Orthodontic Faculty Development Fellowship Award

Dr. Chenshuang Li, *University of Pennsylvania*

Biography

Dr. Chenshuang Li is an Assistant Professor, and the co-clinical director in the Department of Orthodontics at the University of Pennsylvania School of Dental Medicine since 2020. She finished dental school training at the Xi'an Jiaotong University in 2011, completed her Ph.D. training in Orthodontics at the School and Hospital of Stomatology at Peking University in collaboration with the UCLA Dental and Craniofacial Research Institute in 2016, finished her orthodontic specialty training at UCLA School of Dentistry in 2019, and obtained a DMD from University of Pennsylvania in 2022. Dr. Li's research primarily focuses on the functional investigation of molecules involved in craniofacial tissue development and regeneration, as well as 3D imaging analysis. Dr. Li has co-authored more than sixty manuscripts published in top peer-reviewed journals such as The Journal of Clinical Investigation, Biomaterials, The Journal of Bone and Mineral Research, Stem Cells, and The Journal of Dental Research. In addition, Dr. Li is currently the ad hoc reviewer and/or editorial board member of more than 30 peer-reviewed journals, including European Journal of Orthodontics, Bioactive Materials, Journal of Dental Research, Stem Cell Reports. During the past 5 years, Dr. Li was awarded the 2018 AAO First place winner of the Charley Schultz Resident Scholar Award, the 2019 AAO Thomas M. Graber Award of Special Merit, 2021 ORS/ON Foundation Orthoregeneration Award, 2021 IADR Innovation Award for Excellence in Orthodontics Research, 2021 AAOF Orhan C. Tuncay Teaching Fellowship Award, 2021 AAO Full-time Faculty Fellowship Award, and 2023 ADEA Leadership Institute Phase V Leadership Development Tuition Scholarship. Dr. Li has a clear career goal and is eager to serve as an educator and clinician-scientist with an emphasis on evidence-based, patient-personalized orthodontic care.

Project Description

Deficiency in the transverse dimension of the maxillary bone is observed in 8% to 18% of the population. Surgically Assisted Rapid Palatal Expansion (SARPE) was developed to allow for transverse expansion of the maxillary bone in skeletally mature patients, with pre-expansion surgery to release bony resistance. However, complications such as asymmetric expansion or unstable occlusion have been reported. A significant amount of unpredicted asymmetric expansion could impact the following treatment processes and outcomes, sometimes leading to additional surgery to correct the asymmetry. As the reported prevalence of asymmetry is not low and the lack of literature with detailed evaluations, studies that provide a more precise picture of the amount, pattern, and potential etiologies of asymmetry induced by SARPE are warranted. The central hypothesis for the current study is that the angulation of the LeFort I Osteotomy could significantly impact the maxillary expansion outcome after SARPE. To prove our hypothesis, we

will first conduct a clinical observation study by utilizing the existing clinical records of patients who had SARPE at the University of Pennsylvania. Secondly, finite element analysis (FEA) study will be programmed with different angulated osteotomy on the left and right sides of the maxilla to evaluate the expansion patterns.

The benefit to Orthodontic Education

Uneven expansion between the left and right sides is a complication of SARPE that has not been explored extensively. The current study aims to analyze the prevalence, pattern, and potential causes of asymmetric expansion in the transverse dimension after SARPE. If successful, the current study can serve as a clinical guide to precisely design the SAPRE surgical cuts and avoid additional surgery to correct unpredicted asymmetric expansion.

Importance of AAOF

The support from the American Association of Orthodontists Foundation (AAOF) for this project is critical for Dr. Li to produce the preliminary data and develop a competitive research program aimed at obtaining additional external grants; as well as to follow a well-structured education, teaching, and clinical practice plan to pursue her academic career in orthodontics.

How Foundation Funding Is Expected To Or Has Benefitted Your Career

Dr. Li was awarded the 2021 AAOF Orthodontic Faculty Development Fellowship Award. With the support of AAOF ten peer-reviewed articles (all ten as co-first and/or co-corresponding author) were published as part of Dr. Li's career development. In addition, the preliminary data generated from these AAOF supported projects have led to a NIH grant submission (currently under review). The current AAOF fund will support Dr. Li to continue her career development.