Research Aid Award

Dr. Sara Kahng, *University of Illinois Chicago*

Dr. Sara Kahng is a third-year orthodontic resident at the University of Illinois Chicago. She completed her undergraduate education at the University of California, Los Angeles and earned her DDS at the University of Southern California School of Dentistry. During her time in dental school, Dr. Kahng studied cleft palate and soft palate muscle development and malformation. In residency, Dr. Kahng's research aims to better understand 3D printing and digital orthodontics as it relates to clinical orthodontics.

Accurate and efficient bracket placement is important for successful and timely completion of orthodontic treatment. To resolve errors in bracket positioning, indirect bonding (IDB) was developed by Silverman et. al in 1972. Since its introduction, IDB has increased in popularity amongst orthodontists due to the benefits of decreased chair time and unimpaired visualization while positioning brackets. These advantages result in improved accuracy of bracket placement and reduce the need for bracket repositioning and arch-wire bending, ultimately enhancing patient comfort. Various IDB methods have been proposed to master the time-consuming technique. With increasing technological advances in orthodontics, current indirect bonding practices utilize intra-oral scanning, digital bracket placement software, and 3D printing. The aim of this study is to compare the transfer accuracy of digital indirect bonding techniques using flexible silicone trays, 3D printed resin trays, and vacuum formed trays with digitally bonded brackets and 3D printed models. The results of the proposed study will clarify which technique provides the greatest accuracy and will aid in streamlining the digital workflow of indirect bonding in clinical orthodontic practice. By mastering the digital indirect bonding technique, orthodontists will successfully reduce treatment time, costs, and ultimately improve patient satisfaction.

The generous funding provided by the American Association of Orthodontists Foundation will support the investigation of digital indirect bonding techniques and contribute to the clinical advancement of orthodontics. By further understanding IDB as it relates to the emerging digital landscape, we can improve our patient care. Support from the AAOF for my research will allow me to develop my orthodontic career as a clinician and researcher.