotypes of individuals. It also supports the need to include BMI records as part of a normal orthodontic assessment, to aid in treatment planning decisions such as timing of treatment and use of growth modification appliances.