

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 (dilacero - 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 is referred to as 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 complaints 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 were 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.

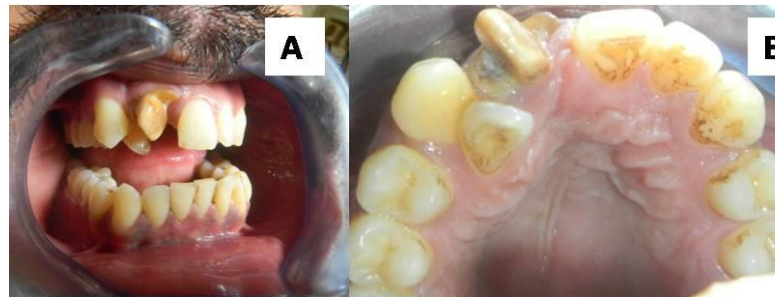


Figure 1- a) Labial view and b) Occlusal view of the dilacerated right maxillary central incisor

This dilaceration 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.

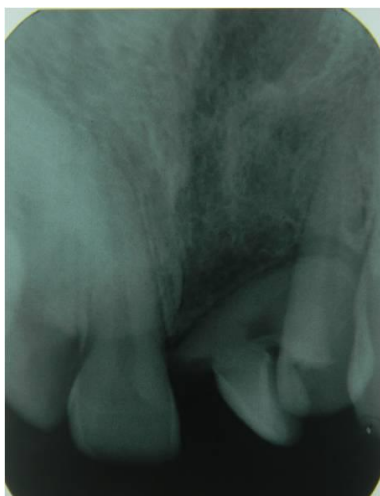


Figure 2- Intraoral periapical radiograph showing crown dilaceration with radiolucent line in relation to maxillary right central incisor tooth

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 cemento-enamel 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.

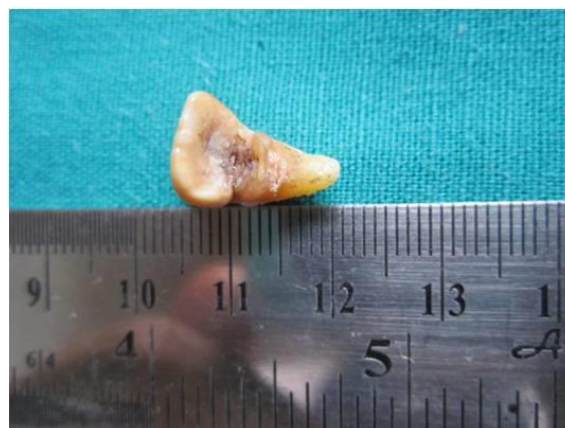


Figure 3- After extraction

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 cemento-enamel 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 are also suggested treatment 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

1. Tomes J. A course of lectures on dental physiology and surgery (lectures I-XV). London: 1846 – 1848.
2. Shafer W.G, Hine M.K, Levy B.M. A textbook of oral pathology. 4th ed. Philadelphia: WB Saunders. 1983;40:308 –11
3. Tiecke R.W. Pathologic physiology of oral disease. St Louis: Mosby.1959.
4. Stewart D.J. Dilacerate unerupted maxillary central incisors. Br Dent J.1978;145:229 –33.
5. Dummett Jr CO. Anomalies of the developing dentition. In: Pediatric Dentistry Infancy through Adolescence, Pinkham JR. 3rd ed WB Saunders Co. Yr 47.
6. Maragakis M.G. Crown dilaceration of permanent incisors following trauma to their primary predecessors. J Clin Pediatr Dent. 1995; 20:49-2.
7. Jafarzadeh H , Abbott P.V. Dilaceration: Review of an Endodontic Challenge .J Endod. 2007;33:1025-1030
8. Subramaniam P, Naidu P .Treatment of crown dilaceration: An interdisciplinary approach. J indian soc pedod prevent dent.2010;28:34-7
9. Kilpatrick N.M, Hardman P.J, Welbury R.R. Dilaceration of a primary tooth. Int J Paediatr Dent 1991;1:151–3.
10. Von Gool A.V. Injury to the permanent tooth germ after trauma to the deciduous predecessor. Oral Surg Oral Med Oral Pathol 1973;35:2-12.
11. Crescini A, Doldo T. Dilaceration and angulation in upper incisors consequent to dental injuries in the primary dentition: orthodontic management. Prog Orthod 2002;3:29-41.
12. Andreasen J.O, Flores M.T. Injuries to developing teeth. In: Andreasen JO, Andreasen FM, Andreasen L, editors. Textbook and color atlas of traumatic injuries to the teeth. Oxford: Blackwell Munksgaard: 2007; 542-76.
13. Topouzelis N, Tsaousoglou P, Pisoka V, Zouloumis L. Dilaceration of maxillary central incisor: A literature review. Dent Traumatol 2010;26:335-41
14. Arthur J, Nowak, Rebecca L, Slayton. Trauma to primary teeth: Setting a steady management course for the office. Contemporary Pediatrics Archive November 2002
15. Neville B.W, Damm D.D, Allen C.M, Bouquot J.E. Oral and maxillofacial pathology. 2nd ed. Philadelphia: WB Saunders, 2002:86–8.
16. Yeung K .H, Cheung R.C, Tsang M.M. Compound odontoma associated with an unerupted and dilacerated maxillary primary central incisor in a young patient. Int J Paediatr Dent.2003;13:208 -12.
17. Malcic A, Jukic S, Brzovic V, Miletic I, Pelivan I, Anic I. Prevalence of root dilacerations in adult dental patients in Croatia. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2006;102:104 -9.
18. Eversole L.R. Clinical outline of oral pathology: diagnosis and treatment. 3rd ed. Hamilton, Ontario, Canada: BC Decker Inc.2002:350.
19. Rao J.P.K, Shetty S.R, Veena K.M, Chatra L, Shenai P. Crown dilacerations - two case reports. Nig Dent J.2011;19:24-6
20. Asokan S, Rayen R, Muthu M.S, Sivakumar N. Crown dilaceration of maxillary right permanent central incisor: a case report. J Indian Soc Pedod Prev Dent 2004;22:197–200.
21. Matsuoka T, Sobue S, Ooshima T. Crown dilaceration of a first premolar caused by extraction of its deciduous predecessor:A case report. Endod Dent Traumatol.2000;16:91– 4.
22. Lowe P.L. Dilaceration caused by direct penetrating injury. Br Dent J 1985;159:373-4.
23. Bhushan B.A, Garg S, Sharma D, Jain M. Esthetic and endosurgical management of Turner's hypoplasia; a sequelae of trauma to developing tooth germ. J Indian Soc Pedod Prev Dent 2008;26:121-24.
24. Ozer S.Y .Dilaceration of Mandibular Central Incisor: a case report. Saudi Endodontic Journal Vol.2011;1:44-49.