ABSTRACT

BACKGROUND:

Apical root resorption is frequently cited as an undesirable effect of orthodontic treatment. The concentration of orthodontic forces on the root can cause biological changes in the cementum and periodontal ligament resulting in root resorption. Studies have shown various patient related and treatment related risk factors associated with root resorption. The type and severity of malocclusion is one of the most important risk factor. Orthodontic patients present different combinations of vertical and sagittal skeletal discrepancies and associated varying degrees of dentoalveolar compensations and hence the amount and type of tooth movement varies between compensated and non compensated malocclusion. There have been suggestions that the amount and type of tooth movement are major determinants for root resorption. The present study focuses on relationship between different types of malocclusion (compensated and non compensated class I and class II division 1 malocclusion) and root resorption.

AIM:

To compare the root resorption levels between Angle’s class I, class II division 1 malocclusion on class I skeletal base and class II skeletal base in subjects who have treated with premolar extraction and fixed appliance mechanotherapy.
OBJECTIVES :

➢ To score the root resorption level in subjects with Angle’s class I malocclusion and class II division 1 malocclusion on class I skeletal base

➢ To score the root resorption level in subjects with Angle’s class I malocclusion and class II division 1 malocclusion on class II skeletal base.

➢ To compare the differences in levels of root resorption among class I skeletal base and class II skeletal base irrespective of Angle’s class I and class II division 1 malocclusion.

➢ To compare the differences in levels of root resorption among class I and class II division 1 malocclusion irrespective of class I and class II skeletal base relationships.

MATERIALS AND METHODS :

The present study was done in department of orthodontics, dentofacial orthopaedics, Tamilnadu Government dental college and hospital, Chennai. A total of 80 patients in the age range of 15 – 25 years of both genders who have undergone orthodontic treatment with fixed appliance mechanotherapy and treated with premolar extractions were included in this study based on inclusion and exclusion criteria. Pre and post treatment panoramic radiographs were used to evaluate root resorption level.

RESULTS :

From the findings observed in this present study, it can be concluded that there was no statistically significant difference in root resorption levels between compensated malocclusion
(Angle’s class I and class II division 1 malocclusion on class I skeletal base) and non-compensated malocclusion (Angle’s class I and class II division 1 malocclusion on class I skeletal base). The present study has found a statistically significant correlation between root resorption and initial overjet ($P = 0.01$) and overbite ($P = 0.002$). Treatment duration has also shown a statistically significant correlation ($P = 0.001$) with post-treatment root resorption. Treatment mechanics also have influence on root resorption. There was a statistically significant correlation ($P < 0.001$) of root resorption with treatment mechanics. It was found that increased amount of root resorption occurs when intrusion mechanics were associated with retraction mechanics.

**CONCLUSION:**

This retrospective comparative study had shown that there was no significant relationship between type (Skeletal or Dental) of malocclusion and root resorption. Since panoramic radiograph was used in this study to evaluate root resorption, which has got its own limitations in terms of accuracy, a study with more accurate measurement of root resorption level is required to validate the results.

**KEYWORDS:** Root resorption; Class I malocclusion; Class II division 1 malocclusion; dentoalveolar compensation.