

## AAO Foundation Award Final Report

Principal Investigator	Dr. Sarandeep Huja
Co-Investigator	Dr. Soledad Fernandez, Dr. David Burr (Consultants)
Secondary Investigators	
Award Type	Biomedical Research Award: Applicant Defined Dewel Award
Project Title	Bisphosphonate associated necrosis after mini implant placement and extractions
Project Year	2008-2009, with no cost extension to June 2010.
Institution	The Ohio State University College of Dentistry
Summary/Abstract (250 word maximum)	<p><b>Purpose</b> - It is unknown whether zoledronic acid (ZA) interferes with initial bone healing at extraction and implant sites. The goal of this study was to examine the effect of short duration ZA on bone remodeling and healing after surgical insult in an aged dog model.</p> <p><b>Materials and Methods</b> - Four 2-3 year old male dogs were administered (0.1 mg/kg/month for 4 months) ZA, while 3 age matched untreated dogs received no drug. In both groups and after the ZA group had completed receiving the drug, the 3<sup>rd</sup> premolar was extracted unilaterally and 2 orthodontic mini-implants/jaw/dog, were placed on the ipsilateral side. After a 6 week healing period, a pair of calcein bone labels was administered. Bone sections from the mandible, maxilla, rib and femur were obtained The % necrosis in the alveolar and basal regions of tooth supporting bone was assayed by lactate dehydrogenase and dynamic histomorphometric parameters were quantified and analyzed using mixed models.</p> <p><b>Results</b> - All extraction sites healed uneventfully and no lesions resembling osteonecrosis were detected. The total % necrosis was limited to less than 1% for all the bone sites examined. The ZA reduced bone remodeling at both surgical (extraction sites and mini-implant site) and non-surgical sites. While there was a significant (<math>p &lt; 0.05</math>) increase in BFR at the surgical sites in the untreated group, this increase was not significant (<math>p = 0.3</math>) in the ZA group.</p> <p><b>Conclusions</b> - Bone remodeling occurs in ZA treated animals at surgical sites. ZA dramatically reduced bone turnover but no exposed lesions resembling osteonecrosis developed at extraction and mini-implant sites after the 4 month drug duration.</p>
Were the original, specific aims of the proposal realized?	Yes. Additional funding was obtained from Delta Dental (\$30,000) to allow us to expand on the original sample size.

<p>Were the results published? If not, are there plans to publish? If not, why not?</p>	<p>Yes, the results are accepted for publication in the Journal of Oral and Maxillofacial Surgery. As the manuscript is beyond the proof stages, I anticipated it will be published within the next few months. Additional publication will be forthcoming as some component of the expanded data (additional funds by Delta Dental) is still being analysed.</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>Preliminary results were presented at the AAO in 2010 at the Washington DC meeting.</p>