Case Report / Olgu Sunusu

Crown dilaceration of maxillary central incisor - A case report
Santral Maksiller Kesicide Taç Ayrılması - Olgu Sunumu

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ABSTRACT

Crown dilaceration is the result of a developmental anomaly in which there has been an abrupt change in the axial inclination between the crown and the root of a tooth. Two possible causes of dilacerations are trauma and developmental disturbances, and it has also been proposed that it might be associated with some developmental syndromes. Dilaceration can be seen in both the permanent and deciduous dentitions, and it is more commonly found in posterior teeth and in the maxilla. A rare case of crown dilaceration of maxillary permanent central incisor has been reported in this article.

Key words: Dilaceration, central incisor, trauma.
Introduction

Crown dilacerations (dilacer - tear up) is non-axial displacement of already formed hard tissue in relation to developing odontogenic tissues. It was first described by Tomes in 1848 as a deviation or bend in the linear relationship of a crown of a tooth to its root [1,2, 3]. Dilacerations can be distinguished from flexion, which is defined as a tooth with a hooked or a bent root [3]. According to Stewart tooth dilaceration referred to hand of a traffic policeman[4]. Incidence of root dilacerations in permanent teeth was 25% with developmental disturbances secondary to primary tooth injury [5]. Its frequency is reported to be 3% of all injuries to the primary teeth [6]. Dilaceration can be seen in both the permanent and deciduous dentitions, and it is more commonly found in posterior teeth and in the maxilla [7]. Here we report a rare case of crown dilaceration of maxillary permanent central incisor.

Case report

A 27 year old male patient reported to the dental clinic with complains of stains on the teeth. Patient gives a history of trauma to the same region during childhood at the age of 5 years. On clinical examination the crown of the central incisor was curved palatally in relation to the lateral incisor [Figure 1 A and B]. A yellowish discoloration and stains was observed on the distal incisal edge of the maxillary right central incisor which was non tender on percussion. Intra oral periapical radiograph of the same region was taken which revealed a radiolucent line at the junction of the cervical and middle third of the crown of the maxillary right central incisor. An acute bend was observed in relation to the crown of the lateral incisor coronal to the radiolucent line [Figure 2]. No periapical changes were observed. Based on these clinical and radiological findings, a final diagnosis of crown dilaceration in relation to the maxillary right central incisor was made. The treatment plan for the patient was extraction of the dilacerated tooth followed by oral prophylaxis [Figure 3].

Discussion

The dilaceration is an angulation in the crown and root of the tooth [8]. This occurs due to the trauma from the primary central incisors during the early developmental stages of the permanent central incisors. Commonly occurs due to the mechanical trauma to the primary predecessor tooth, which results in dilaceration of the developing succedaneous permanent tooth. The calcified portion of the permanent tooth germ is displaced in such a way that the remainder of the permanent tooth germ forms at an angle to it [9,10]. At the age of 4-5 years if child is exposed to trauma ,tooth germ of the permanent incisors develops in a labial direction and position closer to the resorbing root of the primary tooth [11]. The resorbing apex of the primary incisor creates an impact point with the incisal edge of the permanent crown and causes this crown to turn upward, into its tooth follicle [11,12]. Because the permanent incisor root is not fully developed at the moment of injury, part of the already formed root will rotate along with the crown, resulting in crown dilaceration.

This dilacerations creates an abnormal angle between the root and the crown and the longitudinal axis of the tooth is deformed [13]. According to the theory the pathology of crown dilacerations occurs due to displacement of the enamel epithelium and the mineralized portion of the tooth in relation to the dental papilla and cervical loop [12]. In our reported case also patient gives a history of childhood
trauma at the age of 5 years. Other cause for
crown dilaceration, especially when there is no
clear sign or history of traumatic injury,
idiopathic developmental disturbance can be
considered.

![Figure 2](image)

**Figure 2**- Intraoral periapical radiograph showing
crown dilaceration with radiolucent line in relation
to maxillary right central incisor tooth

Tooth dilacerations have been coded as
520.4 according to ICD-9-CM (International
Classification of Diseases – 9 revision - Clinical
Modification) "[14]. Dilaceration seen in both
the permanent and deciduous dentitions, but the
incidence in the deciduous is very low [15,16].
Prevalence is greater in posterior teeth and in
the maxilla with fewer occurrences among
anterior teeth and in the mandible [17]. There is
no sex predilection for dilacerations of the teeth
[18]. Dilaceration can occur anywhere along
the length of the tooth, such as within the crown, at
the cemento-enamel junction, anywhere along
the length of the root, or just at the root apex,
and this will depend on the extent of root that
was formed at the time of injury [19]. A recent
study showed that root dilacerations in incisors,
canines, and premolars is most common in the
apical third of the roots. Dilaceration within the
middle third of the root is more frequent in
molars, whereas dilaceration within the coronal
third of the root is most commonly seen in third
molars [17]. In our reported case also crown
dilacerations was seen at the cementoenamel
junction.

Crown dilacerations are less common
than root dilacerations [20]. Commonly occur in
maxillary permanent incisors because of their
close position to primary incisors due to
trauma [21]. The injuries to the primary dentition
that can result in crown dilaceration are
avulsion or intrusion. Crown dilacerations with
palatal angulation of the crown seen commonly
in upper incisors, whereas labial angulation
seen common in lower incisors [22]. In our
reported case also it was seen in palatal
direction.

![Figure 3](image)

**Figure 3**- After extraction

Clinical appearance of permanent incisors with
crown dilacerations depends on the stage at
which the injury to the developing tooth bud
occurred [12]. If the injury takes place in the
second or third year of life, only a portion of the
crown may be tipped; however, if the injury
occurs during the fourth or fifth year, entire
crown will be tipped. In this case trauma
affected the permanent tooth crown at the age
of 5 years. Intraoral periapical radiograph
reveals a foreshortened crown with
radiolucency line at cementoenamel junction.
Brownish yellow discoloration mainly occurs
due to disturbances in the ameloblastic layer,
causing defective matrix formation due to
trauma. The stretched inner enamel epithelium
continues to induce the differentiation of new
odontoblasts, hence the dentin formation is not
affected [23]. Similar discoloration was seen in
this report also.

Treatment options for crown
dilacerations depends whether the crown is
totally impacted or partially/totally
erupted. Treatment options for crown
dilacerations is divided into surgical approaches
with orthodontic treatment and surgical approaches
without orthodontic correction. Recontouring
of crown with composite resins or using crown preparation option. In the present case, orthodontic realignment was not possible because the long axis of the root was almost parallel to the healthy teeth, which could result in either exposure of the root labially or root resorption. So the extraction was recommended.

**Conclusion**

Permanent crown dilacerations result of post trauma in childhood which affects the permanent tooth bud (2nd to 5th year of age). In this literature we discussed about the clinical and radiologic feature of such condition with treatment option.

**Reference**