Orthodontic Faculty Development Fellowship Award

Dr. Sudha Gudhimella, *University of Louisville*

Dr. Sudha Gudhimella is a Clinical Assistant Professor in the Department of Orthodontics at the University of Louisville. She received her BDS from the NTR University of Health Sciences, India and completed orthodontic residency with an MS at the University of Kentucky. Prior to residency, she did a fellowship in craniofacial biology at the University of Kentucky. Her current research focuses on BV/TV changes in the inter-radicular region of a rodent orthodontic tooth movement (OTM) model using histomorphometric analyses.

To understand the biological mechanisms involved, animal models have been extensively used in experimental studies of OTM. Majority of the current rodent studies of OTM use maxillary incisors as an anchor to move first molar in the mesial direction with hyper physiologic forces ranging between 25cN to 100cN. This model has several disadvantages and drastic reduction in bone volume/ total volume (BV/TV) was reported by the studies using this model. Recent studies have shown that OTM in rats can be achieved with a force of 3cN. However, the changes in the BV/TV in response to this 3cN force remain unknown. The reported BV/TV reduction using µCT images and ~3cN force in our preliminary study was lower than the values reported in the literature. The objective of this current study is to elucidate the BV/TV changes in the inter-radicular bone through histological sections and osteoclast count during OTM with ~3cN force at five time points using histomorphometric analyses.

The findings from this study will provide a better understanding of biology of tooth movement in a rodent model as well as the limitations of using such a model.

Dr. Gudhimella is grateful to the American Association of Orthodontists Foundation (AAOF) for their support with the Willie and Earl Shepard Fellowship Award. The financial support from the AAOF is extremely essential for her research project and will be used towards the histomorphometric analyses of the rodent specimens. Also, the funds from AAOF will support her career development as an academic clinician at the University of Louisville.