

## Orthodontic Faculty Development Fellowship Award

### Dr. Tarek ElShebiny, Case Western Reserve University

#### Short Biography

Dr. ElShebiny is an Assistant Professor and the clinic director in the Department of Orthodontics at Case Western Reserve University School of Dental Medicine. He completed his Orthodontic residency training in Orthodontics at CWRU School of Dentistry in 2016, followed by Craniofacial, Surgical and Special Care Fellowship at CWRU in 2017. Dr. ElShebiny's research primarily focuses on the 3D software packages for virtual tooth movements, 3D superimpositions and 3D airway analysis. Dr. ElShebiny has co-authored more than fifteen manuscripts published in top peer-reviewed journals such as The American Journal of Orthodontics, Journal of Clinical Orthodontics, American Journal of Respiratory and Critical Care, Journal of Dental Sleep Medicine and Journal of Craniofacial Surgery. Dr. ElShebiny was honored to be the recipient of the special care training award from the AAO for the year of 2017. He also received the Research Aid Award from the AAOF for the year of 2018.



#### Brief description of the project:

The purpose of this study is to compare the differences in tooth movements using four virtual setup software packages – ClinCheck Pro, SureSmile, Ortho Analyzer and Ortho Insight 3D.

This retrospective study will analyze the STL files of patients from CWRU Department of Orthodontics. All patients will have previously undergone Invisalign treatment. Initial STL files will be obtained from ClinCheck Pro and imported to SureSmile, Ortho Analyzer and Ortho Insight 3D. Each software will then be used to manually level and align the cases so as to replicate the movements seen in ClinCheck Pro. Final STL files from each of the three software's will be uploaded to Geomagic and superimposed with the final ClinCheck Pro STL file. This will ensure that the final STL files are identical. Differences from the tooth movements table – including extrusion/intrusion, translation buccal/lingual, translation mesial/distal, rotation mesial/distal, angulation mesial/distal and inclination buccal/lingual – will be evaluated.

#### How Orthodontic education will benefit from the award:

Several software packages report ability to perform different procedures, but results are sometimes inconsistent among software, making it difficult for a practitioner to communicate and compare values. This project will let us know if the technology used by different packages is giving us the same result when performing virtual tooth movement in different packages.

#### Why the foundation is important to the project:

The funding provided from the AAOF will help in examining 3D imaging technology that could be beneficial to clinical orthodontics. The foundation help would keep me as a researcher to be

always motivated to work on my imaging projects and researches that I am interested in. Also the funding will make me more committed to academics and always come up with new ideas that will be beneficial to our specialty.