

## Comparing Prevalence of Root Dilaceration in Class 1 And Class 2 Malocclusion.

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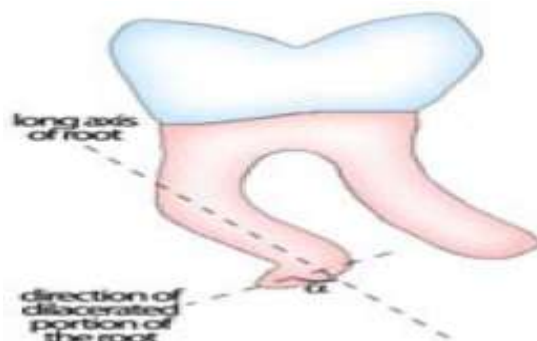
### I. Introduction

Root dilaceration is a dental anomaly characterized by an abnormal angulation of the dental root, which can cause problems during eruption and complications in the orthodontic and endodontic treatment or extraction. Dental anomalies have long been a concern to dental profession. Abnormalities in tooth size, shape, and structure result from disturbances during the morpho-differentiation stage of development, while ectopic eruption, rotation and impaction of teeth result from developmental disturbances in the eruption pattern of the permanent dentition. In addition, various maxillofacial pathologies can affect the jaw size, occlusion, diagnosis and treatment plan of orthodontic patients.

By definition, dilaceration is an abnormal angulation or bend in the root and less frequently, the crown of a tooth. Most cases are idiopathic and have no clinical feature. There are 2 possible cause of dilaceration. The most widely accepted cause is mechanical trauma to the primary predecessor tooth, which results in dilaceration of the developing permanent tooth. An idiopathic developmental disturbances is proposed as another possible cause in cases that have no clear evidence of traumatic injury. While it may be clinically detected by palpation high in the labial sulcus or hard palate; periapical radiography is the best method to detect this abnormal condition and is characteristic. The mesial or distal dilaceration is obviously detectable in periapical radiographs but buccal or lingual dilaceration appears as a round opaque region with radiolucent area in its center (bull's eye appearance). Dilacerations of a tooth may effect its orthodontic movement therefore its diagnosis is important. Co relation of dilaceration with class 1 and class 2 malocclusion is significant in its diagnosis.

Although orthodontic patients have been reported to have high rates of dental anomalies, orthodontists often fail to consider this. If not detected, these can complicate dental and orthodontic treatment. Therefore, orthodontists and general dental professional should carefully investigate such anomalies. Their incidence and degree of expression can provide important information for phylogenic and genetic studies and help in the understanding of differences within and between populations. Several studies have investigated the prevalence of dental anomalies in various age groups and race.<sup>6,7,8</sup>

The aim of this study is to determine the frequency of dilaceration of the root in a sample of orthodontic patients attending our opd by using panoramic radiograph. To measure if the prevalence of dilacerations was more in class 1 or in class 2 malocclusion patients.



### II. Material And Methods

This study was conducted in the department of orthodontics, Bahria university medical and dental college. Panoramic radiographs of 203 orthodontic patients as part of their initial record were examined for the presence of root dilacerations. The angle formed by the root deviation in relation to the long tooth axis was obtained as an angle by means of a diagram printed on transparent acetate, placed over the radiograph. Inclusion criteria was patients attending orthodontic opd, 15 years and above to ensure complete root formation, good quality radiographs and no history of trauma or previous orthodontic treatment. Class 3 skeletal malocclusion and 3<sup>rd</sup> molar was excluded from the sample.

Spss version 16.0 was used for statistics and independent sample t test was applied to compare frequency of dilacerations in skeletal class 1 and class 2 patients.

### III. Result

28 patients out of 203 had a dilacerations in atleast one of the roots,15 out of those 28 patients had an alpha angle of 90 or more. The prevalence of root dilacerations in this studied sample was 14%. Dilaceration was most frequently present in maxillary left second premolar, with a percentage occurrence of 3.4%,then in maxillary lateral incisor with a percentage of 1.9%. The comparison of frequency of dilacerations between skeletal class 1 and class 2 patients showed a significant p value of 0.007, t value of 0.134, adjusted degree freedom of(df) 191. The result showed greater prevalence of dilaceration in class 2 subjects than class 1. Frequency of dilacerations in class 1 patients is 44% and in class 2 is 55 %.

### IV. Discussion

Root dilacerations is a dental anomaly characterized by sudden change in angulation of the root,in most of the cases its etiology is to associated to trauma in deciduous dentition. Other causes may be abnormal development of the root due to the presence of cysts or adjacent tumors; the development of the ectopic tooth germ and hereditary factors, may be associated with such anomaly. Colak et al found Prevalence of root dilacerations in Central Anatolian Turkish dental patients to be 15.2 % in males and 16.6 % in females. This result was similar to the result of our study though gender differentiation was not checked. Ana Malc et al studied similar subject in Croatian dental patients and prevalence of root dilaceration were mandibular third molars (24.1%), maxillary first molars (15.3%), second molars (11.4%) and third molars (8.1%). In the mandible, dilacerations were less common than in the maxilla. with reference to another study conducted by MR Nabavizadeh et al in Shiraz dental school, iran

Root dilaceration was detected in 0.3% of teeth and 7.2% of patients. It was distributed equally between the maxilla and mandible. Mandibular second molar was the most frequent dilacerated tooth (1.6%) followed by maxillary first molar (1.3%) and mandibular first molar (0.6%).In our study maxilla was more commonly involved than mandible.

Some authors define dilaceration as a deviation of 90 degree or greater from the normal axis of the tooth. Others considered a tooth or a root to have dilaceration if there was 20 degree or more deviation from the normal axis of the tooth. In this study; samples were classified based on the later definition.

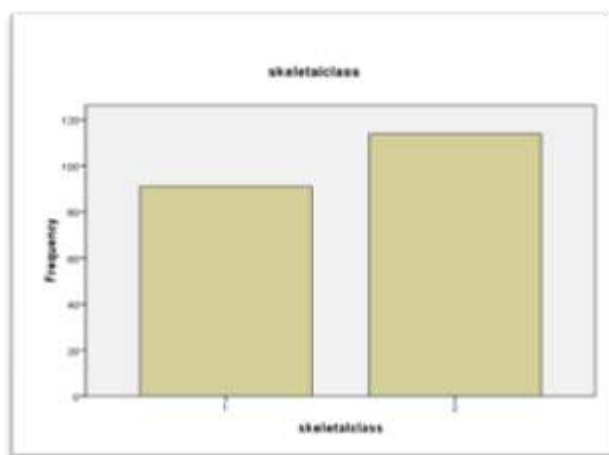
Our study compares occurrence of dilacerations in class 1 and class 2 skeletal malocclusion showing a higher prevalence in class 2 subjects. Such a study has not been done in Pakistani population sample before.

Diagnostic tool for detection of root morphology is not opg, therefore results may be compromised and can be improved if study is done using periapical radiographs or CBCT.

Faerman et al emphasized that early diagnosis of the dilaceration involves performing radiographs on all children in the mixed dentition phase, with a good clinical examination, therefore avoids functional, esthetic, phonetic and psychological problems.

In cases where there is the need for orthodontic traction, extraction or endodontic treatment, of a dilacerated tooth, it is important to obtain the position of the unerupted tooth, for surgical planning and evaluation of degree of difficulty.

Dilacerated teeth may be more prone of external apical root resorption therefore early detection is useful in orthodontic treatment planning.



**Fig. 1** Comparison of frequency of dilacerations in class 1 and class 2 skeletal malocclusion

## V. Conclusion

Prevalence of dilacerations in our sample was 14 %, with maxillary second premolar as the most frequently involved tooth, the null hypothesis that there is no difference between class 1 and class 2 patients has been rejected as dilacerations seems to occur more in class 2 malocclusion patients than in class 1 malocclusion.

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