

AAO Foundation Award Final Report

Principal Investigator	Benjamin Pliska DDS MS FRCD(C)
Award Type	Orthodontic Faculty Development Fellowship Award
Project Title	Oral Appliance Treatment of Obstructive Sleep Apnea: Progression of Long-term Side Effects
Project Year	2011-2012
Institution	University of British Columbia Faculty of Dentistry
Summary/Abstract (250 word maximum)	<p>Introduction: Though well tolerated, oral appliances have known side effects, the most common being occlusal changes. As OSA treatment continues throughout a patient's lifetime, an examination of the progression of these side effects over time is warranted. Therefore the objective of this study was to evaluate the progression of dental changes in patients after at least eight years of oral appliance therapy.</p> <p>Methods: In this retrospective study, orthodontic study models of patients with a minimum of eight years of appliance wear were collected. Models were measured with a digital caliper, and values assessed included overjet, overbite, crowding, intermolar and intercanine distances. Descriptive measures and a mixed-effect polynomial regression analysis were used to analyze the data. Method errors were calculated using Dahlberg's formula.</p> <p>Results: A total of 77 patients (average age at start of treatment: 47.5 ± 10.2 years, 62 males) were included in this study. The average treatment length was 11.1 ± 2.8 years. Method error for dental measurements ranged from 0.13 to 0.64mm. Over the period evaluated there was a significant ($p < 0.001$) reduction in the overbite (2.3 ± 1.6mm), overjet (1.9 ± 1.9mm) and mandibular crowding (1.3 ± 1.8mm). A corresponding significant ($p < 0.001$) increase of mandibular intercanine (0.7 ± 1.5mm) and intermolar (1.1 ± 1.4mm) width was observed. Analysis of the rate of change demonstrated the following ($p > 0.05$):</p> <ul style="list-style-type: none"> • Overbite decreases less with time • Overjet decreases continuously at a constant rate • Mandibular crowding (decrease) and intermolar distance (increase) change less with time • Mandibular intercanine width increases continuously at a constant rate • No significant changes were observed in maxillary variables <p>Conclusions: Dental side effects of oral appliances appear to continue over time producing clinically relevant changes to the occlusion and dental arches. Overjet continues to decrease at a constant rate while overbite appears to decrease less with time.</p>

<p>Were the original, specific aims of the proposal realized?</p>	<p>My OFDFA proposal was not tied to a specific project, but rather to the overall development of a research stream on which I could build a successful academic career. To that end I believe that I have made considerable progress, with the described project being the first outcome of those efforts.</p>
<p>Were the results published? If not, are there plans to publish? If not, why not?</p>	<p>A manuscript of the project has been written and is currently in the final stages of preparation for an anticipated submission date of September 2012 to the journal Sleep and Breathing.</p>
<p>Have the results of this proposal been presented? If so, when and where? If not, are there plans to do so? If not, why not?</p>	<p>The results of the project were presented at the scientific poster section of the American Academy of Dental Sleep Medicine 2012 Annual Meeting. The meeting took place in Boston, MA, from June 7-10, 2012</p>
<p>To what extent have you used, or how do you intend to use, AAOF funding to further your career?</p>	<p>The funds from my OFDFA were used entirely as salary support during the year of the project, and provided some financial relief to assist in the repayment of my educational loans.</p>