



**A COMPARATIVE ANALYSIS OF
DECREASE IN OVERBITE AND SAGITTAL ANCHORAGE LOSS
IN LINGUAL AND LABIAL ORTHODONTICS –
A PROSPECTIVE CEPHALOMETRIC STUDY**

by

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ABSTRACT

Background and Objectives: With the advent of lingual appliance system in orthodontics, it is important to compare the clinical significance of this appliance system with the already practiced labial appliance system. The present study was conducted to evaluate and compare the sagittal anchorage loss and decrease in overbite (bite-opening efficiency) in pre-adjusted edgewise labial and lingual appliance systems.

Methods: Twenty adult Indian patients with age from 18 to 25 years, overbite more than 4 mm and first or second premolars extraction treatment plan either in upper or both the arches were divided into two groups of ten patients each. One group was treated with MBT pre-adjusted edgewise labial appliance and the other with STb lingual appliance system. Both appliance systems were evaluated using lateral cephalograms during first six months of orthodontic treatment. Lateral cephalograms were analyzed using the method described by Pancherz² to measure sagittal anchorage loss. The method described by Ryon-Ki Hong et al⁷ was used for measuring the decrease in overbite.

Results: The results obtained were subjected to statistical analysis. Student's t- test was performed to verify any statistical significant correlation between the labial and lingual appliance systems was present. Statistical differences were determined at the 95% confidence level ($P < 0.05$). Results showed that there was gradual sagittal anchorage loss in both the appliance systems. However, when comparing these appliance systems, sagittal anchorage loss was lesser in lingual appliance system. The study also showed that in deep-bite patients, both the appliance systems were equally capable of decreasing the overbite.

Interpretation and Conclusion: Both the parameters, viz. sagittal anchorage loss and bite opening efficiency should be given consideration in the selection of an appliance system. There is lesser sagittal anchorage loss in the lingual appliance system because of distal rotation of the maxillary molars in the sagittal plane. However, both the appliance systems are equally efficient in opening the bite in deep-bite patients, which may be because of extrusion of premolars in the labial appliance or the bite-plate effect in the lingual appliance.

Keywords: sagittal anchorage loss; decrease in overbite; bite-opening efficiency; labial appliance system; lingual appliance system.