

AAO Foundation Award Final Report

Principal Investigator	Stephen L-K Yen
Co-Investigator	
Secondary Investigators	Wei Shang, Dennis-Duke Yamashita
Award Type	Biomedical Research
Project Title	Correction of Mandibular Distraction Side Effects with Orthodontic Spring Force
Project Year	1999
Institution	University of Southern California
Summary/Abstract	<p>This award funded valuable research on controlling mandibular distraction procedures by using a second guiding force with orthodontic elastics. The lessons learned from the research helped to develop the rabbit model for mandibular distraction side effects and the correction of these side effects with orthodontic springs and elastics. This research defined optimal force, timing and direction of pull for correcting different distraction side effects. We found that in order to redirect an ongoing distaction procedure</p> <ol style="list-style-type: none"> 1) High spring or elastic force(8 oz.) is needed 2) The distraction site must not have mineralized:orthodontic guidance is less efficient during late consolidation 3) The direction of force must counter the bite opening mechanics either as vertical elastics or as a counter rotation. <p>The lessons learned form these studies allowed us to better control distraction procedures and to develop new ways of distracting bone under orthodontic tension. In 2001, we reported the rabbit studies in Journal of Oral and Maxillofacial Surgery and the American Journal of Orthodontics and Dentofacial Orthopedics. We are continuing to study this area of distraction and the rabbit model using microCT analysis. Since this seminal research, we have reported several clinical papers on how to use distraction osteogenesis with orthodontic tooth movement. These papers were published in the American Journal of Orthodontics and Dentofacial Orthopedics, Plastic and Reconstructive Surgery and Journal of Oral and Maxillofacial Surgery.</p>